



Case report

A National Adaptation Programme of Action: Ethiopia's responses to climate change[☆]

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ABSTRACT

This innovative sustainability case on Ethiopia's National Adaptation Programme of Action was created through collaboration among professionals, scholars, students and media design professionals under the auspices of the Michigan Sustainability Case (MSC) initiative. It comprises a terse narrative about a decision maker, multimedia sources including a podcast that link to and enrich the text, and an engaged learning exercise that walks users through the potential and constraints of emerging cost–benefit analysis methods for climate adaptation planning. It challenges learners to address the emerging impacts of climate change by systematically analyzing the challenges faced by Ethiopia's central government in allocating limited financial, technical and administrative resources to mitigate these impacts on its most vulnerable communities. The case not only introduces audiences to climate change risks and vulnerabilities in Ethiopia, but also interweaves those contextual factors with broader technical information, to strengthen understanding of the specific governance challenge at hand. The case thus demonstrates MSC's pedagogical commitment to making ecological, economic, cultural and political context clearer in the development of effective environmental policies. Likewise, the MSC approach deliberately demonstrates to students the challenges of decision-making with imperfect information.

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This Michigan Sustainability Case about climate change planning in Ethiopia is based on a real-life decision where Mr. Kidane Asefa, the chairman of Ethiopia's National Adaptation Programme of Action (NAPA), and focal point for the United Nations Framework Convention on Climate Change (UNFCCC), is faced with the task of prioritizing and selecting from a short list of national climate adaptation projects. It asks learners to think with Kidane about which will produce the greatest benefit, and to critically assess the way that various forms of analysis including cost–benefit, social cost–benefit, and broader legal and social science methods can be tools in making such decisions.

An interdisciplinary team of students from Natural Resources, Public Policy, and Economics departments developed this case on

how NAPAs are designed and implemented. They worked with faculty and global practitioners including Benjamin Larroquette, a Regional Technical Advisor for UNDP in Africa, who works with 15 countries including Ethiopia. The case was the first of its kind, pioneering an initial iteration of the Michigan Sustainability Case web platform and repository for a new form of teaching cases about sustainability issues worldwide.

Assessments of this case carried out in two classrooms at University of Michigan during the winter semester of academic year 2015–2016 returned favorable preliminary data that indicates the potential for such educational approaches to be effective at improving overall learning outcomes, while broadening the range of types of learners who are able to attain sustainability competencies (see Hardin et al., this issue). These results are based on pilot assessment methods that range from observations and focus groups to individual interviews, including analysis of artifacts and student assignments, and randomized control groups receiving different treatments within a single classroom over the course of this year, but also comparisons across this year and the previous year, when the same concepts were taught without recourse to MSC materials.

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This discussion piece, however, hones in on one particular case study, moving beyond its pedagogical value to think about the scientific and communication work that went into making the case, and how such work can feed into engagement with Ethiopian climate change planning challenges by students, teachers, environmental and development professionals, journalists, and others. As a climate change “hotspot,” Ethiopia is expected to suffer disproportionately from increased variability in climate patterns, which will result in more frequent and unpredictable droughts and floods (Bryan et al., 2009). In order to best adapt to the changing climate, the NAPA committee must allocate its limited financial, technical and administrative resources to projects with the highest potential for positive impact on people’s livelihoods (Deressa et al., 2009). Imagining themselves in the role of Mr. Asefa, students of the case rank projects, justify their evaluations, and ultimately recommend the best climate adaptation project to the committee for funding/support through the UNFCCC mechanism.

The case utilizes Ethiopia’s original NAPA document, which contains 37 proposed projects with total costs of 770 million USD (Ethiopia, Ministry of Water Resources and Meteorological Agency). As an assessment of all of these projects is beyond the scope of the case analysis, the case authors narrowed the list to four projects: capacity building, agroforestry, distributed hydropower, and drought forecasting. Each presents distinct costs and benefits for Ethiopia’s diverse sub-populations, emerging along a spectrum of time scales but also across that country’s diverse social and ecological systems (see Fig. 1).

Included in the case’s supplementary information are simulated costs and benefits of each project. Case audiences can use the Edgenotes, curated media resources from around the web, to follow simple, engaging videos that explain principles of discount rate when considering the future in cost–benefit analysis, and familiarize themselves with the methods. Students thereby begin to build mastery of essential analytic techniques and recognition that while quantified projections are useful, they are necessarily limited. Impacts of such large projects will be somewhat unpredictable and inequitable in how they affect sub-populations and shift over time, and will be difficult for an analyst to parse from broader changes. Students of the case come away with a sense of bounded

rationality as a barrier to ideal policy solutions. The case’s core challenge is thus in making critical decisions based on reasonable assumptions, rather than perfect information.

The case’s hands-on analytical exercises reinforce these learning principles. Learners first conduct a traditional cost–benefit analysis (CBA), which employs economic indicators such as net present value and internal rate of return to prioritize projects. Discount rate—the rate at which future costs and benefits are accounted for in current terms—is a keystone assumption in this method. Through a process known as sensitivity analysis, case users are able to tweak the CBA discount rate and recognize how even small changes dramatically impact outcomes over time, making overall changes to the analysis of costs and benefits, and requiring a re-prioritization of projects. The primacy of various parameters for CBA is thus revealed, in relation to specific factors over time.

This exercise produces mastery of CBA skills, and directs learners’ attention to the limitations of the CBA method, which some have argued fails to account for types of costs and benefits that cannot be quantified, and skews complex decision making in favor of market logics (Lohmann, 2009). In this case, audience members or learners are able to explore and discuss project impacts that could fall outside of the scope of traditional economic analysis, such as the disproportional impact on various stakeholders, further marginalization of minority groups, and ethnolinguistic separatist movements. After further research, case users are introduced to social cost–benefit analysis (SCBA), a complementary methodological tool that incorporates non-quantifiable decision factors (Cameron, 2011; Vardakoulis, 2014). Projects are weighted based on additional criteria such as poverty reduction potentials, synergy with other national plans, and reduction of climate change risk for vulnerable communities.

Armed with traditional CBA and SCBA findings, case users then prioritize projects, select the most impactful for funding, and prepare to attend a stakeholder meeting to defend their stance. Through the analysis of available information and the selection and articulation of a position, students hone skills in evidence-based decision-making, effective communication, strategizing, and negotiating with multiple stakeholders.

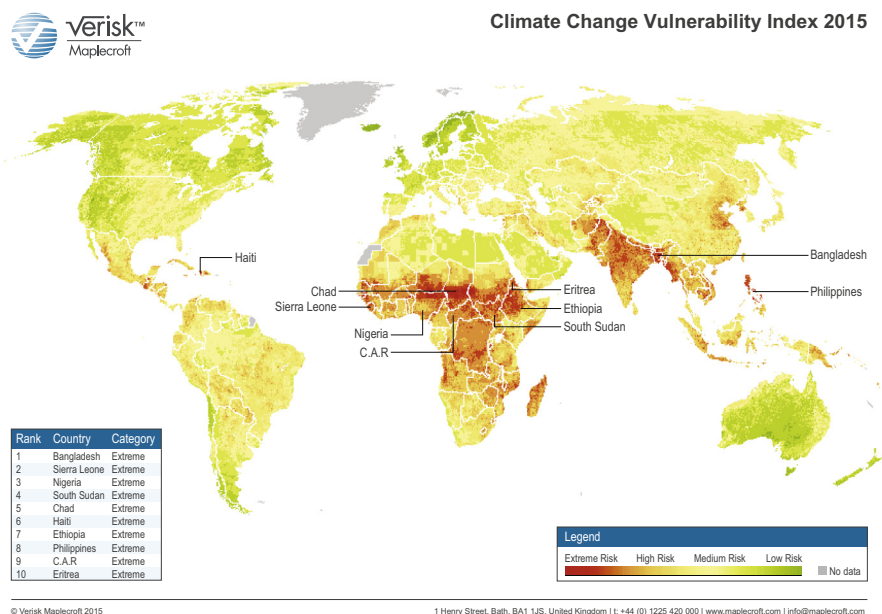


Fig. 1. Climate Change Vulnerability Index 2015, MSC Edgenote. reproduced with permission from Verisk Maplecroft, 2015.

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