
Chapter 20

Evaluating Mitigation Projects through a Theory of No Change

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Abstract. Some have argued that, compared to climate change adaptation interventions, evaluating climate change mitigation (CCM) projects is relatively straightforward, due to the fact that there can be a clear, quantifiable goal regarding a reduction of greenhouse gas emissions. However, many donor-funded CCM projects do not seem to focus on output-based contributions, but rather on removing certain preconditions toward such market transformation. A program theory concept known as the Theory of No Change (TONC), put forth by Christine Wörten, provides an evaluation framework that is especially applicable to such CCM project interventions, and can serve as a useful tool in assessing how likely (or not) it is that interventions will achieve a market transformation. With close reference to the TONC evaluation framework, this chapter identifies and analyzes eight different CCM projects, from five different Association of Southeast Asian Nations (ASEAN) countries: Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. Important findings from this analysis include the following: almost all the projects studied addressed barriers of ignorance and lack of expertise for all agent groups (consumers, supply chain, policy makers, and financiers); none of the projects has specifically addressed the barrier of cost effectiveness; and only a few projects specifically focus on harnessing the interest and/or motivation of relevant agent groups.

The adoption of the Paris Agreement at the 21st Conference of the Parties (COP21), held in Paris in 2015, has marked an important milestone for the international community to unanimously tackle climate change. Although the emergence of the inward-looking Trump administration in the United States has aroused concerns worldwide, the international community needs to remain vigilant and not lose the focus on its fight against climate change. The Earth's climate is indeed changing, and addressing the cause of the problem is of prime importance and significance for all human beings. Climate change mitigation (CCM) is defined as "human intervention to reduce the sources or enhance the sinks of greenhouse gases."¹ In other words, mitigation mainly concerns measures and actions that reduce greenhouse gases (GHGs) by realizing and applying more energy-efficient, or renewable, energy technologies and practices. Although adaptation and loss and damage are both important and interlinked climate change concepts, CCM interventions are the most vital element in solving the root causes of climate change, as well as in transforming markets toward more carbon-neutral products and services.

This chapter discusses, among other issues, the CCM strategy of the United Nations Development Programme (UNDP) for its CCM programs that are funded by the Global Environment Facility (GEF) and implemented in the Association of Southeast Asian Nations (ASEAN) countries, the types of barriers against realizing CCM contributions and market transformation in these countries, and how these barriers correspond to the types of barriers that are introduced in the Theory of No Change (TONC) framework.

The rationale for selecting the ASEAN countries as a test case to apply a TONC program theory framework is that in these countries we have seen robust and steady economic growth over the past decades, with, on average, gross domestic product (GDP) growth of 7.0 percent between 1970 and 1995 (ASEAN Secretariat 2014). The region's recent GDP of 2012 was \$2.3 trillion, which was equivalent to 28 percent of China's GDP, and to 4.3 percent of the world's total GDP, while their population has grown to 617 million in 2012 (ASEAN Secretariat 2016). The importance of realizing green growth, or low-carbon growth, in these vibrant economies should be emphasized.

The kinds of CCM projects analyzed are those utilizing funding through the GEF. The GEF started its first pilot operation in 1991, and, as of 2016, is the largest funder of projects for protecting the environment in the world (GEF 2016). The GEF is a partnership involving a number of so-called implementing agencies, and UNDP and the World Bank are among the largest implementers of environmental projects supported by the GEF. GEF Council approvals of UNDP proposals, for example, have amounted to up to roughly 40 percent of the available funds for commitments up to 2017 (GEF 2016). In this chapter, tendencies and barrier-removal strategies—specifically among CCM projects that are supported by the GEF with UNDP as implementing

¹ United Nations Framework Convention on Climate Change, "Glossary of climate change acronyms and terms," http://unfccc.int/essential_background/glossary/items/3666.php.

agency—are analyzed. The chapter attempts to identify potential gaps within the CCM strategies and the types of barriers being addressed in each of these projects so that we will be able to generate an analytical picture of more effective CCM projects, upon which to build better and more effective strategies in addressing CCM issues not only in the ASEAN region, but also elsewhere in the world.

THE THEORY OF NO CHANGE

In several communities of practice on evaluating climate change and development, evaluating climate change interventions has been considered to be quite difficult compared to, for example, analyzing interventions in the public health sector, for a number of reasons. For example, the following challenges are posed when evaluating climate change projects: a long time frame, uncertainty about actual climate change patterns and their effects in a given locale, shifting baseline data and changing contexts, measuring nonevents, a lack of universal indicators, contribution versus attribution, and diversity of key definitions and terms (Bours, McGinn, and Pringle 2014). As part of the effort to develop a more useful and effective evaluation framework to be applied in climate change interventions, Uitto and other scholars have emphasized the importance of utilizing a *theory of change* (Uitto 2014; Vaessen and Todd, 2008). A theory of change aims to make sure that the underlying assumptions through which desired changes are triggered and realized are made explicit, by highlighting the contextual conditions that may influence the outcomes or results of the interventions (Funnell and Rogers 2011; Weiss 1998). The theory of change is an important component of program theory, which is “an explicit theory or model of how an intervention, such as a project, a program, a strategy, an initiative, or a policy, contributes to a chain of intermediate results and finally to the intended or observed outcomes” (Funnell and Rogers 2011). The theory of change is thus considered to be a useful approach in evaluating complex international development projects and interventions (Center for Global Development 2006).

However, when it comes to CCM interventions, an otherwise useful theory of change approach does not necessarily tend to help render the relationship between interventions and outcomes explicit. This may be due to the fact that most of the CCM interventions funded and implemented by donors thus far have tended to focus on improving the enabling environment or “preconditions”—that is, they were more input-based than output-based. This tendency is represented by the concept of barrier removal. In many of the donor-funded projects, the focus is on the removal of certain types of barriers, which are believed to be preventing a society from achieving a market transformation and becoming carbon-neutral. In reflecting on these issues, Wörten has proposed a “Theory of No Change,” with which one is able to “assess whether or not an intervention has been contributing to a more favorable framework for market development for a sustainable energy technology” (Wörten 2011). Instead of looking at a specific causal relationship between inputs and outputs or outcomes, which is done with the help of a theory of change, TONC looks at whether certain CCM interventions have

met necessary preconditions: that is, whether or not they have the right input framework to be able to remove barriers for a market transformation in a society. If some of the necessary preconditions are not being addressed, then the TONC hints at the possibility of “no change.” That is, it posits that no positive causal change is likely to occur through CCM interventions. In this chapter, the TONC concept is adopted as a test case, to apply to the evaluation of CCM projects of several ASEAN member countries.

METHODOLOGY

Identified Projects

To test the TONC concept, a total of eight CCM programs were selected. These projects were implemented by UNDP, were already completed, and were ASEAN member countries. The project titles were as follows; see table 20.1 for a summary of these projects:

- Industrial Energy Efficiency Improvement Project in Malaysia
- Biomass-based Power Generation and Co-generation in the Malaysian Palm Oil Industry in Malaysia
- Removal of Barriers to Biomass Power Generation and Co-generation in Thailand
- Integrated Microhydro Development and Application Program in Indonesia
- Palawan New and Renewable Energy and Livelihood Support Project in the Philippines
- Efficient Lighting Market Transformation Project in the Philippines
- Energy Efficiency Public Lighting Project in Vietnam
- Promoting Energy Conservation in Small and Medium Scale Enterprises in Vietnam

The primary document sources used for this analysis were project documents (ProDocs) and terminal evaluations of the identified projects. The ProDoc is the official, finalized document that lays out important project implementation information as background analysis of the target country, its development objectives, planned activities, schedules, budgeting information, and so on. By evaluating the ProDoc of each of the identified projects, the types of barriers intended to be removed or reduced against market transformation within the countries, as well as targeted sectors and stakeholders through which such transformation is believed to emerge, were analyzed. ProDocs thus provided important information about project activities and interventions that were being implemented through the respective projects. It is also envisaged that, depending on the status of project formulation and implementation, applying an analytical lens (in this case using the TONC concept) to ProDocs can be a good meta-evaluation exercise.

The second type of source for this analysis was terminal ex post evaluations, prepared and submitted by independent evaluators upon operational closure of the respective projects. Based on this source, how the implemented

TABLE 20.1 **Basic project information**

Project title	Country	Duration	GEF funding	Co-financing
			(million \$)	
Industrial Energy Efficiency Improvement Project	Malaysia	1999–2007	7.3	13.5
Biomass-based Power Generation and Co-generation in the Malaysian Palm Oil Industry	Malaysia	2003–07	4.0	10.8
Removal of Barriers to Biomass Power Generation and Co-generation	Thailand	2001–09	6.8	10.2
Integrated Microhydro Development and Application Program	Indonesia	2008–10	2.1	18.5
Palawan New and Renewable Energy and Livelihood Support Project	Philippines	2000–05	0.8	1.8
Efficient Lighting Market Transformation Project	Philippines	2005–10	3.1	12.0
Energy Efficiency Public Lighting Project	Vietnam	2005–11	3.3	12.4
Promoting Energy Conservation in Small and Medium Scale Enterprises	Vietnam	2006–11	5.8	23.4

SOURCE: Project documents (Government of Indonesia and UNDP, 2005; Government of Malaysia and UNDP, 2005; Government of Malaysia and UNDP, 1999; Government of Thailand and UNDP, 2000; Government of Vietnam and UNDP, 2004; Government of the Philippines and UNDP, 2003; Government of the Philippines and UNDP, 2000; Government of the Vietnam and UNDP, 2005).

interventions had addressed various barriers and different stakeholders was systematically analyzed.

Analytical Framework

In most of the GEF CCM projects, the concept of barrier removal is prevalent. This concept is based on the assumptions that: (1) market transformation toward a more sustainable and energy-efficient society has been prevented because of various types of barriers that exist in many areas, for various agent groups; and (2) transformation of markets occurs when these barriers are reduced or removed by various interventions or activities proposed in the interventions.

The main framework used for analyzing the types of barriers mentioned and targeted by each CCM project is called a TONC, as described above. The argument based on this concept is that when the preset types of barriers are not being addressed by project interventions, it can cause the possibility of generating "no change" toward transformation of market and achievement of CCM objectives, in the case of reduction of GHG emissions.

The theory of change concept presents useful guiding paths toward the achievement of intended results. But the TONC presents the *lack* of such

paths: as such, it is able to provide useful insights into whether or not project interventions are contributing to building a specific enabling environment toward achieving the intended results. When certain interventions are found *not* to be addressing the types of barriers prescribed by TONC, they can be thought of as not being prone to realizing the desired market transformation.

The TONC concept presented by Wörten was only tested for CCM projects that deal with retail products and heating systems, and she has pointed out the need for further research in applying this concept to other fields and cases (Wörten 2011). This meta-evaluation is one such attempt to apply the TONC concept to CCM projects that go beyond these fields.

According to Wörten (2011), the following seven common types of barriers, against which the TONC concept is to be applied, are introduced:

- **Ignorance.** A number of the agent groups may not know the benefits, or even the existence, of specific CCM technologies or products.
- **Lack of expertise.** The different agent groups may lack the expertise to operate and maintain the technologies and the products.
- **Lack of access to technology.** The technologies and the products used may be too expensive, or not readily available in the domestic market, due to insufficient capacity along the supply chain, or a lack of financing.
- **Lack of motivation.** The status quo, traditions, or stereotypes may continue to prevail as a source of resistance toward new technologies and products.
- **Lack of cost effectiveness.** Running the technologies may become, on a total cost of ownership basis, more costly than other traditional energy and technology choices.
- **Lack of affordability.** Such technologies often require large initial investment or upfront costs; a lack of financial support from a host government or commercial banks can therefore represent a barrier.
- **Lack of demand/business model.** It is necessary to generate enough demand in realizing the economies of scale for the supply or the financier's side, as well as to develop innovative and financially robust business models by business owners, especially in small and medium enterprises.

All these types of barriers can be addressed against the four agent groups Wörten introduces: (1) consumers/users; (2) supply chains (such as shops and maintenance technicians); (3) policy makers; and (4) financiers. Table 20.2 shows the TONC barrier types and relevant agent group types.

Conducted Analysis

This meta-evaluation consisted of two sets of analyses. One was to map the types of barriers and addressed agent groups for each project, by referring to the respective ProDocs. This analysis is designed to see which activities had been planned for implementation and, consequently, which activities did not take place because they had not been planned. The second analysis concerns

TABLE 20.2 **Sectors/stakeholders and TONC barriers**

Agent group	TONC barrier type
Consumer/user	Ignorance
	Lack of expertise
	Lack of access to technology
	Lack of affordability
	Lack of interest/motivation
	Lack of cost effectiveness
Supply chain	Ignorance
	Lack of expertise
	Lack of cost effectiveness
	Lack of business model/no demand
Policy maker	Lack of motivation
	Lack of expertise
	Lack of (fiscal) affordability
Financier	Ignorance
	Lack of expertise
	Lack of cost effectiveness
	Lack of business model

SOURCE: Wörlen 2011.

the respective terminal ex post evaluations in order to collect and analyze the evaluative evidence of the activities that were implemented (or were not).

First, in analyzing the ProDocs of the eight projects, the barriers addressed were categorized according to the seven barrier types described above.² Second, by analyzing the ex post evaluations, the author codified the reports by assigning and counting positive (+) or negative (-) evaluative remarks (or mentions). This was not simply based on the assigned ratings within the evaluations (i.e., highly satisfactory, satisfactory, marginally satisfactory, and unsatisfactory). For example, whenever there was a remark that suggested a corrective word, for example “better,” “necessary,” or “needed” action, it was counted as negative. Most of the recommendations offered within the evaluations were also treated as negative (using keywords such

²There are two modifications that have been made by the author to the original TONC barrier types, i.e., inclusion of consideration of renewable energy sources such as biomass sources to the barrier of lack of access to technology, and addition of innovative policy models to the barrier of lack of demand/business model. These barriers were further assigned to the equivalent agent groups—i.e., consumer/user, supply chain (e.g., shops, maintenance technician, and those stakeholders engaged in business

as “should” or “recommended”). This was based on the assumption that recommended actions referred to things that should have taken place during the project implementation phase but had not. And of course such directly associated negative terms as “difficult,” “risky,” “poor,” “not properly,” etc., were noted as negative remarks. Similarly, when assigning positive remarks, the author not only referred to the ratings within the evaluation sections, but also paid close attention to the remarks related to the assessed project contributions, for example with such terms as “valuable,” “important,” “vital,” “key,” “success,” and the like.

One must note, however, that since only evaluators’ remarks were codified, this analysis did not assign any value where there were no planned activities. If there was no remark by the evaluator, even though the project may have missed an important barrier entirely, that element was simply left without any attribution, either negative or positive.

The second type of analysis was done without attempting to assign different degrees of positive-ness or negative-ness: that is, the author categorized the remarks, regardless of the strength or weakness of the adjectives into simply either “positive” or “negative.” The author of this chapter is keenly aware of the fact that such way of “quantification” cannot be considered a robust quantitative analysis. What was intended was a sort of qualitative analysis to discover otherwise unheeded patterns by applying a specific set of analytical lens, that is, the TONC framework.

Findings and Discussion

Table 20.3 summarizes the results of the two types of analyses conducted: (1) the types of barriers addressed by each CCM project, and the involved agent group type against such barriers, plotted as against those prescribed by TONC concept; and (2) the frequency of either positive or negative evaluative remarks identified in each ex post evaluation.

Through this analysis and comparison, several important findings were discovered.

Ignorance and lack of expertise barriers. With some exceptions, almost all of the projects studied addressed the barriers of ignorance and lack of expertise for all agent groups where their implemented interventions cover as much as 88 percent of all the cells assigned to this barrier type. This may be due to the fact that UNDP, the implementing agency of these projects, is a development agency that emphasizes and focuses on technical assistance, especially through capacity development, be it through government (policy makers) or industries (depending on the project, but mainly for supply chains). Looking at the high frequency of positive remarks for the implemented interventions addressed to these barriers, one can say that overall, the projects’ intention of increasing a level of awareness and expertise among industries

and hard infrastructure), policy makers (e.g., government agencies and line ministries), and financiers (e.g., commercial banks and investors).

TABLE 20.3 Addressed barriers and frequency of evaluative remarks among the identified CCM projects

	Ignorance			Lack of expertise			Lack of access to technology			Lack of affordability			Lack of interest/motivation			Lack of cost effectiveness			Lack of business model/no demand			
	Consumer	Supply chain	Policy maker	Consumer	Supply chain	Financier	Consumer	Supply chain	Financier	Consumer	Supply chain	Financier	Consumer	Supply chain	Financier	Consumer	Supply chain	Financier	Consumer	Supply chain	Financier	
I	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
M	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
P	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
T	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
V	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
V	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	68% (22/32)			88% (28/32)			81% (13/16)			58% (14/24)			38% (12/32)			13% (3/24)			63% (20/32)			

SOURCE: Project documents and terminal ex post evaluations.

NOTE: n.a. = not applicable/relevant. I = Integrated Microhydro Development and Application Program (Indonesia); M = Industrial Energy Efficiency Improvement Project (Malaysia); M = Biomass-based Power Generation and Co-generation in the Malaysian Palm Oil Industry (Malaysia); P = Palawan New and Renewable Energy and Livelihood Support Project (Philippines); P = Efficient Lighting Market Transformation Project (Philippines); T = Removal of Barriers to Biomass Power Generation and Co-generation (Thailand); V = Energy Efficiency Public Lighting Project (Vietnam); V = Promoting Energy Conservation in Small and Medium Scale Enterprises (Vietnam). Percentages represent implemented types of interventions divided by the total number of cells for each barrier type.

LEGEND: ● intervention implemented for agent group. Frequency of evaluative remarks: ■ 1 positive remark; ■ 2 positive remarks; ■ 3 negative remarks; ■ 1 negative remark; ■ 2 negative remarks; ■ 3 negative remarks.

has been well realized. However, an interesting gap identified here is that although the agent group of consumers is covered by all the projects for ignorance barrier (i.e., for awareness raising), only a few projects address the issue of raising expertise or capacity for consumers/users. While it seems relevant to focus on those agent groups who have direct contact or business relations, such as supply chains and financiers, providing capacity development to consumers/users can arguably complement other project activities in raising expertise.

Cost-effectiveness barriers. Throughout the eight projects, only Thailand's biomass project seems to have specifically addressed this barrier, which has become visually obvious thanks to the TONC framework, where only 13 percent of this barrier's activities (cells) aimed at different stakeholders was implemented. On top of raising awareness and developing expertise, the issue of a total running cost, or a total cost of ownership basis, is significant when one tries to contribute to long-term, sustainable market transformation within a country. Such issues may have been considered by UNDP as "external risks" to the implemented CCM project interventions, for example, influence from fossil fuel subsidies, or the high cost or price of the technologies themselves. Nonetheless, the cost-effectiveness barrier seems to be an area that should be addressed more consistently in the design of future CCM projects.

Lack of interest/motivation. Another interesting gap is seen in the lack of interest/motivation barrier. Although the barrier of ignorance is universally addressed by all of the projects, when it comes to harnessing interest or motivation, there are only a handful that specifically incorporated these elements in project design, and in related implemented activities. Although it is acknowledged that the awareness-raising component in each project does include certain activities for harnessing interest and motivation, there seems to be a lack of emphasis on going beyond the level of simple awareness, and toward motivation and induced actions therefrom. For example, letting commercial banks know about the technologies and their financial feasibility is one thing, but actually inducing their interest and increasing their motivation for creating a proactive behavior/culture can be quite another. Such a potential systemic lack of focus toward this barrier is reflected in the frequency of negative evaluation remarks as well. For example in the Efficient Lighting Market Transformation Project in the Philippines, even after trainings had been conducted to raise awareness and expertise within the private and government banks, at the end of the project, none of them had provided loans for energy-efficient lighting. This surely was reflected negatively in the evaluation. (This activity component was given a rating of unsatisfactory.)

Policy maker agent group. When one looks at the interventions implemented by the agent groups, it becomes clear that the agent group of policy makers (e.g., government agencies and line ministries) does not seem to be well covered under such barriers as lack of (fiscal) affordability, interest/motivation, and business/policy model. The issue of fiscal or jurisdictional

affordability of certain policies and regulations, as with the case of the fossil fuel subsidies for the cost-effectiveness barrier, may be considered to be “external” to the range of project activities. For example, a country’s ministry of environment may not have jurisdiction or authority over non-environmental matters, such as financial ones, or those related to taxation/subsidies; however, creating cross-sectoral policies and active interministerial collaboration for establishing a development goal within a country still seems to be an important area for project intervention. Also related, policy makers who are involved with the CCM projects may not be interested or well motivated to devise innovative policy packages, or to collaborate with other ministries. Moreover, there may be an issue of power balance between an implementing agency (such as UNDP) and an executing partner (such as a government and its line ministries). Since government counterparts are one of the most important “clients” of implementing agencies, trying to force them to go outside their comfort zone of siloed political jurisdictions can well be a systemic challenge for the implementing agency. All in all, the barriers pertaining to policy makers can be an important gap that needs to be filled by future CCM design and implementation.

Lack of demand, business/policy model. When analyses of project design documents (through ProDocs, as black dots plotted according to the TONC framework) and terminal evaluations are combined, a very strong tendency has been revealed in the barriers addressing the lack of demand, and the business/policy model. In short, for these barriers, much has been implemented but much has also failed. This barrier area has had the largest frequency of negative evaluative remarks, yet with relatively a high percentage (63 percent) of intervention coverage. Activities are indeed happening: however, one can estimate that, due to rigidity of the business and policy models prescribed by the projects, this barrier area overall has been mostly a failure.

CONCLUSIONS

The theory of change, though itself a useful concept in evaluating programs, often is not an applicable concept in the case of donor-funded CCM project interventions. This is because often the proposed activities do not by themselves generate GHG emission reduction, but instead are aimed at removing certain existing barriers to realizing a market transformation within a country, such as awareness, market, technology, policy, and finance-related barriers. The TONC concept was proposed by Wörlen (2011) as a theoretical framework for identifying important barriers that were not being tackled in a project’s activities. Thus TONC can be a useful tool when evaluating project design (through ProDocs) and implementation (through terminal evaluations), as well as the development impact of such projects.

As a test case, a meta-evaluation was undertaken to apply the TONC concept to eight CCM projects that were implemented by UNDP in and with ASEAN member countries. The main objective was to apply the TONC concept to different CCM projects tested by Wörlen, and to find out what

kinds of implications can be drawn through analyzing the projects' barrier removal strategies.

Though obviously limited in its analytical depth, by focusing on the TONC-prescribed types of barriers and key agent groups, it was possible to systematically see the institutional weak spots, and the biases found in project design. The TONC analytical framework has thus proven to be a useful tool for enabling a zoomed-out analysis of CCM project design. It can also help identify and facilitate the necessary actors and agencies before project implementation. When combined with ex post evaluation analysis similar to the one conducted here, the TONC framework can also be a useful tool for summative evaluation about the addressed or unaddressed barriers and interventions of CCM projects. This type of TONC-applied analysis, when accumulated for projects elsewhere, can serve as important reference for future CCM project design and implementation.

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