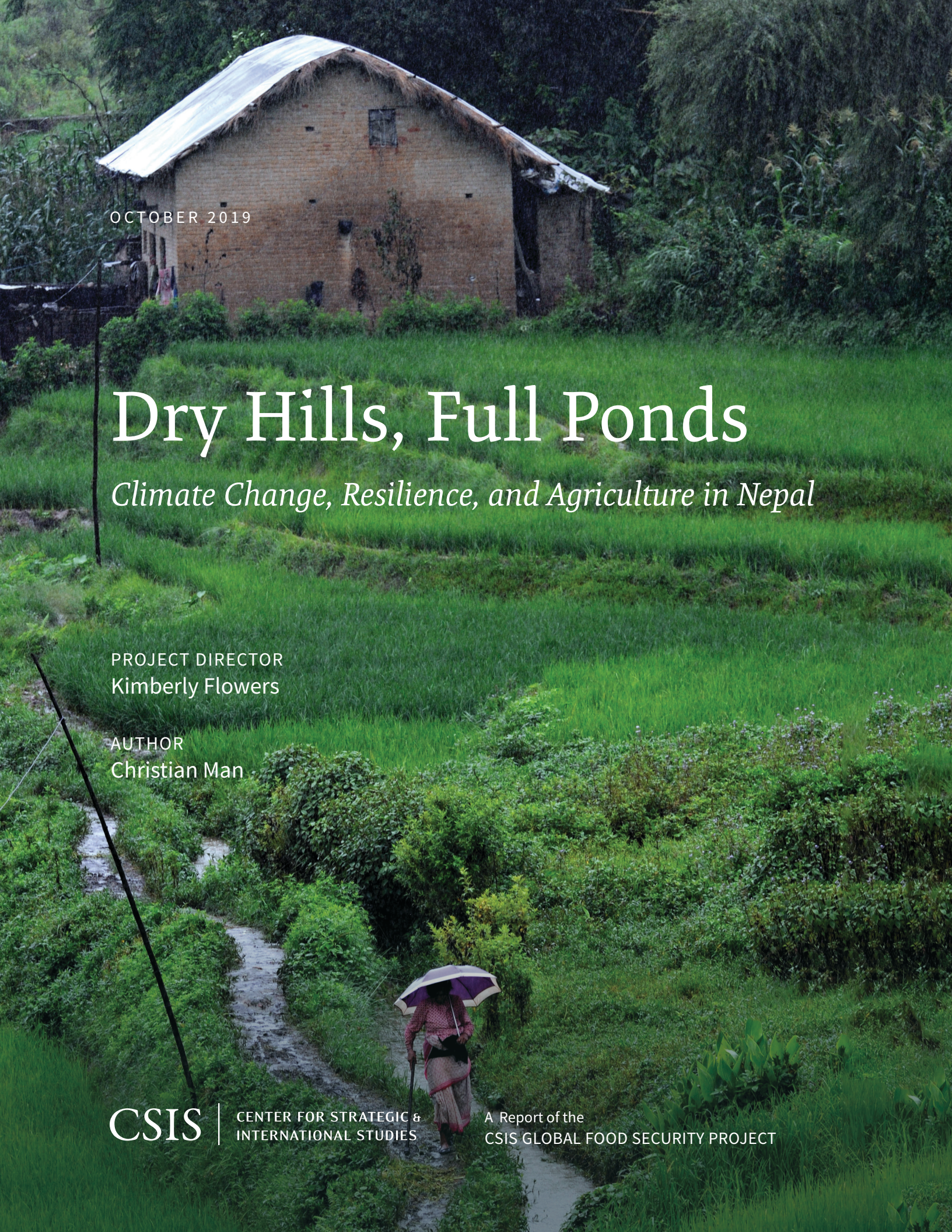

OCTOBER 2019

Dry Hills, Full Ponds

Climate Change, Resilience, and Agriculture in Nepal

PROJECT DIRECTOR
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CSIS | CENTER FOR STRATEGIC & INTERNATIONAL STUDIES

A Report of the
CSIS GLOBAL FOOD SECURITY PROJECT

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Acknowledgments

The author expresses sincere gratitude to Thakur Amgai, who was an exceptional research assistant and interpreter. Special thanks are also due to the U.S. Agency for International Development (especially Sarah Berry, Chip Bury, David Chalmers, Adriana Hayes, Sally Rey, Lynn Schneider, Phil Steffen, and Amy Tohill-Stull) and its implementing partners (especially Phil Broughton and Mark Pommerville), all of whom were gracious and helpful throughout this project. This project would not have been possible without the support of the Center for Strategic and International Studies Global Food Security Project: Kimberly Flowers, Eilish Zembilci, Amy Beaudreault, and Carolyn Hirshon. Thanks are also due to the farmers and traders from Surkhet and Nepalgunj who took time to talk with us about their work and their lives. We hope this report is useful to those who serve these groups, both in Nepal and in places like it around the world.

This work is made possible with support from the Bill & Melinda Gates Foundation.

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1 | Introduction

In the storied history of existential threats humankind has created for itself—genocide, overpopulation, mineral resource exhaustion, totalitarianism, the atomic bomb—climate change is in a league of its own. "If we don't take action," said the British natural historian David Attenborough, "the collapse of our civilizations and the extinction of much of the natural world is on the horizon."[1,2,3]

In many parts of the global South, however, climate change is no prophecy. It is a new normal.[4]

Indeed, it is well understood that climate change is destabilizing agricultural livelihoods in regions like Central America, the African Sahel, and Southeast Asia—places where farming is critical, both to the economy and to human well-being. Rising temperatures, shifting rainfall patterns, declining soil moisture, and a rise in the incidence of drought are, increasingly, forcing vulnerable smallholder farming populations to involuntarily leave agriculture, in whole or in part, and seek alternative sources of income and sustenance. This transition may be local, as farmers shift to either off-farm activities along nearby agricultural value chains (like selling fertilizer) or non-farm activities (like opening a shoe repair shop). It may also be regional or international, as they migrate in search of work in order to remit income home.

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1. Brandon Spector, "Sir David Attenborough Predicts the 'Collapse of Civilization' at UN Climate Summit," Live Science, December 3, 2018, https://www.livescience.com/64219-david-attenborough-warns-climate-change.html.
2. Recent research has further erased uncertainty as to whether human activity is responsible for the rise in global temperature. "We can now say with confidence that human factors like greenhouse gas emissions and particulate pollution, along with year-to-year changes brought on by natural phenomenon like volcanic eruptions or the El Niño, are sufficient to explain virtually all of the long-term changes in temperature," said the Oxford scientist Karsten Haustein. "Global Temperature Change Attributable To External Factors, Confirms New Study," University of Oxford, May 22, 2019, http://www.ox.ac.uk/news/2019-05-22-global-temperature-change-attributable-external-factors-confirms-new-study#.
3. Despite the Trump Administration's oscillations between silence and denialism concerning climate change, some bipartisan support for the issue is evident, even if it is symbolic at this point. Christina DeConcini and Kevin Kennedy, "Bipartisan US Climate Change Bill Aims to Cut Emissions by 90 Percent," World Resources Institute, November 27, 2018, https://www.wri.org/blog/2018/11/bipartisan-us-climate-change-bill-aims-cut-emissions-90-percent.
4. As the 2018 bombshell Intergovernmental Panel on Climate Change report put it, "Populations at a disproportionately higher risk of adverse consequences with global warming of 1.5°C and beyond include disadvantaged and vulnerable populations, some indigenous peoples, and local communities dependent on agricultural or coastal livelihoods (*high confidence*). Regions at disproportionately higher risk include Arctic ecosystems, dryland regions, small island developing states, and Least Developed Countries (*high confidence*)." Allen, M.R. et al., "Framing and Context," in: Global Warming of 1.5°C, (Geneva: International Panel on Climate Change, 2018) https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter1_Low_Res.pdf.

Climate change and rural outmigration describe some—certainly not all—of the key dynamics shaping some 2.7 million agricultural livelihoods in Nepal, where U.S. Agency for International Development (USAID) programs aim to achieve inclusive growth and build resilience capacities among marginalized, vulnerable populations (e.g., women and ethnic minorities).[5] The empowerment of these social groups likewise features prominently in the country's constitution, where the term "inclusion" appears more than 30 times. But—beyond such rhetoric—how does inclusive resilience work in practice, and how should it?

The rationale for this study is that marginalized people—for example, women from social groups of historically "low" social status—belong at the center of the ongoing debate about how institutions like USAID can protect their global development investments amid recurrent crises that are, in part, stemming from climate change. Why do marginalized people belong at the center? The Nepali context suggests at least three reasons. First, marginalized people stand to lose the most from climate-related impacts. Their inherent vulnerability defines and limits their capacity to adapt to floods, droughts, and rising temperatures. The disasters faced by vulnerable people are obviously tragic. They are also costly for donors to address. Proactively investing in the long-term resilience of such populations has the potential to decrease the high costs of emergency humanitarian response.[6] Second, only by building economic capacity among marginalized people can states (like the government of Nepal) and aid agencies (like USAID) make good on a shared vision for inclusive, country-led growth—a core tenant of Feed the Future, the U.S. government's global hunger and food security initiative. Third, marginalized people are positioned to manage and protect the natural resources that are critical to long-term resilience and economic prosperity. Long prioritized in grassroots conservation work, natural resource management (NRM) is increasingly important in mainstream foreign policy. For example, USAID says NRM is a key means by which it will support the Trump administration's Indo-Pacific Strategy, "in which all nations are independent, strong, and prosperous."[7]

Three questions structure this research project. The first question aims to illuminate those international development challenges stemming from climate change for resilience programming in the context of other shocks and stresses (Chapter 2). The second question explores how U.S. programs and policies might better achieve inclusivity in these resilience-building initiatives (Chapter 3). As USAID completes the conversion of its Bureau for Food Security into the Bureau for Resilience and Food Security, a window of opportunity exists to further ensure the new emphasis meaningfully addresses very vulnerable populations.[8] The third question situates inclusive resilience-building efforts within Nepal's agricultural

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5. USAID understands resilience as "the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shock and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth." USAID, *Building Resilience to Recurrent Crisis: USAID Policy and Program Guidance*, (Washington, D.C.: USAID, December 2012), https://www.usaid.gov/sites/default/files/documents/1870/USAIDResiliencePolicyGuidanceDocument.pdf.
6. "The Economics of Resilience to Droughts in Kenya, Ethiopia, and Somalia," USAID, January 31, 2018, https://www.usaid.gov/resilience/economics-resilience-drought.
7. USAID, *USAID'S Strategic Approach to Advancing America's Vision for a Free and Open Indo-Pacific*, (Washington, D.C.: USAID, June 2019), https://www.usaid.gov/sites/default/files/documents/1861/StrategicApproach_Indo-Pacific-Vision.pdf.
8. Sebastien Malo, "World's Top Aid Agency To Promote Resilience with New Body," Thomson Reuters Foundation News, November 14, 2018, http://news.trust.org/item/20181114101357-a6xkb/.

policy landscape, in order to analyze the potential for synergies between USAID and the government of Nepal around shared goals (Chapter 4). The report draws on key informant interviews and stakeholder focus groups conducted with approximately 100 individuals in various parts of Nepal during two weeks of fieldwork in June 2019. We attempt to place the findings within broader bodies of academic and policy-oriented research.

Several major themes emerged from this study. The first is that, despite the clear and present danger climate change presents to agricultural livelihoods in Nepal, it is but one of many challenges the country's smallholder farmers face. Other sources of vulnerability are political and social, for example. USAID's programs must persistently embrace and reflect this multifaceted reality. Second, there are different ways to ensure resilience-building efforts effectively include the most marginalized. Illustrated in USAID's programs, such approaches include building market participation, political empowerment, and self-reliance. Finally, Nepal's agricultural development policy provides an opportunity for USAID to advance the shared goals of climate adaptation and inclusive resilience. Investing in these goals advances a broader one for USAID: expediting Nepal's journey to self-reliance.

The following recommendations for USAID build on these themes.

1. Embrace a coherent, agency-wide message on climate change.

USAID should say and do more about climate change because the United States is the single largest donor of overseas development assistance. What the United States says and does influences countries around the world that follow our lead. Moreover, there is increasing reason to think bold leadership on climate change has bipartisan appeal. In the United States Congress, for example, there is burgeoning support for legislation related to climate change coming from both sides of the aisle. By embracing climate change in its messaging, USAID can re-entrench its leadership and expedite the journey to self-reliance in the countries where it works.

2. Meanwhile, embrace climate *realpolitik* by supporting the government of Nepal's own policy goals for climate change adaptation, inclusion, and resilience.

USAID/Nepal should continue to support elements of the government of Nepal's climate change policies, such as those emanating from its Agricultural Development Strategy, its Nationally Determined Contributions (NDC), and its Local Adaptation Plans for Action (LAPAs). Investing in the implementation of country-led plans that target adaptation, inclusion, and resilience fits squarely within USAID's current mandate. Although it may not carry the symbolic significance of a "USAID Climate Change Adaptation Fund for Southeast Asia," it may well be able to accomplish many of the same goals. Given the urgency, there is no choice but to practice a climate *realpolitik*.

3. When it comes to resilience-building, balance the technical and the political.

There is no such thing as climate change resilience, per se. In countries like Nepal, smallholder farmers experience an integrated set of livelihood risks and challenges. This is especially true for historically marginalized social groups such as women and low-caste ethnic groups. Resilience-building must therefore attend to the fundamental drivers of vulnerability (like exclusion from substantive political processes), not just to technical

adaptation needs (like climate-smart agricultural training for marginalized groups). The choice is not either but both. Technical innovation is critical, but it will not erase centuries of ethnicity-, gender-, and caste-based discrimination. Political participation is, for its part, no silver bullet, but it embodies an "understanding [of] the formal and informal institutional contexts within which [true] change and development occurs."9 The stakes here are unquestionably high: those who ignore the political drivers of vulnerability only reinforce them.

4. Pilot a 10-year project.

From an economic perspective, the road to inclusive resilience is longer because extreme levels of vulnerability imply extremely low capital endowments. People who have historically been excluded from social and economic development processes tend to have less income and savings, less education, greater risk aversion (rationally so), weaker ties with institutional sources of support, smaller landholdings, and so on. Building up these forms of capital takes time. This "building up" process is never linear, because—at a project's ground level—the process is relational.

Piloting a 10-year USAID project focused on inclusive resilience-building has three potential rewards. First, as an experiment, it would demonstrate adaptive management, a key principle USAID asks its partners to practice. Second, it would teach us things. How do the quality and trajectory of outcomes in year six and beyond compare with those in years one through five? Do poverty "graduation" rates within beneficiary communities accelerate more rapidly with a longer time horizon? What emergent developments in market systems can be observed after ten, rather than five, years of investment? Finally, a 10-year project would likely improve the nature of relationships between project staff and government staff at every level (e.g., village-level, regional offices, and capital city).

5. Aggressively bend market systems towards the most vulnerable.

History has been clear about the rewards of business-as-usual capitalism: they go to the few, not the many. This is the reason USAID aims for "inclusive" market systems development. But in places like Nepal, where the roots of social exclusion are centuries old, the dice are loaded against the most vulnerable. As such, USAID must critically evaluate its own efforts at inclusion, and make structural changes to its strategy and operations when it falls short. This may well require the agency to devolve greater decision-making authority to its field offices, in order to allow country-specific adaptation, iteration, and program design.

9. Ed Laws and Heather Marquette, *Thinking and Working Politically: Reviewing the Evidence on the Integration of Politics into Development Practice over the Past Decade* (Thinking and Working Politically Community of Practice, March 2018), https://twpcommunity.org/wp-content/uploads/2018/04/Thinking-and-working-politically-reviewing-the-evidence.pdf.

2 | Putting Climate Change in Context

Climate change in Nepal rests on a paradox. On the one hand, the country's contribution to greenhouse gas (GHG) emissions is incredibly negligible. It ranks 109th globally in GHG emissions. In 2016, Nepal emitted just 8.5 metric tons of carbon dioxide (a primary GHG). The United States, by comparison, emitted some 4,800 metric tons that year.[10] On the other hand, Nepal is exceptionally vulnerable to the risks posed by climate change. The think tank Germanwatch ranks it fourth on its Climate Risk Index.[11,12] To state the obvious, as some scholars have noted, this is "an exceedingly iniquitous dynamic: low-income countries are especially threatened by conditions they have done little to cause."[13]

Such threats are the subject of this chapter. The discussion distills five key elements of the research on climate change in Nepal, especially as they relate to *Research Question 1*: in Nepal, how do shocks and stresses related to climate change interact with other political and socio-economic development challenges? The purpose is to remove climate change from the abstract and locate its concrete effects within the lived experience of rural communities.[14]

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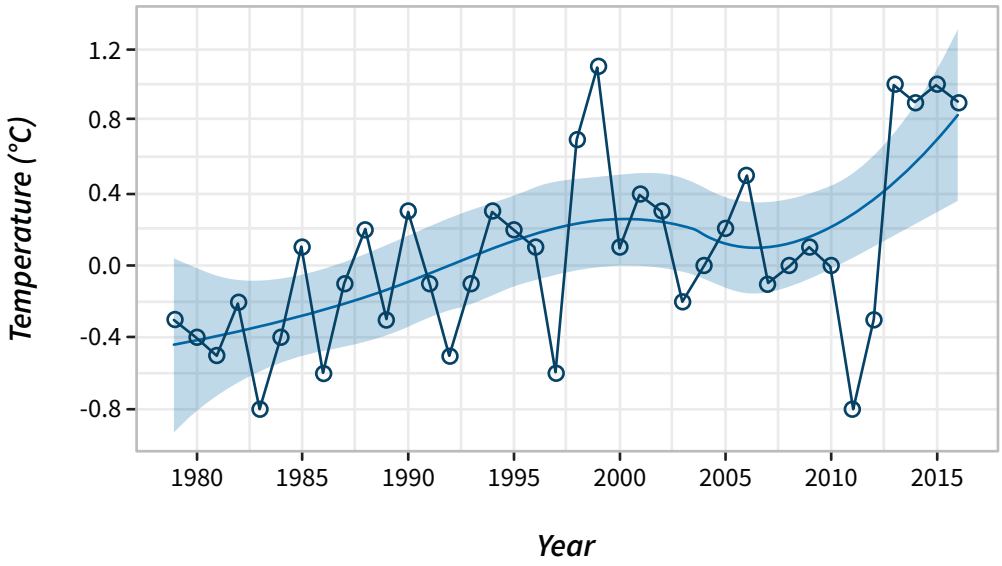
10. The International Energy Agency, https://www.iea.org/.
11. The Climate Risk Index is not an *ex ante* projection but a *post hoc* analysis. It uses four simple indicators for a given time period: number of deaths, number of deaths per 100,000 inhabitants, sum of losses in US$ purchasing power parity, and losses per unit of gross domestic product. See: David Eckstein, Marie-Lena Hutfils, and Maik Winges, *Global Climate Risk Index 2019: Who Suffers Most From Extreme Weather Events? Weather-related Loss Events in 2017 and 1998 to 2017* (Berlin: Germanwatch, December 2018), https://www.germanwatch.org/sites/germanwatch.org/files/Globalpercent20Climatepercent20Riskpercent20Indexpercent202019_2.pdf.
12. Interestingly, KPMG's 2019 Change Readiness Index ranks Nepal similarly, at 104th. Unlike the Climate Risk Index, the Change Readiness Index is an ex ante projection. It assesses a country's change readiness according to its enterprise capability (*inter alia*, subindices related to economic diversification, business environment, transport and utilities infrastructure), government capability (*inter alia*, subindices related to rule of law, food and energy security, macroeconomic framework), and people and civil society capability (*inter alia*, subindices related to human capital, safety nets, and demographics). Laura Frigenti and Timothy A. A. Stiles, *2019 Change Readiness Index: Assessing countries' ability to manage change and build a climate-ready future* (Amstelveen: KPMG International, 2019), https://home.kpmg/xx/en/home/insights/2019/06/2019-change-readiness-index.html.
13. Marc Edelman et al., "Introduction: Critical Perspectives on Food Sovereignty," *Journal of Peasant Studies* 41, no. 6 (October 15, 2014), https://www.tandfonline.com/doi/full/10.1080/03066150.2014.963568.
14. Jonathan Edward Ensor, "Asking the Right Questions in Adaptation Research and Practice: Seeing Beyond Climate Impacts in Rural Nepal," *Environmental Science & Policy* 94 (April 2019), https://www.sciencedirect.com/science/article/pii/S1462901118311079#!.

Climate change is happening.

In April 2019, USAID released a new policy framework titled "Ending the Need for Foreign Assistance."[15] The paradigm centers on building individual, community-based, and institutional self-reliance within the agency's partner countries. The goal, explained Administrator Mark Green, is for countries to be able to eventually "solve their development challenges without our assistance." The means to this end is something USAID calls the "journey to self-reliance," which tracks different indicators of country commitment (e.g., social group equality and the economic gender gap) and country capacity (e.g., government effectiveness and child health). Astoundingly, the new policy framework is all but silent on the science, threats, and implications of climate change.

Average Temperature Anomalies in Nepal



Adapted from: Shrestha, U.B., Shrestha, A.M., Aryal, S. et al., "Climate Change in Nepal: A Comprehensive Analysis of Instrumental Data and People's Perceptions," *Climatic Change* 154, 3-4 (June 2019): 315-334, https://link.springer.com/article/10.1007/s10584-019-02418-5.

Yet scientific evidence on climate change in Nepal paints a clear picture of consistent trends: since the 1970s, statistically significant increases have been observed in average annual temperatures, maximum temperatures, the number of hot days and nights, annual precipitation amounts, and wet spells.[16] Far from abstractions, these volatile dynamics have been pervasive in the lived experience of Nepalis: a 2016 study by the federal government found that the vast majority of citizens have observed an increase in the incidence of drought and plant disease, as well as changes in the timing and duration of the summer and winter seasons. As a result, fully one-third of households reported having lost more than $500 in the last five years—an enormous amount, considering the average

15. USAID, *USAID Policy Framework: Ending the Need for Foreign Assistance* (Washington, D.C.: USAID, April 2019), https://www.usaid.gov/sites/default/files/documents/1870/WEB_PF_Full_Report_FINAL_10Apr2019.pdf.
16. Shrestha, U.B., Shrestha, A.M., Aryal, S. et al., "Climate Change in Nepal: A Comprehensive Analysis of Instrumental Data and People's Perceptions," *Climatic Change* 154, 3-4 (June 2019): 315-334, https://link.springer.com/article/10.1007/s10584-019-02418-5.

annual income for rural households in Nepal is about $3,000.[17,18,19] The estimated direct costs of such events—e.g., decreases in agricultural output stemming from drought—are approximately $300 million per year, about 1 percent of the country's 2018 GDP. For a country with an average GDP growth rate of 4.1 percent over the past six decades, this is no small sum.[20,21]

> *Fully one-third of Nepalis reported having lost more than $500 in the last 5 years owing to perceived climate-related impacts. This is an enormous amount: the average annual income for rural households in Nepal is about $3,000.*

Climate change impacts vary across ecological context.

Despite its small size, Nepal is very ecologically diverse, ranging from the alpine (Himalayan) region in the north, to the mid-hills (including the Mahabharat range and the Churia Hills) that stretch across the country's interior midsection, to the Terai (plains) along its Indian border, which form part of the Indo-Gangetic Plain. Such dramatic variations in altitude have, over the centuries, given rise to some 118 ecosystems, 35 forest types, 286 endemic plant species, and 160 endemic animal species.[22] Such ecological complexity, paired with the relatively coarse resolution of global climate models and inadequate data, has resulted in a lack of consensus on climatological trends. For instance, although many projections agree on the direction of future climatic and weather changes, "differences appear in the magnitude of the changes and in their spatial distribution."[23] As a result, scientists are unsure how the effects of climate change will play out across Nepal. Despite a general agreement that climate change will likely have profound consequences on things like water availability, agrobiodiversity, and crop disease-resistance, understanding localized impacts will require greater investments in scientific research.[24]

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17. "Nepal Average Monthly Household Income: Rural," CEIC, October 15, 2015, https://www.ceicdata.com/en/nepal/household-budget-survey-average-monthly-household-income/average-monthly-household-income-rural.
18. Nepal Central Bureau of Statistics, "National Climate Change Impact Survey 2016: A Statistical Report," (Kathmandu: Central Bureau of Statistics, April 2017), http://202.45.144.7/cbsgov/nada/index.php/catalog/71/related_materials.
19. Drought was the main cause of economic losses.
20. "In extreme years, the [estimated direct cost] is 5 percent or more…[c]onsideration of the additional indirect and macro-economic costs of these impacts could increase current estimates by 25-100 percent." See IDS-Nepal, PAC and GCAP, *Economic Assessment of Climate Change in Key Sectors in Nepal* (Nepal: Government of Nepal Ministry of Science, Technology and Environment, April 2014), https://cdkn.org/wp-content/uploads/2014/05/EIA-summary_sharing_final-low-resolution.pdf.
21. Shrestha, U.B., Shrestha, A.M., Aryal, S. et al., "Climate Change in Nepal: A Comprehensive Analysis of Instrumental Data and People's Perceptions," *Climatic Change* 154, 3-4 (June 2019): 315-334, https://link.springer.com/article/10.1007/s10584-019-02418-5.
22. "Nepal - Country Profile," Convention on Biological Diversity, n.d., https://www.cbd.int/countries/profile/default.shtml?country=np.
23. Peter Marcotullio et al., "Climate and Urbanization" in *Climate in Asia and the Pacific: Security, Society and Stability*, (2014), 60, https://www.springer.com/gp/book/9789400773370.
24. Yanfen Wang et al., "Drivers of Change to Mountain Sustainability in the Hindu Kush Himalaya" in T*he Hindu Kush Himalaya Assessment: Mountains, Climate Change, Sustainability and People*, https://link.springer.com/book/10.1007/978-3-319-92288-1.

Climate change impacts are socially uneven.

Climatic changes in temperature and precipitation regimes have direct impacts on those for whom farming is an important livelihood. This much is obvious. But farmers are hardly a monolithic social group, and different levels of social status uniquely shape the capacity of agrarian households to adapt to climate-related challenges. Consider an illustrative case of food security among Dalits in Nepal. Given their "low-caste" status and subsequent historic marginalization, land ownership among Dalits is scarce.[25] This makes important climate adaptation strategies like crop diversification inherently difficult. As a result, Dalits are often forced to cope counterproductively (or "erosively")—borrowing food from the wealthier neighbors, selling off cattle, or obtaining credit. "Rather than reducing vulnerability," one study notes, "these strategies intensify their indebtedness and dependency, and exacerbate vulnerability. Therefore, the most critical aspect of food insecurity is not associated with climate change per se but with caste-based unequal power relation[s] and socioeconomic marginalization."[26,27] Insofar as vulnerability mediates climate impacts, then, there is reason to believe Nepal's mountain communities will be especially threatened, as poverty rates there are nearly twice what they are in the mid-hills and Terai.[28,29,30]

Climate change is but one of many challenges to resilience and food security for smallholders.

In policymaking terms, it would be simplest to construe Nepal's several million smallholder farmers as a kind of blank slate against which droughts, floods, and other shocks and stresses stemming from climate change play out. If this were the case, shaping targeted interventions would be more straightforward. Increase access to drought-tolerant seeds. Invest in early warning systems. Build economic opportunities that are non-agricultural. The reality, of course, is much messier.

Consider these facts. Even though the agriculture sector provides employment to three-fourths of the economically active population, it accounts for just one-third of GDP, and the country imports far more agricultural goods than it exports. The agricultural import

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25. Jeetendra P. Aryal and Stein T. Holden, *Caste Discrimination, Land Reforms and Land Market Performance in Nepal* (Oslo: Norwegian University of Life Sciences, June 2011), https://pdfs.semanticscholar.org/7dda/bb2cf-4fe008c8f6df3d8f28b622ac836e599.pdf?_ga=2.77267669.1541948279.1564942190-1839310729.1564942190.
26. Peter Anderson and Yograj Gautam, "Multiple Stressors, Food System Vulnerability and Food Insecurity in Humla, Nepal," *Regional Environmental Change* 17:5 (June 2017), https://web.a.ebscohost.com/abstract?-direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=14363798&AN=123224939&h=i77Jviml-DvXqcQYQ3miIxqLMWCSCIlnspercent2bcijRXhoxDlI0nDzrib3Xpercent2fy7hegvfI1pxH3DgMcidZfIGjN-mOfz97wpercent3dpercent3d&crl=c&resultNs=AdminWebAuth&resultLocal=ErrCrlNotAuth&crlhashurl=login.aspxpercent3fdirectpercent3dtruepercent26profilepercent3dehostpercent26scopepercent3dsitepercent26auth-typepercent3dcrawlerpercent26jrnlpercent3d14363798percent26ANpercent3d123224939.
27. See also: Chapter 2 of Robin Mearns and Andrew Norton, *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World* (Washington, D.C.: The World Bank, 2010), http://documents.worldbank.org/curated/en/970361468324546268/pdf/520970PUB0EPI11C010disclosed0Dec091.pdf.
28. Chapter 12 of Giovanna Gioli et al., "Understanding and Tackling Poverty and Vulnerability in Mountain Livelihoods in the Hindu Kush Himalaya," *The Hindu Kush Himalaya Assessment* (2019), https://link.springer.com/book/10.1007/978-3-319-92288-1.
29. G. McDowell et al., "Climate-related Hydrological Change and Human Vulnerability in Remote Mountain Regions: A Case Study from Khumbu, Nepal," *Regional Environmental Change* 13:2, (July 27, 2012), https://link.springer.com/article/10.1007/s10113-012-0333-2.
30. Lyndsay Jones and Emily Boyd, "Exploring Social Barriers to Adaptation: Insights from Western Nepal" *Global Environmental Change* 21:4, (October 2011), https://www.sciencedirect.com/science/article/abs/pii/S0959378011000860.

bill has risen fivefold over the last decade, in fact.[31] Agricultural production is low partly because of the vast migration of labor abroad—about 3.5 million people, mostly men, between 2008 and 2017—in search of better economic opportunities.[32,33,34] Despite progress in poverty reduction from resulting remittances, outmigration has, in turn, produced a subsequent set of challenges to resilience and food security, including land degradation and an increase in work burdens for women who stay behind.[35,36,37] In sum, although climate change features importantly in the constellation of challenges facing Nepal's smallholders, it is one among many. Policymakers must attend to the politics that inhere in these challenges—not just to technical interventions aimed at improving adaptive capacity.[38,39]

What politics? Where inclusion is concerned, there is, for instance, the politics of performance. Many see the government of Nepal's rhetoric (constitutionally and otherwise) about building political opportunity for low-caste social groups as just that—rhetoric.[40,41] "The government wants to put all the talk about inclusion to rest," said a prominent Nepali social scientist in an interview with the Center for Strategic and International Studies (CSIS) Global Food Security Project research team. The indication is that the government's emphasis has been on optics rather than substance. During the country's 2017 local government elections, a historic number of women—almost 15,000—won seats at the table. However, because this was mainly a function of constitutionally

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31. Sangam Prasain, "Agro Products Import Bill Crosses Rs200b," *Kathmandu Post*, August 7, 2018, https://kathmandupost.com/money/2018/08/07/agro-products-import-bill-crosses-rs200b.
32. Nandita Baruah and Nischala Arjal, " Nepalese Labor Migration—A Status Report" The Asia Foundation, June 6, 2018, https://asiafoundation.org/2018/06/06/nepalese-labor-migration-a-status-report/.
33. Remittances, which now account for one-third of GDP, have contributed to precipitous declines in poverty over the last several decades. Yet, "in a perverse way, remittances have also weighed down on Nepal's development potential. First, the buoyant influence remittances have had on the purchasing power of a majority of Nepalis has inadvertently also resulted in the appreciation of the country's real exchange rate which has in turn eroded the competitive edge of manufacturing industries, further undermining the employment generation potential of this sector. Second, the steady outflow of young and potentially restless youth and the cushion of remittances could have also lulled policymakers into not seeing the immediate urgency of key reforms necessary to unlock Nepal's longer-term development potential" p. 16 of *Moving up the Ladder: Poverty Reduction and Social Mobility in Nepal* (Nepal: The World Bank Group, October 1, 2011), http://documents.worldbank.org/curated/en/938301474378140220/Full-report.
34. Outmigration from the agricultural sector is itself a function of a complex set of underlying challenges farmers face: low rates of return to land, labor, and capital; low levels of investment; fragmented landholdings; poor-quality inputs; a weak enabling environment for policy; limited access to credit; weak infrastructure; and so on. See *The Global Food Security Strategy: Nepal Country Plan* (USAID Feed the Future, April 18, 2018), https://www.usaid.gov/sites/default/files/documents/1867/GFSS-Nepal-Country-Plan.pdf.
35. S. Jaquet et al., "Does Outmigration Lead to Land Degradation? Labour Shortage and Land Management in A Western Nepal Watershed," *Applied Geography* 62, (August 2015): 157-170, https://www.sciencedirect.com/science/article/abs/pii/S014362281500096X.
36. To be sure, the social and economic effects are mixed and irreducibly complex. See Bandita Sijapati et al., *Labour Migration and the Remittance Economy: The Socio-Political Impact* (Nepal: USAID, The Asia Foundation, and Centre for the Study of Labor and Mobility, March 13, 2017), https://asiafoundation.org/wp-content/uploads/2017/03/Labour-Migration-and-the-Remittance-Economy.pdf.
37. Jeeyon Janet Kim et al., "The Effects of Male Out-migration on Household Food Security in Rural Nepal," *Food Security* 11, no. 3 (June 2019): 719- 732, https://link.springer.com/article/10.1007/s12571-019-00919-w.
38. John F. Morton, "The Impact of Climate Change on Smallholder and Subsistence Agriculture" PNAS 104, no. 50 (December 11, 2007): 19680-19685, https://www.pnas.org/content/104/50/19680.
39. Devendra Gauchan, "Agricultural Development in Nepal: Emerging Challenges and Opportunities," *Discourses on Nepal's Development* 1, (March 2018): 212-240, https://www.researchgate.net/publication/328963861_Agricultural_Development_in_Nepal_Emerging_Challenges_and_Opportunities.
40. Ram Kumar Kamat, "Govt Not Following Inclusion Policy," *Himalayan Times*, November 16, 2018, https://thehimalayantimes.com/nepal/govt-not-following-inclusion-policy/.
41. "Furore over PSC Decision: Ad for Recruitment of Employees in Local Bodies Not Inclusive Enough," *Himalayan Times*, June 2, 2019, https://thehimalayantimes.com/nepal/furore-over-psc-decision/.

mandated quotas for female representation, it is no surprise that the women who hold these offices consistently feel overlooked and ignored by their male colleagues.[42] It is exclusionary inclusion.

In other words, climate change is a threat to the resilience of marginalized smallholder farmers. But—as commentators have repeatedly noted—it co-exists and interweaves with more fundamental political challenges.[43,44,45] Resilience not only demands the capacity to adapt to prevailing social and ecological realities. It also demands the capacity to transform the political rules at various levels of government that dictate how adaptation happens, for whom, and to what ends.[46]

Climate change adaptation and resilience-building efforts in Asia face unique challenges—like marginalization.

USAID released initial policy guidance on resilience in late 2012, noting, "the nature of shocks and stresses that typically affect Asia…may be different than those in the Horn of Africa or the Sahel or other regions…We recognize the need for a resilience approach in other areas where we work."[47] In practice, however, adaptation and resilience are overwhelmingly Africa-oriented.[48] For example, a recent study found there are 67 adaptation initiatives per one hundred million people in Africa—not a large number, certainly, but it is more than *five times* higher than Asia, where there are just 12 initiatives per one hundred million people.[49]

Framed positively, country ownership—a core value espoused by USAID— for climate change adaptation appears especially strong in Asia. Asian nations are statistically more likely to report proactive adaptations than those in Africa.[50] In Nepal, the federal

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42. *Diagnostic Study of Local Governance in Federal Nepal* (Australian Aid and The Asia Foundation, 2017), https://asiafoundation.org/wp-content/uploads/2018/07/Diagnostic-Study-of-Local-Governance-in-Federal-Nepal-07112018.pdf.
43. Sigrid Nagoda, "New Discourses but Same Old Development Approaches? Climate Change Adaptation Policies, Chronic Food Insecurity and Development Interventions in Northwestern Nepal," *Global Environmental Change* 35, (November 2015): 570-579, https://www.sciencedirect.com/science/article/abs/pii/S0959378015300352.
44. Karen O'Brien, Siri Eriksen, Tor Håkon Inderberg, and Linda Sygna, *Climate Change and Development Adaptation through Transformation* (London: Nordic Development Fund, 2015), http://www.ndf.fi/sites/ndf.fi/files/news_attach/climate_change_and_development.pdf.
45. Andrea J. Nightingale, "Power and Politics in Climate Change Adaptation Efforts: Struggles over Authority and Recognition in the Context of Political Instability," *Geoforum* 84, (August 2017): 11-20, https://www.sciencedirect.com/science/article/pii/S001671851730129X.
46. Helen Jeans, Gina E, Castillo, and Sebastian Thomas, *The Future is a Choice: Absorb, Adapt, Transform Resilience Capacities* (Oxford: Oxford International, January 2017), https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620178/gd-resilience-capacities-absorb-adapt-transform-250117-en.pdf.
47. USAID, *Building Resilience to Recurrent Crisis: USAID Policy and Program Guidance* (Washington, D.C.: USAID, December 2012), https://www.usaid.gov/sites/default/files/documents/1870/USAIDResiliencePolicyGuidanceDocument.pdf.
48. Donors, policymakers, and scholars interweave "adaptation" and "resilience" in various ways, ad nauseum. One USAID document notes how a certain team is "focused on leveraging local resilience adaptations." Explaining the theoretical and practical relationship between these two terms is, fortunately, beyond the scope of this report. See Saleemul Huq, "The Battle over Terminology: Adaptation vs Resilience," *Daily Star*, August 28, 2019, https://www.thedailystar.net/opinion/politics-climate-change/the-battle-over-terminology-adaptation-vs-resilience-1573357.
49. This refers to all adaptation initiatives, not just those funded by the USAID. In the study, the ratio is expressed in initiatives-per-million-people, i.e., 0.67 initiatives per one million people. The scale is adjusted here for clarity. James D. Ford et al., "The Status of Climate Change Adaptation in Africa and Asia" *Regional Environmental Change* 15, no. 5 (June 2015): 801-814, https://link.springer.com/article/10.1007/s10113-014-0648-2.
50. Ibid.

government approved its "National Adaptation Programme of Action to Climate Change" (NAPA) in 2010.[51] The following year, Nepal—"recognizing [the need to] reflect more fully the needs and aspirations of [its own] tremendously diverse communities"—became the first country in the world to develop a formal Local Adaptation Plan of Action (LAPA).[52,53] These plans—robust if imperfect aspirations for national self-reliance—remain woefully underfunded.[54,55]

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51. *National Adaptation Programme of Action to Climate Change* (Nepal: Ministry of Environment, September 2010), https://unfccc.int/resource/docs/napa/npl01.pdf.
52. Brian Penniston, *High Mountains Adaptation Partnership: A Review of Nepal's Local Adaptation Plans of Action* (USAID, January 2013), https://www.climatelinks.org/sites/default/files/asset/document/NepalLAPAs_Stocktaking_TMI-Peniston-FINAL.pdf.
53. Pratigya Silwal, *Local Adaptation Plans of Action (LAPAs): An analysis of approaches to planning for climate change in Nepal* (New Zealand: Lincoln University Digital Thesis, 2016), https://pdfs.semanticscholar.org/18fe/a8e6150a32cc45d5aefeab48cfd53697094d.pdf.
54. Angie Dazé et al., *Nepal National Adaptation Plan (NAP) Progress: Reflecting on Lessons Learned and the Way Forward* (Nepal: Government of Nepal Ministry of Forests and Environment, 2018), http://napglobalnetwork.org/wp-content/uploads/2018/07/napgn-en-2018-nepal-nap-process.pdf.
55. Sigrid Nagoda, "New Discourses but Same Old Development Approaches? Climate Change Adaptation Policies, Chronic Food Insecurity and Development Interventions in Northwestern Nepal," Global Environmental Change 35, (November 2015): 570-579 https://www.sciencedirect.com/science/article/abs/pii/S0959378015300352.

3 | Building Resilience at the Margins

The discussion in Chapter 2 explains that climate change is but one source of threats to resilience for smallholder farmers in Nepal: floods, droughts, temperature increases, and shifting growing seasons over the past several decades only account for a portion of the challenges such farmers face. With the onset of these dynamics, establishing secure agricultural livelihoods has become that much more complex, leaving the country's 2.7 million smallholder farmers further exposed to crisis. This is especially true for the most vulnerable agrarian social groups—for example, women from so-called low castes (e.g., Dalits) who live in Nepal's Far West, where the nearest road is an arduous two-day walk. "I do not even know if we are Nepali citizens," said one Dalit woman in a 2018 *Nepali Times* story. "We Dalits are neglected and oppressed. We have little property, nobody looks after us, not the government, not the organizations, not the gods."[56,57]

This chapter examines several USAID-funded programs in Nepal from the perspective of social inclusion, principally answering one question: amid increasingly complex shocks and stresses, how can resilience-building activities more inclusively serve the most vulnerable members of targeted agriculturalist populations (*Research Question 2*)?[58]

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56. Jocelyn Powelson, "Life and Livelihood in Remote Nepal: Easing the Daily Struggle of Families in a Village Far, Far Away from Kathmandu," *Nepali Times*, September 28, 2018, https://www.nepalitimes.com/banner/life-and-livelihood-in-remote-nepal/.
57. The history of social exclusion and inequality in Nepal is complex, dating back at least to the twelfth century, which saw the migration of waves of caste peoples into certain parts of the central Himalayas. "As these groups moved into Nepal, probably intermarrying in some instances with sectors of the indigenous populations, they applied a Hindu caste logic that had been internal to their own social and cultural life in their relations with the people already inhabiting the hills of Nepal who did not share these social ideologies. In a parallel development, Newars, indigenous to the Kathmandu valley, had begun to adopt forms of caste distinction internally. As elite sectors of parbatiya Hindu groups came to dominate indigenous principalities in the hills and eventually the Kathmandu Valley through the conquest and negotiations of Prithvi Narayan Shah and his direct ancestors, high caste parbatiya, actively supported by the state structure, migrated throughout the mid-hills and valleys of Nepal where their elite became more often than not dominant in administrative and economic life" (pp. 4-5). From the Introduction of Gurung, Om, Mukta S. Tamang, Mark Turin, *Perspectives on Social Inclusion and Exclusion in Nepal* (Kathmandu: Central Department of Sociology/Anthropology, 2014), https://www.abebooks.com/9789937524537/Perspectives-Social-Inclusion-Exclusion-Nepal-9937524539/plp.
58. For context on resilience in Nepal, see Tom Bower et al., *Nepal Resilience Research Report - Final* (Tucson: Center for Resilience (C4R), USAID Food for Peace (FFP), USAID Mission Nepal, Save the Children Nepal, Mercy Corps Nepal, May 4, 2017), https://www.fsnnetwork.org/nepal-resilience-research-report-final. and Vidya Diwakar, Resilience and Sustainable Poverty Escapes in Nepal (Chronic Poverty Advisory Network, April 2018), https://www.agrilinks.org/sites/default/files/usaid_report_nepal_apr18_508.pdf.

Resilience has its origins in ecology, where, since the 1970s, scientists have used it to describe the amount of disturbance a system can absorb without changing state.[59] In the past decade, however, a series of recurrent humanitarian crises on the African continent have helped precipitate its migration to the international development community. Between 2011 and 2012, for example, the Sahel and the Horn of Africa both faced severe droughts. Collectively, the conditions drove some 25 million people into crisis. A senior USAID official wrote in the *Huffington Post*:

> In these cases of chronic crisis, recurring shocks erase development gains and set local populations back into urgent need over and over again. With many in the Sahel still struggling to recover from the region's last food crisis in 2010, they now face a new crisis of food access. Borrowing money to buy food or the seeds to plant this rainy season has the farmers of Chad, Niger, Burkina Faso, and their neighbors incurring amounts of debt that are crippling, and a vicious cycle of suffering persists.[60]

> *"We Dalits are neglected and oppressed. We have little property, nobody looks after us, not the government, not the organizations, not the gods."*

As a result, USAID has spent the last nine years or so investing in its understanding of, and technical programming capacity for, resilience in order to protect past development gains and ensure future ones.

Market participation, political empowerment, and self-reliance describe three potential sources of inclusive resilience for marginalized communities evident in USAID/Nepal's programs. These sources structure the chapter, which draws illustrations from fieldwork the CSIS Global Food Security Project conducted in Nepal in June 2019.

***Market participation* provides an opportunity to build inclusive resilience.**

Despite substantial changes in how it is described and approached, agricultural market development writ large has long been a focus of USAID programming in Nepal. In the 1950s, for example, USAID—then known as the United States Operations Missions (USOM)—implemented the Rapti Valley Development Project in the country's mid-west. The $2 million project was the country's first "integrated rural development project" (a term that had not yet been popularized at the time). It prioritized a broad range of market-related interventions: equitable land distribution, road and market infrastructure development, and the formation of cooperative societies centered on agricultural inputs and marketing.[61]

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59. Lance H. Gunderson, "Ecological Resilience—In Theory and Application," *Annual Review of Ecology and Systematics* 31, (November 2000): 425-439, https://www.annualreviews.org/doi/pdf/10.1146/annurev.ecolsys.31.1.425.
60. Nancy Lindborg, "Chronic Crisis in the Sahel Calls for a New Approach," Huffpost, September 1, 2012, https://www.huffpost.com/entry/sahel-food-crisis_b_1641398.
61. The project, "which USOM touted as its most "prestigious and substantial effort, did not provide the optimal development payoffs expected." Indeed, by the end of the 1950s, "there was no evidence that U.S. agricultural projects had contributed to increased agricultural yields, increased productivity, or higher per-capita income."

USAID/Nepal continued such work in the 1980s and 1990s. It was then that the agency began to recognize—in vague terms—the need to make market development processes socially inclusive. The final evaluation of the $19 million Rapti Development Project (1987–1995) found a "dramatic increase in increased income, equity, women's participation, sustainability, and favorable social effects."[62]

Inclusive economic growth came into sharper focus in the early aughts with the advent of globalization and its attendant fears concerning inequality.[63] "(I)n light of the threats and opportunities that globalization poses," asked USAID, "can small firms and the industries they dominate compete in globalized markets, and, if so, how?"[64] The answer was a hypothetical yes; thus, in 2006, the agency adopted a focus on value chains as a lever for economic growth and poverty reduction in the agriculture sector.[65] In the case of Nepal, this focus on inclusive agricultural economic development has been reiterated ad nauseum.[66]

Today, inclusive market system development describes a fundamental component of USAID's vision for achieving sustainable impact at scale.[67] Inclusion, in the context of USAID programming, can be understood as the meaningful participation of individuals, households, and communities with the lowest relative socioeconomic status. The paradigm, which builds on that of value chains, emphasizes a kind of system that is at once economically competitive, socially inclusive, and comprehensively resilient.[68] USAID's Knowledge-Based Integrated Sustainable Agriculture in Nepal II (KISAN II) project is a good illustration of inclusive market system development. Among other things, the project aims to "promote inclusive development by enabling less-commercially-oriented farmers (particularly women, youth, and marginalized groups) to access market benefits."

For example, KISAN II has partnered with a variety of market actors, including several fine rice mills. The mills receive approximately $40,000 in matching grant funding to buy down some of the risks and costs of doing business with remote, small-scale producers, most of whom have historically only grown coarse rice. The mill forms majority-female farmer groups, training the groups on how to appropriately plant the seed and apply fertilizer (producing fine rice is more

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Christa A. Skerry, Kerry Moran, and Kay M. Calavan, *Four Decades of Development The History of U.S. Assistance to Nepal 1951-1991* (Nepal: USAID, 1991), https://pdf.usaid.gov/pdf_docs/PNABR755.pdf.

62. John Mellor Associates, Inc. and Institute for Integrated Development Studies, *The Rapti Development Project* (Nepal: J. Mellow Associates Inc. and Institute for Integrated Development Studies, January 10, 2013), https://pdf.usaid.gov/pdf_docs/PDABM231.pdf.

63. Nancy Birdsall, founding president emeritus of the Center for Global Development, put the concern bluntly in a 1999 speech. "I have a simple point to make: globalization puts developing countries at risk of increasing income inequality." Nancy Birdsall, *Globalization and the Developing Countries: The Inequality Risk* (Washington, D.C., March 18, 1999), https://carnegieendowment.org/1999/03/18/globalization-and-developing-countries-in-equality-risk-pub-38.

64. Olaf Kula, Jeanne Downing and Michael Field, *Globalization and the Small Firm: A Value Chain Approach to Economic Growth and Poverty Reduction* (Washington, D.C.: AMAP and ACDI/VOCA, February 2006), https://www.marketlinks.org/sites/marketlinks.org/files/resource/files/ML5023_mr_42_strategy_paper.pdf.

65. USAID, *A Framework for Inclusive Market System Development* (Washington, D.C.: USAID), https://www.marketlinks.org/sites/marketlinks.org/files/resource/files/Market_Systems_Framework.pdf.

66. Madhab Karkee, *Nepal Economic Growth Assessment - Agriculture* (Kathmandu: August 12, 2008), https://pdf.usaid.gov/pdf_docs/Pnadn016.pdf.

67. USAID, *A Framework for Inclusive Market System Development* (Washington, D.C.: USAID), https://www.marketlinks.org/sites/marketlinks.org/files/resource/files/Market_Systems_Framework.pdf.

68. One critical component USAID/Nepal uses to enable marginalized groups to participate in and benefit from market systems development is business literacy programming. Such programs, which are a component of the Nepal Global Food Security Strategy Country Plan, focus on this "push" approach, in order to build literacy skills and entrepreneurial capacity. Both KISAN II and PAHAL, which are discussed in this chapter, implement business literacy programs.

difficult than producing coarse rice). They also guarantee to buy the fine rice paddy at a price almost 50 percent above what coarse rice can be sold to local traders for (about 29 Nepalese rupees per kilogram for fine rice paddy versus 20 rupees for coarse rice paddy).[69] In the future, some of the mills are even planning to set up collection centers close to the farmers' fields, further lowering transaction costs for smallholders. Once established, these partnerships between farmer groups and rice mills are expected to be self-sustaining, owing to the booming demand for fine rice from urban consumers. There is another incentive for the mills to work directly with producers, as well: whereas middlemen tend to indiscriminately mix the good-quality paddy with the poorer-quality paddy they sell to mills, small-scale producers "only bring their best stuff," in the words of one mill owner-operator.

Sahu Rice Mill's two owner-operators—brothers—at their facility in Nepalgunj, Nepal. The mill received a grant from USAID's KISAN II project to work with about 2,000 smallholder rice farmers, who receive training, a price premium, and a guaranteed market in exchange for growing a specialized variety of rice the mill needs.

Photo: Christian Man

Building so-called backward linkages between established market actors and smallholder farmers is a specialty of KISAN II. Refining a model established under KISAN I, KISAN II has partnered with seven agrovets (end-to-end farmer supply stores that provide extension services and sell local and hybrid seed varieties, bio-pesticides, veterinary supplies, and animal feed), creating business incentives for these retailers to reach remote farming communities. These remote villages represent new if hard-to-reach markets for agrovets. This is where community business facilitators, or CBFs, come in.

69. The training also focuses on increasing productivity, so farmers can potentially earn higher incomes through better yields.

CBFs are known and trusted locals in the villages agrovets want to reach, as they are embedded salespersons who already have rapport in their markets. On behalf of the agrovet, CBFs sell products and provide agricultural extension services to farmers, such as trainings on goat vaccinations and post-harvest management. Some also run demonstration plots for improved planting techniques for rice, maize, and cowpeas. The ingenious part, however, is the model's sustainable compensation scheme: the money the agrovet saves by not having to travel to remote villages can be used to pay the CBFs, who work on a commission basis (between 5 and 15 percent). CBFs bring something else to the relationships with their communities: market information. For example, the CBF for one Laxmi Agrovet in Surkhet is helping farmers from across the 800 households with which he works to sell extra produce at local "collection centers" (a "pop-up" farmers' market), and to local traders, hotels, and restaurants. The magic is not in the raw information itself, but in the fact that it comes from a trusted source. For vulnerable smallholder farmers with a necessarily high aversion to risky new business ventures, this distinction makes all the difference. In the words of the Surkhet agrovet owner, "Unlike the KISAN II project, which will go away, the effects of the CBFs will not end, because they are making direct connections between farmers and the private sector."

These initiatives developed by KISAN II are creative and promising. Going forward, however, it is imperative that USAID invests in research that analyzes long-term impacts well after the project has concluded—especially when the goals relate to social inclusion and resilience. These are not short-term endeavors; the origins of social exclusion and vulnerability are centuries old.

Why, then, do most USAID projects last about five years? It is a commonsense question—one the CSIS Global Food Security Project has posed before, in different ways—without a commonsense answer.[70,71] During a meeting with senior management at the USAID Mission to Nepal, the Global Food Security Project asked two versions of it. What at USAID dictates project duration? For what reason do, say, 10-year projects generally not exist? No one, including the Mission Director, could say why exactly, although it was thought to be a function of USAID's operational policy, the Automated Directives System. This is hardly a critique of a dedicated cadre of development professionals. It is rather an indication that perhaps the received wisdom of five-year interventions, borne of bureaucratic politics, is ripe for disruption.

***Political empowerment* provides an opportunity to build inclusive resilience.**

Inclusive resilience-building is not limited to economics. Consider Hariyo Ban II (HBII), a five-year, $18 million USAID project being implemented by the World Wildlife Fund and other nonprofit organizations. Its main goal is to increase ecological and community resilience in two biodiverse landscapes the government of Nepal has identified: the Chitwan-Annapurna Landscape and the Terai Arc Landscape. The project's name derives

70. Reid Hamel, T*racking Promises: Analyzing the Impact of Feed the Future Investments in Bangladesh*, (Washington, D.C.: CSIS, September 2016), https://csis-prod.s3.amazonaws.com/s3fs-public/publication/160908_Hamel_TrackingPromises_Web.pdf. (see Recommendation 5 on page 51)
71. Kimberly Flowers and Onesmo Shuma, *Tracking Promises: Analyzing the Impact of Feed the Future Investments in Tanzania*, (Washington, D.C.: CSIS, March 2016), https://csis-prod.s3.amazonaws.com/s3fs-public/publication/160401_Flowers_TrackingPromises_WEB.pdf. (see Recommendation 3 on page 38)

from a popular Nepali saying: *Hariyo Ban Nepal Ko Dhan* ("Healthy green forests are the wealth of Nepal"). Its focus areas include biodiversity conservation, climate change adaptation, gender equality, social inclusion, and governance.[72]

HBII's Community Learning Action Centers (CLACs) vividly illustrate how resilience programming can result in fundamental political transformations for marginalized Nepalis, such as Dalit women. CLACs provide a structured opportunity for such groups to meet over a period of 16 weeks. They reflect on their lives together, discussing challenges and constraints. The groups then devise social action plans and receive a small amount of seed funding (about $1,000) to begin implementing them.[73] The results have been impressive: more than 12,000 women, empowered by 485 CLACs, have gone on to leadership positions in local government bodies. These seats of power have not historically been reserved for Dalit women—yet they afford opportunities for these incumbents to rewrite the rules. For example, one woman who participated in a CLAC rapidly emerged as the group's facilitator. She then successfully ran for the office of deputy mayor in her village, where she is currently working to abolish the cruel, centuries-old tradition of *chhaupadi*, in which women are banished from their family homes while they are menstruating.[74]

Hariyo Ban I (HBI), the predecessor to HBII, was likewise successful in increasing the number of women and marginalized people in executive committees for Community Forestry User Groups (CFUGs) and other NRM groups' decision-making bodies. For instance, an assessment of 913 CFUGs between 2013 and 2016 showed a nearly 25 percent increase in the number of groups with women serving as either chairperson or secretary.[75]

Promulgated in 2015, Nepal's constitution mandates that a portion of political offices, even local ones, are held by women and low-caste individuals. Granted, such legal provisions are often a necessary condition of transformation. But they are also insufficient: initiatives like HBI and HBII are likewise needed to help women gain the knowledge and capacity to meaningfully participate in political processes in the face of gender stereotypes and exclusionary social norms. Indeed, despite encouraging progress, those norms persist: men still hold some 98 percent of head political offices (e.g., chairperson or mayor).[76]

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72. A continuation of the original Hariyo Ban project (2011-2016, HBII's development hypothesis suggests that "if stakeholders are better able to conserve and benefit from biodiverse natural resources and adapt to climate change in a manner that diversifies livelihood options, improves gender equality and social inclusion, and promotes good natural resource governance, then people and ecoystems in the target landscapes will be more resilient." Internal document provided by HBII staff.
73. Reflection and action by oppressed people that is oriented around social problems is a time-honored tradition, traceable to the work of the Brazilian pedagogical theorist and activist Paulo Freire. Freire referred to this process as *conscientization*, one by which people, "[not as recipients but as knowing subjects], achieve a deepening awareness both of the socio-cultural reality which shapes their lives and of their capacity to transform that reality." As one CARE representative put it, "We put the idea of social justice into their minds." Arthur S. Lloyd, "Freire, Conscientization, and Adult Education," Adult Education 23, no. 1 (September 1, 1972): 3-20, https://journals-sagepub-com.proxygw.wrlc.org/doi/abs/10.1177/074171367202300101.
74. Although Nepal outlawed *chhaupadi* in 2018, it is still widely practiced in rural parts of the country. Bhadra Sharma and Kai Schultz, "Woman and 2 Children Die in Nepal Menstruation Hut," New York Times, January 9, 2019, https://www.nytimes.com/2019/01/09/world/asia/nepal-menstruation-taboo.html.
75. Internal HBI and HBII documentation provided by CARE.
76. *Nepal's Locally Elected Women Representatives: Exploratory Study of Needs and Capacity* (Nepal: Australian Aid and The Asia Foundation, July 19, 2018), https://asiafoundation.org/wp-content/uploads/2018/07/Nepals-Locally-Elected-Women-RepresentativesExploratory-Study-of-Needs-and-Capacity-Assessment.pdf.

Dalit women at a Community Learning Action Center meeting in Kanchanpur, Nepal. The meetings allow participants to reflect and act on the challenges they face. As one organizer put it, "We put the idea of social justice into their minds."

Photo: Umesh Shrestha, Hariyo Ban Program, CARE Nepal

Self-reliance provides an opportunity to build inclusive resilience.

During a focus group with 12 farmers in the hills outside Surkhet, Nepal, one participant summarily described the consequences of a dry season: "There is nothing much you can do about it," he said. That perspective illustrates well the (refreshing) tendency for farmers to call it like it is, in a plainspoken manner. Arguably, it also illustrates a kind of cognitive barrier smallholders face in adapting to climate-related impacts. That barrier is hardly unique to Nepal, but it arises from a culture with no literal translation for the word "resilience."[77]

Such are some of the challenges facing PAHAL (Promoting Agriculture, Health, and Alternative Livelihoods), a USAID Food for Peace project that began in 2014 and is currently in its final year. PAHAL has worked with a half-million individuals to build livestock assets, increase non-farm income, build family health, raise agricultural productivity, and tie farmers into beneficial networks. One of the things to like about this integrated approach is that vulnerable farming households have had the opportunity to build their own safety nets through savings groups and financial literacy trainings *alongside* opportunities to expand their farms' production and commercial orientation. The result is not just higher incomes, but more savings: there is more money to save, and more knowledge and inclination to save it. Another participant from the focus group described how savings builds self-reliance, not just financial security. "When you have money, you feel confident," he said.[78]

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77. Lindsey Jones and Emily Boyd, "Exploring Social Barriers to Adaptation: Insights from Western Nepal" *Global Environmental Change* 21, no. 4 (October 2011): 1262-1274, https://www.sciencedirect.com/science/article/abs/pii/S0959378011000860.
78. As a USAID officer rightly noted, confidence derived from financial savings vividly illustrates an increase in agency, "where people can start to control components of their lives and livelihoods, acting as their own agents in their own self-interests." (Personal communication, August 23, 2019).

A woman stands proudly in front of her irrigated vegetable garden in the arid hills outside Surkhet, Nepal. On the day the photo was taken, the area had not received rain in three months. A plastic pond (next page), built during the USAID PAHAL project, supplies the garden's water.

Photo: Christian Man

Rainwater harvesting with a plastic pond in a hill region near Surkhet, Nepal, built during the USAID PAHAL project.

Photo: Christian Man

Critics may contend that illustrations such as the one above are just anecdotes, devoid of evidence, devoid of a proof of concept at scale in which the development community is increasingly, and rightfully, interested. This is fair—even if PAHAL's results to date indicate scaled impact, such as the creation of nearly 15,000 on- and off-farm microenterprises. The point, however, is that market systems development in USAID programming should not be considered *responsibly* inclusive unless they help vulnerable households build financial resilience to shocks and stresses. Exposing such farmers to the opportunities of markets means exposing them to the vicissitudes of markets. This exposure must be counterbalanced with insulation, such as that provided by savings or business literacy trainings.

The "self" in self-reliance refers not just to individuals but to communities, as well. One way USAID supports community self-reliance is by letting local groups judge who among them is most vulnerable.[79] HBII's participatory well-being ranking (PWBR) illustrates this form of self-reliance. This is how it works: First, program facilitators gather community members, explain the PWBR process and goals, and prepare a list of the names of the heads of household members. Second, ensuring at least three-fourths of member households participate, facilitators help members select well-being criteria and rank households accordingly, from least vulnerable (V1) to most vulnerable (V4). Criteria may include land holdings, availability of food grains, family size, education and income levels, physical and mental disabilities, exposure to climate hazards, and social status. Finally, the results can be used by members, for example in the context of natural resource management (NRM) groups (e.g., Community Forestry User Groups), to ensure resources are allocated according to need. The PWBR process is itself useful, as it better attunes community members to those neighbors who are most needy. In critical periods—like a search-and-rescue following a flood—the ranking can quickly be consulted to determine which members (e.g., disabled, elderly) should be located first.[80]

From rice mills to savings groups to local elections, this chapter has used a range of illustrations of USAID's work in Nepal to suggest that inclusive resilience can take many myriad forms. It can happen through market participation when donors buy down the costs and risks of doing business with remote, marginal farming communities. It can happen through political participation, if smallholder resilience is understood in terms of political transformation, not just technical adaptive capacity. It can also happen through self-reliance, provided economic safeguards accompany economic opportunities. However, resilience programming has the best chance of succeeding when it leverages opportunities created by context-specific policy regimes.

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79. This type of self-reliance reflects the principle of subsidiarity. "Subsidiarity states that assigning to a higher institution or level of the society what a lower form of social organization can do is unjust." This is because people who are closer to a problem tend to have a better understanding of the issue. World Health Organization, *Community Involvement in Tuberculosis Care and Prevention: Towards Partnerships for Health: Guiding Principles and Recommendations Based on a WHO Review* (Geneva: World Health Organization, 2008), https://www.ncbi.nlm.nih.gov/books/NBK143702/.
80. "Hariyo Ban Program: Internal Governance Tool 2 Participatory Well-Being Ranking (PWBR)," WWF-Nepal, n.d., http://d2ouvy59p0dg6k.cloudfront.net/downloads/toolkit_2_pwbr.pdf.

4 | Pulling Policy Levers for Inclusive Resilience

Development that aims to build inclusive resilience in the face of climate change is no laboratory experiment. As the previous chapters have suggested, historical and political context pre-configures—and in some cases circumscribes—the possibilities of a project's impact.[81] Policy regimes represent an immediate, practical level of context in which development occurs.[82] The purpose of this chapter is to briefly set inclusive resilience within the context of Nepal's Agricultural Development Strategy (ADS). The question driving the analysis is pragmatic, rather than academic: what opportunities and challenges does Nepal's political and policy landscape present for climate adaptation and inclusive resilience-building efforts (*Research Question 3*)?

Nepal's Agricultural Development Strategy

The country's 20-year (2015–2035) grand strategy for the agriculture sector is nothing if not ambitious, with an estimated price tag of about $4.5 billion for some 232 projects aimed at improved governance, higher productivity, profitable commercialization, increased competitiveness, and so on. The overall vision of the ADS is to structurally transform the agriculture sector over the next 20 years into one that is "self-reliant, sustainable, competitive, and inclusive," with stronger "livelihoods and food and nutrition security leading to food sovereignty."[83]

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81. This seems self-evident, but in practice the global development community is hardly of one accord. For instance, although the randomized control trial (RCT) "revolution" underway in development economics undoubtedly represents methodological advances in how we understand policy's causal impacts, the movement has been criticized as "apolitical tinkering," as the anthropologist Jason Hickel saltily put it. (https://twitter.com/jasonhickel/status/1136915701795631106). Florent Bédécarrats, Isabelle Guérin, and François Roubaud, "All that Glitters is not Gold. The Political Economy of Randomized Evaluations in Development" *Development and Change* 50, no. 3 (December 6, 2018): 735-762, https://onlinelibrary.wiley.com/doi/abs/10.1111/dech.12378.
82. "Regimes are broadly defined as governing arrangements constructed by states to coordinate their expectations and organize aspects of international behavior in various issue-areas. They thus comprise a normative element, state practice, and organizational roles." Carter A. Wilson, "Policy Regimes and Policy Change" *Journal of Public Policy* 20, no. 3 (September-December 2000): 255-256, https://www.jstor.org/stable/4007691?seq=1#page_scan_tab_contents.
83. Ministry of Agricultural Development, *Agriculture Development Strategy (ADS)* (Nepal: 2016), http://nnfsp.gov.np/PortalContent.aspx?Doctype=Resources&ID=325.

Developed in concert with a broad range of multilateral and country donors, including USAID, the sprawling plan has plenty to say about inclusion:

- "The vision indicates that marginal groups should be included in programs and share of benefits of agriculture."[84]
- "The ADS promotes inclusion of disadvantaged groups and regions and an approach to value chain development based on 'Markets for the Poor' that emphasizes the need of more equal benefits distribution along the value chain."[85]
- "Establish a comprehensive set of mechanisms at the policy, planning, and implementation levels to assure gender equity, social inclusion, and geographical inclusion in the ADS through capacity building of relevant institutions at the central and local level."[86]

One complication, however, is that no one is sure how the ADS will be implemented given the government of Nepal's new structure; the Ministry of Agricultural Development released the ADS just before the promulgation of the government's federalist constitution in September 2015. Such uncertainty around the transition to federalism was a consistent theme that emerged from interviews conducted by the CSIS Global Food Security Project.

One might also question the feasibility of implementing such a costly strategy, even if the cost is to be spread out over two decades. In fact, in one meeting with an undersecretary in the Ministry of Agriculture and Livestock Development (MOALD), there was an indication that, instead of something to actually be implemented, the ADS is just a paradigm by which agricultural development—implemented wherever, whenever—can be interpreted.

USAID/Nepal and the ADS

Despite ambiguities around who will pay for it and who will implement it, the ADS nonetheless sketches a bold, ambitious set of designs that would be truly transformative for Nepal, even if they were only realized to some small degree. It also presents myriad opportunities for USAID/Nepal to support country-led approaches to agricultural development.

An interesting example of USAID's engagement to date with the ADS is the Joint Sector Review (JSR). The JSR is a platform that aims to facilitate shared dialogue, priority-setting, resource mobilization, and oversight on the implementation of the ADS between the three tiers of the government of Nepal and development partners like USAID, as well as other bilateral and multilateral donors. USAID supported the MOALD in the creation of a JSR process, which the MOALD endorsed in November 2017.

The government's recent restructuring of Nepal to a federal system has caused enormous challenges for all sectors, agriculture included, as systems navigate the transition to the new decentralized model without any roadmap. The first-ever Annual JSR Meeting convened in April 2019, chaired by the minister of agriculture. It brought donors together with representatives of the MOALD, provincial agriculture ministries, and

84. Ibid.
85. Ibid.
86. Ministry of Agricultural Development, *Agriculture Development Strategy (ADS)* (Nepal: 2016), http://nnfsp.gov.np/PortalContent.aspx?Doctype=Resources&ID=325.

local governments. The purpose of the meeting was to plan the country's agriculture development process at the federal, provincial, and municipal levels by developing common guidelines, preparing province-level agriculture development plans, and establishing a coordination framework for the ADS, including the development of a common monitoring, evaluating, and reporting mechanism.

Since the meeting, government and development partners have committed to a joint action plan that outlines next steps and responsibilities and serves as a framework and roadmap for collaboration. As a result of this planning and the leadership role USAID has played in interfacing with other development partners and the government as chair of the Development Partners Food Security Group for the past year, the agriculture sector is, arguably, ahead of others in terms of transitioning to federalism.

The JSR process illustrates a promising platform for coordination in the agriculture sector in a period of relative stability and is one that USAID has initiated and helped to lead in other Feed the Future countries, as well. For this rocky period of transition in Nepal, it presents a powerful mechanism by which USAID can advance the ADS' aims for climate adaptation and inclusive resilience-building.

5 | Recommendations and Conclusions

Climate change is upon us. Its impacts—which, in places like Nepal, interweave with a complex set of pre-existing social, political, and economic challenges—are reverberating throughout the global South, increasing the precarity of agricultural livelihoods. As policymakers, researchers, and practitioners work rapidly to help farmers build resilience to this new normal, it is imperative that those who are most vulnerable receive the greatest attention. Indeed, the gains of USAID's efforts for resilience must accrue to the many, not the few. The following recommendations aim at that end.

1. Embrace a coherent, Agency-wide message on climate change.

Despite its strengths, the vision emanating from USAID's new policy framework, "Ending the Need for Foreign Assistance," is near-sighted, omitting as it does any substantive consideration of the science, threats, and implications of climate change. In countries like Nepal where USAID works, the focus on climate change is clearer. Key policy documents (such as the USAID Country Development Cooperation Strategy and the Global Food Security Strategy Nepal Country Plan) reference climate change and, to a degree, reflect an understanding of its threats and implications.[87,88] The understanding is best at the project level, however. Initiatives like USAID/Nepal's Hariyo Ban II demonstrate nuanced strategies for reducing climate-related vulnerabilities. Sadly, though, funding for some climate-related programming in Nepal has dried up in the past several years.

USAID should say and do more about climate change because the United States is the single largest donor of overseas development assistance. What the U.S. says and does influences countries around the world that follow our lead. For example, when President Obama pledged $3.5 billion for global food security at the 2008 G8 Summit in L'Aquila, Italy, it helped lead other donors to pledge an additional $22 billion in agricultural

87. USAID, *Country Development Cooperation Strategy Summary*, (Nepal: USAID, August 21, 2019), https://www.usaid.gov/sites/default/files/documents/1861/CDCS_summary_Final_nepal_updated20202.pdf.
88. Feed the Future, *The Global Food Security Strategy (GFSS) Nepal Country Plan*, (Nepal: Feed the Future, May 8, 2018), https://www.usaid.gov/sites/default/files/documents/1867/GFSS-Nepal-Country-Plan.pdf.

development assistance.[89] Unfortunately, the sitting USAID Administrator, Mark Green, has been equivocal at best on issues related to climate change.[90]

Yet there is increasing reason to think bold leadership on climate change has bipartisan appeal. In the United States Congress, for example, there is burgeoning support for legislation related to climate change coming from both sides of the aisle. Likewise, recent polls show the majority of Republicans and Democrats support climate actions such as U.S. participation in the Paris Climate Agreement; reductions in greenhouse gas emissions; and carbon taxation for fossil fuel companies.[91]

By embracing climate change in its messaging, USAID can re-entrench its leadership and expedite the journey to self-reliance in the countries where it works.

2. Meanwhile, embrace climate realpolitik by supporting the government of Nepal's own policy goals for climate change adaptation, inclusion, and resilience.

It is reasonable not to expect agency-wide messaging on climate change while President Trump is in office. Regardless, USAID/Nepal can continue to support elements of the government of Nepal's climate change policies, for example those emanating from its ADS, its Nationally Determined Contributions (NDC), and its Local Adaptation Plans for Action (LAPAs).[92] Investing in the implementation of country-led plans that target adaptation, inclusion, and resilience fits squarely within USAID's current mandate. Although it may not carry the symbolic significance of, for example, a "USAID Climate Change Adaptation Fund for Southeast Asia," it may well be able to accomplish many of the same goals. Given the urgency, there is no choice but to practice a climate realpolitik.

3. When it comes to resilience-building, balance the technical and the political.

There is no such thing as climate change resilience, per se. In countries like Nepal, smallholder farmers experience an integrated set of livelihood risks and challenges. This is especially true for historically marginalized social groups such as women and low-caste ethnic groups. Resilience-building must therefore attend to the fundamental drivers of vulnerability (like exclusion from substantive political processes), not just to technical adaptation needs (like climate-smart agricultural training for marginal groups). The choice is not either but both. Technical innovation is critical, but it will not erase centuries of ethnicity-, gender-, and caste-based prejudices. Political participation is, for its part, no silver bullet, but it embodies an "understanding [of] the formal and informal institutional contexts within which [true] change and development occurs."[93] The stakes

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89. Kimberly Flowers, "Keeping it Stable: The Connection Between Hunger and Conflict," *Georgetown Journal of International Affairs* (January 31, 2018), https://www.georgetownjournalofinternationalaffairs.org/online-edition/2018/1/31/keeping-it-stable-the-connection-between-hunger-and-conflict.
90. See, for example: USAID Administrator Mark Green On-The-Record Roundtable Interview, August 16, 2017, Washington, D.C, https://www.usaid.gov/news-information/press-releases/aug-16-2017-usaid-administrator-mark-green-record-roundtable-interview.
91. Anthony Leiserowitz et al., *Politics & Global Warming* (New Haven: Yale University and George Mason University, 2018), https://climatecommunication.yale.edu/publications/politics-global-warming-march-2018/.
92. Government of Nepal: Ministry of Population and Environment, *Nepal First Nationally Determined*, (Nepal: Government of Nepal: Ministry of Population and Environment, October 2018), https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Nepal%20First/Nepal%20First%20NDC.pdf.
93. Ed Laws and Heather Marquette, *Thinking and Working Politically: Reviewing the Evidence on the Integration of Politics into Development Practice over the Past Decade* (Thinking and Working Politically Community of Practice, March 2018), https://twpcommunity.org/wp-content/uploads/2018/04/Thinking-and-working-politically-re-

here are unquestionably high: those who ignore the political drivers of vulnerability only reinforce them.[94]

In the context of research on resilience, this requires asking the right questions. "What are the impacts of climate change?" is a starting point, but it must be asked alongside a second, broader question: "What are the most significant changes taking place in people's lives?" Jointly, the questions widen the aperture on the determinants of vulnerability, so expanding the opportunities on which adaptation practice can act.[95,96]

4. Pilot a 10-year project.

The revolution in more patient forms of development is already underway in the private sector. Consider the Acumen Fund, an impact-oriented venture capital fund whose model for "patient capital" establishes long time horizons, a high risk-tolerance, and adaptability in the face of changing needs.[97] USAID's project cycle lengths do not appear to arise from principle or evidence but by procedural default, the consequence of both an ambiguous set of bureaucratic technicalities and an absence of funding guarantees. This is a frank assessment, not a condemnation. Government institutions are messy and complex, and the inertia of their procedures can be formidable. But we cannot reduce fundamental development questions (like project duration) to pragmatics or unexamined precedent.

From an economic perspective, the road to inclusive resilience is longer because extreme levels of vulnerability imply extremely low capital endowments. People who have historically been excluded from social and economic development processes tend to have less income and savings, less education, greater risk aversion (rationally so), weaker ties with institutional sources of support, smaller landholdings, and so on. Building up these forms of capital takes time. This 'building up' process is never linear, because—at a project's ground level—the process is relational.

Piloting a 10-year USAID project focused on inclusive resilience-building has three potential rewards. First, as an experiment, it would demonstrate adaptive management, a key principle USAID asks its partners to practice. We know from behavioral economics that it is a mistake to continue a behavior simply because of previously invested resources. This observation, the sunk cost fallacy, makes it sound like it is easy to model future behavior on a rational, evidence-based logic. It is not easy, especially when you do not know if it will work. Second, it would teach us things. How does the quality and trajectory of outcomes in year six and beyond compare with those in years one through five? Do poverty "graduation" rates within beneficiary communities accelerate more rapidly with a longer time horizon? What emergent developments in market systems can be observed

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viewing-the-evidence.pdf.

94. Sigrid Nagodaa and Andrea J. Nightingale, "Participation and Power in Climate Change Adaptation Policies: Vulnerability in Food Security Programs in Nepal," *World Development 100*, (December 2017): 85-93, https://www.sciencedirect.com/science/article/abs/pii/S0305750X17302504.

95. Jonathan Edward Ensor et al., "Asking the Right Questions in Adaptation Research and Practice: Seeing Beyond Climate Impacts in Rural Nepal," *Environmental Science and Policy* 94, (April 2019): 227-236, https://www.sciencedirect.com/science/article/pii/S1462901118311079#!.

96. Siri H. Eriksen, Andrea J. Nightingale, and Hallie Eakin, "Reframing Adaptation: The Political Nature of Climate Change Adaptation," *Global Environmental Change* 35, (November 2015): 523-533, https://www.sciencedirect.com/science/article/abs/pii/S0959378015300509.

97. "Acume's Patient Capital Model is a New Approach to Solving Poverty," Acumen, https://acumen.org/about/patient-capital/.

after 10, rather than five, years of investment? Regardless of the findings, the questions would lead to a sharper understanding of the temporal dimension of theories of change. Finally, a 10-year project would likely improve the nature of relationships between project staff and government staff at every level (e.g., village-level, regional offices, and capital city). The negative stereotype of transient international development practitioners is negative for a reason. If meaningful incentives for longer commitments were built into project job descriptions, it is reasonable to believe we would see collaborations between project staff and government officials that are deeper, 'thicker,' and more effective.

5. Aggressively bend market systems towards the most vulnerable.

History has been clear about the rewards of business-as-usual capitalism: they go to the few, not the many. This is the reason USAID aims for 'inclusive' market systems development. But in places like Nepal, where the roots of social exclusion are centuries-old, the dice are loaded against the most vulnerable. As such, USAID must critically evaluate its own efforts at inclusion, and make structural changes to its strategy and operations when it falls short. This may well require the agency to devolve greater decision-making authority to its country offices, in order to allow country-specific adaptation, iteration, and program design.

About the Project Director and Author

Kimberly Flowers is director of the Humanitarian Agenda and the Global Food Security Project at CSIS. In this role, she analyzes the effectiveness of U.S. foreign assistance programs and policies that impact global hunger, poverty, and malnutrition. She is a frequent speaker, moderator, and author on issues from the global food system to humanitarian aid. Ms. Flowers has published in Forbes; Georgetown University's International Affairs Journal; and has been quoted in congressional testimonies, Foreign Policy, and the Washington Post. At CSIS, she has led a high-level task force on humanitarian access and done field research in more than 12 countries, including leading bipartisan, bicameral congressional staff delegations.

Prior to joining CSIS in 2015, Ms. Flowers was the communications director for Fintrac, an international development company focusing on hunger eradication and poverty alleviation through agricultural solutions. From 2005 to 2011, she worked for the U.S. Agency for International Development, serving overseas as a development, outreach, and communications officer in Ethiopia and Jamaica; supporting public affairs in Haiti after the 2010 earthquake; and leading strategic communications for the U.S. government's global hunger and nutrition initiative. Ms. Flowers began her international development career in 1999 as a Peace Corps volunteer in Bulgaria, where she founded a young women's leadership camp that continues today. She also served as a Peace Corps Response volunteer in Jamaica in 2004. She is a magna cum laude graduate of William Jewell College, studied at Oxford University, and is an alumna of the Pryor Center for Leadership Development.

Christian Man is a research fellow with the CSIS Global Food Security Project, where his research centers on policy-oriented, ecologically sensitive approaches to strengthening smallholder agricultural livelihoods. He is also an adjunct professor at the Elliott School of International Affairs at The George Washington University. Prior to joining CSIS, Christian worked with Catholic Relief Services, helping with the design, implementation, and analysis of Seed System Security Assessments in Ethiopia, Democratic Republic of the Congo, Burundi, and Zimbabwe. He also worked with The Palladium Group, an international development consulting firm. Prior to his work in international development, Christian was a community development practitioner in Memphis, Tennessee, where he helped organize an urban agriculture program, a food policy council, and a local foods distributor. He received a PhD in rural sociology and international agriculture and development from Penn State.

Annex 1: Methodology

A) *Sampling Strategy*: The sampling strategy for the study can be described as both purposive (i.e., respondents were identified as having, or having had, expertise or experience relevant to the research questions) and convenient (respondents were able and willing to meet with our research team). USAID/Nepal provided assistance in identifying study participants.

B) *Protection of Human Subjects*: The research team obtained informed consent from each respondent. The terms of consent are available upon request.

C) *Data Collection*: The interviews and focus groups were principally implemented in person, with a small number conducted by phone.

D) *Data Analysis*: Qualitative data were recorded with handwritten notes, transcribed, analyzed, and coded for themes using qualitative data analysis software.

E) *Rigor*: The research team was led by Christian Man, who is trained as a rural sociologist and has worked on agriculture issues for 10 years. He was assisted by Thakur Amgai, a Nepali interpreter and journalist with 15 years of experience working on environmental issues. At the request of the author, a voluntary panel of experts, including representatives of USAID and other organizations discussed herein, reviewed this report for accuracy, coherence, and quality, providing non-binding input. The author accepted and incorporated feedback at his discretion.

F) *Errata*: Any factual errors are the sole responsibility of the author.

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