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TECHNICAL REPORT

APPLYING SOCIAL AND BEHAVIOR CHANGE TO CLIMATE CHANGE ADAPTATION

A LITERATURE REVIEW



September 2019

This document was produced for review by the United States Agency for International Development. It was prepared by Chemonics for the 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.

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Cover Photo: Neil Palmer, CIAT. Two farmers in Kawanda, Uganda discuss the potential for growing drought-tolerant bean varieties to foster climate-smart, resilient development.

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Prepared for:

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

Prepared by:

Chemonics International Inc.

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 the author or authors and do not necessarily reflect the views of USAID or the United States Government.

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ACRONYMS

BCC	Behavior change communication
CBSM	Community-based social marketing
C-Change	Communication for Change
CGIAR	Consultative Group for International Agricultural Research
COM-B	Capability-Opportunity-Motivation-Behavior Model
CSA	Climate-smart agriculture
DBC	Designing for Behavior Change
EBF	Exclusive breastfeeding
FMNR	Farmer-managed natural regeneration
FSN	Food Security and Nutrition
HBM	Health Belief Model
HC3	Health Communication Capacity Collaborative
ICT	Information and communications technology
IEC	Information, education, and communication
KPC	Knowledge, Practice, and Coverage
NGO	Nongovernmental organization
NWGs	Neighbor Women's Groups
PDI	Positive Deviance Inquiry
PMT	Protection Motivation Theory
RANAS	Risks, Attitudes, Norms, Abilities, and Self-regulation
SBC	Social and behavior change
SBCC	Social and behavior change communication
SBCWG	Social and Behavior Change Working Group
SEM	Socioecological Model
SLT	Social Learning Theory
SPRING	Strengthening Partnerships, Results and Innovations in Nutrition Globally
TIPs	Trials of Improved Practices
TOPS	Technical and Operational Performance Support
TRA	Theory of Reasoned Action
WASH	Water, sanitation, and hygiene

ACKNOWLEDGMENTS

This literature review was prepared by consultants Laurie Ashley and Tom Davis in collaboration with Veronique Lee on behalf of the USAID ATLAS project. The authors would like to thank colleagues from USAID/Washington for their valuable input and insights on social and behavior change. In particular, the authors would like to acknowledge Megan Hill, Clive Mutunga, Hope Hempstone, Stephanie Levy, Nga Nguyen, and Colin Quinn, who provided guidance at the start of this research and feedback on the literature review at various stages of its development.

EXECUTIVE SUMMARY

Climate variability and change will affect the livelihoods of most populations in the coming decades, putting the lives and well-being of millions of people at increased risk and undermining development gains. Climate variability and change already pose direct and indirect threats to global health and are likely to worsen health problems and create challenges that stem from: decreased water and food security; increased vulnerability of communities exposed to climate impacts, such as sea level rise and extreme weather; and a growing global population that is increasingly mobile. The range of water- and vector-borne diseases will shift, and mortality will likely increase due to heat waves. The significant social, economic, and environmental effects of climate change will challenge traditional livelihoods, exacerbate conflicts, and intensify humanitarian crises.

Understanding, anticipating, and adapting to potential climate impacts across various sectors are critical for creating a stable, more resilient foundation for sustainable development. However, the uptake of actions that enhance adaptation and improve resilience hinges on the ability and willingness of individuals to change their behavior, which in turn is determined in large part by an array of cognitive, socioeconomic, political, and cultural factors.

In many cases, adaptation efforts require fundamental and widespread changes in human behavior. For example, changing a community's behavior away from clearcutting mangrove forests and toward sustainable mangrove forest management is difficult in communities that depend on mangrove wood for fuel and construction. While behavior changes in managing mangrove forests can support critical ecosystem services that provide economic benefits to people over time, such as protection against coastal flooding and improved health of fisheries, adaptation is often challenging because its benefits are not always tangible or immediate. Understanding of, and increased focus on, the social, cognitive, and cultural factors that influence behavior can increase the uptake of adaptation behaviors.

Within the broader behavior change field, social and behavior change (SBC) is the application of theory-based approaches to identify opportunities to change behaviors at the individual, community, and societal level. A successful SBC strategy must include communications in tandem with other elements, such as education and training, and access to finance and other resources that safeguard livelihood security, thereby making changes in behavior practical for individuals, households, and communities. SBC is an important yet underutilized tool that has the potential to help people adapt to the changes already occurring in their communities as well as those that may be on the way. SBC interventions are designed to empower, motivate, and increase the capability of target groups, from individuals to organizations to communities, to improve livelihoods by changing their behaviors and ensuring that they have opportunities to practice new or modified behaviors. Identifying cost-effective and efficient methods to help vulnerable communities adapt is especially important to help spur action where capacity and/or funds to address climate change are limited.

This review examines the field of SBC and its relevance for climate change adaptation. The review assesses peer-reviewed articles and publications of donors and nongovernmental organizations (NGOs) related to SBC with a focus on work in international development that is relevant to adaptation. While there is a wealth of literature on SBC, work on SBC for adaptation is still in the early stages. The findings of this review serve as the foundation for a guidance package to help development planners incorporate SBC into activities that promote climate change adaptation.

Examples of international development projects and activities with relevance for adaptation include:

- A health and nutrition behavior change project in Mozambique that reduced malnutrition more than 30 percent through behavior change at a cost of less than US\$3 per beneficiary per year;
- An SBC campaign for water and biodiversity conservation in the high Andes of Peru;
- A pioneering TV program for sustainable agriculture in East Africa;
- A radio drama series in Ghana about coastal resource management that featured doomed lovers; and
- An SBC approach in the Sahel to improve nutrition and hygiene that teaches people how to make and use their own community videos.

INTRODUCTION

Human behavior is complex — it often takes a combination of influences to trigger a person to test, adopt, and sustain new behaviors. SBC as a process is iterative and employs a range of strategies, including advocacy and interpersonal communication, to bring about behavior change at both community and individual levels. Developing better SBC knowledge and skills can help development practitioners avoid focusing their efforts on any single behavioral determinant that they believe is driving an adaptation behavior. Rather, a foundational understanding of SBC enables development practitioners to recognize that there may be several determinants influencing decisions and actions.

Most adaptation measures require fundamental and widespread changes in human behavior related to health, agriculture, natural resource management, and settlement patterns. Individual behavior drives adoption of technology, support for policies, and ultimately, societal change. Attention to sociocognitive factors can improve understanding and increase uptake of adaptation behaviors. In designing effective adaptation initiatives, it is important to understand what people perceive as worth achieving, feasible to achieve, and motivating. SBC work in health, agriculture, and natural resource management and conservation provides guidance and lessons learned for adaptation. When applied to other activities and projects, such as family planning and HIV prevention, SBC deals with complex personal and social dynamics and deeply held norms. These may parallel adaptation initiatives that address socially and culturally embedded behaviors like crop choice, agricultural practices, and natural resource harvesting.

Climate variability and change have unique attributes to consider when tailoring SBC approaches for adaptation. Many of the experiences and lessons from SBC work are directly applicable to adaptation initiatives such as malaria prevention; water, sanitation, and hygiene (WASH); sustainable agriculture; natural resource conservation; and indirectly through complex behaviors such as family planning. Still, certain SBC models and theories may be more applicable to adaptation than others. Unique adaptation considerations for SBC efforts include:

- New kinds of knowledge about climate variables and adaptation options are needed;
- New knowledge and information must be relatable, e.g., individuals and communities must feel that climate projections are relevant to them despite their uncertainty; and
- Adaptation options must be feasible and demonstrable.

These considerations underscore a need for development practitioners to look to and understand the types of SBC approaches that have been used and their effectiveness in promoting other behaviors that may be analogous to adaptation behaviors. Conventional approaches sometimes assume that providing more and better information to people about the science of climate change will lead to better decisions on reducing climate risk. However, evidence from the behavioral and decision sciences shows that while good scientific and technical information is important, it is not enough.

Values, beliefs, attitudes, preferences, habits, costs and benefits assessment, perceived social norms, policies, institutions, and other factors interact to influence a behavior. It is important to assess *local* barriers and enablers of behaviors as well, because the main barriers and enablers may vary from district to district or region to region. Broadening one's view of possible facilitating factors (enablers) and barriers to social and behavior change — and identifying them through formative research — can be helpful in designing successful programs that support or contribute to climate change adaptation.

1. SOCIAL AND BEHAVIORAL DETERMINANTS, THEORIES, AND MODELS

Section I introduces SBC and its evolution over recent decades. It also explores social and behavioral determinants, theories, and models that may be particularly relevant for adaptation and offers examples of how these theories could be combined and applied. This section includes a discussion of types of behavior change and critiques of behavior change approaches in international development.

2. APPLICATION OF BEHAVIORAL MODELS IN ADAPTATION AND OTHER DEVELOPMENT PROJECTS

Section II discusses SBC applications in international development relevant for adaptation from the health, natural resource conservation, and agriculture sectors. This section provides an overview and in-depth discussion of the main SBC models and theories that may be most relevant for adaptation.

Much of the existing guidance for designing and implementing SBC programs is applicable to adaptation, but some practitioners may need to learn how to better design and carry out SBC activities using the wealth of SBC resources. While climate change adaptation has unique characteristics that influence SBC interventions, many of the SBC interventions already designed can be used for adaptation, with some program adjustments or goal specific modifications. Findings from SBC and adaptation work suggest that risk perception, perceived self-efficacy, response efficacy, and social identity and networks are important determinants for understanding and influencing adaptation intention and action. Out of several SBC theories and models examined, the models described in Section II are most relevant and potentially more effective at meeting adaptation objectives.

3. IDENTIFYING DETERMINANTS THROUGH FORMATIVE RESEARCH

Section III discusses identification of social and behavioral determinants through formative research, a key step in designing effective SBC approaches. The building blocks of SBC models and theories are mostly determinants (see Annex A), which are factors that can influence whether a person adopts and maintains a behavior that a project is promoting.

Identifying key determinants of adaptation is important for project design. Social and behavioral determinants are perceptions, feelings, or beliefs shaped by socioeconomic, political, and cultural factors that can support or prevent the adoption of a behavior. Understanding key determinants of adaptation, which we currently know little about, is essential to designing effective behavior change strategies and interventions. Development practitioners working in agriculture, natural resource management, health, and nutrition for at least 34 organizations in at least 45 developing countries have used formative research methods of SBC (e.g., Barrier Analysis and Doer/Non-doer Analysis) to identify the most important determinants of promoted behaviors for their sector. Other methods for identifying determinants include the Risks, Attitudes, Norms, Abilities, and Self-regulation (RANAS) and Alive and Thrive methods. Websites for gathering data on the barriers and enablers of behaviors (some of which are adaptation behaviors) and SBC training manuals and tools for identifying important determinants are now available in multiple languages. These tools are being used to boost behavior adoption globally and can be applied to climate adaptation.

4. SBC INTERVENTION LEVELS, COMMUNICATION CHANNELS, AND TECHNIQUES

Section IV discusses SBC techniques and communication channels. This section starts with an overview of the Socioecological Model (SEM). This is a useful framework for SBC because the social, structural, and environmental contexts are where the barriers and enablers that make up motivation, capability, and opportunity exist, to either constrain or enhance behavior change at individual and group levels. This model guides project designers in assessing each level and identifying factors that influence the behaviors that they are promoting. Interventions can then be designed to increase motivation, capability, and opportunity for action *at multiple levels* simultaneously. SBC can be put into practice by matching a behavior change objective with a behavior change technique through a specific communication channel. This section outlines eight SBC techniques and four main communication channels.

5. CATALYZING CHANGE: EXAMPLES OF SBC PROGRAMS, APPROACHES, AND COST-EFFECTIVENESS

Section V discusses examples of SBC programs and approaches and how they achieved coverage with behavior promotion. No matter how appropriate a chosen SBC model is, how appropriate the promoted behaviors are, and how much work is invested in identifying the determinants of the promoted behaviors, a project will fail if it fails to *reach* the people who are intended to adopt the behaviors. A project needs to reach the right people, *frequently* and in situations when they are ready to listen to new information or to participate in activities that may lead to their adopting adaptation behaviors. Cost-effectiveness is also a factor when planning SBC. Some outreach methods like mass media may be inexpensive per person but ineffective in bringing about a change in any one person when used without other methods. Other outreach methods like direct interpersonal communication, such as between an extension agent and farmer, may be more effective in bringing about a change but may be more expensive.

This section discusses examples of programs that relied on different methods for achieving reach — mass media; interpersonal communication; information and communications technology (ICT), digital and social media; or a combination of methods — and presents costs when that information is available.

6. IMPLEMENTING SBC PROGRAMMING FOR ADAPTATION

Section VI draws from a range of SBC implementation guidance resources to outline how SBC for adaptation can be implemented. To plan SBC processes for adaptation, development practitioners can use existing SBC planning tools and methods while taking into consideration the unique attributes of climate change adaptation. In the design of an SBC adaptation program, planners will need to choose how to frame the initiative: in the context of global or local climate change, or only in the context of the immediate risk, such as malaria, flooding, or water quality. Recent local experience with the impacts of climate change or broader climate trends and variability will influence risk perceptions and the willingness to adopt adaptation behaviors.

CONCLUSION

SBC and climate change adaptation research and projects are limited but growing. Findings from SBC and adaptation work suggest that perceived self-efficacy, perceived response efficacy, perceived social norms, and perceived risk are important for understanding and influencing the adoption of climate-resilient behaviors and practices. This research resulted in practical recommendations for increasing perceived self-efficacy and perceived response efficacy to make adaptation appealing to individuals and communities.

Given that SBC and adaptation are each cross-sectoral and complex fields of practice, integrating the expertise of adaptation and SBC practitioners will be key to thoughtfully designing and implementing interventions. Further, development practitioners will need to develop skills to:

- Continue to build a robust evidence base for promotable adaptation behaviors (as has been done for other sectors, such as WASH and maternal and child health);
- Use the right behavioral models to target specific behaviors;
- Identify and address social and behavioral determinants that are suitable for adaptation;
- Use messages and activities specific to adaptation determinants;
- Use the right communication channels to reach the priority audience and an ideal blend of channels to maximize the messages' reach and effectiveness; and
- Aim efforts at targeted populations, reaching the priority and influential groups that most need to understand and deliver messages to improve adaptation, or groups who directly participate in adaptation SBC activities.

ANNEXES

Annexes A-E include a list of common social and behavioral determinants, descriptions and examples of behavior change theories, an illustrative SBC adaptation program scenario, selected SBC projects in international development, and a list of SBC resources.

INTRODUCTION

Social and behavior change (SBC) is the process of applying research and theory-based approaches to identify opportunities to change behaviors at the individual, community, and/or societal levels. Human behavior is complex — a combination of influences is often necessary to trigger a person to test, adopt, and sustain new behaviors. SBC as a process is iterative and employs a range of strategies, including advocacy and interpersonal communication, to bring about behavior change by individuals and communities. Better SBC knowledge and skills can help development practitioners avoid focusing on a single behavioral determinant that they believe is driving an adaptation behavior. For example, SBC could help practitioners avoid focusing on perceived risk of crop loss during a particularly dry season as the single determinant for diversifying the mix of crops to be planted and recognize instead that there may be other determinants influencing decisions and actions. Ultimately, practitioners need to understand the people they are trying to influence: their reasons for and against adopting particular behaviors, who influences their decisions, and what leads people to make changes, especially in information- and resource-scarce environments.

A robust evidence base demonstrates that SBC approaches are effective at changing practices at group and individual levels in diverse contexts. Reviews of 91 food security studies and data collected from hundreds of child survival articles show that projects using SBC approaches and tools are more successful in achieving their objectives than those not using them (Fox & Obregón, 2014; USAID SPRING, 2014).

Best practices for SBC interventions have emerged from decades of experience:

- Conduct qualitative research on the social and behavioral determinants of the practices promoted in an intervention.
- Develop mutually reinforcing interventions through multiple communication channels and points of contact.
- Apply fit-for-purpose strategies that may include: interpersonal communication (e.g., counseling by agricultural extension agents), community mobilization, social marketing, mass media campaigns, improved access to and quality of goods and services, creation of incentives or disincentives, and environmental restructuring (e.g., “nudges” that help make practices easier for people or physical cues to prompt action).
- Social, market, or environmental change may be required to enable or facilitate individual behavior change. Projects can use mass media and advocacy to facilitate changes in social norms and policies and encourage public or private investments to respond to environmental and climate changes.

WHY SBC FOR CLIMATE CHANGE ADAPTATION?

Most adaptation measures require fundamental and widespread changes in human behavior related to health, agriculture, natural resource management, and settlement patterns. These

changes can involve adopting a new behavior, stopping a damaging behavior, preventing the adoption of a negative behavior, modifying an existing behavior, or maintaining a behavior (UK GCN, 2009). For example, a farmer may need to change the crop species he/she cultivates when changing rainfall patterns reduce yields for traditional crops. Individual behavior drives adoption of technology, support for policies, and, ultimately, societal change. Attention to sociocognitive factors can improve understanding and increase uptake of adaptation behaviors. Individual and collective perceptions of risk, ability to act, action effectiveness, their own motivations, and the enabling environment (social, political, and institutional) are significant components of achieving action regarding adaptation (Clayton et al., 2015; Frank et al., 2011; Grothmann & Patt, 2005).

Experience in health and nutrition behavior change in international development projects — where SBC has been more extensively applied than in climate change adaptation — has shown that behavior change can be rapid and widespread. For example, as a result of the USAID-funded Nehnwaa project in Liberia that used Care Groups — an evidence-based peer education behavior promotion strategy — and conducted SBC formative research, the proportion of mothers who practiced appropriate handwashing increased from 0.3 percent at baseline to 83.0 percent five years later. Use of insecticide-treated nets increased from 38 percent to 98 percent during the same period. These large and rapid changes in behavior are sometimes associated with equally large changes in lifesaving impact. For example, in the Nehnwaa project, the proportion of underweight children fell from 67 percent at baseline to 23 percent at endline. The rapid formative research that was conducted to identify the determinants of insecticide-treated net usage was possibly one reason for the success of this program. That research identified both access issues (e.g., that nets should be provided based on the number of sleeping places or beds per family rather than a certain number of people per household) and cultural reasons (e.g., that men believed that with the net, their spirits could not fly out at night to escape witchcraft spells) that needed to be considered when promoting insecticide-treated net usage.

Experience and lessons from SBC work are applicable to adaptation initiatives directly (e.g., for malaria prevention; water, sanitation, and hygiene (WASH); sustainable agriculture; natural resource conservation) and indirectly (e.g., through complex behaviors such as family planning). It is critical that development practitioners apply SBC best practices as they communicate information on climate trends, projections, and risks, and help communities to understand and implement their options for adaptation.

WHAT IS UNIQUE ABOUT SBC FOR CLIMATE CHANGE ADAPTATION?

SBC work in health, agriculture, and natural resource management and conservation provides guidance and lessons learned for adaptation. When applied to other activities and projects, such as family planning and HIV prevention, SBC deals with complex personal and social dynamics and deeply held norms. These may parallel adaptation initiatives that address socially and culturally embedded behaviors (e.g., crop choice, agricultural practices, natural resource harvesting).

Certain attributes of climate change adaptation, however, are unique, and require special attention when developing SBC programming. The causes of climate change are often intangible, and the impacts are wide-ranging and difficult to predict for specific areas and timescales. Development practitioners will need to promote adaptation while recognizing the uncertainty about future local conditions and the timing and magnitude of any expected changes.

- **New kinds of knowledge are needed.** Given long-term changes and increasing variability in weather and climate conditions, the solutions that communities have traditionally used to respond to climate variability may no longer be sufficient to confront unprecedented long-term changes and increasing variability. Therefore, adaptation projects are often tasked with presenting new information from unfamiliar sources (e.g., meteorological services) about climate variables (e.g., seasonal weather forecasts) and adaptation options (e.g., new seed varieties). Development practitioners will need to pay attention to information accuracy and legitimacy, carefully communicating new information for adaptation; this is critical for audience uptake. New information, specifically quantitative historical weather data and climate projection data leads to improved understanding about the science of climate variability and change. Trust in climate change information can be damaged by poor information (whether inaccurate or sensationalized). If exaggerated or framed as a global concern rather than a specific *local* risk, climate change information may be demotivating and diminish people's belief in their ability to adapt (Frank et al., 2011; Gifford et al., 2011; Kuruppu & Liverman, 2011). Likewise, increasing a person's fear of a given threat (e.g., flooding) usually only helps up to a point, and eliciting *too much* fear may actually *hurt* adoption of adaptive behaviors unless a person is simultaneously given the skills to deal with the threat.
- **New knowledge and information must be relatable.** Climate risk is often difficult to both communicate and understand. A level of uncertainty is intrinsic in climate projections (conditions and timescales), and thus adaptation “pits an unsure gain against an unsure loss.” (Jones et al., 2014). People tend to interpret real or perceived uncertainty as weak evidence, and uncertainty has been found to reduce pro-environmental behavior (Gifford et al., 2011). Appropriately communicating, framing (e.g., adoption as an avoided loss versus a gain), and addressing levels of uncertainty are important components of adaptation. It is also instructive to look at how uncertainty has been used in the past by competing interests. For example, tobacco companies found that communicating uncertainty — the argument that “not all the data are in” suggested that cigarettes were *definitely* not linked with lung cancer and other health problems — was more effective in persuading people not to give up cigarettes than denying the risk altogether. Similarly, one of the potential challenges to changing individual and community behaviors related to climate change could be the uncertainty of climate projections.
- **Adaptation options must be feasible and demonstrable.** Development practitioners will need to find effective ways to promote adaptation behaviors that ultimately involve potentially *distant* risk and reward. Although climate changes are increasingly experienced by individuals and communities, the impacts of increased climate variability and change are ever evolving, and some have yet to materialize. People can have “psychological distance” from climate change information. A lack of social norms about climate change can also be a factor of psychological distance (Jones et al., 2014). Additionally, experience is often a stronger driver of risk perception and behavior change than analytical thinking. In other words, when a risk has not been experienced, people

are not likely to have a strong emotional response and will delay decisions and behavior change to address the risk (the affect heuristic; Slovic et al., 2002). Even when people already recognize climate changes, however, these impacts may not represent the frequency, extent, or magnitude of future climate variability, such that some psychological distance remains. The rewards of adaptation behavior change may also be distant. People’s perceived value of a reward (or avoidance of loss/punishment) decreases when its occurrence is delayed or uncertain (Weber, 2010). When climate change is viewed as a distant, future threat, the impetus for action decreases the further into the future the benefits are expected to be realized. The impetus for action can be strengthened by giving people knowledge of direct impacts in nearby regions — even when those occurrences are infrequent — as that can motivate people to adopt changes through the “availability heuristic.”¹

These considerations underscore a need for development practitioners to study SBC approaches promoting behaviors that may be analogous to adaptation behaviors. Development practitioners need to identify and use facilitating factors, and remove barriers to encourage adoption of adaptation behaviors, going *beyond* those distant rewards. Initiatives should also be informed by testing target groups’ responses to various types and framings of climate communication.

BROADENING OUR VIEW OF WHAT INFLUENCES BEHAVIOR

Conventional approaches sometimes assume that providing more and better information to people about the science on climate change will lead to better decisions on reducing climate risk. However, evidence from the behavioral and decision sciences shows that while good scientific and technical information is important, it is often insufficient for people to take action on adaptation (Jones et al., 2014). Brown (2004) points out that in climate change communication, as in the field of sustainable development “[...] a solution based on economic analysis alone is less sustainable than one that incorporates economic, ecological, and social understandings; this, in turn, is less viable than a solution that also includes psychological, cultural, and religious perspectives.”

Values, beliefs, attitudes, preferences, habits, assessment of costs and benefits, perceived social norms, policies, institutions, and other factors interact to influence a behavior. Additionally, even a relatively focused change in individual behavior — for example, properly using a mosquito net — may involve changing and coordinating the behaviors of multiple actors at multiple levels (Reddy et al., 2016). It is important to assess *local* barriers and enablers of behaviors as well, because the main barriers and enablers may vary from district to district or region to region.

Broadening one’s view of possible facilitating factors (enablers) and barriers to social and behavior change — and identifying them through formative research — is critical to designing successful programs that support or contribute to climate change adaptation. Some have

¹ The availability [heuristic](#) operates on the notion that if something can be recalled, it must be important, or at least more important than alternative solutions that are not as readily recalled. People also tend to heavily weigh their judgments toward more recent information, making new opinions biased toward that latest news.

viewed adoption of climate-smart agriculture (CSA), for example, as relying on “accessibility, promotion, and training of specific CSA technologies and increased access to markets” (USAID, 2016:5). However, a 2016 USAID assessment explored social, political, and institutional factors affecting CSA adoption and found many that influenced adoption, including livelihood systems, identity roles and responsibilities (including gender), decision-making timeframes, and farmer risk-management perspectives. All of these factors were important in shaping barriers and incentives for CSA adoption. This study also found that — while cost matters for CSA adoption — from the farmer perspective, it is the *initial* cost that is most important for adoption. Current climate risk was also found to be a highly important factor for farmers in CSA adoption: farmers are reluctant to adopt any CSA practice that may lower their capacity to address the impacts of *current* climate variability, even if that practice is appropriate for *future* climate change. Across assessment sources for CSA, analyses converged around the value of addressing: 1) initial costs (barrier) with subsidies (incentive); 2) access to external inputs (barrier) with subsidies and access to credit (incentives); and 3) inadequate extension services (barrier) with more and better extension services (incentive) (USAID, 2016).

PURPOSE OF REVIEW

The purpose of this review is to examine lessons learned from the field of SBC and their relevance for climate change adaptation. This review gathers information on SBC theories and approaches with the above-mentioned attributes of adaptation in mind. While a wealth of literature exists on SBC, application of SBC to adaptation is still in the early stages. The review assesses peer-reviewed articles and donor and NGO publications related to SBC, with a focus on international development relevant to adaptation. The authors identified documents through keyword searches and recommendations from field experts. Literature related to SBC and international development was focused on the last 10 years, with an emphasis on work in Africa across development sectors.

This literature review consists of the following sections:

- **Section I** introduces SBC and its evolution over recent decades. It also explores social and behavioral determinants, theories, and examples of how these theories could be combined and applied. It also discusses examples and types of behavior change and critiques of behavior change approaches in international development.
- **Section II** discusses SBC applications in international development relevant to adaptation from the health, natural resource conservation, and agriculture sectors, and provides an overview and in-depth discussion of the most relevant SBC models and theories.
- **Section III** discusses identification of social and behavioral determinants through formative research, a key step in designing effective SBC approaches.
- **Section IV** discusses SBC techniques and communication channels.
- **Section V** discusses examples of SBC programs and approaches and how they achieved coverage with behavior promotion.
- **Section VI** draws from a range of SBC implementation guidance resources to outline how SBC for adaptation can be implemented.

Following the conclusion section, five annexes include common social and behavioral determinants, descriptions and examples of behavior change theories, an illustrative SBC adaptation program scenario, selected SBC projects in international development, and a list of SBC resources.

1. SOCIAL AND BEHAVIORAL DETERMINANTS, THEORIES, AND MODELS

The study and practice of SBC aims to understand what motivates people, how people process information, and what features of their environment influence their decisions. The field is situated within the psychology, behavioral science, and behavioral economics disciplines, but has increasingly drawn from other disciplines, such as anthropology. This demonstrates a shift from exploring individual behavior to more holistic thinking about how and why different factors affect people's decisions and why behaviors often deviate from "optimal" choices.

With its broad view of individual, environmental, and structural pathways of behavior change, SBC has emerged for USAID as the preferred evidence-based approach through which interventions are designed to elicit changes in behavior. Its predecessors include information, education, and communication (IEC), behavior change communication (BCC), and social and behavior change communication (SBCC) (see Box 1). It is widely recognized that individual behavior is a product of multiple and overlapping individual, social, and environmental influences. As a consequence, interventions to encourage new behaviors should not only focus on changing knowledge, attitudes, and practices through communication, but also target the physical, socioeconomic, and cultural environment through other channels. Examples include advocacy, political and social leadership, community and social mobilization. Noncommunication activities include introducing a new product or redesigning a product that people can easily adopt, increasing access points

BOX 1. EVOLUTION OF SBC

Interventions that seek to change behaviors by addressing factors such as knowledge, attitudes, and norms are known collectively as social and behavior change (SBC) interventions. Over the years, behavior change work has evolved from information sharing to more holistic approaches in recognition of the fact that individual-, family-, and community-level behaviors are the product of overlapping influences.

Before SBC, interventions were driven by:

- IEC (information, education, and communication), which presupposes that information drives individuals to change their behavior
- BCC (behavior change communication), which recognizes that knowledge in addition to other individual factors influence an individual's behavior
- SBCC (social and behavior change communication), which understands social and gender norms to be as important as individual factors in influencing behavior

SBC work now acknowledges four key facts about human behavior:

- People give meaning to information based on the context in which they live;
- Culture and networks influence people's behavior;
- People cannot always control the issues that determine their behavior; and
- People's decisions about health and well-being compete with other priorities (C-Change, 2012).

and hours for services or resources, offering subsidies and incentives, and creating support groups (C-Change, 2012).

In examining behavioral influences, SBC considers predisposing, enabling, and reinforcing factors:

- Predisposing factors are an individual's knowledge, beliefs, attitudes, skills, values, and self-efficacy (a sense that one has the ability to take up a new behavior).
- Enabling social or environmental factors facilitate or constrain actions (e.g., social norms, access to information, distance to services, or government policies).
- Reinforcing factors are the positive or negative effects of adopting a behavior that influence continuing the behavior.

Analysis of these factors can lead to an understanding of a target audience's willingness or ability to change (Middlestadt et al., 2003).

SBC programs apply behavior change models and theories, and while there is not one correct theory to use for a given situation, some theories may fit better than others. Each SBC project should develop its own theory of change drawing on concepts from the most relevant models and theories. No single theory, for example, dominates health SBC because health risks, populations, cultures, and contexts vary (USDHHS, 2014). This review discusses a few of the dozens of behavior change models and theories.

1.1 SOCIAL AND BEHAVIORAL DETERMINANTS

Multiple factors — often called “determinants” — contribute to motivation, capability, and opportunity that ultimately lead to changes in behavior. These factors can be enablers or barriers. (See Annex A for a list of common SBC determinants, other names for each determinant, and examples.) Designing an SBC intervention requires formative research and an accurate analysis of these determinants. Depending on the context, different sets of these determinants will need to be organized into different behavior change models.

For example, in a project promoting rainwater collection by parents of young children in a particular area of a country, the project may find that the following determinants are linked with collecting rainwater:

- **Perceived risk:** If parents believe that the risk of a drought is low, they may be *less* likely to install the rainwater collection system.
- **Perceived social norms:** If parents believe that others important to them (e.g., grandparents, neighbors) think that rainwater catchment systems are a bad idea, they may be *less* likely to install the system.

However, in a similar project in another country or area of the same country, a project may find that different determinants are linked with collecting rainwater:

- **Access:** If it would be difficult for parents to get the materials to install a rainwater catchment system, even if they are motivated to make the change, they may not do so.

- **Perceived positive consequences:** If parents believe that building a rainwater catchment system will decrease the number of mosquitos around their house, they may be *more* likely to install the system.

Experience from international NGOs suggests that four determinants appear to be more common and more powerful influencers of behavior change for most health and nutrition behaviors in developing countries:

- Perceived self-efficacy/skills,
- Perceived social norms,
- Perceived positive consequences, and
- Perceived negative consequences (Kittle, 2013)

These were found to be the most frequently adopted determinants (not occurring due to chance) to explain differences between the Doers (adopters) and Non-doers (non-adopters) of a behavior in 150 Barrier Analysis studies conducted by 14 organizations and posted on the Food Security and Nutrition (FSN) Network’s Behavior Bank. See below for the complete list of the most common determinants in order of significance (determinants where behavior adoption was least likely due to chance are listed first):

- Perceived self-efficacy/skills (in 86 percent of the studies)
- Perceived social norms (77 percent)
- Perceived positive and negative consequences (75 percent)
- Perceived susceptibility/risk (45 percent)
- Response efficacy/ability (41 percent) (sometimes referred to as “action efficacy” or “results efficacy”)
- Perceived severity (30 percent)
- Perceived divine will or a person's belief that it is God’s will for him or her to have the problem and/or overcome it (25 percent, noting that traditionally, this is the determinant most likely to be omitted from Barrier Analysis studies)
- Particular enablers — “What makes it easier?” (9 percent)
- Particular barriers — “What makes it difficult?” (7 percent)

The proportion of studies that would find a particular determinant to be significant,² of course, is dependent on the behaviors studied, and not all determinants were explored in all of the studies summarized above. The mix of behaviors studied, though, spanned several development sectors: half of the posted studies were related to health and nutrition behaviors, 27 percent were WASH studies, and 14 percent were studies of agriculture, natural resource management,

² That is, where there is a statistically significant difference at the $p < 0.05$ level in the proportion of Doers (adopters) and Non-doers (Non-adopters) who note a given determinant (e.g., say that they feel like they are at high risk of having a particular problem/disease, or say that they feel the majority of people important to them are opposed to the behavior).

and livelihood behaviors, while the remaining studies were related to other sectors (e.g., education).

SBC and adaptation research and projects are limited but growing. SBC in adaptation is not only about adopting new techniques or technologies or ending maladaptive behaviors, but also changes in psychological factors, interpersonal relationships, community life, and the broader enabling environment (Somda et al., 2017; Feng et al., 2017; Truelove et al., 2015). Some adaptation researchers and practitioners have employed SBC approaches to change perceptions, thought processes, attitudes toward risk and vulnerability, and values (Gifford et al., 2011; Huang et al., 2011; Jones & Boyd, 2011; Grothmann & Patt, 2005). Findings from SBC and adaptation work suggest that perceived risk, perceived self-efficacy, perceived response efficacy, and social identity and networks are important for understanding and influencing adaptation intention and action. These ideas are discussed in more detail in the following sections.

Some of the emerging research recommendations and conclusions on SBC determinants and adaptation include:

- Target groups' perceived self-efficacy and perceived response efficacy may be increased through appropriate and reliable information on adaptation measures and advice on how to implement them (Esham & Garforth, 2013; Kuruppu & Liverman, 2011).
- Climate risk perception may be overwhelmed by other factors in farmer decision-making. Adaptation measures need to be made appealing to farmers by emphasizing the range of risks that the measures can address in addition to the climate risk (Truelove et al., 2015).
- Individuals may perceive that climate risks are so large that adaptation is futile. Adaptation can be motivated through accurate, unexaggerated climate risk information, and by increasing perceived self- and response-efficacy (Frank et al., 2011).
- The trans-theoretical model proposes that individuals go through a series of stages when adopting a new behavior: *pre-contemplation, contemplation, preparation, action, and maintenance*). Individuals in different stages of behavior change respond to different behavior triggers. In one study, for example, individuals in the pre-contemplation stage were most responsive to efforts to change their perceived severity of climate risk consequences and the cost of response actions (perceived positive/negative attributes of the behavior), while those in the action stage were more responsive to efforts to change their perceived self-efficacy and response-efficacy factors (Gebrehiwot & van der Veen, 2014).

A more detailed discussion of these determinants of adaptation follows.

PERCEIVED SELF-EFFICACY

Individuals with a low estimation of their own ability to adapt and take action are less likely to engage in adaptation behaviors. Higher levels of perceived self-efficacy, or capacity, can be an important driver of adaptation intent (Burnham & Ma, 2016; Kuruppu & Liverman, 2011; Adger et al., 2009; Grothmann & Patt, 2005). Factors such as having a higher income and past

experience with adaptation can increase perceived self-efficacy (Burnham & Ma, 2016). Perceived adaptive capacity (a type of perceived self-efficacy specific to adaptation) is an important component of an individual's decision to undertake adaptation behavior (Feng et al., 2017; Bubeck et al., 2013; Esham & Garforth, 2013; Kuruppu & Liverman, 2011).

Kuruppu & Liverman (2011) assert that greater attention should be paid to understanding self-efficacy. Self-efficacy in agricultural practices can be increased through activities such as conventional agricultural extension services or farmer-to-farmer extension service models. Access to extension services in Ethiopia, for example, significantly increased farmer adaptation behaviors such as tree planting and diversifying or altering crop types (Deressa et al., 2009).

Experiences with motivational interviewing, a psychologically based behavior change method, led to the recommendation that when both perceived self-efficacy and perceived importance of a behavior are low, it is usually better to focus first on perceived self-efficacy. Increasing the perceived importance of a behavior without increasing self-efficacy and skills can lead to higher levels of cognitive dissonance and pushback. With higher self-efficacy ("I could do this if I wanted."), people are often more willing to assign a higher level of importance to a behavior (Kuruppu & Liverman, 2011).

Self-efficacy is critical not only for adaptation intention (i.e., someone's readiness to implement the adaptation behavior) but also for adaptation action (i.e., observable uptake of the adaptation behavior). One study examined factors influencing adaptation intention versus actual adoption of adaptation behaviors among New Zealand farmers. Self-efficacy was the only behavior change factor that influenced both intention and adoption (Niles et al., 2016).

PERCEIVED RESPONSE (ACTION) EFFICACY

Perceived response efficacy (perceived action efficacy) is the belief that a response will reduce a risk or achieve an outcome. In assessing response efficacy, an individual's perception of the response efficacy of a given measure (e.g., "Are drought-resistant crops *truly* drought resistant?") can significantly influence adoption (Esham & Garforth, 2013). For example, the intention of apple farmers in China and rice farmers in Vietnam to undertake adaptation measures significantly increased when they perceived greater efficacy of the promoted measures (Feng et al., 2017; Dang et al., 2014). Response efficacy was important for the adoption of flood mitigation measures in Germany (Bubeck et al., 2013). In some SBC models, response efficacy, together with self-efficacy and in consideration of response cost, is called "coping appraisal."

PERCEIVED RISK AND SEVERITY

Perceived risk has long been recognized as a key determinant of human response to environmental shocks and change. Perceived risk is composed of an individual's or collective's beliefs about 1) the existence/probability and 2) characteristics/severity of a given risk. (Sometimes the assessment of the consequences of a threat, or perceived severity, is considered a separate determinant, and sometimes an aspect of perceived risk.) Perceived risk is influenced by personal experience, worldviews, trust in information and institutions, and other

social factors. It may and often does differ from objective risk assessment. Direct experience is generally more important to an individual's risk perception than secondhand information (Clayton et al., 2015). Additionally, recent personal experience with a risk (in contrast to experience in the distant past) can strongly influence people's perception of the likelihood and danger of the risk, described as a "recency effect" (Roco et al., 2015). Similar to the "recency effect," the "availability heuristic" suggests that the more readily available and vivid a memory of an event, the more likely people are to estimate that the event will occur again (Grothmann & Patt, 2005).

On another note, it is important to keep in mind that fear arousal, which is used in some SBC interventions or strategies, is often less important in motivating precautionary action than perceived response efficacy and self-efficacy. While some psychology studies (e.g., Witte & Allen, 2000) suggest that fear framing can be effective in *motivating* change of various behaviors, Sherr (1990) and other researchers noted that the fear-inducing HIV prevention campaigns in the 1980s and 1990s used images of death, but evaluations cast doubt on their effectiveness. There is limited evidence that fear arousal is an effective SBC intervention (Ruiter et al., 2001). Unless there is evidence that fear appeals will be effective and that level of fear of an outcome is positively associated with adoption of a behavior, fear appeals should be limited. There are cases, as well, when *too much fear* can block adoption because people are overcome with doubt about their choices or by a sense of futility.

Strength of belief in the local impacts of climate change correlates strongly with responses to climate change (Blennow & Persson, 2009). Relative risk perception expresses the perceived probability of being exposed to climate change impacts and gauging the harm of these impacts, compared with the harm and urgency of other, nonclimate impacts (Grothmann & Patt, 2005). Tangible local risks are therefore more likely to prompt action than more abstract national or global risks, emphasizing the need for communication to address concrete local impacts and response measures (Arbuckle et al., 2015; Deng et al., 2017), and to refer to specific and tangible risks during behavior promotion.

Limiting factors for agriculture (e.g., water, temperature) usually have a strong influence on climate change attitudes and behaviors among farmers because they are psychologically "close" (Niles et al., 2015). Among farmers in New Zealand, Sri Lanka, and the United States (California), this "closeness" was demonstrated by past climate change experiences, and concern about the limits of water and temperature was correlated with stronger perceived climate risk and the adoption of adaptation practices (Esham & Garforth, 2013; Niles et al., 2015). Kuruppu and Liverman (2011) further note that people may feel overwhelmed by the severity of climate change risk in general and globally but may be more willing to respond to local impacts such as water stress.

Trust in the source of information is particularly important in influencing risk perception (Arbuckle et al., 2015; Clayton et al., 2015). Perception of floods or droughts might be well-established in a community, but the broader risk of climate change is often difficult to communicate and understand given that the causes are invisible, and the impacts are wide-

ranging and difficult to predict for specific areas and timescales. They are difficult to detect and understand based on personal experience (Kahan et al., 2011). When information is provided through a trusted source (such as a news outlet, person, or agency), and is relevant to people's lives, it can influence risk perception and adaptation behavior. One study found that supplying information on temperature and rainfall through a trusted source increased the likelihood of farmers switching to adapted crop varieties by 17.6 percent (Deressa et al., 2009).

People's subjective assessment of risk probability is often not directly proportional to objectively assessed probability. Rather, people tend to underestimate large probabilities and overestimate small probabilities (Grothmann & Patt, 2005). Additionally, the recency effect (i.e., an event that is fresh in one's mind) and availability heuristic (i.e., how easily one can bring to mind a relevant example) lead people to place too much weight on the probability of recent or severe events being repeated. For example, people will often overestimate the level of crime — whether crime is going up or down — after hearing a memorable, widely broadcast, and gruesome murder story.

Some research shows, however, that perceived risk is not always as important for adaptation as one may imagine. Risk perception, often shaped by experience with a given hazard, for example, is often insufficient to motivate adaptation. Research among farmers in New Zealand showed that risk perception motivated intention to adapt, but not behavior change (Niles et al., 2016). Climate change is just one of many risks farmers face, and behavior is often motivated by many other determinants than risk. The perception of climate risk may be overwhelmed by other factors in decision-making. In these cases, interventions meant to encourage adaptation can appeal to farmers by emphasizing the range of risks and positive consequences of associated adaptation measures to address those risks rather than a sole focus on the climate risk (Truelove et al., 2015).

Annex A contains a complete list of SBC determinants, their definitions, and their applications in both health and adaptation projects.

1.2 SBC MODELS AND THEORIES

SBC models and theories predict *which* of the determinants will affect behavior change, and how those determinants *interact* to influence behavior change. These theories and models provide a *tangible* way to understand the *intangible* reasons for people's decisions to change or not change behavior. This document discusses the handful of SBC models that are useful for adaptation out of the dozens of SBC models. By choosing a specific model as a framework, development practitioners can remind themselves of the determinants that they should explore and on which they should focus during a project.

BOX 2. COM-B: A BASIC MODEL OF BEHAVIOR CHANGE



Many SBC modes spread from and build upon the Capability-Opportunity-Motivation-Behavior Model (COM-B model), which is, at its core, a model exclusively focused on individual behavior. In this model, capability indicates an individual's psychological and physical ability to practice the behavior. Motivation indicates the factors within an individual that drive behaviors. Opportunity comprises all of the behavioral determinants and factors external to the individual that enable or prevent the individual from practicing the behavior. These elements interact and influence each other, in turn driving behavior. For example, doing an activity can in turn increase the capability, motivation, and/or opportunity to do the activity again. Capability and opportunity also interact to influence motivation.

Applying the COM-B model, a project supporting female farmers to increase production of early-maturing pearl millet (a drought-resistant crop) may:

- Raise awareness of the nutritional and market value of the crop (increase motivation);
- Teach the skills to grow the crop (increase capability); and/or
- Provide subsidized or free seeds (increase opportunity).

However, other barriers may keep farmers from practicing the behavior. For example:

- Women may not have access to land or may not have decision-making ability regarding what is produced on household land (opportunity).
- Consumers may prefer other varieties or other grains, limiting the potential for both consumption and sales (opportunity and motivation).

While the COM-B model presented above (Box 2) is a general model of behavior change that illustrates how capability, motivation, and opportunity determine behavior, the following five SBC models and theories (Table 1, discussed in detail below) may be more useful for development practitioners seeking to encourage uptake of adaptive and resilient behaviors, given the focus of the models on determinants that appear to be common in adaptation.

Table 1. Relevant SBC models and social and behavioral determinants for adaptation

THEORY OR MODEL	DEFINITION	DETERMINANTS EMPHASIZED	RELEVANCE FOR ADAPTATION
Health Belief Model (HBM)	A model that attempts to explain and predict health behaviors by focusing on the attitudes and beliefs of individuals. Based on the understanding that a person will take a health-related action if that person feels a negative health	<ul style="list-style-type: none"> • Perceived susceptibility and perceived severity (sometimes combined and described as perceived threat) • Cues to action 	Cues to action were among the most significant determinants of 12 behavior change factors influencing household adoption of hazard-resistant construction practices in cyclone- or flood-

THEORY OR MODEL	DEFINITION	DETERMINANTS EMPHASIZED	RELEVANCE FOR ADAPTATION
	condition can be avoided, has a positive expectation that by taking an action the condition can be avoided, and confidence in one's ability to take the recommended action. The model includes six determinants that predict why people will act, prevent, screen for, or control illness conditions.	<ul style="list-style-type: none"> • Perceived benefits (includes perceived response efficacy) • Perceived barriers • Perceived self-efficacy (confidence in one's ability to act) 	affected communities in five countries in Asia and Africa.
Theory of Reasoned Action (TRA)/ Theory of Planned Behavior	Theory to explain all behaviors over which people can exert self-control, with behavioral intent key to this theory. Behavioral intentions are influenced by the attitude that the behavioral intent will have the expected outcome and a subjective evaluation of the risks/benefits of that outcome.	<ul style="list-style-type: none"> • Perceived response efficacy (beliefs about the outcome of the behavior) • Perceived positive consequences (one's evaluation of expected outcomes) • Perceived social norms, and one's motivation to comply with a requested behavior <p>The Theory of Planned Behavior adds:</p> <ul style="list-style-type: none"> • Perceived self-efficacy and behavioral control (includes both perceived self-efficacy and "controllability") 	Accepts that individuals look to others to know how to feel about something, and those opinions are important in deciding on adoption. This suggests that a climate champion approach, for example, may be useful in encouraging the adoption of adaptation behaviors.
Protection Motivation Theory (PMT)	PMT proposes that the intention to protect oneself depends on four factors (see first four determinants listed at right) and can be used for predicting and influencing behaviors.	<ul style="list-style-type: none"> • Perceived risk • Perceived severity • Perceived self-efficacy • Perceived response efficacy • Perceived consequences (especially intrinsic and extrinsic rewards of starting or continuing an unhealthy or maladaptive behavior) • Costs (a potential barrier) associated with the promoted behavior 	<ul style="list-style-type: none"> • Considers that adaptation is partly driven by individual actions to avoid impacts to things that people value or identify with, or that are social norms. • Emphasizes how <i>threat appraisal</i> (perceived severity, perceived probability, and rewards of no change) and <i>coping appraisal</i> (perceived response efficacy, perceived self-efficacy, and costs of change) are evaluated together to inform intention to change behavior. • The Model of Private Proactive Adaptation to Climate Change is an extension of the PMT with adaptation.
Social Learning Theory (SLT)	Theory positing that people learn from one another via observation, imitation, and modeling.	The focus is less on behavioral determinants and more on how people learn.	Considers that many new behaviors can be acquired by observing and imitating others, extracting information from those observations, observing rewards and punishments (called <i>vicarious reinforcement</i>), and making decisions about the performance of the behavior. This suggests that demonstration activities may be

THEORY OR MODEL	DEFINITION	DETERMINANTS EMPHASIZED	RELEVANCE FOR ADAPTATION
			useful for the uptake of adaptation behaviors.
Nudge Theory	Proposes that indirect suggestions, choice architecture (the way choices are presented), and positive reinforcement can help achieve behavior change and can influence the motives, incentives, and decision-making of groups and individuals	The focus is less on behavioral determinants, and more on how the presentation of information or modifications in an environment can influence behavior.	Nudges could be used to influence uptake of adaptation efforts and influence behaviors related to adaptation (irrigation, crop choice, treating drinking water, dealing with heat stress, etc.).

These models are illustrated and explained in additional detail in Section II.

1.3 EXAMPLES AND TYPES OF BEHAVIOR CHANGE IN ADAPTATION

While the health sector has led in using SBC approaches in international development, other sectors are also adopting these approaches, including natural resource management, biodiversity conservation, agriculture, governance, and peacebuilding (Reddy et al., 2016; Verissimo, 2013; Schultz, 2011; Maktary & Smith, 2017). Much of this work has direct applicability to adaptation, including SBC related to vector- and waterborne diseases, natural resource conservation, and agriculture. Other initiatives, such as family planning and HIV prevention, demonstrate that SBC can be used in complex situations to change strong social norms.

Examples of SBC initiatives in the health sector are wide-ranging and include:

- Increasing use of insecticide-treated nets and treatment-seeking for malaria symptoms
- Increasing handwashing with soap to decrease diarrhea and pneumonia, and use of tippy taps (a simple device often used in areas without running water)
- Increasing rates of child immunization
- Increasing exclusive breastfeeding prevalence and breastfeeding duration
- Increasing modern contraceptive use
- Reducing prevalence of concurrent sexual partnerships to prevent HIV transmission
- Increasing condom use and voluntary medical male circumcision to prevent HIV transmission

Examples of SBC initiatives in natural resource conservation and agriculture include:

- Establishing “no-take” zones to regenerate fish stocks
- Switching from damaging fishing methods (cyanide, dynamite, fine-meshed fishing nets) to sustainable fishing methods to regenerate fish stocks
- Adopting improved cook stoves or biogas stoves to reduce deforestation
- Planting trees for reforestation and agroforestry

- Adoption of sustainable agriculture practices for soil and water conservation and improved income (Yavinsky et al., 2015; Dorward et al., 2014)

Practitioners may need to promote different types of behaviors for successful adaptation. Fogg (2012) distinguished 15 ways that behavior can change based on whether the behavior is:

- New or familiar
- A start, increase, stop, or decrease
- One-time, spanned (i.e., over a set period of time), or permanent

Fogg presents this typology in a grid with the columns distinguishing whether the behavior change is a new or familiar behavior, and whether the change is increasing, decreasing, or stopping a current behavior. (See Table 2 for a thought exercise unpacking different types of adaptation behaviors and illustrating possible relationships between behaviors). The rows distinguish one-time, spanned, and permanent behavior change.

In many cases, and as is evident in Table 2, adaptation efforts require fundamental and widespread changes in human behavior. A modification to a specific behavior may require changes to an accompanying or related behavior or coordinating the behaviors of multiple actors at different levels. For example, changing a community’s behavior away from clearcutting mangrove forests is often a “tough sell” for many communities that depend on mangrove wood for fuelwood and construction. While behavior changes in managing mangrove forests can support critical ecosystem services that provide economic benefits to individuals and communities over time, such as protection against coastal flooding and improved health of fisheries, progress toward adaptation is often challenging because its benefits are not always tangible or immediate.

Table 2. Illustrative adaptation behaviors based on Fogg’s Behavior Grid

	NEW, UNFAMILIAR BEHAVIOR	FAMILIAR BEHAVIOR	INCREASE BEHAVIOR INTENSITY	DECREASE BEHAVIOR INTENSITY	CESSATION OF BEHAVIOR
One-time behavior change	<ul style="list-style-type: none"> • Plant trees to stabilize slopes/dunes and control erosion • Purchase improved cookstove 	<ul style="list-style-type: none"> • Implement measures to protect newly planted seedlings (e.g., buy and install netting/ fencing) • Install rainwater cistern closer to farming plots 	<ul style="list-style-type: none"> • Encourage neighbors to plant more hearty tree species over a larger area 	<ul style="list-style-type: none"> • Travel shorter distances for water by using nearby rainwater cistern for garden crops 	<ul style="list-style-type: none"> • Abandon harvesting fuelwood as a livelihood and seek alternative income-generating activities
Time-bound behavior change	Practice soil conservation practices, such as low or no-till or ridge tilling, during agricultural growing seasons	<ul style="list-style-type: none"> • Continue listening to radio for daily, 10-day, and seasonal forecasts • Plant seeds earlier based on seasonal forecast 	<ul style="list-style-type: none"> • Purchase more drought-tolerant/resistant seeds; plant based on seasonal forecast • Increase consumption of certain available 	<ul style="list-style-type: none"> • Decrease use of non-drought-tolerant seeds • Limit fishing activities during rainy/hurricane season for safety 	<ul style="list-style-type: none"> • Stop fishing in certain areas during breeding season to limit overfishing and allow fish stocks to replenish

	NEW, UNFAMILIAR BEHAVIOR	FAMILIAR BEHAVIOR	INCREASE BEHAVIOR INTENSITY	DECREASE BEHAVIOR INTENSITY	CESSATION OF BEHAVIOR
			foods (e.g., red cactus fruit) during extreme droughts <ul style="list-style-type: none"> • Increase postharvest practices (e.g., drying, storage) to prevent losses 		
Permanent behavior change	<ul style="list-style-type: none"> • Prepare/cook food over an improved cookstove to decrease consumption of dwindling fuelwood 	<ul style="list-style-type: none"> • Continue growing vegetables in off-season and intercrop/practice crop rotations with legumes 	<ul style="list-style-type: none"> • Increase practice of integrated pest management 	<ul style="list-style-type: none"> • Use less fuelwood by purchasing improved cookstove 	<ul style="list-style-type: none"> • Stop practice of slash/burn agriculture

As another example, the climate-smart agriculture (CSA) strategy of farmer-managed natural regeneration (FMNR) encourages farmers to restore land and replant trees for fuel, building materials, food, and fodder. FMNR is a collection of behaviors that can benefit farmers *individually*, primarily by increasing their farm productivity directly (e.g., through increased tree products) and indirectly (e.g., through improved soil and water conservation). FMNR can also yield a *community* benefit as soil and water conservation impacts help protect surrounding farms. In Fogg’s grid, FMNR could involve several types of behavior change:

- Stop fully cutting down most trees from now on
- Start or increase regenerating trees from stumps, roots, and seeds from now on
- Start or increase coppicing (pruning to ground level) and pollarding (pruning upper branches) of trees from now on

1.4 CRITIQUES OF SBC IN INTERNATIONAL DEVELOPMENT

Behavior change initiatives have prevented and reduced stunting and anemia, reduced HIV transmission, increased the use of insecticide-treated nets, increased handwashing, and more (Lamstein et al., 2014; Vu et al., 2015; Deribew et al., 2012; Scott et al., 2007; Fox & Obregón, 2014). Nevertheless, the effectiveness and appropriateness of behavior change approaches has been questioned for international development involving more complex livelihood-related behaviors.

Regarding effectiveness, some SBC programs fail to initiate and/or sustain changes in behavior into the medium and long term (Stead et al., 2007). While programs may change behavioral intention, this does not necessarily translate to behavior change, as many factors moderate intention–behavior consistency (Webb & Sheeran, 2006). Additionally, some approaches focus on increasing knowledge, which has been shown to be a poor predictor of behavior change (Lamstein et al., 2014). Glass & McAtee (2006) noted that results from experiments in

individual health behavior change have been disappointing, as many efforts neglect the broader social and physical environment. It is possible, of course, that some of the evaluated programs may not have used state-of-the-art behavior change methods, such as conducting formative research on social and behavioral determinants of key behaviors, pretesting of SBC messages, or using multiple effective communication channels for messages. Another challenge is quantifying or measuring the impact of SBC interventions, given the complexity of human behavior and the time that may be required to influence broad-based change.

Others argue that the theories and approaches that dominate behavior change are Western-centric, culturally imperialistic, and/or insensitive to the numerous unintended and potentially negative consequences of changing the behavior of individuals or communities (Barranquero, 2011; Sosale, 2008; Curran & Park, 2000; Airhihenbuwa & Obregon, 2000). A further critique is that while behavior change may be applicable to narrow technical behaviors (e.g., handwashing), it has inappropriately been extended to more complex livelihood-related behaviors where greater potential exists for unintended consequences.

In response to these critiques, behavior change efforts have since the 1970s increasingly employed participatory approaches. SBC further takes an approach cognizant of the inherently political character of education and communication, uses an interactive and research-driven process, and aims to change social conditions as well as individual behaviors.

Some advocate for further evolving behavior change approaches to address the critiques. Barranquero (2011), for example, argues that the rich history of participatory communication for social change in Latin America is overlooked, but it offers a more complex, participatory, and democratic communication paradigm. Others promote incorporating a psychosocial approach to broaden thinking about human behavior. A psychosocial focus conceptualizes people as “dynamic, conflicted, multiple and capable of profound ambivalence” and recognizes an inseparable interplay between social forces and individual engagement (Lertzman, 2014:3).

Research is lacking comparing the effectiveness of behavior change approaches and comparing particular approaches with more routine approaches. This makes it difficult for development practitioners to choose the most effective approach for their situation. One example of such a comparison is by George et al. (2015) of the Care Group approach³ in expanding population coverage of key child survival interventions (including some relevant to adaptation, such as insecticide-treated net usage). This study compared results from Care Group and non-Care Group projects in five countries in Africa and Asia that were funded through the USAID Child Survival and Health Grants Program. All programs had similar budget levels and were conducted over approximately the same time period in the five countries. The study found that Care Group projects had double the behavior change of non-Care Group projects. The reduction in estimated child mortality was 53 percent greater in Care Group projects compared with non-Care Group projects. The authors concluded that Care Groups may significantly increase the effectiveness of key child survival interventions, largely through

³ See www.caregroupinfo.org for more information on this approach.

behavior change. Other papers summarize the Care Group approach (Perry et al., 2015a) and the results of projects globally that have applied it (Perry et al., 2015b).

2. APPLICATION OF BEHAVIORAL MODELS IN ADAPTATION AND OTHER DEVELOPMENT PROJECTS

This section provides more in-depth information on SBC models and theories and their application to climate adaptation. As the social and behavioral determinants of each model are mentioned, it may be helpful to refer to Annex A for the definition and examples of each determinant.

2.1 HEALTH BELIEF MODEL

The Health Belief model (HBM) focuses on several determinants to predict the likelihood of action (adoption of a behavior): perceived susceptibility and perceived severity (which are sometimes combined and described as perceived threat), cues to action, perceived benefits (which includes perceived response efficacy in this model), perceived barriers, and perceived self-efficacy (which was added in 1988). The HBM is one of the most widely used and well-tested models for explaining and predicting health-related behavior. A 1984 review of 18 prospective and 28 retrospective studies suggests that the evidence for each component of the model is strong (Carpenter, 2010; Janz & Becker, 1984). It has been used by at least 34 development organizations in about one-third (44) of all developing countries as part of the Designing for Behavior Change (DBC) framework.

The HBM examines the mental calculations individuals make in considering behavior change. The model's key concepts are the nature of a threat (perceived risk), the ability of action to reduce a threat (perceived response efficacy), the ability to complete an action (self-efficacy), and the perceived benefits and barriers, e.g., costs and consequences of taking action (Glanz & Bishop, 2010). The model is the root of the Protection Motivation Theory (PMT) and has many similarities but includes a focus on “cues to action” as a behavioral determinant.

The HBM was applied in Australia to examine adaptive behaviors during heat waves. Research found the following to be predictive of adaptive behaviors:

- Perceived benefits (i.e., knowing several benefits of adaptive behaviors during heat waves, such as listening to weather reports to plan outdoor activities, or staying in air-conditioned environments to avoid dehydration).
- Cues to action (targeted and timely information about heat wave danger through family members, the media, health care workers, or previous experience with heat waves).

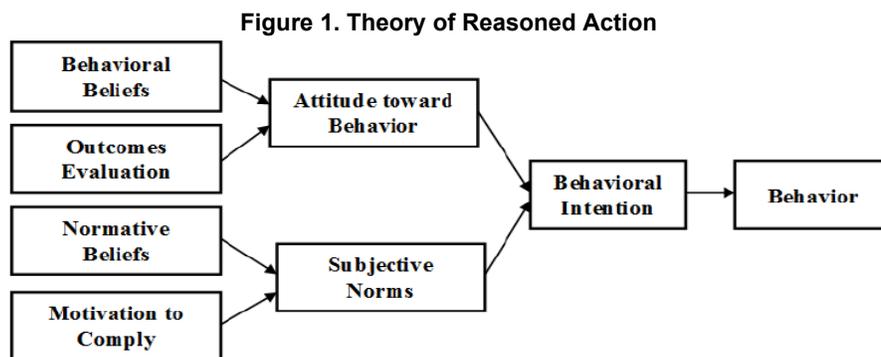
- Knowledge about heat waves (e.g., people with heart conditions have a greater chance of falling ill during heat waves; heat waves can cause death) (Akompab et al., 2013).

Still widely applied in the health sector, HBM is particularly appropriate for health-related adaptation initiatives such as those involving vector-borne disease, waterborne disease, and heat stress. The HBM is also one of the two SBC models that underpin the widely used⁴ DBC framework and Barrier Analysis studies used as part of the DBC framework.

2.2 THEORY OF REASONED ACTION/PLANNED BEHAVIOR

The **Theory of Reasoned Action** (TRA) — and the Theory of Planned Behavior, an extension of TRA — focuses on perceived response efficacy (beliefs about the outcome of the behavior), perceived positive consequences (one’s evaluation of expected outcomes), perceived social norms, and one’s motivation to comply with a requested behavior. These determinants interact to influence one’s attitudes toward the behavior and one’s subjective norms, which in turn interact to produce a behavior intention — wanting to do a behavior. The stronger the intention, the more likely that one will put in increased effort to perform the behavior, which also increases the likelihood of adopting the behavior. The Theory of Planned Behavior adds perceived self-efficacy/behavioral control to TRA. (Behavioral control includes both perceived self-efficacy and “controllability,” whether one believes that one personally has control of a behavior or if it is controlled by outside forces.)

The TRA aims to explain the relationship between attitudes and behavior. It predicts how individuals will behave based on their preexisting beliefs about the behavior being promoted, what they think will happen if they adopt the behavior (perceived consequences, called “outcomes evaluation” in this model), their beliefs about what others think about the behavior (perceived social norms, called “normative beliefs” in this model), and their motivation to comply with those norms (Ajzen & Fishbein, 1980). This model (Figure 1) improves upon some earlier models (e.g., the HBM) by giving more attention to perceived social norms.



Source: Ajzen & Fishbein, 1980

⁴ As noted, the DBC framework and the Barrier Analysis study methodology that is part of the DBC have been used by 34 NGOs/international NGOs in 44 developing countries. Of the Barrier Analysis studies posted to the [Food Security and Nutrition Network’s Behavior Bank](#), 56 percent are on health and nutrition behaviors, 27 percent are on WASH behaviors, and 14 percent are on agriculture, natural resource management, and other livelihood behaviors.

The TRA predicts that it is both *our own* attitudes about a behavior and *our perception of other people's attitudes* about the behavior that lead to behavioral intention. It accepts that we do not form our opinions in a vacuum, but often look to others to know how we should feel about something, and both of those opinions are important in deciding on adoption. For example, a farmer may generally have a positive attitude about planting live barriers to reduce erosion, but if his or her friends or family members feel that it is a waste of time (his/her “subjective norms”), they can influence the farmer’s adoption of the technique. These subjective norms are further divided in the TRA into *normative beliefs* (what one thinks others would want or expect one to do) and *motivation to comply* (how important it is to the person to do what he or she thinks others will expect). See Box 3 for an application of HBM and TRA.

BOX 3. APPLICATION OF THE HBM AND TRA: THE CRS SEGAMAYA PROJECT

Catholic Relief Services’ (CRS) project, Food Security for the Population of Mam and Achi (SEGAMAYA, for its Spanish acronym), provides an example of using an SBC model to identify determinants of promoted behaviors. The project used the DBC framework, which includes formative research (Doer/Non-doer Analysis, a shorter version of Barrier Analysis) on behavioral determinants included in the HBM and the TRA. The project was active in two different yet culturally similar departments of Guatemala: San Marcos and Baja Verapaz. Project staff in San Marcos participated in a DBC training where they learned how to conduct a Barrier Analysis. The staff decided to study the practice of planting live barriers along the edges of agricultural terraces using Doer/Non-doer Analysis. The practice, which had been promoted, had a low adoption rate that puzzled the staff given that it required moderate labor and local plant material that could be obtained at little to no cost.

Through the formative research in San Marcos, the project found that most farmers — both those who did and did not adopt the practice — fully understood the benefits of the practice. However, those who had adopted the practice worked together in groups to plant the barriers. The farmers who did not adopt the behavior noted that live barrier plantings were affected and damaged during times of drought.

The project created an SBC strategy for San Marcos based on the key behavioral determinants identified for planting live barriers to prioritize organizing farmers to work together on each other’s land during the off-season to plant the live barriers. The project also brainstormed with farmers about strategies to prevent drought-related losses in the species used for the barriers. By contrast, interventions in Baja Verapaz were based solely on past experiences in the area.

In Baja Verapaz, where upgraded SBC tools and formative research were not used, adoption of the promoted practice declined over the course of the project. The final evaluation confirmed that adoption in San Marcos increased, and that use of live barriers had become the most commonly used form of soil conservation in the project area.

Sources: This example is taken from USAID SPRING’s Accelerating Behavior Change for Nutrition-Sensitive Agriculture, <https://www.spring-nutrition.org/publications/training-materials/accelerating-behavior-change-nutrition-sensitive-agriculture>.

2.3 PROTECTION MOTIVATION THEORY AND RELATED MODELS

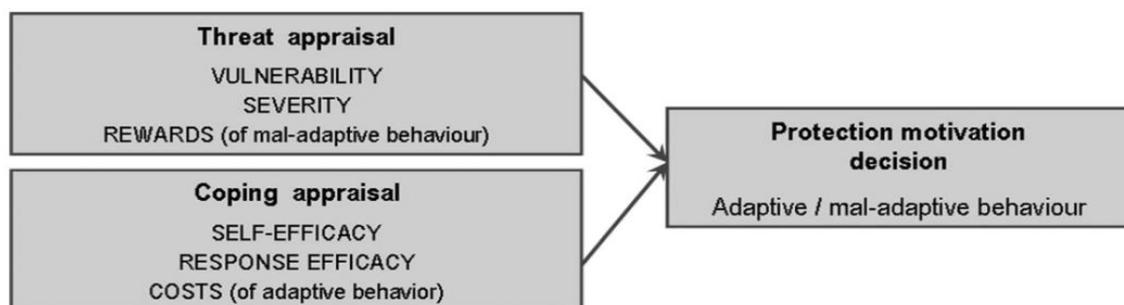
Many models of behavior change in adaptation have mainly built upon the PMT, which is itself an extension and reworking of the HBM. The PMT focuses on six determinants: perceived risk, perceived severity, perceived consequences (especially intrinsic and extrinsic rewards of starting or continuing an unhealthy or maladaptive behavior), perceived self-efficacy, perceived response efficacy, and costs (a potential barrier) associated with the promoted behavior. The PMT emphasizes how *threat appraisal* (perceived severity, perceived probability, and rewards of no change) and *coping appraisal* (perceived response efficacy, perceived self-efficacy, and costs of change) are evaluated together to inform intention to change behavior. The Model of Private Proactive Adaptation to Climate Change is an extension of the PMT to adaptation.

PMT has guided much of the SBC work related to adaptation. This theory has been employed based on the idea that adaptation is partly driven by individual actions to either avoid impacts to things people value or to benefit from opportunities associated with climate change.

Adaptation research has extended the PMT to better reflect the complex factors that influence behavior in many resource-dependent communities in the developing world (Truelove et al., 2015). Grothmann & Patt (2005) were the first to develop a model for adaptation behavior change based on the PMT. Since 2005, research has investigated the PMT model for adaptation in different contexts and expanded it to include more focus on features such as social identity and social appraisal (similar to perceived social norms), as well as combining the PMT with the trans-theoretical model (which discusses different stages of behavior change). Additionally, one assessment used an extended and combined theory of Diffusion of Innovations to examine adoption of CSA practices.

Other work focusing on the response efficacy and self-efficacy components of PMT for adaptation (which taken together are called “coping appraisal”; see Figure 2) found that these determinants are important variables in an individual’s undertaking of flood-mitigation efforts (Bubeck et al., 2013). The study found that both response efficacy and self-efficacy are predictors of precautionary behavior. The authors recommend that risk communication should increase focus on the potential of flood-mitigation measures to reduce or avoid flood damage (addressing response efficacy) and on information about implementing such measures (addressing self-efficacy) (Bubeck et al., 2013). Grothmann & Patt (2005) developed a

Figure 2. Extensions of the Protection Motivation Theory



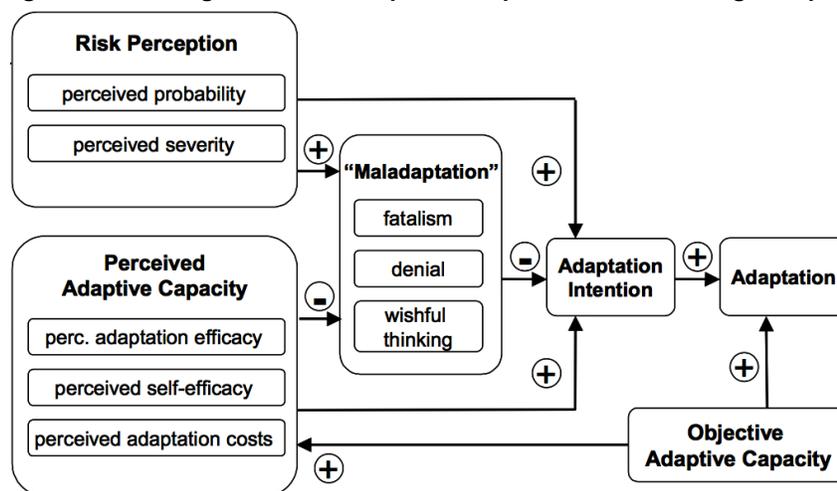
Source: Bockarjova & Steg, 2014

sociocognitive model of “proactive private adaptation to climate change impacts” to examine perceived risk and perceived adaptive capacity, which is related to perceived self-efficacy (Figure 3). This model proposes that perceptions of risk and adaptive capacity are both important to climate change adaptation intention. If perceived risk and perceived adaptive capacity are both high, for example, then adaptation intention will also be high. If perceived risk is high and perceived adaptive capacity is low, however, the response may be fatalism, denial, or wishful thinking. The model includes three components to perceived adaptive capacity: perceived adaptation efficacy (a form of perceived response efficacy), perceived self-efficacy, and perceived adaptation costs (one type of perceived barrier).

This model also includes the role of *objective* adaptive capacity (i.e., how much time, money, knowledge, power, and social support a person objectively has) in affecting whether adaptation intention becomes adaptation action. The model has demonstrated explanatory power for individuals undertaking adaptation actions (e.g., Grothmann & Patt 2005).

Recognizing the role of interpersonal communication, social norms, and community life on adaptation intention, Truelove et al. (2015) developed a sociopsychological model based on PMT to predict adaptation intention. This model added a component of “social appraisal” designed to be more applicable to people who are engaged in interdependent livelihoods or who draw from a common resource (e.g., water), as in most agricultural contexts. They suggested a stronger theoretical emphasis on community factors, including social cooperation and social capital.

Figure 3. Sociocognitive model of proactive private climate change adaptation



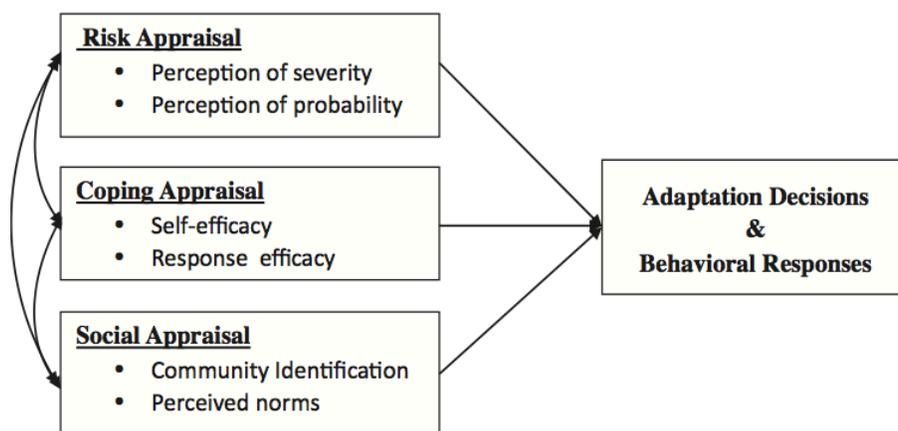
Source: Grothmann & Patt, 2005

Truelove et al. (2015) tested their risk, coping, and social appraisal (RCSA) model with rice farmers facing drought risk in Sri Lanka (Figure 4). Social appraisal was assessed through community identification and perceived social norms. Among the farmers, beliefs on both self-efficacy and response efficacy were the strongest predictors of behavioral intentions. Social appraisal was also important, with perceived social norms (i.e., one’s perception of what is commonly done in a situation) consistently correlated with intentions. Farmers were more likely to adopt an adaptation behavior if they perceived that other farmers had also adopted the

behavior. Community identification (strong identification as a member of a community) was a predictor for adaptation intention for *communal* adaptation efforts (e.g., reallocating land and water resources) but not for individual adaptation efforts (e.g., adjusting irrigation practices). For SBC, the findings suggest that interventions intended to encourage adaptation should emphasize how others have adopted practices and that community-level adaptation efforts are most suited to places with strong community identification and social capital.

Related to the RCSA model, Esham & Garforth (2013) found that social networks have a positive impact on farmer adaptation to climate risk since most adaptation measures are learned through experience and observing neighboring farmers. Their research, also in Sri Lanka, found that farmers who network with others to discuss climate change are more likely to adopt adaptation strategies themselves. With little information from external sources (e.g., extension services, media) farmers relied on social networks for adaptation information and motivation.

Figure 4. Risk, coping, and social appraisal model of adaptation decisions



Source: Truelove et al., 2015

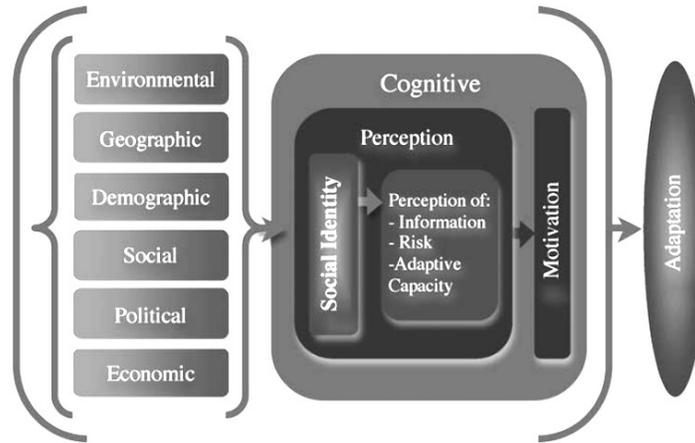
Recent social network analysis studies have shown that many behaviors and conditions such as smoking, obesity, and even happiness spread person-to-person through social networks (Christakis & Fowler, 2007, 2008a, 2008b). Since social networks are often “scale free,” (i.e., linkages do not occur purely at random but rather may result from a process of preferential attachment), some individuals tend to have a lot more connections and influence than others. The authors of some of the most prominent social network studies (Christakis & Fowler) have suggested that effective behavior change approaches should target highly connected hubs within social networks with behavior change messages and activities.

Examining adaptation among coffee farmers in Mexico, Frank et al. (2011) focused on the influence of **social identity** on an individual’s perception of information, risk, and adaptive capacity (Figure 5). They found that social identity is important to an individual’s motivation to change behavior since social identity shapes risk perception, including the evaluation of information about climate variables and options for adaptation. Social identity also influenced the perceived *credibility* of various information sources (agricultural cooperative, extension

agents, scientists, media), with climate science information deemed most credible when it was provided by external “expert” sources.

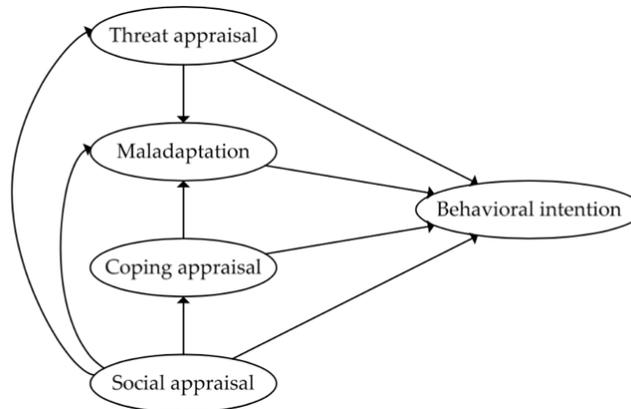
Source: Frank et al., 2011

Figure 5. Conceptual model of major factors relating to adaptation, with an emphasis on social identity



In further work to incorporate social appraisal into the PMT for adaptation, Feng et al. (2017) developed the threat, coping, and social appraisal, maladaptation, and behavioral intention model (Figure 6). Their research with farmers in China showed that social appraisal (interpersonal and community influence) is an important influence on threat and coping appraisals and, as a result, a key factor in farmers’ behavioral intention. The study also showed a significant negative relationship between threat appraisal and maladaptation; that is, if perceived threat is high, maladaptive behavior is lowered.

Figure 6. The threat, coping, and social appraisal, maladaptation, and behavioral intention model



Source: Feng et al., 2017

Grothmann & Reuswig (2006) and Gebrehiwot & van der Veen (2014), in studies of flood and drought risk responses, respectively, combined PMT with the trans-theoretical model. As discussed earlier, the trans-theoretical model proposes that individuals go through a series of

stages when adopting a new behavior. Both studies found that individuals in different stages were motivated by slightly different determinants (factors):

- Individuals in the earliest *pre-contemplative* stage were most influenced by information on **perceived severity** and **cost** of response actions.
- Individuals in the *contemplative stage* were most influenced by information on **self-efficacy** and **cost**.
- Individuals in the later *action stage* were most influenced by information on **self-efficacy** and **response efficacy** (Gebrehiwot & van der Veen, 2014).

2.4 SOCIAL LEARNING THEORY

Social Learning Theory (SLT) suggests that many new behaviors can be acquired by observing and imitating others, extracting information from those observations, observing rewards and punishments (called vicarious reinforcement), and making decisions about the performance of the behavior. In this model, reinforcement plays a role in learning but is not entirely responsible for learning. The focus is less on behavioral determinants and more on how people learn. Entertainment education (“edutainment”) is often built on this theory and features positive and negative role models, and a character who is trying to decide on a behavior. Social learning often explicitly engages stakeholders in knowledge creation through collective reflection and action (Keen et al., 2005).

SLT is receiving increasing attention for its ability to inform climate change adaptation communication (Ensor & Harvey, 2015; Harvey et al., 2012; Collins & Ison, 2009; see Box 4). As climate change impacts evolve within communities and around the world, social learning among people who have experienced climate change impacts and those who are likely to experience impacts soon can facilitate learning and adaptation (Reed et al., 2013).

The aim of social learning is to achieve “a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice” (Reed et al., 2010). Social learning approaches facilitate knowledge sharing and joint learning such that the limitations of individual experience are overcome through working with diverse stakeholders to better understand a situation. Interaction among diverse stakeholders is at the center of social learning approaches. Social

BOX 4. SOCIAL LEARNING IN PRACTICE

CGIAR (Consultative Group for International Agricultural Research) has embraced a social learning approach. Its Climate Change, Agriculture and Food Security (CCAFS) initiative is committed to incorporating social learning in adaptation, with some success in Uganda and Tanzania through the [Policy Action for Climate Change Adaptation](#) (PACCA) initiative. CCAFS, the International Institute for Environment and Development (IIED), the International Livestock Research Institute (ILRI), and others created a climate change and social learning working group to support researchers and practitioners and build evidence around social learning methodologies. Rhodes University published “Social learning for adaptation,” a handbook authored by Cundill et al. (2014), to guide local NGOs in adaptation of social learning efforts.

learning approaches commonly involve iterative knowledge sharing and joint action to co-create knowledge, relationships, and practices. Tools include role-playing games, workshops, social simulations, working with scenarios, and action research (Ensor & Harvey, 2015).

The potential for the social learning approach to generate responses in a context of uncertainty, interconnectedness, and complexity makes it appealing to development practitioners working in adaptation, and it is particularly useful for several tasks:

- Social learning can be a tool for collectively determining the climate risk or adaptation efforts that people are most willing to address.
- Social learning can facilitate behavior change when the understanding of an issue is contested and incomplete, as with climate change (Collins & Ison, 2009).
- Social learning can play an important role in spreading adaptation actions beyond individuals and into communities and networks, enabling new, shared ways to catalyze changes in practice (Ensor & Harvey, 2015; Collins & Ison, 2009).

A review of 24 peer-reviewed publications on social learning in natural resource management revealed that social learning approaches have resulted in cognitive learning (factual knowledge), normative learning (changes in norms, values, and belief systems), and relational learning (building of trust, appreciation of others' worldviews, etc.) across individual, network, and system scales (Ensor & Harvey, 2015). Informal intrafarm communication channels (social learning) — for example, those employed in Farmer Field Schools — increase the effectiveness of agricultural extension efforts and are strong determinants of adoption and diffusion of irrigation technology (Genius et al., 2013).

In researching social learning approaches in agriculture, Shaw & Kristjanson (2014) found greater adoption of new technologies when socially differentiated groups, such as smallholder farmers, women, and indigenous groups, worked together. In addition, social learning contributed to novel learning and exchange, helped to co-create relevant and legitimate knowledge, and built networks, all of which have potential to improve and accelerate livelihood and adaptive capacity outcomes (Shaw & Kristjanson, 2014).

2.5 NUDGE THEORY

Nudge theory, a concept in behavioral science (and in political and economic theory), proposes that indirect suggestions, choice architecture (the way choices are presented), and positive reinforcement can help achieve behavior change and can influence the motives, incentives, and decision-making of groups and individuals. It is not a complete behavioral model, but rather a concept that can help in designing behavior change interventions and in understanding what may help people to make a change.

Nudges appear to work because they make choices and decision-making simpler and easier by capitalizing on “bounded rationality” — the idea that rationality is limited by the tractability or difficulty of a decision, and by cognitive and time limits. The manipulation of “choice architecture,” or the ways choices are presented, is central to the theory. The selection of a

choice often depends upon how it is presented (Thaler & Sunstein, 2008). There is no neutral choice architecture; any way a choice is presented will affect a decision-maker. The intentions and designs behind nudges can be transparent or hidden. Nudge theory, which Thaler and Sunstein describe as “libertarian paternalism” — that it is both possible and legitimate for private and public institutions to influence behavior while also remaining cognizant of freedom of choice — has been criticized for its questionable ethics, particularly when applied to vulnerable groups (Bovens, 2008).

Bovens (2008) identified types of agency that could be subjects for a nudge, including: ignorance, inertia, akrasia (acting against one’s better judgment due to weakness of will power), and social benefit (when an action has a greater benefit for society than for an individual). Nudges may be most appropriate for one-time or infrequent behaviors since people can become immune to repetitive nudges and reminders. Various governments have used nudge theory to encourage behaviors such as paying taxes, giving a day’s salary to charity, increasing voting rates, and becoming an organ donor. Others have used nudge theory for health initiatives such as antenatal/postnatal care and protection from sun exposure, resource conservation, such as cold-water clothes washing, and more. Nudge theory could be used in adaptation efforts to influence behaviors related to activities such as irrigation, crop choice, treating drinking water (e.g., by putting chlorine tablet dispensers close to standpipes), dealing with heat stress, and others.

2.6 OTHER RELEVANT THEORIES: FRAMING THEORY AND DIFFUSION OF INNOVATIONS

In addition to the five SBC theories discussed above, aspects of other theories may have some relevance for adaptation; they focus on 1) shaping messages that resonate with target audiences (and influencing audiences that may impact target audience decisions), and 2) tapping into the power of social networks to convey those messages.

FRAMING THEORY

Framing theory is a media theory that posits that the way in which issues are presented in the media strongly influences how people perceive these issues and consider related actions. An issue can be presented in different ways depending on the context, narratives, and sources (C-Change, 2012). This theory supports adaptation communication, given that the framing of new, uncertain, and complex information is critical to its legitimacy and ability to motivate action.

A frame is a way to pare down a complex issue and emphasize certain aspects of an issue such that audiences can identify its relevance to them (Spence & Pidgeon, 2010). To frame climate risk and adaptation behavior in a way that will motivate action, practitioners should understand how target audiences will interpret a particular framing. Pidgeon & Fischhoff (2011) noted that different communities and social groups within communities understand and respond to risk differently depending on the outcomes at stake and the influence of emotions and social processes. Two common types of framing are 1) attribute framing, which highlights a particular aspect or attribute of an issue, and 2) outcome framing, which presents a particular behavior or

issue in terms of gains or losses. Adaptation communication can be optimized through framing climate risk attributes and adaptation outcomes that are most motivating for a target group.

DIFFUSION OF INNOVATIONS

Diffusion of Innovations theory explains how and why information, ideas, and social practices are spread and exchanged within social networks. It focuses on:

- Characteristics of social systems (e.g., norms, tolerance of deviancy, connectivity, communication channels)
- Individual adopters (e.g., attitudes, need for innovation)
- The innovation itself

Innovation characteristics of the theory are relative advantage, compatibility, complexity, trialability, and observability. The most significant factors for adoption are usually high relative advantage, high compatibility, and low complexity (Rodgers 1995). Reed (2007) proposed adding the concept of adaptability as the extent that an innovation can be adapted to meet “dynamic, and sometimes unforeseen, user demands and specifications.” The theory posits that information exchange within a network is dependent on social connections, access to communication channels, and access to resources, including information.

Local knowledge brokers or opinion leaders play a key role in innovation diffusion by framing innovations in ways that are more readily understood and adopted by others in their social networks (Reed et al., 2013; Dearing, 2009). The theory is that community members will imitate these admired and trusted leaders by trying and adopting new behaviors.

The theory has a long history of study in numerous sectors, including agricultural innovations and soil and water conservation. It dominated agricultural extension efforts for decades, despite critiques of its limitations in supporting more complex innovations such as integrated pest management. There has been effort to adapt the theory from a paradigm of technology transfer to one of participatory technology development, where technology development is part of an extended Diffusion of Innovations theory with collaboration among experts and local innovators (Reed, 2007). This extended theory may be more suited to adaptation efforts focused on locally driven solutions to climate risks. The framing and timing of Diffusion of Innovations efforts can be tailored to reinforce contextual conditions, such as recent experience of a climate hazard, in increasing the likelihood of innovation adoption and diffusion (Dearing, 2009). Diffusion of Innovations theory is most appropriate for adaptation efforts where well-connected social networks can facilitate innovation diffusion.

Annex B includes further descriptions of these SBC models and theories.

2.7 MATCHING ADAPTATION CONTEXTS WITH SBC APPROACHES: ILLUSTRATIVE EXAMPLES

Table 3 matches examples of adaptation efforts with relevant theories, models, and approaches, including SBC concepts and illustrative communication channels and activities.

Table 3. SBC for adaptation: Relevant theories, determinants, communication channels, and activities

DESIRED SOCIAL AND BEHAVIOR CHANGE FOR ADAPTATION	SELECTED RELEVANT THEORIES, MODELS, AND APPROACHES	SELECTED DETERMINANTS AND RELEVANT THEORETICAL CONCEPTS	ILLUSTRATIVE COMMUNICATION CHANNELS AND PROJECT ACTIVITIES TO ADDRESS THE DETERMINANTS
Farmers adopt water-efficient irrigation practices	<p>Protection Motivation Theory (extended to include social norms/appraisal)</p> <p>Theory of Reasoned Action</p> <p>Social Learning Theory</p>	<ul style="list-style-type: none"> Perceived severity (of water scarcity) Perceived risk (of water scarcity) Perceived response efficacy (that the irrigation practices work) Perceived self-efficacy (that one can do the irrigation practices) Perceived consequences (cost/benefit of response behavior) Community identity Perceived social norms (i.e., whether others support the practice) Perceived divine will (are the practices in line with faith teachings and beliefs) 	<ul style="list-style-type: none"> To increase perceived severity and risk and change perceived consequences: Interpersonal communication training guide for extension workers about discussing drought risk in the context of climate change and water-efficient irrigation practices. Show farmers photos of devastating crop loss from drought in nearby regions. To build perceived self-efficacy: Community-based video production of new irrigation practice; videos shared in mediated sessions with target farmers; motivational interviewing techniques to build perceived self-efficacy; demonstration sessions. To build perceived response efficacy: Use side-by-side fields with and without water-efficient irrigation practices to demonstrate effectiveness. To build community identity and perceived social norms: Public recognition of farmers adopting new irrigation practice, and demonstration days at adopting farmers' fields. To increase perceived divine will: Sermon guides created for pastors and imams on promoted irrigation practices. Have pastors and imams give testimonials on the practice.
Heads of households adopt flood-resistant construction practices	<p>Protection Motivation Theory (extended to include social norms/appraisal)</p> <p>Health Belief Model</p>	<ul style="list-style-type: none"> Perceived severity (of flooding) Perceived risk (of flooding) Perceived consequences (cost/benefit of response behavior) and perceived response (action) efficacy Perceived self-efficacy Community identity Perceived social norms Cues to action 	<ul style="list-style-type: none"> To increase perceived severity, risk and response efficacy/perceived consequences: Hold interactive community information sessions about climate change-induced changes in flood risk to homes and response options. Create flood maps to show which houses are at increased risk. Show heads of households photos of devastated houses from flooding in nearby regions. To increase perceived social norms and community identity, and cues to action: Implement flood-resistant demonstration homes in cooperation with homeowners with homes in highly visible locations; use guided testimonials to promote them. To increase perceived self-efficacy: Include hands-on training sessions during demonstration home (re)construction. To increase perceived risk and cues to action: Work with local radio and print media outlets on stories about flood risk and flood-resistant construction practices.
Children and others who	Health Belief Model	<ul style="list-style-type: none"> Perceived risk (of waterborne illness) 	<ul style="list-style-type: none"> To increase perceived susceptibility and severity, and positive consequences: Care

DESIRED SOCIAL AND BEHAVIOR CHANGE FOR ADAPTATION	SELECTED RELEVANT THEORIES, MODELS, AND APPROACHES	SELECTED DETERMINANTS AND RELEVANT THEORETICAL CONCEPTS	ILLUSTRATIVE COMMUNICATION CHANNELS AND PROJECT ACTIVITIES TO ADDRESS THE DETERMINANTS
<p>collect household drinking water treat water with chlorine at a point-of-collection dispenser during flood season</p>	<p>Nudge theory Community-based social marketing as approach</p>	<ul style="list-style-type: none"> • Perceived severity (of waterborne illness) • Perceived positive and negative consequences, and relative advantage • Perceived response efficacy and positive/negative consequences (cost/benefit of response behavior) • Perceived self-efficacy and reduced perceived barriers • Cues to action • Social norms 	<p>Group volunteers discuss with parents the impact of waterborne illness on children and adults, changes in risk due to climate trends, and benefits of treated water (including cost savings).</p> <ul style="list-style-type: none"> • To decrease negative consequences (time) of behavior, barriers to behavior, increase cues to action, and “nudge” the behavior: Place a no-cost chlorine dispenser next to water source with a visually descriptive “how to use” and colorful happy children signage. Train local community promoter to care for the dispenser system and advocate for its use.⁵ Teach children songs about use of chlorine dispenser. • To increase perceived self-efficacy: Hold community event to introduce and celebrate chlorine dispensers and their use. • To increase perceived social norms: Support opinion leaders to model water treatment and hold community dialogues about the benefits they experienced. Give children who use the chlorine dispenser lapel pins (Water Hero!) to wear on first day of use and use speech/essay contests at schools on benefits of water purification.
<p>Families use mosquito nets and seek treatment for malaria symptoms in a historically malaria-free area</p>	<p>Health Belief Model Social Learning Theory</p>	<ul style="list-style-type: none"> • Perceived severity (of malaria) • Perceived risk (of malaria) • Perceived response efficacy and positive/negative consequences (cost/benefit of response behavior) • Perceived self-efficacy • Access • Cues to action 	<ul style="list-style-type: none"> • To increase perceived severity, risk, self-efficacy, and response efficacy: Interpersonal communication training sessions and guides for health care providers and community opinion leaders (women and men) on evolving malaria risk and adaptation options; radio announcements citing data on increased malaria cases at health facilities. • To increase perceived susceptibility and response efficacy: Mass media messaging (radio or TV) with messages framed by research on target group responsiveness to particular risk attributes and response outcomes. • To increase perceived risk, severity, and self-efficacy: Door-to-door campaigns and community workshops by health care workers for family discussions of malaria risk and adaptation options. • To increase access: Targeted voucher programs for mosquito net acquisition, and increased access points beyond clinics; radio spots on where to get nets.

⁵ This also draws on the community-based social marketing approach’s focus on the Four Ps: product, price, place, and promotion.

3. IDENTIFYING DETERMINANTS THROUGH FORMATIVE RESEARCH

The building blocks of SBC models and theories are mostly determinants (see Annex A) — factors that can influence whether a person adopts and maintains a behavior that a project is promoting. There are several ways in which development practitioners identify and select determinants around which to design interventions.

3.1 TRADITIONAL PRACTICES

- *Practice 1: Assemble project staff members and discuss the determinants that, based on their experience, they believe are most important for adoption of the targeted behaviors.* While the experiences and perspectives of frontline staff are valuable, and they may casually hear about barriers to and enablers of adoption of behaviors from beneficiaries, this is not the most effective way to identify determinants. Staff will often have a set of “go to” behavioral determinants that have traditionally been the focus of their behavior change efforts, such as promoting *positive consequences* and teaching people how to do the behavior (focusing on *perceived self-efficacy*). The *majority* of community members, both Doers (adopters) and Non-doers (non-adopters), often talk about factors that make a behavior either more difficult or easy to adopt. However, both Doers and Non-doers identify the same difficulties in roughly the same proportions. In this case, there is a good chance that the difficulty is not driving the behavior. Also, project staff often develop their own ideas of what works to promote adoption based on a limited (rather than broad) set of activities and messages that they have tried. Promotion of the advantages of behaviors and teaching people how to carry out behaviors (i.e., focusing on perceived self-efficacy and skills) are particularly popular ways to promote behaviors, but are not always sufficient to bring about behavior change. While these are among the most common determinants, many others often come into play, such as social norms and perceived risk.
- *Practice 2: Try to focus on all the determinants used in an SBC model that staff have chosen to use for a project.* This “shotgun” approach can be effective (if not efficient) to promote behaviors when the number of behaviors promoted is limited and the project budget is large enough. But in many projects, there is simply not enough time and money to focus on all determinants of all behaviors.
- *Practice 3: Conduct cross-sectional formative research on a broad set of possible social and behavioral determinants and identify the more common ones among the population.* This is a step closer to the ideal since project staff focus on a broader set of possible behavioral determinants and use data to make decisions. However, since some barriers and enablers will be mentioned by both Doers and Non-doers in roughly equal

proportions, cross-sectional studies and use of methods (e.g., focus groups) to “listen for” determinants will probably not identify the most important determinants — those that are more likely to be discouraging non-adopters.

3.2 BEST PRACTICE

The most appropriate way to identify determinants of key promoted behaviors is to conduct formative research on possible behavioral determinants and tease out the ones that seem to influence people who have adopted the promoted behaviors more than people who have not adopted the behaviors (see Box 5). Using quantitative data allows a project to identify the determinants that are more likely to be truly linked to adoption (by comparing Doers and Non-doers). There are several ways that this research is generally done in development projects.

BARRIER ANALYSIS

This is the most commonly used method among organizations for identifying determinants (Davis, 2004). A rapid assessment tool that can help organizations explain low or no adoption of a promoted behavior, Barrier Analysis is usually used at the beginning of a program to determine key messages, strategies, and activities for boosting behavior change. It has been used in food security, adaptation, child survival, and other community development programs. It can also be used in an ongoing program to evaluate ways to improve the promotion of behaviors that continue to show low adoption rates. At least 45 Doers and 45 Non-doers of the behavior are surveyed, so the sample size is relatively small. After a five-day training in the methodology, Barrier Analysis can be done rapidly by trained personnel. Using a team of 10 people to carry out Barrier Analysis, the data collection and analysis for each behavior studied can usually be completed in one or two days.

Barrier Analysis is supported primarily by the Health Belief Model and the Theory of Reasoned Action and explores a series of behavioral determinants: 1) perceived self-efficacy/skills, 2) perceived social norms, 3) perceived positive/negative consequences, 4) access, 5) perceived barriers/enablers, 6) cues for action/reminders, 7) perceived susceptibility, 8) perceived severity, 9) perceived divine will, 10) culture, and 11) policy. Analysis of results allows the user to make statements such as “Doers of the behavior are 5.2 times more likely than Non-doers to say that their husband approves of the practice (perceived social norms).” Projects may then use these results to develop activities and messages linked with each important determinant.

A method similar to Barrier Analysis is Doer/Non-doer Analysis, which focuses on a smaller set of determinants.

KNOWLEDGE, PRACTICE, AND COVERAGE (KPC) SURVEYS

Some projects include questions on determinants in their cross-sectional baseline surveys. This can require a large sample size when the number of Doers and Non-doers in a population is disproportionate (e.g., 15 percent Doers and 85 percent Non-doers). It can also lengthen the baseline questionnaire and interview time (sometimes significantly if many behaviors are assessed), but it does allow for a comparison of Doers and Non-doers. An advantage is that it is

integrated into the survey, so — if staff are trained in more advanced statistical methods — they can better control for confounders and interaction between data points and do multivariate analysis.

Alive & Thrive, a Bill & Melinda Gates Foundation-funded initiative to save lives, prevent illness, and ensure healthy growth and development through improved breastfeeding and complementary feeding practices, uses both qualitative and quantitative studies to identify important determinants of promoted behaviors. For example, in Vietnam, Alive & Thrive added measures of behavioral determinants to the survey that was used to evaluate its TV spots promoting exclusive breastfeeding (Nguyen et al., 2017). The determinants measured were positive and negative consequences of the behavior, knowledge and beliefs about outcomes (perceived response efficacy), perceived self-efficacy, and perceived social norms. Alive & Thrive ran analyses on the baseline survey to look at the prevalence of each belief and its association with the behavior. For determinants that were associated with each behavior studied (and promoted), Alive & Thrive continued asking the questions through four more rounds of data collection. The data were then used to tailor its SBC approach.

RISKS, ATTITUDES, NORMS, ABILITIES, AND SELF-REGULATION (RANAS) SURVEYS

The RANAS approach to behavior change was originally developed for the water, sanitation, and hygiene (WASH) sector in developing countries, but it is applicable to a range of behaviors, settings, and populations (Mosler, 2012). The RANAS approach involves data collection through cross-sectional surveys and comprises four steps: 1) identifying possible behavioral factors; 2) measuring the behavioral factors and identifying the ones that are driving the behavior (by comparing Doers and Non-doers); 3) selecting or developing corresponding behavior change techniques and strategies; and 4) implementing and evaluating the behavior change techniques and strategies. This has many of the same strengths and limitations as use of Knowledge, Practice, and Coverage (KPC) data. Determinants are explored that deal with risk, attitudes, social norms, ability (self-efficacy/skills), and self-regulation. With RANAS, both behaviors and determinants are measured with a questionnaire and through observations both before and after implementation to control for intervention-independent changes in behavior. SBC strategies are judged to be effective when the before–after differences in behavior and the behavioral determinants are larger for the intervention group than for the control group.

Few development projects have the resources to conduct formative research on every behavior they will promote. Thus, many projects choose to conduct formative research to identify the most important determinants of key behaviors. For other behaviors that are not as critical, staff then select from a broader set of determinants based on their hunches or qualitative data when developing SBC messages and activities.

BOX 5. AN EVIDENCE BASE FOR FORMATIVE RESEARCH THAT IS “POWERFUL TO CHANGE”

Formative research on determinants can make a difference. As part of their “Powerful to Change Studies,” members of the CORE Group Social and Behavior Change Working Group (SBCWG) analyzed data on two key behaviors (exclusive breastfeeding and handwashing with soap) from 18 USAID Child Survival and Health Grants Program (CSHGP) projects. The SBCWG reviewed baseline, midterm, and final reports, interviewed key staff, and calculated a performance index to identify the highest- and lowest-performing projects in terms of adoption of the behavior by beneficiaries.

For exclusive breastfeeding (EBF):

- Five of the six highest-performing EBF projects used three or more forms of formative research, including focus group discussions, Barrier Analysis, key informant interviews, positive deviance inquiries, measuring key determinants through a KPC survey, and health worker attitude surveys. Five of the six used either Barrier Analysis or Doer/Non-doer Analysis, a variation of Barrier Analysis. Four of the six also conducted qualitative research with influencing groups such as men, mothers-in-law, and health facility staff. (These methods were used much less frequently by low-performing projects.)
- Three of the six highest-performing projects used SBC theories to guide their work. The models used included the Health Belief Model, the Theory of Reasoned Action, and the Stages of Change (trans-theoretical) Model.
- Highest performers used either the DBC framework (which includes Barrier Analysis) or the BEHAVE framework (a similar precursor to DBC) to develop their SBC strategy. Five of the six highest-performing projects received training and technical support in DBC/BEHAVE, while the remaining projects mainly received training in communication skills and counseling alone.
- Highest performers targeted more determinants and ensured that implementation closely followed the design.
- High-performing projects targeted an average of four key determinants per project, while lower-performing projects targeted an average of only two determinants.
- Five of the six high-performing projects used Care Groups or other support groups to promote EBF.
- High performers had more frequent and comprehensive monitoring and evaluation, using feedback from monitoring to adjust the project strategy and implementation. The highest-performing projects monitored their SBC strategy (often by measuring behavior change indicators) two to four times per year.

Sources: CORE Group SBCWG, 2010; Davis Jr., T (2009).

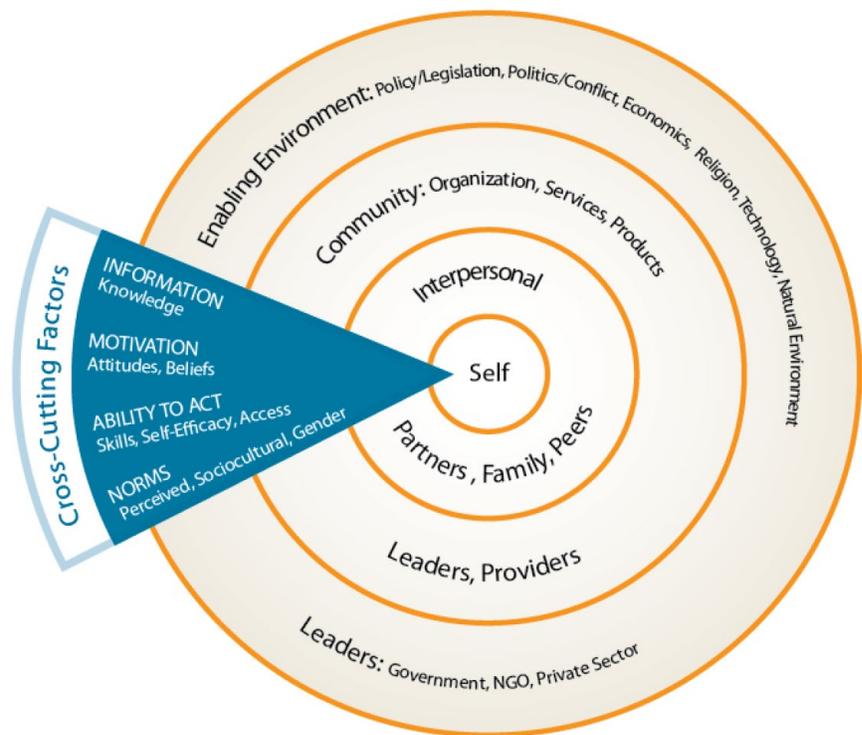
4. SBC INTERVENTION LEVELS, TECHNIQUES, AND COMMUNICATION CHANNELS

4.1 WHOM TO REACH: THE SOCIOECOLOGICAL MODEL

SBC embraces a socioecological model of change that views individual behavior as embedded in social, institutional, and environmental contexts. Socioecological models (SEMs; also called social ecological models) view behavior as guided as much by peers, society, and the “rules of the game” as by personal choice.

Figure 7. The Socioecological Model

The **Socioecological Model** (Figure 7) is a theory-based framework for 1) understanding the multifaceted and interactive effects of personal and environmental factors that determine behaviors, and 2) identifying behavioral and organizational leverage points for behavior promotion. The SEM helps practitioners think about the **context** in which people act, emphasizing that **actions at multiple intervention levels** are often needed to bring about and sustain a change in behavior (C-Change, 2012).



Source: C-Change, 2012

The center of the SEM is an individual (self). That person lives within an **interpersonal** context—people with whom s/he regularly interacts. Encompassing and interacting with the person (self) and interpersonal levels is the **community**. Organizations like cooperatives, schools, religious institutions, mutual support groups, local markets, and public and private providers of services and goods operate at the community level. Encompassing and interacting

with all the other levels is the **enabling environment** consisting of political, economic, sociocultural, religious, education, technological, communication, and natural/environmental systems. Cross-cutting factors influence and drive behaviors across all levels. Note that these cross-cutting factors are the same as the factors encompassed by the COM-B model (motivation, capability, and opportunity).

This model is useful as a framework for SBC because the social, structural, and environmental contexts are where the barriers and enablers that make up motivation, capability, and opportunity exist, to either constrain or enhance behavior change at individual and group levels. The SEM therefore guides project designers in assessing each level and identifying the factors that influence the behaviors that they are promoting. Interventions can then be designed to increase motivation, capability, and opportunity for action *at multiple levels*. Effective SBC interventions usually target multiple levels simultaneously, focusing on those factors that are most closely related to priority behaviors.

For example, a project may want to help families use tippy taps (simple and low-cost handwashing devices constructed from locally available materials such as a plastic bottle, wooden poles, and string) so that they can continue with handwashing during droughts. They may choose to achieve that objective by:

- Holding trainings with mothers on the benefits of using a tippy tap and how to construct one, targeting the individual (**self**) and **interpersonal** levels;
- Engaging men and community leaders about the use of tippy taps as an adaptation measure during times of drought, targeting the **interpersonal** and **community** levels; and/or
- Constructing tippy taps in marketplaces, churches, mosques, and other public spaces, and working with local vendors to ensure that materials are available for tippy tap construction (e.g., used plastic bottles), targeting the **community** and **enabling environment** levels.

4.2 MATCHING SBC OBJECTIVES WITH BEHAVIOR CHANGE TECHNIQUES AND COMMUNICATION CHANNELS

In SBC a behavior change objective is matched with a behavior change technique through a specific communication channel. A behavior change technique is an observable and replicable component of an intervention designed to change causal processes that influence behavior (Michie et al., 2013:4). To operationalize SBC strategies such as advocacy, social mobilization, or individual behavior change, programs employ techniques such as persuasive communications, modeling desirable behaviors, feedback, social norms marketing, and financial incentives (Gifford et al., 2011). The RANAS approach (described in Section III) describes 36 behavior change techniques that range from straightforward to more complex efforts to organize social support or promote a positive group identity. Michie et al. (2013) further describe 93 behavior change techniques clustered into 16 groups. Table 4 provides examples of eight behavior change techniques in clean cooking interventions (Goodwin et al., 2015).

Table 4. Types of SBC techniques and examples from the clean cooking sector

BEHAVIOR CHANGE TECHNIQUE	DESCRIPTION	ILLUSTRATIVE INTERVENTION
Reward and threat	Makes the adoption of behaviors seem attractive or makes the failure to adopt practices seem threatening. This is linked to the concept of “value exchange” (what desirable outcome would audiences receive for their compliance, or what undesirable outcome would they avoid).	Provide incentives for households to buy stoves
Shaping knowledge	Helps people to understand what cleaner cooking behaviors are, how to perform them, and where to acquire the technologies and materials needed.	Sponsor radio announcements on stove availability
Changing the physical environment	Involves structural changes to the surrounding environment. Also refers to resetting environmental defaults so that a new behavior is easier to sustain due to sympathetic cues and triggers.	Construct a smoke hood, chimneys, and flues
Social support	Involves providing resources and facilitating influence. “Seeding” a new behavior with a trusted person or group helps ensure the new behavior appears desirable and starts to become the norm, leading people to want to emulate and model it.	Have community health workers advise on fuel choice
Goals, planning, and monitoring	Working with an audience’s goals involves unearthing their aspirations, ambitions, and intentions; reframing the new behavior as a way of achieving their goals; and helping the audience realize its goals through the new behavior.	Help families to create purchasing plans for new stoves and link those plans to their aspirations
Comparisons	Provides a choice of options and the opportunity for people to compare what is available with the options chosen by their peers, neighbors, friends, and family members.	Make a variety of stove models available
Identity and self-belief	Targets audiences according to their actual or aspirational roles. Gender and other roles determine how we perceive ourselves, how we are perceived, and how we are expected to think and act. Linked to this is the process of increasing people’s sense of self-efficacy and building momentum behind a desire to change their behavior.	Empower women to decide on stove choice
Regulation	Imposes regulatory mechanisms, including bans and restrictions, or industry standards. These are a measure of enforcement as opposed to persuasion and can amplify “softer” behavior change techniques.	Restrict the use of certain fuel types

Source: Goodwin et al., 2015

The behavior change objective and selected techniques are further matched with appropriate communication channels. Four main communication channels are:

- *Interpersonal communication*: person-to-person or small-group interaction and exchange (e.g., counseling, peer education, hotlines, parent–child, teacher–student or spousal communication, and support groups);
- *Community-based interventions*: designed *with, for,* and carried out *in* communities (e.g., community-based social marketing, local theater, songs, community radio or television, community events, community dialogue, outreach, and sports);
- *Mass media*: designed to reach a large number of people (e.g., educational entertainment, TV, radio, newspapers, movies, magazines, and the Internet); and
- *Information and communications technology (ICT), and digital or social media*: digitized content, such as video, text, images, and audio, that can be transmitted over the Internet, computers, or mobile networks (e.g., websites, vlogs, blogs, social networking sites, online games, eLearning/distance learning, software, and apps) (HC3, 2017a).

The most appropriate techniques and communication channels may depend on 1) the complexity and sensitivity of the challenge, 2) the characteristics of the audience, including literacy, and 3) the desired reach (HC3, 2017b).

Several SBC techniques have been identified based on scientific studies regarding persuasion. Six basic persuasion principles that describe how one person might influence another were identified by Cialdini, Goldstein, and others: consistency/commitment, social proof, reciprocity, authority, liking, and scarcity (Cialdini, 2008). Several training modules on these persuasion principles tailored for development practitioners are available online and cover [consistency and commitment](#),⁶ and [social proof and reciprocation](#).⁷

⁶ For the consistency and commitment persuasion online teaching module, see:

http://caregroupinfo.org/vids/Persuasion_Pt_1/Persuasion_Part_1.html

⁷ See http://caregroupinfo.org/vids/Persuasion_Pt_2/Persuasion_Part_2.html for the social proof and reciprocation online teaching module.

5. CATALYZING CHANGE: EXAMPLES OF SBC PROGRAMS, APPROACHES, AND COST EFFECTIVENESS

No matter how appropriate a chosen SBC model is, how appropriate the promoted behaviors are, and how much work is invested in identifying the determinants of the promoted behaviors, a project will fail if it fails to *reach* the people who are intended to adopt the behaviors. A project needs to reach the right people, often *frequently* and in situations when they are ready to listen to new information or to participate in activities that may lead to their adopting adaptation behaviors. Cost-effectiveness is also a factor when planning SBC. Some outreach methods (e.g., mass media) may be inexpensive per person, but ineffective in bringing about a change in any one person when used without other methods. Other outreach methods (e.g., interpersonal communication, such as between an extension agent and farmer) may be more effective than mass media in bringing about a change but may be more expensive. Some outreach methods also leverage volunteers (e.g., Care Groups, Farmer Field Schools, Youth Environmental Clubs) to help bring down the cost of reaching beneficiaries.

This section discusses examples of programs that relied on different methods for achieving reach — mass media; interpersonal communication; ICT, digital and social media; or a combination of methods — and presents costs when that information is available.

5.1 FOOD FOR THE HUNGRY/MOZAMBIQUE CARE GROUP PROJECT

Primary SBC strategy: Interpersonal communication using community-based peer learning

Key takeaway: Investment in formative research can lead to significant impact. The project used an iterative approach to formative research, first identifying important determinants of key target behaviors through Barrier Analysis and Positive Deviance Inquiry (PDI) methods before they were promoted. Selected behaviors were measured multiple times per year with feedback to each district so that additional attention could be given to behaviors that were lagging in adoption after several months of promotion.

Project objective: From 2005 to 2010, Food for the Hungry implemented a USAID-funded child survival program in seven districts of Sofala Province of Central Mozambique (Davis et al., 2013). The project reached a population of 1.2 million with interventions in nutrition, WASH, and

integrated management of childhood illness targeting pregnant women and mothers with children 0–23 months old.

Intervention: At the start of the program, Mozambique had one of the highest under-five mortality rates in the world (153 deaths per 1,000 live births). With the Care Group approach, mothers are organized into Neighbor Women’s Groups (NWGs) of about 12 women, and each group elects a Care Group Volunteer. Volunteers are brought together in groups of 12 (the Care Group) and trained by a paid promoter every two weeks using a flip chart with lessons on nutrition, WASH, and childhood illness prevention, management, and referral. Each volunteer is then responsible for meeting and sharing information with her cohort of 12 beneficiary mothers through a combination of NWG meetings and home visits. Group meetings are useful for building social norms while home visits allow the volunteer to tailor messaging to the individual mother and the situation in her household. Husbands and grandmothers are often invited to participate in home visits and to attend some of the NWG meetings.

SBC methods used: The project relied on the HBM and the TRA. Formative research⁸ (Barrier Analysis and PDI) identified important determinants of key behaviors (e.g., exclusive breastfeeding, handwashing with soap, use of oral rehydration salts-zinc [ORS-Zinc], water purification) before they were promoted. Selected behaviors were measured multiple times per year with feedback to each district. Approximately 40 behaviors were promoted over the life of the project through mostly interpersonal communication from volunteers to mothers and influencers, volunteers to community leaders and clinic staff, and promoters to community leaders, clinic staff, and district and regional ministry of health staff.

Impact: Rapid and dramatic behavior change was seen in almost all project indicators. Exclusive breastfeeding to six months more than doubled; handwashing increased 50 percentage points; ORS preparation for diarrhea treatment increased by 41 percentage points; and the number of mothers who could recognize three or more signs of childhood illness tripled. Over a five-year period, this US\$3 million Care Group project reduced estimated under-five mortality by 30 percent and reduced child malnutrition by 31 percent in the primary project area and 42 percent in the secondary project area.⁹ It is estimated that the project saved 6,848 lives of children under five at a cost of US\$2.78 per beneficiary, US\$441 per life saved, and US\$14.72 per disability-adjusted life year averted. The final evaluator noted that the project may be among the most cost-effective child survival projects implemented at scale.

Care Group Volunteer mothers are also empowered. Surveyed volunteers reported significant respect from others in their social networks as a result of participation in the project. All of the mothers noted that they were more respected by other women in their community because of their participation as a Care Group Volunteer. Of the volunteers, 64 percent reported being

⁸ For an example of this formative research, see http://bit.ly/EBF_Formative_Research.

⁹ Figures were generated using the Lives Saved Tool (LiST), a widely recognized evidence-based modeling program to estimate intervention impact. More information about this tool can be found on the Johns Hopkins website: <http://www.jhsph.edu/departments/international-health/centers-and-institutes/institute-for-international-programs/list/>.

more respected by community leaders, and 61 percent reported being more respected by their husbands (Davis et al., 2013).

Evidence from several studies shows that results of Care Group projects are sustained after projects end. According to surveys conducted by World Relief at 30 and 45 months after the end of their Care Group project in Mozambique, final program goals for eight key indicators continued to be exceeded. Many communities had continued selecting and training new volunteers on their own. A total of 93 percent of volunteers were still active 20 months after the project ended.¹⁰ In a survey of food security practitioners by Technical and Operational Performance Support (TOPS), of the 65 percent of respondents who knew of the Care Group model, 91 percent said that the approach was very or somewhat effective.¹¹ Food for the Hungry has applied a similar, cascade behavior change model (Agricultural Cascade Education) to agriculture and natural resource management, as well.

5.2 RARE PRIDE CAMPAIGNS: ESTABLISHING RECIPROCAL AGREEMENTS FOR WATER AND BIODIVERSITY CONSERVATION IN PERU

Primary SBC strategy: Social marketing through “Pride campaigns” and interpersonal communication strategies

Key takeaway: Understanding the situation by analyzing knowledge, attitudes, and practices related to land use and water and forest conservation helped Rare pinpoint the target and influencing audiences. The social marketing campaign and interventions sought not only to change but also to coordinate the behaviors of multiple actors interacting at different levels (e.g., individual, community).

Project objective: In the high Andes of northern Peru, Rare worked with Cáritas-Peru from 2010 to 2012 on a social marketing Pride campaign to create locally governed water institutions (reciprocal water agreements). These agreements helped downstream water users compensate upstream farmers for setting aside riparian forests for conservation or restoration. The agreements offer incentives for upstream farmers to act through compensation of in-kind payments for their improved land use practices. Downstream water users ultimately benefit from a regular supply of clean water. The Pride campaign was launched to generate local buy-in and accelerate the signing of reciprocal water agreements.

Intervention: A trained local leader acting as campaign manager led the social marketing program, negotiated with community stakeholders, supported the organizational structure of the agreements, and inspired local government actors to provide political and financial support. To identify the key players, audience segments, and barriers to change, campaign design began

¹⁰ World Relief unpublished survey data presented at Care Group Innovations session of CORE Group Conference held September 25–29, 2017 in Baltimore, Maryland.

¹¹ Presentation at September 25–29, 2017 CORE Group Conference, <https://www.slideshare.net/COREGroup1/care-group-innovations>.

with a situation analysis that evaluated the socioeconomic conditions of farmers and water users, as well as the drivers of deforestation and land use change. The campaign team also established a baseline by measuring knowledge, attitudes, and practices.

Campaign implementation began with awareness raising using materials from billboards to songs to radio drama with slogans such as “*Arriba Conservamos – Abajo Aportamos*” (Upstream we conserve — Downstream we pay) and “*Si luz para siempre quiero tener, el bosque y sus aguas debo proteger*” (If I want to always have electricity, I must protect the forest and its waters). Next, the campaign established partnerships between upstream farmers, downstream water users, municipal authorities, and the hydropower companies, Electro SAC and Electro Norte. The campaign prompted two mayors to create a municipal ordinance whereby water and electricity users pay an additional tariff for “environmental services” in their electricity bill. These funds go directly to the Watershed Management Committee created to manage the agreements.

SBC methods used: While each Pride campaign develops a tailored theory of change, the organization’s social marketing strategy is based on the Stages of Change model (Butler et al. 2013). The campaign aims to increase awareness and knowledge of the issues, improve environmental attitudes, promote interpersonal communication with peers and trusted opinion leaders, identify barriers to behavior change, and remove barriers through partnerships that bring relevant expertise (Figure 8). To reduce threats to the conservation target, Pride uses these approaches to promote alternative behaviors among target audiences (DeWan et al., 2013).

Figure 8. The Rare Principles of Pride campaign theory of change



Source: Butler et al., 2013.

Impact: Research and monitoring during and after the campaign showed that in addition to supporting 25 reciprocal water agreements and the protection of more than 360 hectares of forest, the project led to increased knowledge, as well as greater interpersonal communication about forest conservation, targeted agricultural practices, and the benefits of the reciprocal water agreements. Knowledge and understanding of the reciprocal water agreement mechanism as a strategy for conserving forests increased significantly. Attitude shifts were modest and mixed (some did not improve) and no statistically significant changes were seen (Martinez et al., 2013).

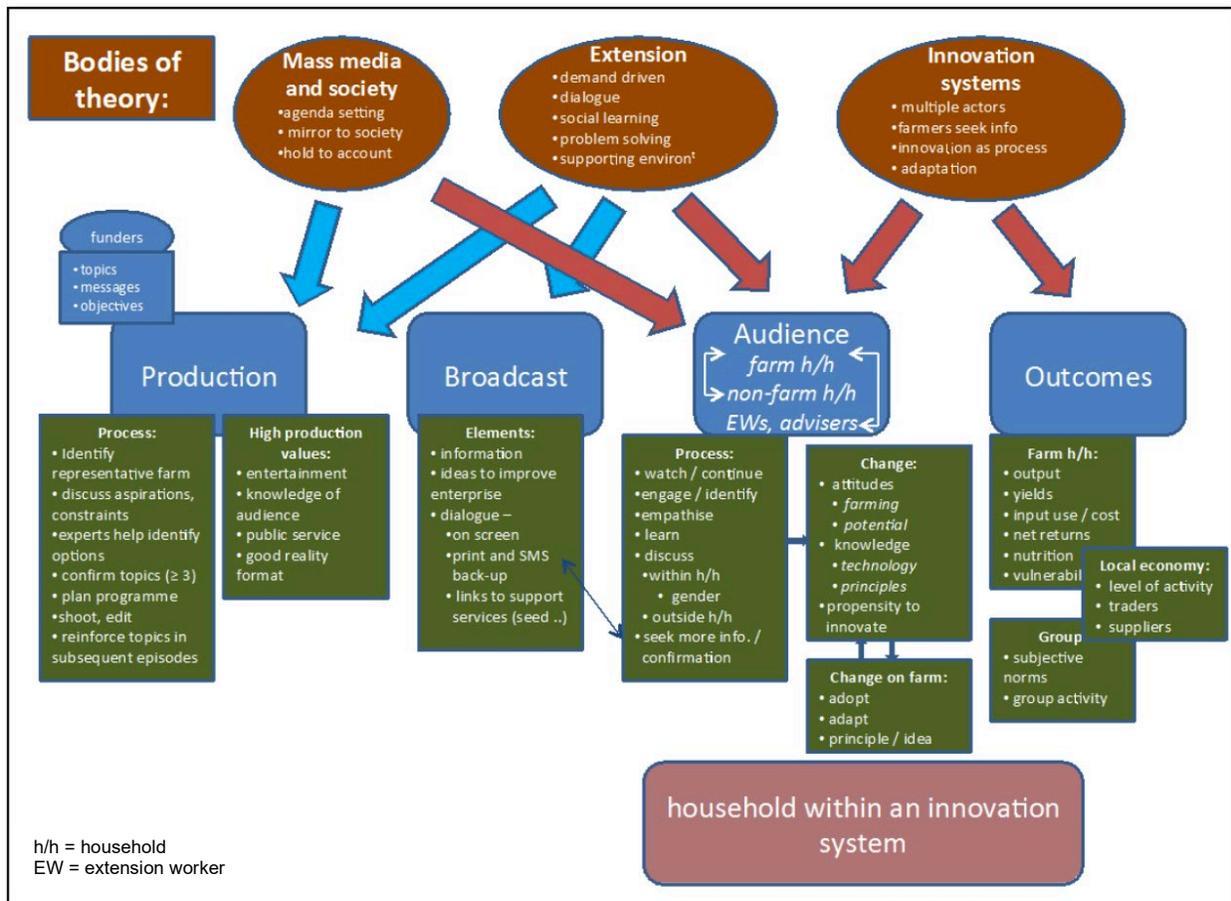
5.3 SHAMBA SHAPE UP: PIONEERING TELEVISION USE FOR AGRICULTURE IN EAST AFRICA

Primary SBC strategy: Mass media campaigns for social learning

Key takeaway: By tapping into the aspirations of the contestants on the Shamba Shape Up TV show and pairing that with expert knowledge from trusted sources (e.g., agricultural experts) delivered in an entertaining way, the Shamba Shape Up model addresses key determinants of the show’s audience, inspiring them to take up similar changes on their own.

Project objective: Shamba Shape Up is a knowledge-based, agricultural entertainment television show in Kenya, Tanzania, and Uganda that provides practical advice on farming. Its aim is to increase agricultural productivity, enrich the lives of farmers, and cultivate best practices. The program, which has been running since 2012, draws on theory and research to incorporate key ideas from mass media theory, good practice in extension and advisory services, and innovation systems (Figure 9).

Figure 9. The Shamba Shape Up theory of change



Source: Dorward et al., 2014

Intervention: An entertaining reality TV show, Shamba Shape Up features a dynamic presenter duo and agricultural experts who, together with families, conduct farm "make-overs" (Figure 10). In each episode, experts in various farming techniques visit a selected farm or *shamba* and discuss current issues and problems facing the host farmer. The experts help identify solutions and opportunities and explain and demonstrate potential changes. Viewers are able to "vicariously share in the process by which the farm household comes to a decision on the changes to try out on their farm" (Dorward et al., 2014:23). Each episode is broadcast twice per week during the main cropping season, once in English and once in Swahili. In 2017, the program was in its seventh season, with each season containing 26 episodes.

Figure 10. The Shamba Shape Up approach



Source: www.shambashapeup.com

SBC methods used: The show uses a social learning strategy that engages viewers on both educational and emotional levels. Accompanying the TV show are: descriptive "what, how to, and why" leaflets for each episode; a call center and mobile information service with crop and livestock experts; and an online farm budgeting tool to help farmers build personalized budgets with information on a range of farm products.

Impact: The program has reached 5 million people in the three countries with practical demonstrations on improved farming practices and approaches covering topics from livestock health and agronomy to climate change adaptation. Research on the program's impacts in Kenya estimates that more than 428,000 households benefited from adopting a practice they learned from the program, generating farm income benefits totaling US\$24 million (Dorward et al., 2014). Findings from the program's 2015 knowledge, attitudes, and practices survey showed that:

- 80 percent of viewers learned something new
- 43 percent made changes as a result of the program
- 77 percent of those who made changes increased their farm income (Mediae Company, 2016)

Other findings included increased margins for maize and dairy farmers through increased maize productivity and increased milk yields and length of lactation period in dairy cows (Dorward et al., 2014).

5.4 EDUCATIONAL ENTERTAINMENT FOR ENVIRONMENTAL HEALTH AND CONSERVATION IN GHANA

Primary SBC strategy: Mass media campaigns to build social capital

Key takeaway: Learning from members of the intended audience reveals key insights about designing, rolling out, and sustaining an SBC intervention.

Project objective: To improve coastal governance in Ghana through an ecosystem-based approach, the USAID Integrated Coastal and Fisheries Governance Program (known by its local name, Hen Mpoano) developed and aired a radio drama series in the Western Region of Ghana as part of its comprehensive community awareness and engagement strategy. The program ran from 2009 to 2013.

Intervention: The radio series featured doomed lovers, Gifty and Kweku, living in a fictional coastal fishing village in Ghana's Western Region. The 52-episode series, launched in 2011 as part of the program's multimedia behavior change campaign, aimed to entertain as well as educate fishing communities across six coastal districts about sustainable coastal resource management. The program raised awareness about environmental health and conservation in Ghana in innovative, engaging ways, including a call-in talk radio show where listeners could discuss the plotlines and messages.

SBC methods used: During its first year, Hen Mpoano conducted an approach to formative research that engaged partners and community members, including chief fishermen and fishmongers, incorporated local stories and knowledge, and envisioned mechanisms to maintain and enhance coastal regions. The findings revealed that radio is the most widely accessible and used source of news for Ghanaians and ultimately informed the development of the radio drama and associated radio call-in shows on Goodnews FM and Ankobra FM. The program opened with a catchy theme song that drew in Ghanaians of all ages and built on community traditions of storytelling. Some characters were played by people from the local communities, helping create community buy-in. The program was broadcast in Fante and English and aired on Tuesdays, when fishermen typically do not go to sea.

After the 15-minute episodes a magazine show featured community leaders and fisheries and other natural resource experts in panel discussions about the issues raised in that episode. Phone-in sessions gave the listening audience the opportunity to discuss characters and plot and for education and communication to continue. Hen Mpoano gathered evidence of changes in behavior through the phone-in sessions, as well as pre- and post-drama surveys (University of Rhode Island Coastal Resources Center, 2018).

Impact: This US\$12.5 million project served 1,318 rural households that benefited directly from U.S. government interventions between FY2010 and FY2013 (USAID, 2013). Assuming a rural

household size of 4.4,¹² and counting beneficiaries as all household members, there would be 5,799 beneficiaries in this four-year program, and the cost would be US\$539 per beneficiary per year. The radio program, however, had a much broader reach, with an estimated 2.5 million listeners in the first year, and continued to disseminate episodes after the project ended (University of Rhode Island Coastal Resources Center, 2018).

5.5 PARTICIPATORY COMMUNITY VIDEO FOR IMPROVED NUTRITION AND HYGIENE IN THE SAHEL

Primary SBC strategy: Interpersonal communication using community-based peer learning

Key takeaway: A modification to a behavior may require changes to an accompanying or related behavior as well as coordination of multiple actors' behaviors to achieve high impact. The USAID project, Strengthening Partnerships, Results and Innovations in Nutrition Globally (SPRING), conducted formative research to select 10 behaviors to target, within a specific subset of actors, which are often referred to as audience segments.

Project objective: In the Sahel, SPRING aims to improve the nutritional status of vulnerable households and communities, with a particular focus on pregnant and lactating mothers and children under two years of age.

Intervention: Community video is one SBC activity that SPRING has used to promote best practices in nutrition and hygiene in Senegal and Niger. Community video employs the SBC techniques of modeling desired behaviors and promoting social norms matched with the communication channel of community-based peer learning. SPRING facilitates community-based video production teams made up of members that show an interest in developing video production skills. The actors in these community videos are local “stars” who are respected members of the community known to demonstrate the nutrition-related behaviors being promoted. SPRING, in conjunction with international partner Digital Green, trains local video production teams to shoot and edit videos, with sessions on preproduction (creating storyboards and scripts), production (filming and working with actors), and postproduction (editing and subtitling).

Trained mediators use the community videos as teaching tools during community gatherings and women's group meetings. After each viewing, facilitators lead group discussions on the video topics to allow viewers to share concerns, ask questions, and discuss adapting the suggested practices for their households. Home visits are also conducted by the volunteers after the video is screened. SPRING promotes the sustainability of the community video approach by ensuring that production teams will be able to independently produce films by the end of the project.¹³

¹² Household size is noted in the fifth round of Ghana Statistical Service's 2008 Living Standards Survey. http://www.statsghana.gov.gh/docfiles/glss5_report.pdf

¹³ See <https://www.spring-nutrition.org/>

The SPRING community video pilot intervention in Niger produced 10 videos, each promoting a different behavior to help decrease childhood illnesses caused by poor handwashing, and to improve diets through an increase in responsive feeding practices. Moderate to large changes were seen in the behaviors promoted and assessed in the program. For example:

- Households with at least one place designated to wash hands increased from 14 percent at baseline (2015) to 59 percent 3–4 months after video exposure.
- Households with a handwashing station with soap and water increased from 74 percent to 96 percent.
- Women who have a separate plate for their children at mealtime increased from 70 percent to 97 percent.
- Women who actively encourage their child to eat increased from 31 percent to 85 percent.

SBC methods used: Before developing the formative research protocol for its SBC pilot in Niger, SPRING conducted a situational analysis in September 2014, using available published and unpublished reports and other program documents related to nutrition, WASH, livelihoods, family planning, and gender practices, focusing on the Maradi region. To build evidence for using community video in the Sahel, SPRING conducted formative research and introduced community video in 20 villages in Niger, relying on data and a flexible methodology to rapidly adjust the approach.

Impact: SPRING's analysis determined the cost per beneficiary reached to be approximately US\$16.19 *per behavior*. For all 10 behaviors promoted during the pilot, the cost per beneficiary was US\$161.87. Based on the numbers of beneficiaries whose behaviors changed, SPRING determined that the cost per handwashing behavior changed alone was US\$28.91 per beneficiary, and for maintaining a separate plate for the child, US\$36.24 per beneficiary who “adopted” the behavior.

Cost estimates for scale-up included a small stipend increase for the project mediators and were extrapolated for two scenarios to determine the added costs associated with expanding the intervention from 1,500 to 7,500 beneficiaries. Using the 10 pilot videos, SPRING estimated the cost to scale up the program to 7,500 at US\$277,169 (without new video production). As a result, the cost per beneficiary per year falls to US\$36.96 (with all 10 videos). A second scenario estimated the costs of expanding the intervention to 7,500 beneficiaries and producing new video content. The costs associated with the second scenario were US\$304,887. As a result, the cost per beneficiary per year would be US\$40.65 (for all 10 videos), US\$7.26 for the handwashing station behavior changed, and US\$9.10 for the separate plate behavior changed.¹⁴

¹⁴ A full write-up on the approach and research findings is available online: <https://www.spring-nutrition.org/publications/reports/seeing-believing>. Note that SPRING's calculations are for cost per beneficiary per behavior promoted. This is an unusual practice. For comparability with other projects, we have calculated them, using SPRING's data, as cost per beneficiary per year.

5.6 COMMUNITY-BASED SOCIAL MARKETING APPROACH (MIXED METHODS)

Community-based social marketing (CBSM), based on social psychology and an evolution of the social marketing approach, promotes sustainable behavior at the community level. The approach recognizes that information-intensive behavior change efforts, while easy to carry out, are often unsuccessful, and interventions at the community level are often most effective when they involve direct contact with people. CBSM relies on community-focused research to examine existing and perceived benefits and barriers to a product or practice (Mckenzie-Mohr, 2000). Like social marketing, CBSM involves the four “P’s”: product (or practice/action), price, place, and promotion. It has proven effective across a range of health behavior change interventions (Stead et al., 2007). CBSM focuses on a combination of seven behavioral determinants and SBC strategies:

- Commitment (e.g., verbal or public pledges)
- Social norms (e.g., advertise that others are engaging in the desired behavior)
- Social diffusion (e.g., make the behavior change visible to others)
- Prompts (e.g., cues or reminders to engage in a behavior)
- Communication (e.g., vivid, personal, concrete messages)
- Incentives (e.g., tax breaks or rebates)
- Convenience (e.g., ease of doing one behavior over another)

CBSM has been used in California to promote water conservation strategies during drought (USDN, 2016). Maibach et al. (2008) argued that social marketing has considerable potential to influence population behavior change toward climate change mitigation and adaptation strategies.

Annex D provides additional information on selected SBC projects in international development.

6. IMPLEMENTING SBC PROGRAMMING FOR ADAPTATION

To plan SBC processes for adaptation, development practitioners can use SBC planning tools and methods while taking into consideration the unique attributes of climate change adaptation. In the design of an SBC adaptation program, planners will need to choose how to frame the initiative: in the context of global or local climate change, or only in the context of the immediate risk (e.g., malaria, flooding, water quality). Recent local experience with climate change impacts or broader climate trends and variability will influence risk perceptions and likely the adoption of adaptation behaviors.

There are several approaches to developing a theory of change and SBC strategy, including the DBC, Communication for Change (C-Change; see C-Change, 2012), P Process (HC3, 2013), and RANAS (Mosler, 2012) approaches (highlighted in Section II, Annex D, Annex E, and Section III, respectively). Various sources propose a series of steps and guiding questions for program development and development of an SBC strategy. SBC tools and guidance are available on the [SBC Task Force page of the FSN Network website](#).¹⁵ The Health Communication Capacity Collaborative (HC3) produced [guidance](#) for SBC specific to a range of topics, including: emergency preparedness; malaria; gender; reproductive health; maternal, newborn, and child health; and more. This section describes the components of a common sequence of activities for implementing SBC programming for adaptation.

6.1 UNDERSTANDING THE SITUATION AND CONDUCTING FORMATIVE RESEARCH

The goal of these activities is to gain insights from many perspectives into the issue a program seeks to address and to develop a theory of change based on these insights. As described in Section III, the analytical approach may take various forms, ranging from key informant interviews to gather information on observed behaviors, to conducting cross-sectional formative research on a broad set of possible behavioral determinants to identify those that are common among the population, to a more focused inquiry on the behavioral determinants that appear to influence people who have adopted the target set of behaviors. The step-by-step process, starting with a situation analysis and followed by SBC design, is outlined in more detail below.

¹⁵ See <http://www.fsnnetwork.org/social-and-behavioral-change>

Situation, context, or environmental analysis is the fundamental first step in the SBC process. It establishes the baseline conditions by providing a clear, detailed, and realistic picture of the opportunities, resources, challenges, and barriers regarding an issue or behavior.

A complete situation/context analysis gathers information on the following:

- The **problem**, its severity, its causes, and the broad context;
- The **people** affected by the problem (potential audiences); and
- Factors inhibiting or facilitating behavior change (HC3, 2013).

Problem analysis and people analysis provide the information needed for a complete situation analysis:

- **Problem analysis** clarifies the root causes of a problem and a vision for change. It involves systematic collection and study of issue-specific data, demographic data, and other information describing the social, economic, political, and sectoral (e.g., climate or health) context of the issue. Complex behaviors may be best understood through a systems thinking approach that maps out all the influencing factors and the relationships among them (UK GCN, 2009).
- **People analysis** establishes a clear, detailed, and realistic picture of those directly affected by the problem and those involved with and influencing those directly affected. (This is researched along with the behavioral determinants with some approaches, such as DBC.) People analysis informs the coverage strategy and the selection and design of promoted behaviors, messages, materials, media, and activities. This analysis is used to understand beliefs, preferences, constraints, motivations, and behaviors of the target audience(s). People analysis can also be used later in a program to pretest concepts and materials, as well as for monitoring and evaluation. Secondary data and qualitative methods (e.g., focus groups) are often useful for this phase, but more intensive formative research (e.g., Barrier Analysis, RANAS, Trials of Improved Practices [TIPs], Positive Deviance Inquiries [PDIs]) will probably be needed to fill information gaps (TIPs and PDI are explained below). People analysis includes factors that may inhibit or facilitate behavior change, such as:
 - Sociodemographic characteristics (e.g., sex, age, language, and religion)
 - Gender and its impact on audience members' behavior and ability to change
 - Geographic characteristics (e.g., where the audience lives and how that might impact behavior)
 - Psychographic characteristics (e.g., individual needs, hopes, concerns, and aspirations)
 - Thoughts, beliefs, knowledge, and current actions related to the health or social issue

SBC design follows the situation analysis and includes the steps listed below:

1. **Choose and modify (if necessary) appropriate behaviors to promote.** The choice of the best behaviors to promote can have a significant impact on a project's results. Some of the main formative research tools that have been used for this are TIPs and PDIs.

- **Trials of Improved Practices (TIPs)** is a formative research technique developed by the Manoff Group.¹⁶ Using TIPs, program planners pretest the actual practices that a program will promote. The procedure consists of a series of visits in which the interviewer and the participant analyze current practices, discuss what could be improved, together reach an agreement on one or a few solutions to try over a trial period, and then assess the trial experience together at the end of the trial period. The results are moved directly into program design. TIPs has been applied to nutrition as well as other public health issues, including HIV/AIDS, malaria,¹⁷ school health, infectious disease control, maternal health, and family planning. There has been discussion of TIPs for agriculture in the FSN Network as well.¹⁸
 - **Positive Deviance Inquiries (PDI):** Positive deviance is an approach to behavioral and social change based on the observation that in any community there are people whose uncommon but successful behaviors or strategies enable them to find better solutions to a problem than their peers, despite facing similar challenges and having no extra resources or knowledge than their peers. These individuals are referred to as positive deviants (Tuhus-Dubrow, 2009). In PDI, an outcome of interest is chosen (e.g., good nutritional status in children, higher yields by farmers) and then a questionnaire is applied to those who have achieved the outcome (e.g., mothers of well-nourished children, farmers with higher yields). Questions seek out possible behaviors and other factors that may have led to their success. Analysis is done to find those behaviors or factors that have the highest association with the intended project outcome, and then plans are developed to promote those behaviors or to give them more emphasis. A particular form of PDI is the **Local Determinants of Malnutrition (LDM) Study** methodology developed by Food for the Hungry and applied in the project in Mozambique described in Section V.
 - **Human-centered Design (HCD)** can be helpful in tailoring products and behaviors to the needs of the beneficiary. HCD is a design and management framework that develops solutions to problems by involving the human perspective in all stages of the problem-solving process. Human involvement typically takes place in observing the problem within its context and brainstorming, conceptualizing, developing, and implementing the solution. HCD builds upon participatory action research.
2. **Conduct program analysis**, a tool for program development, to help the planning team identify key constraints to SBC programming. Findings from the analysis inform the program design, identifying clear actions to enhance the potential for success. The analysis explores factors that may enhance or constrain the planned SBC program and then utilizes the findings for program design. Those factors may include: community assets, the enabling environment (relevant policies, conventions, norms, social movements), and allies, partners, and gatekeepers.

¹⁶ See <https://www.k4health.org/toolkits/miyca-fp/trials-improved-practices-guide>

¹⁷ For an application of TIPs to use of insecticide-treated nets, see: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3752810/>

¹⁸ See http://www.fsnnetwork.org/sites/default/files/registration_-_fsn_network_knowledge_sharing_meeting_in_addis_june_11-13.pdf

3. **Summarize the analysis and theory of change.** This step involves writing a concise problem statement and developing a theory of change that posits how the desired change is expected to occur. The process centers on selecting or modifying an SBC model or theory that will provide a map for examining the problem, researching determinants, designing interventions, and evaluating impact. Planners also explore established theories with consideration of the type of change the program is promoting (e.g., whether it is more individual or more social and structural), how the primary and influencing audiences view the change, and how easy it will be to bring about change. Theories can be adapted, modified, or combined to create a theory that fits with the program analyses.

In addition to the theories discussed in this literature review, the [Centers for Disease Control and Prevention TheoryPicker](#)¹⁹ may serve as a guide for selecting a theory for SBC. The overview of communication theories from the University of Twente (2017) describes 48 communication theories. The theory of change includes explicit consideration of any assumptions made and strategies that will work in the short, medium, and long term.

4. **Conduct formative research** on the behavioral determinants of the promoted behaviors and delineate key SBC messages and activities (see Section III). Development practitioners should consider resources and personnel for formative research according to the geographic scope or parameters of the project (e.g., number or percentage of beneficiaries the project is expected to reach), as well as the breadth and depth of the anticipated research. Based on a review of sample terms of reference and SBC guidance,²⁰ the level of effort allocated for formative research can range from about 30 days to six months.

6.2 DEVELOPING A SBC STRATEGY

The goal of these activities is to develop an SBC strategy that bridges understanding of the situation and program implementation. The strategy provides direction and guidance on the promotion and integration of products, materials, and activities needed for behavior change. An SBC strategy often includes the elements described in Table 5.²¹

Table 5. Common elements of an SBC strategy

¹⁹ See <https://www.orau.gov/hsc/theorypicker/index.html>

²⁰ For examples of terms of reference for formative research studies, see https://www.actionagainsthunger.org/sites/default/files/publications/FormativeResearchGuidance_ABC.pdf, <https://www.ungm.org/UNUser/Documents/DownloadPublicDocument?docId=480428>, https://globalhandwashing.org/wp-content/uploads/2015/03/Handwashing_Handbook_web-1.pdf and https://www.fsnnetwork.org/sites/default/files/final_second_edition_practical_guide_to_conducting_barrier_analysis.pdf

²¹ This table is taken from the USAID-funded SPRING course, Accelerating Behavior Change for Nutrition-sensitive Agriculture, available online: <https://www.spring-nutrition.org/publications/training-materials/accelerating-behavior-change-nutrition-sensitive-agriculture>

SBC STRATEGY ELEMENT	DESCRIPTION
Initial formative research conducted	Describes the types of formative research that were conducted initially to develop a draft SBC strategy, including choosing the behaviors to promote and hypotheses about the most important behavioral determinants of those behaviors.
Select key practices promoted	Lists the key practices (“priority behaviors”) to be promoted.
Priority groups for the behavior	Describes the priority groups (“target groups”) for the project and often includes information about their demographic features, their daily routines, and things that most group members want. Drawing from the situation analysis, identifies, segments, and prioritizes audiences with similar communication needs, preferences, and characteristics.
Estimated baseline adoption	Describes the estimated proportion of people in the priority group who have currently adopted the practice.
Presumed influencers (also referred to as influencing audience)	Describes the presumed influencers or influencing audience of the priority groups (including institutions) based on who the people in the priority groups talk to and respect the most.
Presumed constraints (barriers) of key practices	Describes the presumed constraints (barriers) that may prevent adoption of the key practices promoted in the project. (These hypotheses should be confirmed later through focused formative research.)
Presumed facilitators (enablers) of key practices	Describes the presumed facilitators (enablers) that may encourage adoption of the key practices promoted in the project. (These hypotheses should be confirmed later through focused formative research.)
Noncommunication activities and services to reach priority groups and influencers (including nudges, incentives, and subsidies)	Describes the noncommunication activities to be used to confront each constraint and uses each facilitator for the priority groups and influencer groups. Considerations in selecting strategic approaches are outlined in this HC3 guide . (Michie et al. [2011] further describe a method for characterizing and designing behavior change interventions that matches behaviors with techniques.) The wide range of SBC noncommunication activities includes group formation, increasing equitable access to products/services, policy and law changes and enforcement, exchange visits, making insurance available, and providing subsidies and financial or other incentives (e.g., conditional transfers). (These initial plans should be modified after focused formative research is conducted.)
Communication activities and messages to reach priority groups and influencers, communication channels (including messengers), and coverage plan	Describes the communication channels, coverage plan, messages, and the intense, equitable, and interactive activities to be used to increase the priority groups’ motivation, capability, and opportunity to adopt and maintain the priority practices. Mentions where, when, and how often communications will be distributed, broadcast, or used. Describes how project staff plan to reach the influencer groups and institutions and how often they will be reached (the coverage plan). The wide range of SBC communication activities includes interpersonal and peer communication, testimonials and demonstrations, community-based media, counseling, distance learning, ICT, mass media, and support media/mid-media. (These initial plans should be modified after focused formative research is conducted.)
Media and materials used	Describes the media and materials project staff will use for communications and other SBC activities.
SBC objectives	Provides clear, concise statements of the intended effect of SBC programming, such as the desired change in behaviors and the behavioral determinants that influence those behaviors in a given timeframe. Like a program indicator, SBC objectives should be specific, measurable, and time-bound.
SBC monitoring and evaluation plan	Provides concise information on how the project will track indicators related to implementation of communication and noncommunication SBC activities, including changes in reach, recall, acceptability, behavioral determinants, behaviors, and outcomes.

CREATING COMMUNICATION MATERIALS

The goal of these activities is to put this part of the SBC strategy into action by creating compelling, audience-targeted materials. This involves creating, testing, and revising

communication products and materials such as facilitation manuals for group interactions, flip charts, toolkits, TV or radio scripts, social media processes, and more.

1. **Consider development of a “creative brief”** for each program activity. The brief acts as a guide for practitioners, creative agencies, and stakeholders to develop ideas for materials. The brief should include the goal, audience, and communication objectives that address desired changes in the behavioral determinants, the message brief, key content and tone, and other creative considerations.
2. **Select a creative team** that fits the project’s needs and create draft communication concepts and materials. Larger mass media projects may need designers, artists, writers, producers, broadcasters, or others. When using mainly interpersonal communication, only a good curricula designer and photographer or artist may be needed to work with staff to create materials.
3. **Test and revise materials** with intended audiences, for example to ensure that they can understand the messages and images, and that they are culturally acceptable. Adjust, eliminate, or add materials based on audience response.

IMPLEMENTING, MONITORING, AND EVALUATING SBC WORK

Implement and monitor the program with detailed objectives, indicators, and work plans based on the SBC strategy.

1. **An implementation plan** is a stand-alone document drawn from the SBC strategy and including details on the “who, what, when, and how much” of programming activities to achieve the strategy objectives. The plan covers partner roles and responsibilities, activities, timeline, budget, and management considerations. It identifies partners and competencies needed for implementation, such as design, training of staff and volunteers, media placement, community mobilization, etc.
2. **The monitoring and evaluation** plan includes indicators for targeted behavior change and changes in behavioral determinants among program audiences, as described in the SBC strategy. The implementation plan can either be stand alone, or if practical in the context of the overall project management structure, it can be integrated into the project monitoring and evaluation plan.

A scenario that briefly illustrates this SBC planning and implementation process is provided in Annex C.

7. CONCLUSION

SBC and climate change adaptation are each rich, cross-sectoral and, at times, complex fields of practice. A key success factor of SBC for adaptation will be the integration of SBC expertise into thoughtfully designed and implemented interventions. Leveraging this expertise creates an opportunity to refine best practices bring about behavior change for adaptation.

By using tested SBC models, theories, and methods, the world has seen progress in health and nutrition behavior change. Despite population growth, and in just two to three decades, the number of child deaths in the world was cut in half, and the proportion of women who die during or around childbirth dropped by 45 percent. This is due in no small part to changes in behavior at the individual, organizational, community, and public policy levels, and the use of improved SBC methods by community development practitioners worldwide.

The field of SBC has much to offer climate adaptation. Practitioners and designers can draw SBC guidance and lessons from a range of SBC programs and research in health, nutrition, agriculture, natural resource conservation, and other sectors. By learning about the SBC models and theories that are most appropriate for adaptation, and developing skills in identification of important behavioral determinants, practitioners can select the best SBC models, methods, activities, and messages to use for a given adaptation challenge.

Given the challenges of communicating and understanding climate risk, SBC communication for adaptation should include a focus on trusted, legitimate, and credible communications. Careful analysis of both target groups and influencing audiences and tailoring of SBC communications and interventions to different audience segments are important parts of the process. Incorporating social learning into SBC approaches for adaptation has a strong potential to generate better community understanding of climate risks and adaptation action, and to empower communities to take action. More research on SBC for adaptation, specifically using the models and theories discussed in this document, will enhance the evidence base.

To advance SBC in adaptation and resilience programming, practitioners will need to develop skills to:

- Continue to build a robust evidence base for promotable adaptation behaviors (as has been done for other sectors, such as WASH and maternal and child health);
- Use the right behavioral models to target specific behaviors;
- Identify and address social and behavioral determinants that are suitable for adaptation;
- Use messages and activities specific to adaptation determinants;
- Use the right communication channels to reach the priority audience and an ideal blend of channels to maximize the reach and effectiveness of messages; and

- Aim efforts at targeted populations, reaching the priority and influential groups that most need to either understand and deliver messages to improve adaptation, or groups who directly participate in adaptation SBC activities.

Development practitioners need SBC skills to successfully confront the challenges of climate change adaptation. While it is impractical for climate adaptation specialists to become experts in SBC theory and practice, becoming knowledgeable about core SBC concepts and aware of the need to integrate them into program activities is important to improving the success of adaptation work.

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ANNEX A: COMMON SOCIAL AND BEHAVIORAL DETERMINANTS

The following determinants are drawn from a variety of behavioral models and are also used by the Food Security and Nutrition (FSN) Network Social and Behavioral Change Task Force (2013).

DETERMINANT / FACTOR	ALSO CALLED, OR SIMILAR	DESCRIPTION	HEALTH/NUTRITION EXAMPLES	ADAPTATION EXAMPLES
<i>Capability</i>				
Knowledge		Basic factual knowledge about the problem and the behaviors that will address the problem.	A mother's knowledge about making oral rehydration solution.	A farmer's knowledge of drip irrigation methods.
Skills	Often considered part of self-efficacy	The set of abilities necessary to perform a particular behavior.	A mother knows how to make oral rehydration solution.	A farmer knows how to create terraces in her land.
<i>Motivation</i>				
Perceived self-efficacy	Self-efficacy, perceived adaptive capacity, perceived behavioral control	An individual's belief that he or she can do a particular behavior. Behavioral control includes both perceived self-efficacy and "controllability," whether one believes that one personally has control of a behavior or if it is controlled by outside forces.	Whether or not a mother feels she has the skills to exclusively breastfeed (EBF) her child for the first six months of life. Whether or not a mother feels she can EBF when she works during the day.	Whether or not a farmer feels he can plant drought-resistant crops given his current knowledge and skills.
Attitudes		A wide-ranging category for what an individual thinks or feels about the behavior. An individual's evaluation or beliefs about a recommended response.	A pregnant woman's attitudes about exclusive breastfeeding.	A farmer's attitudes about planting early-maturing pearl millet.
Perceived social norms	Social norms, social identity, social networks, social appraisal	The perception that people important to an individual think that s/he should do the behavior.	Whether or not a mother believes that people important to her think that she should vaccinate her child.	Whether or not a farmer believes that people important to her think that she should chop down mangrove forests for wood.
Perceived consequences	Perceived positive and negative consequences	What a person thinks will happen, either positive or negative, as a result of performing a behavior. Exploring this determinant may reveal perceived advantages/disadvantages and benefits/drawbacks of a behavior,	Whether or not a man believes that building a tippy tap will help his family use less water.	Whether or not a farmer believes that helping her community build a water pan will decrease the amount of time she needs to fetch water.

DETERMINANT / FACTOR	ALSO CALLED, OR SIMILAR	DESCRIPTION	HEALTH/NUTRITION EXAMPLES	ADAPTATION EXAMPLES
		attitudes about a behavior, and perceived positive and negative attributes of a behavior.		
Perceived response efficacy	Response efficacy, perceived action efficacy	The belief that by adopting/practicing the behavior, one will avoid the problem (i.e., that the behavior is effective in avoiding the problem). Sometimes this is included in <i>perceived positive consequences</i> .	Whether or not a mother believes that purifying water using SODIS (solar disinfection; leaving in the sun) purifies the water.	Whether or not a farmer believes that a drought-resistant seed variety will truly grow when there is little rain.
Perceived risk	Risk, risk perception, perceived susceptibility, threat appraisal	A person's perception of how vulnerable s/he is to the problem or disease that the behavior is intended to prevent.	Whether or not a mother believes her child can get pneumonia.	Whether or not a community leader believes that her community will experience drought in the coming year.
Perceived severity	Threat, fear	A person's perception of how big or serious the issue targeted by the behavior(s) is for a person. This can also include emotional arousal caused by perceiving a significant and personally relevant threat.	The degree to which a mother believes that pneumonia is a life-threatening disease for children.	The degree to which a farmer believes that lack of water will be a hardship for his family.
Intentions		What an individual plans or projects s/he will do in the future; commitment to a future act. Future intention to perform a behavior can be highly associated with actually performing that behavior.	Whether or not a father plans to involve his wife in financial decisions concerning health products.	Whether or not a youth plans to attend meetings on protecting the environment.
Perceived divine will		A person's beliefs concerning whether God (or the gods) approve of him/her doing the behavior.	Whether or not a mother believes that God/Allah is in favor of the mother only giving her child breastmilk immediately after birth.	Whether or not an agricultural extension agent believes that God/Allah is in favor of planting in rows.
Opportunity				
Access		Access encompasses the <i>existence</i> of services, products, and resources; their <i>availability</i> to an audience, and an audience's comfort in accessing desired types of products or using a service. Can include barriers regarding cost, distance, language, gender, and cultural issues.	Whether or not insecticide-treated nets are readily available to mothers in a community.	Whether or not a farmer feels well received at a seed store.
Enablers	Positive attributes of the behavior	Particular things that make the behavior <i>easier</i> to adopt or do, or more attractive.	When a mother thinks that having enough time makes it easier to wash her hands with soap.	When a farmer believes that creating live barriers to reduce erosion is made easier by doing the work with one's friends.

DETERMINANT / FACTOR	ALSO CALLED, OR SIMILAR	DESCRIPTION	HEALTH/NUTRITION EXAMPLES	ADAPTATION EXAMPLES
Barriers	Negative attributes of the behavior	Particular things that make the behavior more <i>difficult</i> to adopt or do, or less attractive.	When a father thinks that games played by women at antenatal clinics make it harder for him to accompany his wife to antenatal care.	When a farmer thinks that building seawalls requires too much physical labor.
Cues to action	Cues for action, reminders	Presence of reminders that help a person remember to initiate a behavior or to remember the steps involved in doing it.	When a mother says that she often forgets to take her children for subsequent doses of vaccines after the first dose.	When a community leader says that it is difficult to remember to hold meetings on preparing for flooding.
Policy		Laws and regulations that affect behaviors and access to products and services. Policies can provide incentives for behaviors or set up barriers to behaviors.	When a man says that he does not openly defecate because of a law against it in his community.	When a farmer says that he does not want to plant a new crop variety without having crop insurance available.
Culture		The set of history, customs, values, and practices within a self- defined group. May be associated with ethnicity or lifestyle (e.g., "youth" culture).	When a mother says that it is against cultural rules to allow her daughter to leave the house during the first 40 days she has given birth.	When a farmer says that it is against cultural rules to reroute waterways or install dams.
Actual social norms		How people important to an individual react when an individual adopts/ practices a behavior (e.g., gender norms, norms for authority).	When a large proportion of people important to mothers are against eating soybeans.	When a large proportion of people important to farmers are against mulching.
Social structures and hierarchies		Social structures can either support or constrain individuals and groups from conducting a behavior.	When a mother is not allowed to go to the clinic without her husband's permission.	When a community leader is not allowed to hold meetings without first gaining permission from the district office.
Actual consequences		What happens after performing a behavior.	When pregnant women take iron to avoid anemia during pregnancy but become constipated.	When farmers lose plants to drought that were planted as live hedges to reduce erosion.

ANNEX B: COMMON SBC THEORIES, MODELS, AND FRAMEWORKS

The following common behavior change theories and models provide a basis for SBC research, strategies, and approaches. Many more communication theories are described in resources such as C-Change (2012) and University of Twente (2017). SBC theories and models are often extended, modified, and/or combined to create a theory of change specific to a program or project. While research studies are likely to employ a single theory, it is rare to find a project or program based solely on a single unmodified theory. The examples of theory application (research, program, or projects) in the table below use the described theory as a base but may include extensions or modifications.

LEVEL OF FOCUS	THEORY	DESCRIPTION	EXAMPLE
Primarily individual	Protection Motivation Theory (PMT)	PMT is an extension of the Health Belief Model (HBM) and was developed in 1975 for the health promotion and disease prevention sector. It evolved and has since been applied in various fields. The theory describes how individuals are motivated to react in a protective way toward a perceived threat. The key elements are: threat appraisal (similar to perceived risk) and coping appraisal. Coping appraisal comprises “response efficacy,” the belief that an action will mitigate the threat, and “self-efficacy,” an individual’s perception of his/her ability to implement the required actions to mitigate the threat.	Focus on Youth in the Caribbean used a PMT-based HIV intervention that included parental monitoring, communication, and HIV education. It was adopted by the Bahamian Ministry of Health. A randomized controlled trial found the program had significant impacts on HIV/AIDS knowledge, self-efficacy, response efficacy, response cost, vulnerability, and condom use intention from 12 months to 24 months postintervention. Compared with control groups, participating youth experienced significantly increased self-efficacy and response efficacy to remain abstinent/refuse sex at 12, 18, and 24 months, significantly reduced response cost at 12 and 24 months, and significantly enhanced condom use intention at 24 months (Gong et al., 2009).
Primarily individual	Health Belief Model (HBM)	HBM has been used in health and nonhealth projects. HBM was developed to help examine why people did or did not use preventive services offered by public health departments. This cognitive model posits that behavior is determined by beliefs about threats to an individual’s well-being and the effectiveness and outcomes of actions or behaviors. These beliefs are further supplemented by stimuli referred to as cues to action that trigger actual adoption of behavior. Perceived threat is at the core of the HBM, as it is linked to a person’s “readiness” to take action.	An HBM-based nutrition education program for junior high girls in Iran used a lesson plan that included learning objectives based on individual perceptions (perceived susceptibility and perceived severity) and likelihood of action (perceived benefits, perceived barriers, and taking health action) that influenced the students’ dietary calcium intake behavior. Lessons included emphasis on the risks of low calcium intake, the benefits of adequate intake, and what the students

		<p>Perceived threat consists of perceived susceptibility or vulnerability and the seriousness of the expected consequences. The perceived benefits (effectiveness) associated with a behavior are weighed against the perceived costs and negative consequences that may result from it (perceived barriers) to establish the overall extent to which a behavior is beneficial. The individual's perceived capacity to adopt the behavior (self-efficacy) is another key component of the model. HBM also identifies two types of cues to action: internal (e.g., individual psychology and perceptions) and external (e.g., relationships, information) (Glanz & Bishop, 2010).</p>	<p>could do to ensure adequate intake. Communication channels included short lectures, presentations, pamphlets, and mediated discussions. A study examining the effects of the program found that students in the education program exhibited significantly higher nutritional attitude and practice scores after 2 months (Naghashpour et al., 2014).</p>
Primarily individual	Theory of Planned Behavior (TPB) (an extension of the Theory of Reasoned Action)	<p>This theory is intended to explain all behaviors over which people have the ability to exert self-control and posits that behavioral intention is the most important determinant of behavior. Behaviors are more likely to be influenced when individuals have positive attitudes about the behavior; the behavior is viewed positively by key people who influence the individual (subjective norm); and the individual has a sense that he or she can control the behavior (perceived behavioral control) (Ajzen, 1991). The theory has been widely criticized for its focus on rational reasoning (excluding unconscious influences), the role of emotions in achieving outcomes, and its exclusion of external factors that influence behavior (Sniehotta et al., 2014). In response to criticism, it is often used as one component of broader integrated behavior models.</p>	<p>The Communication and Malaria Initiative in Tanzania (COMMIT) BCC program (2008–2012) incorporated elements of the TPB including a focus on attitudes, behavior control, and social norms. COMMIT sought to increase perceptions that bed nets are a socially accepted approach for avoiding malaria; foster people's confidence in their ability to use bed nets every night; and improve the fatalistic attitude that malaria is an unavoidable and constant presence in people's lives. Activities included:</p> <ul style="list-style-type: none"> • Discussions and group meetings with community change agents, mobile video unit shows, and road shows • Training community change agents who organize and conduct interpersonal communication and educational events • Production of the feature film "Chumo," a love story that educates viewers on the dangers of malaria in pregnancy and how to prevent it • "Pata" children's radio program, to encourage children to take action to ensure their family is protected from malaria • Journalist Against Malaria Network established with a core group of print, TV, and radio journalists working to ensure malaria is on the national and local agenda <p>Program results included nearly 77% of those exposed to the program put all their children under bed nets the previous night, as opposed to 35% of those unexposed.</p>
Primarily individual	Stages of Change or Trans-	<p>This model focuses on stages of individual motivation and readiness to change behavior, and matches interventions to individuals' stages. It proposes that people are at different stages</p>	<p>A smoking cessation program in the United States recruited smokers to participate through identifying their stage of change and matched them with stage-</p>

	theoretical model	<p>of readiness to adopt positive behaviors. The notion of readiness to change, or stage of change, has been examined in health behavior research and found useful in explaining and predicting changes for a variety of behaviors. The stages are (USAID, 2014):</p> <ul style="list-style-type: none"> • <i>Pre-contemplation, Pre-awareness</i>: No intention to change behavior in the foreseeable future; lack of awareness of the problem or feelings of inability to overcome the problem. • <i>Contemplation, Awareness</i>: Awareness of the problem; consideration about overcoming it but no commitment to act. • <i>Preparation</i>: Intention to act in the next month (or unsuccessful action in the past year). • <i>Action</i>: An individual modifies behavior, experiences, or environment (sometimes through many steps) to overcome the problem. • <i>Maintenance</i>: An individual works to prevent reverting to old behavior and to consolidate the gains attained during action. 	<p>specific interventions including self-help manuals, individualized assessments of self-efficacy and temptation, and more. This led to more than 80% participation in the program, much higher than recruitment methods not tailored to an individual's stage of change, which resulted in as low as 1% participation (Glanz et al., 2008).</p>
Primarily individual	Values, beliefs, norms (VBN) framework	<p>Designed to analyze relationships between environmental concerns and behavior, this framework examines key explanatory variables of pro-environmental behaviors, including personal values, beliefs, attitudes, and norms. The model proposes a causal chain (values leading to beliefs leading to personal norms leading to behavior) and posits that beliefs provide the foundation from which attitudes are formed and those attitudes can be highly predictive of behaviors. Risk perception (adverse consequence for valued objects) is central to the framework.</p>	<p>van der Werff & Steg (2016) used the VBN to test factors that influence individuals' interest and actual participation in smart energy systems (energy systems integrating renewable energy production, smart meters, and smart plug devices) with 500 households in the Netherlands. Findings included:</p> <ul style="list-style-type: none"> • Problem awareness and values explained 42% of variance in perception of outcome efficacy (effectiveness of system to reduce fossil fuel consumption), • Personal norms, outcome efficacy, problem awareness, and values explained 44% of the variance in interest in smart energy systems, and • All VBN variables taken together explained 21% of the variance in actual participation in the smart energy system.
Primarily interpersonal	Social learning theory or social cognitive theory	<p>Social learning theory is rooted in both the psychology of individual learning and the sociology of shared learning. Encompassing and evolving from Bandura's (1986) social cognitive theory, social learning is based on the idea that people learn behavior from interacting with others and observing the behavior of others. The theory states that three core concepts determine whether an individual will reproduce an observed behavior. These are:</p> <ul style="list-style-type: none"> • <i>Personal</i>: the level of self-efficacy an individual has toward the behavior (confidence in his/her ability to complete the behavior) 	<p>The Adaptation at Scale in Semi-arid Regions (ASSAR) project led by the African Climate and Development Initiative (ACDI) aims to improve understanding of climate change in semi-arid areas across Africa and Asia. ASSAR is trialing a Transformative Scenario Planning (TSP) social learning process in which participants explore a holistic understanding of the biophysical and political-economic systems they are part of and then develop strategies to reduce system vulnerability to climate change. The project also includes participatory research on barriers and successes for effective</p>

		<ul style="list-style-type: none"> • <i>Behavioral</i>: the response an individual receives after completing the behavior • <i>Environmental</i>: aspects of the environment that influence an individual's ability to complete the behavior (situational influence and reinforcement) <p>Social learning has been defined as emerging through practices that facilitate knowledge sharing, joint learning, and co-creation of experiences in ways that:</p> <ul style="list-style-type: none"> • Take learning and change beyond the individual to communities, networks, or systems; and • Enable new shared ways of knowing to emerge that lead to changes in practice. 	communication of climate information and knowledge, via social learning and game playing.
Primarily community	Diffusion of Innovations theory	<p>This theory focuses on how information, new ideas, or social practices are spread and exchanged within social networks, such as a community, neighborhood, work group, or peer group. Exchange of information within a network is dependent on the connections within a community, access to communication channels, and access to resources including information. This theory has more of a structural and less of an individual focus; however, it is recognized that community opinion leaders (for a specific issue) lead by example. Community members are encouraged to try new behaviors and maintain practices by imitating these admired and trusted leaders.</p>	Pannell et al. (2006) used the Diffusion of Innovations theory to examine adoption of soil and water conservation practice among Australian landowners. They found that adoption depends on a range of personal, social, cultural, and economic factors, the characteristics of the innovation itself, and if it will enhance achievement of landowner goals. They found that innovations are more likely to be adopted when they have a high relative advantage, that is, perceived advantage over the idea or practice it supersedes, and are easy to test and learn about before adoption. Non-adoption or low adoption of a number of conservation practices was linked to their lack of a relative advantage (particularly in economic terms) or difficulty in trialing them.
Primarily community	Communication for Social Change or Integrated Model of Communication for Social Change (IMCFCSC)	<p>This model is based on “a process of public and private dialogue through which people define who they are, what they want and how they can get it” (Figueroa et al., 2002). It is a dynamic and iterative process focused on community dialogue and collective action. It starts with a catalyst (external or internal to the community) which then leads to dialogue, which, when effective, prompts collective action and the resolution of a common problem. It was developed as a people-inclusive, integrated approach to communication for development. The model is best suited for problems that are heavily influenced by community and social factors, such as social norms. Community dialogue and collective action processes work best as participatory exercises that allow community members to define the problem of interest, identify potential solutions to that problem, and evaluate the outcomes of those solutions (HC3, 2014a).</p>	The Health Communication Partnership Zambia (HCPZ) project (2004–2010) was designed to address individual and community health priorities through strengthening community networks, mobilizing local leaders, engaging youth, and promoting positive gender norms. Neighborhood Health Committees (NHCs) were the primary project catalyst. Each health zone in Zambia has an NHC composed of community members volunteering to support local health initiatives. The project supported and revitalized selected NHCs by training community volunteers to promote access to existing health services and recognize the need to mobilize external resources. The project coordinated a participatory process to support NHCs using community dialogue and collective action, supplemented by media messages and community-based activities. Evaluation showed

			improved social cohesion and community participation. Individuals living in communities who reported working together to address health problems were more than twice as likely to be using modern contraception, twice as likely to have been tested for HIV, and 1.5 times more likely to have their youngest child sleep under a bed net to prevent malaria (HC3, 2014a).
Primarily community	Social marketing approach and community-based social marketing	Social marketing is the use of commercial marketing to develop and distribute products (or practices and services) to influence voluntary behavior or target audiences for the purpose of societal benefit rather than commercial profit. The approach is organized around four “P’s: product (or practice), price, place, and promotion. “Product/practice is what is being promoted. Price/cost is the ease of access and barriers to using the product or practice. Perceived cost may not be identical to actual cost, as people may have the wrong impression about how easy or difficult it is to access the product. Places/access points refer to where people might have access to the product, where the product is distributed and made available. Promotion refers to the information/activities to let people know about products and their characteristics” (C-Change, 2012:38). Community-based social marketing applies a social marketing approach with recognition that community-level processes and direct interaction with people are often most effective in achieving behavior change.	The South African health communication program, Brothers for Life (BFL), promotes HIV testing, voluntary medical male circumcision (VMMC), male involvement in the prevention of mother-to-child transmission of HIV (PMTCT), and prevention of gender-based violence. BFL uses Diffusion of Innovations principles to promote positive health behavior among South African men. One activity targeting VMMC is based on the principles of observability and trialability and publicizes interviews with men who underwent VMMC through a national campaign using TV and radio. Through storytelling, BFL connected other men to the experiences of their peers and encouraged them to make a decision to go forward with the procedure. BFL also created an SMS number that men and women could text to get answers to their questions about VMMC and directions to the nearest clinic. BFL increased knowledge of VMMC from 8% in 2009 to 47% in 2012 and led to an increase in VMMC uptake (HC3, 2014b).
Primarily enabling environment	Nudge theory	The nudge theory proposes that positive reinforcement and indirect suggestions influence people to behave in a certain way. A nudge is an environmental cue or structure that influences the motives, incentives, and decision-making of groups and individuals. The theory posits that contextual aspects of decision-making, known as choice architecture, greatly influence people’s choices. The theory states that the way a choice is presented, including the physical, social, and psychological aspects of the contexts in which choices take place, influences behavior. The theory also recognizes that opting for the “default” choice is common, inertia is powerful, and preferences are inconsistent (Thaler & Sunstein, 2008).	Cornell University researchers trialed low- and no-cost environmental changes in cafeterias to test if these could lead children to take and eat healthier foods. Called the “Smarter Lunchrooms Makeover,” they tested multiple small changes such as making fruits and vegetables more attractive, convenient, and normative, all simple applications of nudge theory. After the “makeover” was implemented, students were 13% more likely to take fruits and 23% more likely to take vegetables. Actual consumption increased by 18% for fruits and by 25% for vegetables. They also found that after the makeover, the percentage of kids eating a whole serving of fruit increased by 16% and by 10% for vegetables. These small changes cost just a few hours and less than US\$50 to implement.

Primarily enabling environment	Framing theory	<p>Framing theory is a media theory that posits that how issues are presented in the media strongly influences how people perceive these issues and consider related actions. A given issue can be presented in different ways depending on the context and narratives given and the sources used. Agenda setting is another media theory that posits that the amount of media on a subject influences how important people think it is (C-Change, 2012). Work with framing theory often incorporates prospect theory to understand if framing behavior change as a loss (the costs of not changing behavior) or a gain is more effective.</p>	<p>According to prospect theory, messages advocating a low-risk (i.e., easy, low-cost) behavior are most effective if they stress the benefits of adherence (gain frame), whereas messages advocating a high-risk (i.e., difficult, more to lose) behavior are most effective if they stress the costs of nonadherence (loss frame) (Kahneman & Tversky, 1979). Condom use is viewed as a low-risk behavior but it may entail high-risk (emotional) interpersonal negotiations. A study comparing condom use messages on 1) advocating relational behaviors (e.g., discussing condoms) and 2) health behaviors (e.g., carrying condoms) found that, as predicted, loss-framed relational messages and gain-framed health messages were more effective (Kiene et al., 2005).</p>
Multiple levels	Social Ecological Model (SEM)	<p>The SEM was developed with the premise that multilevel interventions are more robust and sustainable than single-level interventions. The model considers factors across levels of influences on behavior (individual, interpersonal, community, and environment) with recognition that influences interact among these levels. The model views individual behavior as a product of “multiple, overlapping social and environmental influences” (USAID, 2014:9).</p>	<p>Nigerian Urban Reproductive Health Initiative (NURHI) II is a 5-year project, funded by the Bill & Melinda Gates Foundation, to eliminate supply and demand barriers to contraceptive use and make family planning a social norm in Nigeria. The project is built on the premise that increasing demand for family planning is a requirement for increased contraceptive use. NURHI II targets a positive shift in family planning social norms at the structural, service, and community levels. Activities to support and reinforce proven models in family planning services include:</p> <ul style="list-style-type: none"> • Advocacy initiatives targeted at state and local government levels to ensure access to and support for family planning services for the urban poor; • Improving quality and access to services through supply logistics, training health providers in family planning counseling and provision of IUDs and implants, and improving health facility management systems; and • Generating demand for family planning in fun, innovative ways, such as a popular radio program with drama and live call-ins and community-level family planning promotion activities by teams of urban youth social mobilizers.

ANNEX C: SBC FOR ADAPTATION SCENARIO: COASTAL EROSION

The following scenario is a simplified example that briefly illustrates an SBC planning and implementation process. In practice, this would require a full team to undertake desk and field research and program design, and work with partners to develop and implement strategies. Using the Socioecological Model (SEM) and SBC implementation guidance, this program planning team would follow steps to understand the situation, focus and design a strategy, create program products, and implement, monitor, and evaluate the program. A use case and a possible series of SBC programming steps are outlined below.

Use case

Adjua lives on the coast of Ghana, as does about a quarter of the country's population. Coastal erosion has washed whole sections of her village out to sea and continues to threaten homes and agricultural land. She is from a fishing family in the western region that relies on catching, smoking, and selling fish for its livelihood. In Ghana, smoking preserves fish in the hot environment where refrigeration is rare. Adjua's job is to smoke the fish. It is demanding work requiring long exposure to the heat and smoke of the stove. Mangrove wood is popular for smoking, and Adjua's family uses mangrove to feed the fish-smoking stove. Mangrove deforestation in the region, however, is impacting the family in numerous ways. First, the fishery on which the family relies is depleted, in part due to the loss of mangroves, which provide juvenile fish habitat. Next, mangrove fuelwood is increasingly expensive and cuts into the family's profits. And finally, with climate change leading to rising sea levels, the depleted mangrove forests make the coast more vulnerable to the erosion that has already damaged the village.²²

Understanding the situation

Situation analysis

To investigate coastal erosion in the region, the team engages stakeholders and conducts a desk review to gather and examine information related to: climate variability, trends, and impacts, including sea level rise; other causes of coastal erosion; trends in coastal erosion impacts to villages, biodiversity, and ecosystem services; populations and livelihoods directly and indirectly affected by coastal erosion; mangrove ecology; trends in mangrove forest species and extent; and drivers of mangrove deforestation. Through this process, the team determines

²² This paragraph is based on project information from the USAID/Ghana FTF Sustainable Fisheries Management Project.

that the combination of rising sea levels, coastal development, and mangrove deforestation is the root cause of coastal erosion. They gain an understanding of the extent and severity of coastal erosion and mangrove deforestation. They also learn about the livelihoods associated with fish smoking and harvesting mangrove wood and hold a series of stakeholder workshops to fill in their knowledge gaps about these livelihoods.

The team further researches media access and related program efforts in the area. They learn that radio and song and dance performances are popular in the region. They also learn about a project that has supported the development of a high-efficiency stove for smoking fish that would reduce fuelwood requirements, reduce fish-smoking families' heat and smoke exposure, and result in a smoked fish with lower toxic polycyclic aromatic hydrocarbon concentrations than those from the conventional smoker stoves, potentially making them more appealing to customers. The team considers how this new stove would reduce fuelwood demand and thus likely improve the family's profits, reduce pressure on mangrove forests that protect the coast from erosion, and decrease consumption of toxins. They find out, however, that there is a lack of awareness about this new stove and that its cost could be a barrier to adoption.

People analysis and audience segmentation

Given the situation analysis, the team determines that the people living in eroding coastal communities are most affected by the problem, including fish-smoking families. They find out that the people most at risk from coastal erosion are the poorest families, which have been pushed into marginal, unsafe areas by population growth and coastal development. The team looks for "positive deviants" within the fish-smoking community — people who are interested in high-efficiency stoves or have already adopted them. Guided by the concentric levels of the SEM, they further identify the people directly and indirectly influencing members of these coastal fish-smoking households. They consider the role of outside family members, smoked fish consumers, journalists, community health workers, local government, religious leaders, and policymakers. Guided by the "wedge" of the SEM, the team considers the lives of fish-smoking households using focus group discussions and interviews to understand: 1) information available to people in these communities, 2) motivations to act (beliefs, attitudes, gender norms), 3) ability to act (life skills, assets, self-efficacy), and 4) norms (underlying values).

Program (or context) analysis

Next the team examines community assets (relevant institutions, products, and services), the enabling environment (relevant policies, conventions, norms, social movements), and opportunities for partnership. They find that while there are national initiatives related to improving management of the coastal zone, policies do not appear to have much impact on behavior. They find that there is an active community health system and workers are aware of the health risk posed by fish smoking.

Summary of analysis and theory of change (including formative research on behavioral determinants)

With recognition of the forces driving coastal erosion (sea level rise, coastal development, and mangrove deforestation), the team develops a problem statement for the part of the issue that

can be addressed through SBC programming. They develop a vision for change where coastal erosion is reduced through reducing demand for mangrove fuelwood among fish-smoking families, health risks from indoor air pollution are reduced, and fisheries experience some recovery. Drawing on Protection Motivation Theory (PMT), Social Learning Theory (SLT), the HBM, Diffusion of Innovations theory, and nudge theory, the team develops a theory of change that identifies target tipping points for change. The team uses Barrier Analysis and other qualitative tools to identify the most important behavioral determinants affecting the behaviors they plan to promote.

Theory of Change

1. Problem statement: Demand for mangrove fuelwood for fish smoking is exacerbating coastal erosion (which is an increasing threat due to climate change) and impacting fisheries in the region; current stoves are low efficiency, requiring a lot of fuelwood and producing excessive indoor air pollution.
2. Changes needed to address problem: Increased purchase and use of high-efficiency stoves to reduce demand for mangrove fuelwood and improve indoor air quality.
3. Key barriers and facilitating factors:
 - Lack of awareness that mangrove deforestation leads to coastal erosion and depletion of fisheries
 - Lack of awareness that rising sea levels due to climate change are increasing the threat posed by coastal erosion
 - Lack of awareness of new stoves and very few high-efficiency stoves currently in use
 - No training in how to use new stoves
 - Cost of new stoves
 - Concerns about the risks of coastal erosion, depleted fisheries, and impacts of smoke on health (facilitating factor of perceived risk)
4. Assumptions:
 - The SBC intervention will result in increased purchase and use of high-efficiency stoves by: increasing awareness of mangrove deforestation and its impacts in the context of rising sea levels; increasing awareness of high-efficiency stove availability and use; raising the profile of the health risk associated with indoor smoke; and providing subsidies for stove purchase. The reduced demand for mangrove fuelwood will result in reduced mangrove deforestation.
5. SBC theory and behavioral determinants identified during formative research:
 - PMT (individual level)
 - **Perceived Risk** concerning coastal erosion in the context of rising sea level, depleted fisheries, and health risk of indoor smoke
 - **Perceived self-efficacy** related to ability to purchase and operate high-efficiency stoves

- **Perceived response efficacy** related to the ability of the new stove to reduce mangrove deforestation, reduce fuelwood needs (and costs), and improve indoor air quality
 - HBM (individual level)
 - **Perceived benefits** of purchasing and using a stove (direct benefits=improved health, reduced fuelwood costs; distant benefits=reduced risk of coastal erosion, improved fishery) compared with **perceived barriers** (initial cost, learning how to operate a new stove)
 - **Cues to action** — External cues: education about risks of coastal erosion, mangrove deforestation, and indoor air pollution; internal cues: health symptoms related to smoke or heat exposure
 - SLT (interpersonal level)
 - **Collective reflection** and **iterative knowledge sharing** about the connections between stove type, fuelwood needs, mangrove deforestation, coastal erosion, rising sea level, depleted fisheries, and indoor air quality
 - **Joint action** through putting on stove workshops and discussions
 - Diffusion of Innovations theory (community/social level)
 - **Perceived characteristics of the innovation** (new stove) — relative advantage, compatibility, trialability, and observability
 - **Characteristics of the social network** — what are the different networks of the fish-smoking and health care worker communities, what is their size, who are the leaders and innovators in the networks
 - Nudge theory (enabling environment)
 - **Choice architecture** — project facilitates new stoves being readily available in local markets and subsidizes new stoves to incentivize purchase
6. Tipping points: Community leaders (health, faith, local) and innovators start discussing high-efficiency stoves and the relationship of this innovation to mangrove deforestation, coastal erosion, rising sea level, fisheries, and indoor air quality (SLT, Diffusion of Innovations). These leaders and innovators serve as a catalyst to increase dialogue about high-efficiency stoves and mobilize fish-smoking households to explore the benefits of the stoves (Diffusion of Innovations). Fish-smoking households consider perceived risks, self-efficacy, response efficacy, and benefits and barriers of new stoves (PMT, HBM). Project ensures new stove availability and subsidies for new stoves incentivize purchase.
7. Input:
- Interventions with community leaders, health care workers, and fish-smoking households and support materials that address risks, barriers, and benefits related to mangrove deforestation and high-efficiency stoves.
8. Output:

- Community leaders, health care workers, and fish-smoking households perceive the risks related to mangrove deforestation, sea level rise, and inefficient stoves.
- Fish-smoking households are aware of new stoves, believe they can operate new stoves, and believe these stoves will reduce health risk from smoke and reduce fuelwood needs and mangrove deforestation.

9. Outcome:

- Fish-smoking families are incentivized to purchase new stoves by internal motivation (risk perception, self-efficacy, response efficacy, perceived benefits) and choice architecture (project subsidy).
- Demand for mangrove fuelwood is reduced.

10. Impact:

- Mangrove deforestation, coastal erosion, and health risks from indoor smoke are reduced.

Focusing and designing

The team develops a communication strategy that addresses audience, barriers to change, SBC concepts, key communication objectives, strategic approach and positioning, and a channel, activity, material matrix.

Audiences, barriers to change, SBC concepts, and key communication objectives

This component of the communication strategy identifies the key audiences and the objectives of the communication strategy.

AUDIENCE SEGMENT	DESIRED CHANGE	BARRIERS TO CHANGE	SBC BEHAVIORAL DETERMINANTS AND CONCEPTS	COMMUNICATION OBJECTIVES ADDRESSING BARRIERS
Fish-smoking households	Switch to high-efficiency stoves	<ul style="list-style-type: none"> • Lack of awareness that mangrove deforestation leads to coastal erosion and depletion of fisheries • Lack of awareness of new stoves • No training in how to use new stoves • Cost of stove 	<ul style="list-style-type: none"> • Risk perception about coastal erosion, sea level rise, depleted fisheries, and indoor smoke • Motivation and self-efficacy to purchase and use new stoves • Response efficacy (perceived benefit) of new stoves • Perceived benefits and barriers • Joint action of exploring new stove use • Perceived characteristics of the innovation • Cues to action (education, information, symptoms) • Choice architecture incentives: subsidies for stove purchase • Characteristics of the social network 	<p>By the end of the program, 1,000 households in the district will have received subsidies to purchase a high-efficiency stove.</p> <p>By the end of the program, each household with a new stove will be confident in using it.</p> <p>By the end of the program, mangrove fuelwood consumption will be reduced by 25%.</p>
Community health workers	Increase awareness of health risk of	<ul style="list-style-type: none"> • Competing priorities from other health issues 	<ul style="list-style-type: none"> • Cues to action (education, information, symptoms) • Risk perception of indoor smoke 	<p>By the end of the program, all community health workers will be confident in explaining the negative effects of indoor smoke</p>

	indoor smoke	<ul style="list-style-type: none"> Iterative knowledge sharing about experiences with smoke and heat exposure 	relative to other health risks such as malaria.
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Strategic approach and positioning

Based on an understanding of the situation and the communication objectives, the team decides to use two main approaches — social mobilization about reducing risk from indoor air pollution and behavior change to increase new stove purchases. The strategic approach is to create a supportive environment for purchasing new stoves and reducing the health risk of indoor smoke. The team considers positioning for the program to create a memorable program identity. They develop the positioning statement: “High efficiency stoves are a path to healthy indoor air, reduced fuelwood costs, and mangrove regeneration.”

Activity, channel, material matrix

To match the strategic approach and the situation, the team chooses the following techniques: radio campaign, home visits, group stove workshops and discussions, community theater, posters and print materials, coalition building, and training for health care workers. They develop a matrix to match communication channels and activities.

COMMUNICATION CHANNEL	AUDIENCE	ACTIVITIES AND MATERIALS
Interpersonal	Fish-smoking households, health care workers	Home visits, group stove workshops and discussions, health care worker training
Community-based	Fish-smoking households	Community theater
Mass and mid-media	Fish-smoking households	Radio campaign, posters, and print materials

Creating

To put the communication strategy into practice, the team creates and tests the communication products and materials and selects designers, artists, writers, and broadcasters to develop materials.

Develop and test creative briefs

The team develops a creative brief for each activity, including the goal, audience, and communication objective the activity is targeting. They develop guidance and materials for each activity, emphasizing the risks of coastal erosion; the connection between coastal erosion, sea level rise, and mangrove deforestation; the health risks of smoky air in the house; and the benefits of high-efficiency stoves for addressing the risks of both coastal erosion and smoky air. They test each of the activities and materials with members of the target audiences and refine them based on feedback. In testing, the team considers: audience comprehension, attractiveness (captures audience’s attention), acceptance (relevance to audience), involvement (does the audience identify with the material), and relevance/effectiveness (does the product induce people to talk further and/or seek out more information or solutions).

Implement, monitor, and evaluate

Finally, the team develops a project implementation plan and monitoring and evaluation system and begins to implement the program. These plans operationalize the developed theory and approaches. In light of project monitoring, the team considers other audiences for a phase II of the project, including mangrove harvesters, smoked fish consumers, and journalists.

ANNEX D: SELECTED SBC PROJECTS IN INTERNATIONAL DEVELOPMENT

SECTOR	PROJECT	BEHAVIOR CHANGE STRATEGIES/APPROACHES	LOCATION AND FOCUS
Health	USAID Communications for Change (C-Change)	SBC framework Socioecological model Key strategies: advocacy , social mobilization , and behavior change communication	Africa, Asia, Latin America and the Caribbean, and Eastern Europe (HIV prevention, family planning, malaria prevention, gender equality)
Health	USAID/Zambia Communications Support for Health (Final Report)	Behavior-centered programming Key strategies: <ul style="list-style-type: none"> • Mass media (television and radio drama series, advertisement campaign) • Interpersonal communication and community engagement (peer group clubs, engage/train traditional and local leaders, community-wide film screenings and discussions) • Community mobilization (develop locally specific solutions, one-on-one counseling, mother groups) • Communication products (pregnancy care planner) • Leverage partner strengths (increase supply of health resources to match increased demand) • National policy and advocacy 	Zambia (HIV/AIDS, malaria, maternal and child health, nutrition, and family planning)
Health	President's Malaria Initiative (PMI)	<ul style="list-style-type: none"> • SBC cross-cutting area (technical guidance) • Employ an iterative approach to designing, implementing, monitoring, and evaluating SBC activities, e.g., P Process • Accelerator behavior focus through behavior integration guidance • Trans-media approach including mass media, interpersonal communication, ICT, and edutainment or infotainment • Malaria behavior change communication indicator reference guide • Strategic Framework for Malaria Communication at the Country Level • PMI is supporting a malaria SBC evidence review that will help highlight evidence-based best practices for malaria SBC from peer-reviewed and gray literature 	20 countries in Africa (Malaria)

SECTOR	PROJECT	BEHAVIOR CHANGE STRATEGIES/APPROACHES	LOCATION AND FOCUS
Health	USAID Improving Healthy Behavior Project (IHBP)	Goal was to use BCC to increase uptake of positive health behaviors. Key strategies included: advocating for greater political and social commitment to behavior change; systematically engaging key influencers in the community; advocacy for additional human resources; improving budgeting and funds disbursement; and reinforcing coordination within relevant government departments.	India (Family planning and reproductive health; tuberculosis; HIV/AIDS; and maternal and child health)
Health and nutrition	USAID IYCN (Final Report)	IYCN (Infant and Young Child Nutrition Project) identified barriers and facilitating factors related to recommended malnutrition prevention behaviors and used targeted communication interventions to facilitate change and reinforce key messages with health workers, communities, and households, in addition to caregivers. IYCN facilitated the development of national BCC strategies and ensured that consistent and accurate messages were reinforced at each level through one-on-one counseling, home visits, mother support groups, cooking demonstrations, drama performances, and mass media.	16 countries in Africa, Asia, and Latin America (Nutrition)
Health and nutrition	USAID Feed the Future (FTF) Integrating Nutrition in Value Chains (INVC) Project (Final Report)	INVC included SBC for improved nutrition through targeted community activities including: theater for development, radio jingles, radio programs, and public service announcements.	Malawi (Nutrition)
Health and nutrition	UN Scaling Up Nutrition	Uses a social mobilization, advocacy, and communication approach to improve nutrition. Strategies include: organize high-level officials for nutrition events; engage parliamentarians in actively advocating for nutrition; support development of comprehensive government or joint social mobilization, advocacy and communication strategies; develop advocacy tools that are country-specific to raise awareness about nutrition at a high level; establish civil society alliances and/or strong civil society support for social mobilization, advocacy, and communication activities.	61 countries in Asia, Africa, and Latin America (Nutrition)
Health and nutrition	USAID Communication for Healthy Communities (CHC)	To increase the adoption of healthy behaviors, the project uses an integrated SBC approach that capitalizes on a popular brand and national campaign to spur dialogue on healthy behaviors and increase demand for health services to reduce HIV rates, total fertility, maternal and child mortality, malnutrition, malaria, and TB. Strategies include: <ul style="list-style-type: none"> • Designing and implementing high-quality health communication interventions to improve knowledge, attitudes, norms, behaviors, and demand for services related to HIV, TB, malaria, nutrition, maternal and child health, and family planning 	Uganda (HIV, family planning, maternal and child health, nutrition, malaria, and TB)

SECTOR	PROJECT	BEHAVIOR CHANGE STRATEGIES/APPROACHES	LOCATION AND FOCUS
		<ul style="list-style-type: none"> Improving the coordination of health communication interventions Increasing research and knowledge management to enhance health communication 	
Health and nutrition	Alive & Thrive	The project combines media, social franchising, and interpersonal communication to promote the adoption of desired behaviors and changes in social norms related to nutrition. The project uses advocacy, social mobilization, mass communication, and research.	12 countries in Africa and Asia (Nutrition)
Health and nutrition	USAID Communicate for Health Project (C4H)	Collaborates with the Ghana Health Service to bolster its ability to develop SBC campaigns in family planning, nutrition, maternal and child health, malaria, HIV/AIDS, and WASH. The project launched a nationwide radio, TV, and social media campaign to reach more than 24 million people with interactive programming.	Ghana (Family planning, nutrition, maternal and child health, malaria, HIV/AIDS, and WASH)
Health and nutrition	Health Communication for Life (HC4L)	Supports the Government of Malawi's efforts to increase public demand for quality, sustainable, priority health services and products. The project works to expand citizens' motivation, opportunity, and ability to use these resources, while building the capacity of the government and key institutional partners to support national SBC programming. Strategies include: <ul style="list-style-type: none"> Use data and diverse partnerships to conduct activities that address Malawi's local health challenges, sociocultural context, and behavioral norms Use an integrated health communication platform based on a participatory action media approach; develop community-facing messages through an audience-centered process 	Malawi (Health and nutrition)
Health and nutrition	USAID SHIKHA (Final Report)	To improve maternal diet and reduce malnutrition in children under two, the multi-faceted program involved home visits, health forums, social mobilization, and a mass media campaign. Specific strategies included: interpersonal counseling delivered by trained community workers through home visits, social mobilization conducted during village meetings, women's health forums, messages given by health workers during antenatal and postnatal sessions, and mass communication.	Bangladesh (Maternal and child health)
Health and WASH	USAID WASHPlus	Uses integrated and at-scale SBC approaches to improve health outcomes related to water, sanitation, and hygiene; and household air pollution.	Seven countries in Africa and Asia (WASH and household air pollution)
Sanitation	USAID/Southern Africa Regional Environment Program (Final Report)	This broader clean water and resource conservation project included a behavior change component focused on improving sanitation through the community-led total sanitation approach.	Angola, Botswana, and Namibia (Community-led total sanitation)

SECTOR	PROJECT	BEHAVIOR CHANGE STRATEGIES/APPROACHES	LOCATION AND FOCUS
Health, nutrition, and agriculture	Sustainable Nutrition 4 All (SN4A) (Technical Brief)	<p>Using a combination of the HBM, TRA, and SEM, the SN4A approach induces behavioral change by triggering an understanding of the critical factors for improved nutrition, with a special focus on intrahousehold gender relations. SN4A increases local capacity to trigger demand for more nutritious foods, while also improving the supply of nutrient-rich vegetables from smallholder farmers, and increasing national governance capacity. Activities include:</p> <ul style="list-style-type: none"> • Formative research and baseline study • Community mapping • Pretesting messages/materials • Triggering session/community mobilization • Interpersonal communication strategy • Mass media • Community sessions 	Uganda and Zambia (Nutrition and agriculture)
Health, nutrition, and agriculture	USAID SPRING	<p>SPRING embraces a behavior-centered approach to promote adoption of high-impact, nutrition-related behaviors. The project supports countries, districts, groups, households, and individuals in adopting and sustaining high-impact nutrition practices by:</p> <ul style="list-style-type: none"> • Promoting specific individual and group behaviors among mothers, fathers, caregivers, nutrition and health service providers, farmers, peer networks, and others; • Shifting social attitudes, structures, and norms regarding those behaviors; and • Ensuring an enabling environment that promotes and/or supports social change and positive change in nutrition behaviors. 	15 countries in Africa, Asia, and Latin America (Nutrition and agriculture)
Agriculture	Africa Rice	<p>Aiming to decentralize and democratize learning in the agriculture sector, rural learning methodologies include:</p> <ul style="list-style-type: none"> • Participatory Learning and Action Research (PLAR) supplemented by technology-mediated learning methodologies, using video, radio, and ICT • Farmer-to-farmer learning • Evaluations in Benin and Togo showed that video-mediated farmer-to-farmer learning was 80% more effective in changing agriculture behaviors than conventional innovation training 	26 countries in Africa (Rice production)

SECTOR	PROJECT	BEHAVIOR CHANGE STRATEGIES/APPROACHES	LOCATION AND FOCUS
Agriculture	Drought tolerant maize for Africa initiative (2007–2012)	Used multiseason participatory varietal selection, including men and women farmers separately. Farmers compared crop varieties, becoming citizen scientists, collecting and comparing crop information and results; researchers learned about varietal performance under moderate drought conditions over time; seed producers were able to optimize varieties for drought conditions in diverse agro-ecologies. Methods included: <ul style="list-style-type: none"> • Personal stories in local media, both print and radio, to communicate farmers' learning and results, and • Awareness campaigns, including field demonstrations and interactive call-in radio programs 	13 countries in Africa (Drought-tolerant maize production)
Agriculture	Shamba Shape Up	Shamba Shape Up is Kenya's first make-over television program guiding small-scale farmers on topics such as improved pest management, irrigation, cattle rearing, poultry keeping, financial education, and crop management techniques in an engaging yet informative way. The Shamba Shape Up team visits a farm each week in a different area of the country. The team involves the film crew and a number of experts from partner organizations who specialize in the topics to be covered in the episode. Shamba Shape Up also offers free leaflets available by SMSing a request, a call center and mobile information service, and an online budgeting tool for farmers.	Kenya, Tanzania, and Uganda (Sustainable agriculture practices)
Agriculture	USAID FTF FARM I and II	FARM agricultural extension activities were implemented as direct interventions that reached project beneficiaries through training, grants, and behavior change activities. FARM used mass media and telephone technology.	South Sudan (Modern agricultural technologies, farming practices, and marketing systems)
Agriculture	USAID Integrated Initiatives for Economic Growth in Mali, IPM work	Based on formative research on the barriers to adopting integrated pest management (IPM), the project: <ul style="list-style-type: none"> • Mobilized local government representatives (governor, mayor, village chiefs, and local development agency) to inform communities about the IPM practice and win trust through awareness-building visits • Created village surveillance brigades to ensure adoption of practices • Held workshops and trainings for farmers and extension agents • Distributed (during trainings) flyers and a documentary film that demonstrated the step-by-step IPM process • Disseminated messages through Mali's television station 	Mali (IPM)

SECTOR	PROJECT	BEHAVIOR CHANGE STRATEGIES/APPROACHES	LOCATION AND FOCUS
		<ul style="list-style-type: none"> Used radio broadcasts, village meetings, and posters to build awareness of the process and benefits 	
Natural resource management	Rare Pride campaigns	<p>Theory of change and principles include a focus on social marketing and working through knowledge, attitudes, interpersonal communication, and barrier removal that lead to behavior change and conservation results. Marketing tools commonly include mascots, billboards, public events, and radio shows. The Pride campaigns' theory of change is based on elements of the trans-theoretical model, Diffusion of Innovations theory, and staged model of communication effects.</p> <p>To design a project of change, Pride campaigns go through the following phases: engage stakeholders, understand your site, rate threats, map the problem, create theory of change, measure success.</p>	<p>Global</p> <p>(Coastal fisheries, clean fresh water, agriculture, species conservation)</p>
Biodiversity	USAID Wildlife Asia	<p>USAID Wildlife Asia works to reduce demand for illegal wildlife products by communicating, mobilizing, and advocating ways to change practices and build new social norms around the use of wildlife products. Activities include targeted behavior change campaigns that are based on formative research and use proven social marketing and BCC tools. Wildlife champions, business leaders, women, and youth help amplify demand-reduction messaging campaigns in China, Thailand, and Vietnam.</p>	<p>China, Thailand, and Vietnam</p> <p>(Reduce demand for wildlife products)</p>
Democracy, human rights and governance (DRG)/conflict	Search for Common Ground initiatives	<p>Multilayered outreach campaigns based on conflict-related research of knowledge, attitudes, and behaviors and on communication options. Campaigns include radio programming, participatory theater, mobile cinema, door-to-door visits, dialogue-to-action initiatives, and training for influential community leaders, including youth and religious leaders. In South Sudan, youth also led participatory action research.</p>	<p>South Sudan and Yemen</p> <p>(Peace, social cohesion, conflict, and children's health)</p>
Democracy, human rights and governance (DRG)/conflict	Cote d'Ivoire Transition Initiative 2 (Final Report)	<p>Activities included: increasing credible information through community radio (on-air roundtables, sharing personal stories), social media, print media, promoting dialogue among youth, participatory theater, and television series.</p> <p>(Theory and approaches not described in available materials.)</p>	<p>Cote d'Ivoire</p> <p>(Social cohesion, peaceful elections)</p>

ANNEX E: SELECTED SBC RESOURCES

RESOURCE	DESCRIPTION
USAID TOPS Food Security and Nutrition Network's Social and Behavior Change Task Force	Tools and resources in several languages for SBC related to food security and nutrition, including the Designing for Behavior Change manuals, Barrier Analysis manuals, Make Me a Change Agent SBC techniques manuals, and Care Group manuals.
Communication Initiative Network	A knowledge hub and convening space for SBC practitioners that includes research, evaluations, and support materials from a wide range of sources.
Communication for Change (C-Change)	A resource library of publications produced by C-Change, a USAID-funded project implemented by FHI 360. Publications include an SBC learning package.
HC3 Health Compass and Population Health and Environment	Houses SBC capacity-building materials. HC3 Population, Health, and Environment includes resources focused on ecosystems and natural resources.
HC3 Integrated SBCC Programs Implementation Kit	A USAID HC3 implementation kit for SBC programs that address multiple health topics and behaviors under one program, including the integration of agriculture and nutrition.
CORE Group	Tools, training, case studies, and research on SBC for health and food security. The CORE Group is the knowledge management partner of the USAID TOPS program and was instrumental in producing many of the TOPS-funded FSN Network manuals.
Health Communication Capacity Cooperative (HC3)	USAID's flagship SBC project has many SBC resources, including a series of implementation kits.
Fostering Sustainable Behavior: Community-Based Social Marketing	A book, articles, case studies, and strategies for community-based social marketing with work mainly based in the United States and Europe.
USAID Accelerator Behaviors	Guidance and tools for integrating behavioral outcomes into health programming to accelerate impact.
Supplement to the Journal of Health Communication	A series of papers on SBC in the health sector produced following the 2013 Evidence Summit on population-level SBC.
Social and Behavior Change Interventions Landscaping Study: A Global Review	A 2011 report reviewing existing evidence and data on SBC interventions across reproductive health, neonatal health, maternal and child health, and nutrition.
Coming of age: communication's role in powering global health	A 2016 BBC review of the evidence on the role of communication in the global health sector.
Wildlife consumer behavior change toolkit	A toolkit produced by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the Wildlife Trade Monitoring Network (TRAFFIC), and the World Bank on using behavior change to reduce demand for endangered species.
CDC TheoryPicker	This tool takes users through a series of questions to find one or more of six common health behavior theories that best fit a particular situation and issue.
Overview of communication theories	University of Twente communication studies describe 48 communication theories.
ADAPTATION-SPECIFIC RESOURCES	

RESOURCE	DESCRIPTION
CGIAR Climate Change and Social Learning Initiative and Social Learning and Climate Change approach	Publications, videos, and blogs about social learning approaches in climate change initiatives for agriculture and food security.
Social learning for adaptation handbook	A handbook on implementing social learning for adaptation, with a focus on southern Africa, for practitioners and action researchers.

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