

Constructing Theories of Change for Information Society Impact Research

Alexander Flor

1 Introduction

It was a cold February morning in 2010 when a select group of development workers assembled at Raamweg 5, The Hague. The motley group represented major sectors, themes, stakeholders, and continents in the Global South. Hosted by the International Institute for Communication and Development (IICD) and sponsored by the Food and Agriculture Organization of the United Nations (FAO), they convened with a singular purpose in mind: to put their heads together and attempt to bring coherence to the information and communication technology for development (ICT4D) discourse.

1.1 A Question of Impact

It has been 10 years since the G8 nations announced their intentions in Okinawa to help bridge the digital divide and, in doing so, alleviate poverty in the Global South. However, the past decade had been met with uncertainty and mixed feelings about the promise of information society. An oft-cited indictment is the preponderance of anecdotal (and the lack of hard) evidence that directly correlated information and communication technologies to development and poverty alleviation. *Do digital access and opportunities really contribute to achieving the Millennium Development Goals?* Five years before the end of the MDG timeframe, this question remained largely unanswered.

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It was not the intention of The Hague gathering, however, to answer this question. Although unarticulated, the group's collective experience and gut feeling pointed towards the affirmative. They would instead attempt to craft the logic behind this affirmative answer and do so with the strength of their convictions.

1.2 *Contradictions*

In the past, ICT4D programmes have tried to address the lack of evidence-based impact studies by strengthening capacities for research. However, increased capacity in the conduct of disciplined inquiry responds to methodological challenges only, not to the substantive. The substantive challenge involves addressing the innate contradictions encountered when embarking on information society impact research.

The first of these contradictions deals with the dual nature of information society. By 2005, the international development assistance community had seen it fit to classify development programmes under two major categories: sectors and themes. Sectors include agriculture, health, education, environment, natural resources, etc. Themes involve crosscutting concerns such as governance, gender, poverty, sustainability, and climate change. When situated within the development arena, the information society is *both* a sector and a theme. Its sectoral dimension covers hardware design, software development, infrastructure expansion, universal access, information and communication policy, and knowledge products and services. Its thematic nature, on the other hand, is manifested in its crosscutting applications.

ICT4D may be applied in any development sector. When used in agriculture, it becomes eAgriculture; in health, it may take the form of telemedicine; in education, it is referred to as ICT4E; and in the environment, its major application is geospatial information systems (GIS). Generally, when assessing development performance, programme evaluators would consider ICTs as belonging to a different sector altogether (information technology or telecommunications) and, hence, beyond their purview and concern. Although ICT impacts significantly on these programmes, sectoral evaluations tend to class it along with other control (i.e. *ceteris paribus*) variables and, thus, not sufficiently looked into.

A second contradiction deals with the fact that information society impact cannot be disaggregated from outcomes generated by purely sectoral interventions. To be fair, information society impact research has been conducted early on (e.g. Batchelor 2003, 2006, Batchelor and Norrish 2005) and widely enough (see Heeks and Molla 2009). Proponents submit that the difficulty in establishing a direct link between information society and the MDGs is not due to the lack of impact evidence but to difficulties in disaggregating and attributing such impacts to ICTs alone. For instance, it is difficult to sift through macro-level economic data and directly link ICT interventions to significant change in income, equity, or environmental quality indicators. Information society impact may be somewhat likened to a coefficient whose exact value cannot be factored separately from a given product. A postmodernist would refer to this contradiction as the *invisibility* of information society within the development arena.

Thirdly, information society impact is often not immediate and hardly tangible. ICT4D may facilitate development processes. Openness may empower development actors. But neither technology nor openness generates instant economic returns unless these are directly linked to a service within the value chain. This lack of immediacy or concreteness of information society impact further contributes to the difficulty in its documentation and measurement as hard evidence.

These contradictions are exacerbated by the fact that, as Matías Dodel points out elsewhere in this book, information society discourse lacked a comprehensive, universally accepted framework that establishes clear causal links between ICTD interventions and MDG outcomes. It was with the development of such a framework that The Hague summit invested its efforts into.

1.3 Purpose

The purpose of this chapter is to take The Hague discussion a step further by constructing *theories of change* based on the framework developed. The practical implication of building these so-called theories of change will be the availability of alternative results chain models for the conduct of information society impact research relative to the Millennium Development Goals. The chapter has three major sections. The first one discusses the framework which resulted from The Hague ICT4D meeting in 2010. The second elaborates on the theories of change. The third presents an essay on evaluating impact and unintended outcomes.

2 The Hague Framework

The Hague discussion was chaired by Stephen Rudgard of FAO Rome and facilitated by his associate, Michael Riggs, backstopped by IICD's Denise Senmartin. Rudgard was among the first advocates of evidence-based research (EBR) for evaluating impact within the international development assistance community, while Riggs was the driving force behind the global eAgriculture community. Senmartin, on the other hand, was involved in impact studies on ICTs for rural livelihoods (IICD 2006). Attendees included: Africa-based information science expert Peter Ballantyne, representing the international agricultural research community; evaluation specialist Kay Leresche; gender and communication advocate Anriette Esterhuysen; and myself as the sole representative from Third World academia.

2.1 Antecedents and Assumptions

Rudgard, Riggs, and Senmartin acknowledged that ICT4D frameworks have been proposed in the past. These models, although useful, have not been generally

adopted since some were too complicated while others were context specific. Some were donor driven or biased towards an ideological point of view. Many were focused on technology neglecting the sociological, cultural, and developmental dimensions. At the very onset, the group was in agreement on the need to revisit these models and incorporate them into a unified framework that is universally acceptable and applicable for all development sectors and themes.

Senmartin says the framework should:

- Be versatile and be applicable for planning, implementation, monitoring and evaluation, impact analysis, or scientific research
- Cater to development practitioners, planners, policymakers, academics, and donors
- Have sound theoretical bases
- Possess the qualities traditionally associated with good frameworks, i.e. coherence, comprehensiveness, parsimony, and elegance

2.2 *ICT4D Model*

In spite of these agreements, our disparate backgrounds came into play and eventually led to contentious debates that, upon the prompting of Ballantyne, we conceded to be attendant to the process of convergence and synthesis. The opposing discussions, in fact, generated a model that many will consider coherent yet comprehensive, elegant yet parsimonious. Characteristic of the development discourse that we represented, there was an initial tendency to use the terms model, theory, framework, construct, and concept interchangeably. Indeed, the interfaces between some of these terms were quite significant. As we progressed, however, the differences became more distinct. We began to refer to a framework as a structured set of conceptual boxes wherein we can situate a narrative or approach the study of ICT4D. By theory, we meant an explanation of the causal relationships among the elements that make up the ICT4D phenomenon. By ICT4D model, we meant a visual representation of how elements making up the ICT4D phenomenon interacted. At The Hague meeting, the ICT4D model became the visual representation of the ICT4D framework. The elements are, in effect, ICT4D concepts, and a statement of relationship between two or more of these concepts was considered a construct.

Constructs Theoretically, the model takes off from a generally acknowledged construct: *Communication can effect developmental changes in societies*. This proposition had been tried and tested since the 1950s through the 1970s in the works of Beal et al. (1957), Rogers (1962), and Quebral (1973). In fact, this idea is being actively revived in the current C4D (communication for development) initiative within UN agencies.

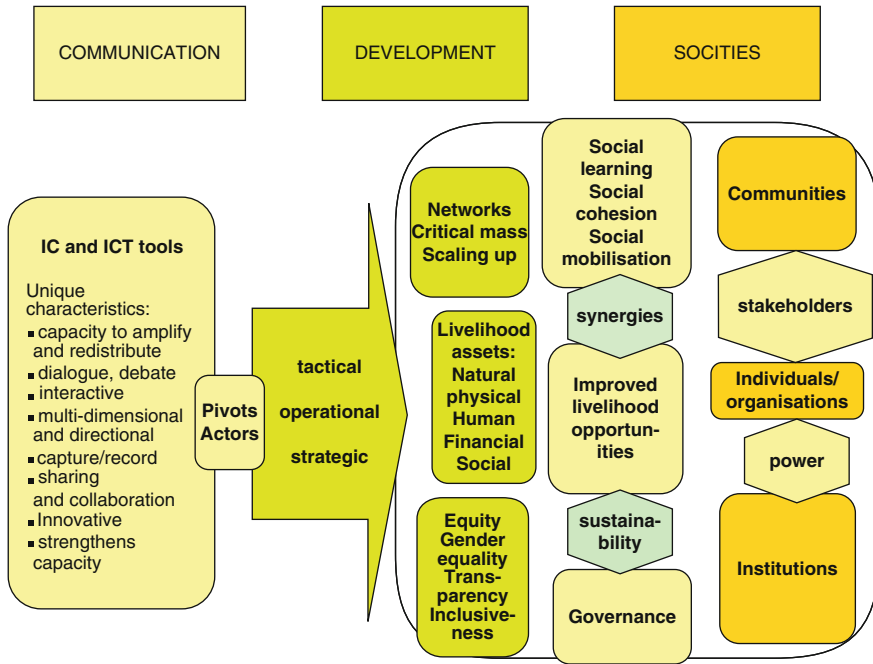


Fig. 1 The Hague framework

We supplemented this basic construct further by the following commonly shared assumptions:

- Communication is a social process.
- Communication is the exchange of information or the sharing of knowledge.
- The essence of ICT4D is not technological but social; the emphasis should be on the “C” and the “D” instead of the “I” and the “T.” In eAgriculture, for instance, bandwidth may be important but food security far outweighs it.

Additional constructs that made up the framework submit that ICT, as a social phenomenon, has the following attributes: knowledge capture, storage, distribution, amplification, interactivity, multidimensionality, multidirectionality, sharing, collaboration, and technological innovation (Fig. 1).

Furthermore, individual, organizational, or institutional pivotal actors (otherwise referred to as intermediaries, catalysts, change agents, focal points, or champions) link ICTs to the beneficiary. There are primary, secondary, and higher-order impacts of ICTs through these pivotal actors:

- ICTs contribute to natural, physical, financial, human, and social capital resulting in improved livelihood outcomes for individuals and organizations (Flor 2008).

- ICTs lead to transparency, equity, gender equality, and inclusivity resulting in strengthened governance for institutions while providing sustainability to improved livelihood outcomes.
- ICTs create networks, critical mass, and enable upscaling of interventions resulting in social learning, social cohesion, and social mobilization among communities while feeding its synergies to improved livelihood outcomes.

Conceptual Referents The major elements of this model are *communication*, *developmental changes*, and *society*. For each of these major elements, conceptual referents were identified. The conceptual referents for *communication* were ICTs and their unique features. The referents for *developmental changes* were social learning, social cohesion, social mobilization, improved livelihood outcomes and improved governance. The referents for *society* were individuals, groups, communities, organizations, and institutions.

After 2 days of discussions, The Hague group decided that the agreed upon constructs and visual model constituted an ICT4D framework that held much promise and that it was time to disband. Theoretically, the framework explained how development sectors could benefit from information and communication technologies. Furthermore, it enumerated the elements required to do so. In other words, it made us understand the dynamic behind the impact.

2.3 Gaps

However, as the group wound up the discussion and prepared to adjourn, there was a sentiment that something had been left undone. In particular, Leresche, a veteran of multilevel impact evaluations in Africa, raised concerns that the framework did not provide for the specifics of evidence. It visually and narratively laid out the phenomenon in conceptual terms, but it did not do so in empirical terms. The framework needed much more than conceptual referents but empirical referents as well. It required an articulation of the impacts, an elaboration of the outcomes, and an identification of interventions, but most of all, a determination of the causal links between these three. In other words, The Hague framework needed *theories of change*.

3 Theories of Change

3.1 Definitions

What are theories of change?

The questioning of impacts articulated at the beginning of this chapter was not unique to information society discourse. It was true to the entire development

assistance community as well. Even before the Millennium Development Goals were proposed at the turn of the century, stakeholders in the development process—donors, beneficiaries, governments, and civil society organizations—have become more critical, more circumspect, and more vigilant with the results of development aid. A variety of approaches and tools were introduced by the same stakeholders to ensure that impacts were appropriately monitored and evaluated. Apart from the *evidence-based approach* championed by DFID came *results-based management* (RBM) of the World Bank, *management for development results* (MfDR) of the Asian Development Bank, *performance-based assessments* (PBA), and *theories of change* (ToC). The latter, as defined, is a set of beliefs that guides the thinking about how and why a complex change process will unfold (Clarke 2004). A ToC is not a theory in the academic sense of the word. It is not a general theory on how change occurs but a “theory” specific to an intervention (Clouse 2011), which may take the form of a programme or a project. Thus, although adequate within the general context of ICT4D, The Hague framework required ToCs when it came to specific impacts of particular information society interventions, projects, or programmes, which stakeholders are on the lookout for.

The New York-based Center for Theory of Change explains that:

... a Theory of Change defines all building blocks required to bring about a given long-term goal. This set of connected building blocks—interchangeably referred to as outcomes, results, accomplishments or preconditions is depicted on a map known as a pathway of change/change framework, which is a graphic representation of the change process. (<http://www.theoryofchange.org>. Accessed 3 May 2013)

The main tool of the ToC is a *map* of causes and effects, which, the Center describes, is constructed in six stages (<http://www.theoryofchange.org/what-is-theory-of-change/how-does-theory-of-change-work/>. Accessed 3 May 2013):

1. Identifying long-term goals
2. Backwards mapping and connecting the preconditions or requirements necessary to achieve that goal and explaining why these preconditions are necessary and sufficient
3. Identifying basic assumptions about the context
4. Identifying the interventions that the initiative will perform to create desired change
5. Developing indicators to measure outcomes to assess the performance of the initiative
6. Writing a narrative to explain the logic of the initiative

For the sake of clarity, definitions of impact, outcomes, and outputs specific to information society context are provided here. In the simplest terms, *impact* would refer to the positive or negative contribution of information society intervention on a Millennium Development Goal. *Outcome* is an immediate or intermediate condition caused by the intervention that may lead to a goal and thus linked to an impact. *Output* is a product or a service delivered by the intervention that may lead to an outcome.

How does information society impact on the Global South? This section will attempt to answer this question using the theories of change approach initially in general terms, then in specific ones.

3.2 *Changing the Global South*

Long-Term Goals As discussed by Andrea Ordonez in a separate chapter, the term *development*, as used within the context of ICT4D, is often associated with project-based goals. Nowadays, development interventions for the Global South are designed and implemented to contribute to the long-term targets of any one of the eight Millennium Development Goals. Identified during the Millennium Summit of 2000, these goals are targeted to be achieved by 2015. With 193 UN member states and 23 development organizations endorsing the MDGs, the international development assistance community has patterned its plans and devoted its resources to the fulfilment of these goals, rightly or wrongly. If the information society is to be recognized as having a positive impact on the developing world, then it will have to be situated within the MDG framework.

Change Narrative What are the requirements of these long-term goals that are provided by information society? Based on The Hague group's collective experience, there are four attributes of the information society that may be seen as preconditions or requirements necessary to achieve any one of the MDGs: openness, equity, quality, and scale. Openness refers to access to natural, physical, economic, intellectual, and knowledge resources. Equity pertains to the distribution of these resources. Quality relates to the value of these resources. Scale indicates the levels, range, and degree of availability of these resources.

The information society runs on an information-based economy. It functions with and operates on networks. Information or knowledge becomes the primary wealth generating, enabling, and empowering resource. Networks become the dominant platform for any wealth generating, enabling, and empowering activity. The continued development, utilization, and application of information and communication technologies perpetuate these conditions and become both the cause and effect of an information-based economy.

The Hague framework emphasizes the liberating nature of information and communication technologies with their innate characteristics: dialogue, debate, and interactivity; documentation, capture, and recording; multidimensionality and omnidirectionality; amplification and redistribution; and sharing and collaboration. To this list of qualities, the following may be added: augmentation, automation, mobility, speed, integration, and synergy.

Dialogue, debate, and interactivity; documentation, capture, and recording; and multidimensionality and omnidirectionality contribute to transparency, which leads to *openness*. Amplification and redistribution result in inclusivity. Sharing and collaboration lead to enablement. Integration and synergy bring empowerment.

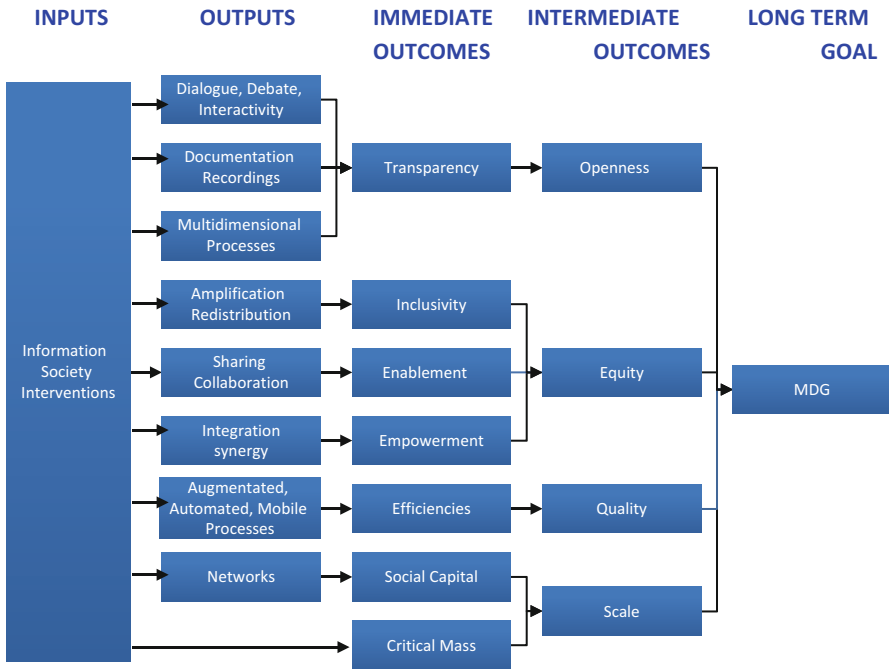


Fig. 2 Information society pathway to change

Inclusivity, enablement, and empowerment generate *equity*. Augmentation, automation, mobility, and speed improve effectiveness and generate efficiencies that lead to *quality*. On the other hand, networking develops social capital and a critical mass that contributes to *scale* (Flor 2005). A not-so-specific pathway to change resulting from this narrative is found in Fig. 2.

Pathways to change maps are usually drawn vertically. With the long-term goal on top, one works down to the intermediate outcomes, immediate outcomes, outputs, and interventions. Figure 2 was drawn horizontally to show the logical sequence from interventions to long-term goal not suggestive of hierarchy. Furthermore, pathways generally portray causal links between specific interventions that lead to particular outputs that result in definite outcomes linked to explicit goals. The above general results chain was constructed for illustrative purposes only. Found below are three examples that focus on specific goals and are patterned after conventional ToCs. They do not represent any specific project on the ground. The elements are a composite based on my own previous field experiences. Nevertheless, these are indicative of authentic information society ToCs as applied to the Millennium Development Goals. Note that the sample ToCs are structured with an upward vertical logic from the intervention to the output, through the immediate and intermediate outcomes ending with the long-term goal on the top.

3.3 Indicative Information Society ToCs

Pathway to Change 1: Agriculture Sector MDG 1 declares that extreme poverty and hunger should be eradicated by 2015. This places the agriculture sector as a top priority in national and international development programmes. How can ICTs contribute to the achievement of MDG 1? An indicative pathway is found below (Fig. 3).

To contribute to the long-term goal of ending extreme hunger, a hypothetical national eAgriculture programme would have two explicit outputs: a crop decision support system (CDSS) and a marketing information system (MIS) for agricultural products. The CDSS, if designed appropriately and used efficiently, will result in maximized production of staple crops such as rice, corn, and tubers as well as minimized wastage of agricultural inputs such as water and fertilizer. On the other hand, the MIS will assist policymakers in formulating an inclusive food distribution policy and will result in transportation and distribution efficiencies. Maximized production and minimized wastage will lead to the intermediate outcome of food security operationalized through the self-sufficiency ratio indicator. Similarly, an inclusive food policy and efficient transportation and distribution system will lead to the intermediate outcome of equitable food distribution. Food security and equitable distribution will contribute to Millennium Development Goal 1, which is to end extreme poverty and hunger by 2015. Such is merely an indicative pathway. For a deeper understanding, Kabran Aristide describes in Part II of this book *on the ground* experiences on eAgriculture in the Ivory Coast.

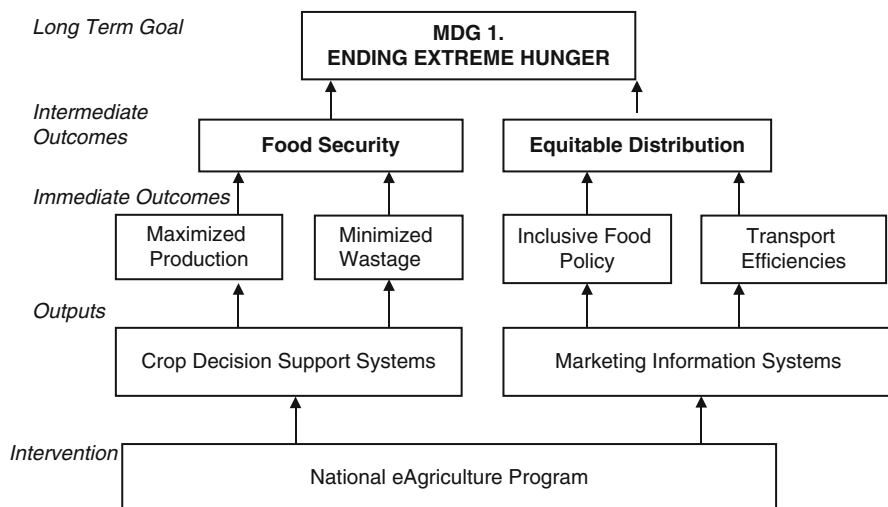


Fig. 3 eAgriculture indicative pathway to change

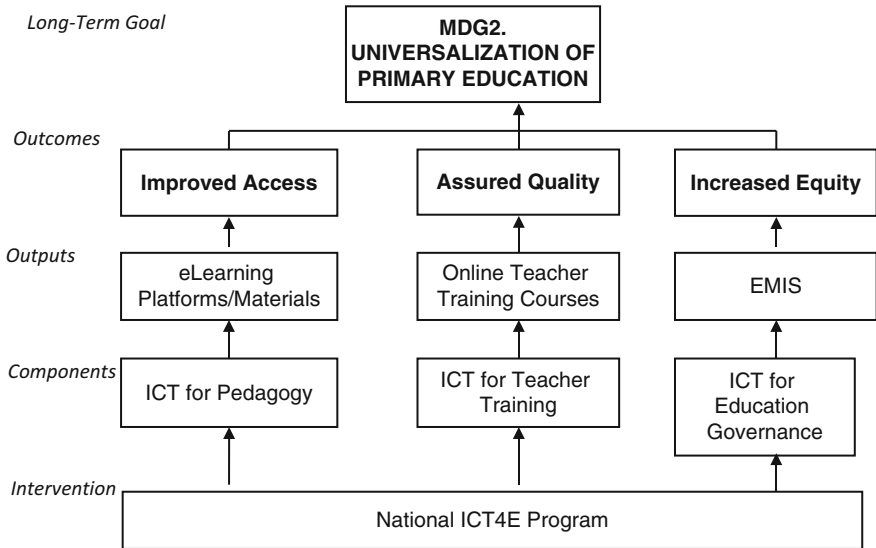


Fig. 4 ICT4E indicative pathway to change

Pathway to Change 2: Education Sector MDG 2 states that universal primary education should be achieved by 2015. Elementary school education should be made available for all in every country in the world (Fig. 4).

The information society can contribute to the goal of universalization of primary education via a National ICT4E Programme with three components: ICT for pedagogy, ICT for teacher training, and ICT for education governance. The ICT for pedagogy component will produce eLearning platforms and educational resources. The ICT for teacher training component will generate online teacher training courses that may be taken by actively serving teachers during their free time. The ICT for education governance component will design and develop an inclusive educational management information system (EMIS) that would cover depressed, disadvantaged, and underserved communities. The eLearning platforms and educational resources will result in improved educational access operationalized by enrolment indicators. Online teacher training courses will bring about quality education measured as completion rates. An inclusive EMIS will result in increased educational equity. All three outcomes—improved access, assured quality, and increased equity—will contribute to MDG 2, the universalization of primary education by 2015. This hypothetical pathway, specifically its teacher training thread, is validated by Olivera, Ale, and Chib in their Peru case study found in the second part of this book.

Pathway to Change 3: Climate Change Theme The previous examples—eAgriculture and ICT4E—focused on interventions that contribute to long-term sectoral goals. ICT4D theories of change may also contribute to long-term thematic

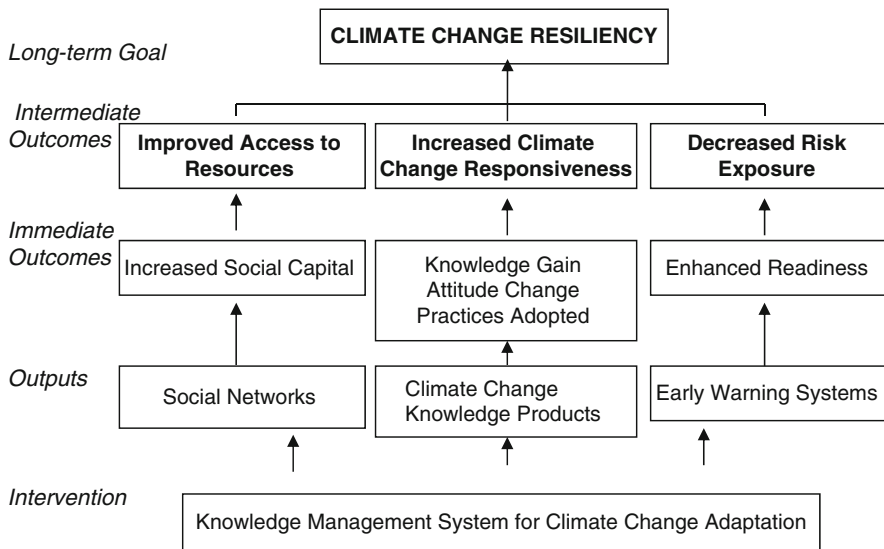


Fig. 5 Climate change KM indicative pathway to change

goals, such as gender and governance, which cut across sectors. Under MDG 7, ensuring environmental sustainability, we can situate a subgoal that qualifies as a thematic one and that may be addressed by information society interventions.

Climate change resiliency is a thematic goal since it cuts across the environment, agriculture, health, education, and national security. Given the fact that the Global South is the most adversely affected by this phenomenon, it is included here as a long-term goal for information society ToC (Fig. 5).

The information society can contribute to the long-term goal of climate change resiliency, at the community level, with the design, development, and testing of a knowledge management system for climate change adaptation. This system will generate three outputs: social networks, climate change knowledge products, and early warning systems for natural disasters such as tsunamis, typhoons, floods, droughts, and forest fires. An immediate outcome of social networks would be an increase in social capital among community associations, which would eventually result in improved access to climate change adaptation resources. Immediate outcomes of climate change knowledge products are knowledge gain, attitude change, and practices adopted, which result in increased climate change responsiveness. An immediate outcome of early warning systems is increased community readiness leading to decreased risk exposure. Improved access to climate change adaptation resources, increased community responsiveness, and decreased community exposure to risks will collectively result in long-term climate change resiliency (Gonzalez-Flor et al. 2013).

4 Evaluating Impact

The three pathways illustrated above are visual representations of information society theories of change. They provide indicative elements (i.e. interventions, outputs, and outcomes) that impact on the Global South. Moreover, the pathways establish clear causality between the elements. The pathways or ToC maps may guide the planning and design of information society interventions. More importantly, they serve as bases for monitoring and evaluating results, impacts, and contributions to the MDGs. Identifying the elements of change and tracing their causal links establish a logical relationship between information society attributes and Global South development. However, ToC maps alone do not address the need for evidence.

4.1 Evidence of Change

Indicators provide evidence of change. Indicators are empirical measurements of outputs and outcomes. Outputs, in the form of goods or services produced by the intervention, are generally quantified or qualified output indicators or both. In the eAgriculture example given above, the outputs are a Crop Decision Support System and a Market Information System. The output indicators are quantified as the “*number of knowledge/information systems*” or qualified as “*operational knowledge/information systems*.” Similarly, in the ICT4E example, the outputs are eLearning materials, online teacher training courses, and an EMIS. The output indicators then become the number of eLearning materials, the number of online teacher training courses, and an inclusive EMIS.

Outcomes, being immediate or intermediate conditions or circumstances brought about by the outputs of an intervention, are measured in relative terms instead of absolute numbers. Outcome indicators come in the form of rates, ratios and proportions or products, coefficients, and quotients. In the KM for climate change example, immediate outcome indicators involve the differences between baseline, midterm, and final measurements of social capital within community organizations; adaptation of knowledge, attitudes, and practice (KAP) among families; and disaster preparedness of neighbourhood associations.

Each output and outcome identified in a ToC should have at least one corresponding observable and measurable indicator to fulfil the evidence-based standard.

4.2 Unintended Outcomes

And now for the caveat: while well-constructed theories of change on information society impact may guide us in establishing causal links between ICTs and the MDGs, we can be blindsided by them. The parameters set in our ToCs provide us with the focus and vision required for objective disciplined inquiry. Furthermore,

it will provide us with solid evidence of significant change. However, these parameters, derived mostly from results-based indicators exemplified above, may act as horse blinders, robbing us of our peripheral vision and preventing us from appreciating the totality of the information society phenomenon under study. As such, impact studies on information society and openness themes, be these *ex post* regulatory or final project evaluations, require us, at a certain point in the process, to remove these blinders and to explore the so-called unintended outcomes or impacts, negative or positive.

Presented herein are unintended ICT4D outcomes discovered in three impact evaluations conducted in 2011 in three separate countries (Indonesia, Philippines, and Nepal), at three evaluation points (*ex ante*, midterm, and final evaluation), and on three information society domains (eLearning, openness, and information systems). The subjects of impact evaluation—the eLearning component of JICA’s Maritime Education and Training Improvement (METI) Project in Indonesia, the indigenous knowledge system (IKS) component of EU’s Focused Food Production Assistance to Vulnerable Sectors (FPAVAS) in the Philippines, and the MIS component of UNESCO’s Strengthening National Capacity on Planning, Monitoring and Evaluation of Literacy and NFE Programmes (CAPEFA) in Nepal—provide us with surprising outcomes that have not been incorporated in the project design but may eventually be considered as a project’s saving grace.

Case 1. The Economics of eLearning This case study may not be directly related to an MDG, but because of its implications on GDP, it may be indirectly linked to MDG 1: the eradication of poverty. Indonesia is the largest Muslim country in the world. It is also home to some of the poorest communities particularly in its coastal areas (Badan Pusat Statistik 2010), which may be a contradiction of sorts. It is the world’s biggest archipelago covering three time zones. Compared to any other country, Indonesia has the longest coastline. The country is strategically located in one of the world’s busiest waterways: east of the Indian Ocean, west of the Pacific Ocean, south of the China Sea, and north of the Corral Sea. It is within the planet’s largest center of marine biodiversity, the Sulu Celebes Sea. Thus, Indonesia has been described as the “Sleeping Giant” in the global maritime sector. Most certainly, Indonesia has a legitimate claim of becoming a global maritime power. The country can potentially become one such power by establishing the strategic presence, in terms of quantity as well as quality of its merchant marines and officers within the global fleet. In other words, it can achieve its goal of becoming a leading maritime nation by producing a well-trained highly educated maritime workforce manning flagships from different countries. Strategically, it can make its mark through quality maritime education and training. From 2009 to 2011, the Indonesian Ministry of Transportation implemented a JICA-funded undertaking, Maritime Education and Training Improvement Project, to develop policies, curricula, and delivery systems to improve the quantity and quality of the country’s maritime workforce.

Compliance to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention) and the Seafarer’s Training, Certification and Watchkeeping Code (STCW Code) has

been the global framework, rationale, and driving force for maritime education and training improvement. STCW 2010, the latest version of this international agreement, provides for the standardization of maritime distance education programmes. Section A-I/6 on Training and Assessment states that “Each Party shall ensure that all training and assessment of seafarers for certification under the Convention is structured in accordance with written programs, including such methods and media of delivery, procedures, and course material as are necessary to achieve the prescribed standard of competence.” This implies a tacit acceptance of distance learning, in general, and eLearning, in particular, as an MET delivery system provided that certain standards are set, adhered to, monitored, and enforced. Hence, eLearning as a strategy and delivery system was incorporated into the project. In the *ex ante* evaluation of the strategies introduced by the project, the potential impact of eLearning on education and training improvement was assessed. Having been assigned this task, the evaluation employed a pathway of change model that aimed at quality education and training as an intermediate outcome. While conducting the evaluation, it became clear that the potential impact of eLearning extended beyond the confines of education and training improvement and infringed upon the economic aspect.

The economic argument hinges upon opportunity costs incurred when an Officer Third Class leaves his or her current onboard assignment to undergo advanced training for his or her upgrade to Officer Second Class. When Indonesian maritime academies enrol Officers Third Class for upgrading for eight months, Indonesian families collectively incur an estimated opportunity cost of USD 3.96 million per year based on the onboard salaries of their breadwinners. When Officers Second Class go onshore for upgrading for another six months, an opportunity cost of USD 8.4 million per year is further incurred due to their higher pay scales. These opportunity costs can be mitigated with onboard instead of onshore training via eLearning. Opportunity costs pertain to the families of Indonesian officers only and hence are incurred at the micro level. At the macro level, Indonesian GDP is deprived of as much as USD 30 million annually due to the onshore training for upgrading. Additionally, maritime eLearning programmes are ten times cheaper than residential or on campus programmes (Azuma et al. 2011). A classroom to student ratio of 1:30 is no longer necessary. Maritime academies need not be constrained to accept applicants on the basis of limited facilities. The educational expenditure of the trainee is likewise reduced. Transportation costs, educational materials costs, and tuition fees would be significantly reduced. These are positive unintended economic impacts of introducing eLearning into the Indonesian MET sector (Flor 2013b).

Case 2. The Downside of Open Knowledge Resources From 2010 to 2011, the EU implemented the Focused Food Production Assistance to Vulnerable Sectors (FPAVAS) Project in the Philippines. Incorporated in the project design was the development of an indigenous knowledge system that would capture climate change adaptation best practice among the indigenous tribes in the six project areas for sharing and reuse. This paved the way for a piggyback study titled “Design, Development and Testing of an Indigenous Knowledge Management System Using

Mobile Device Video Capture and Web 2.0 Protocols” that was implemented during the FPAVAS midterm. The theoretical basis for proposing that mobile devices may lead to the active participation of IPs as ICT4D Web content providers is founded on the relationships among three concepts: social capital, the network effect, and critical mass theory. The study’s philosophical basis rested upon open access and open learning resources assumptions (Flor 2013a).

The primary ICT4D intervention was the mobile device—GPRS-enabled mobile phones, with audio-video capture and Internet browsing functionalities. In a nutshell, the vertical logic employed in the study predicted that the technological intervention would enable and empower IP communities to capture their indigenous practices on climate change adaptation and share these via the Web among other IP communities for their reuse, resulting in increased climate change resiliency. During the conduct of the study, however, marked reluctance from organized indigenous people’s groups to participate in the initiative was observed. It soon became apparent that interfacing indigenous knowledge with open access concepts held complicated issues.

Firstly, indigenous belief systems covering knowledge transfer, sharing, and reuse are guided by a tradition of hierarchy. Indigenous communities, as a rule, have tribal elders, chieftains, and healers who regard themselves as custodians of knowledge, which may only be shared with prudence, responsibility, and, on occasion, sanctity. An unintended consequence of the intervention was to contradict the prevailing belief system that indigenous knowledge on feeding (agriculture) and healing (medicine) cannot be made openly available to any person who may misuse it.

Secondly, interventions in the past have failed to respect the privacy of IP communities. This brings to mind a field experience while developing and testing the ethnographic methodology 20 years ago. Fieldwork was being conducted among the indigenous tribes of Central Mindanao under an International Potato Center grant, video documenting the indigenous agricultural practices of the Talaandig-Higaonon tribe in the slopes of Mt. Kitanglad, Bukidnon. One practice in particular was the planting of sweet potato which is one of their staples. Like many of their counterparts from all over the world, the members of the tribe plant the crop during the full moon, naked. For purposes of academic research, the video capture of such an event may be acceptable and may even be repackaged into a rich media knowledge product. However, uploading this knowledge product to YouTube showing the tribe members unclothed would be ethically indefensible. Based on this, another unintended result of the intervention may be the violation of privacy of IP communities.

Thirdly, non-IP users of indigenous knowledge are prone to prejudice and value judgments. Mainstream cultures have often prejudged indigenous peoples as uncivilized, lazy, unlearned, superstitious, primitive, and dirty (Buasen 2010). A possible outcome of making indigenous practices openly available on the Web that has not been considered was the reinforcement of prejudice among non-IP users.

Case 3. Championing Non-formal Education Through MIS Strengthening National Capacity on Planning, Monitoring and Evaluation of Literacy and Non-

formal Education Programmes was a 2-year undertaking of the UNESCO Office in Kathmandu in cooperation with the Non-formal Education Centre (NFEC) of the Nepal Ministry of Education and Sports (MOES). It was designed to directly contribute to the implementation of the National Education for All Action Plan 2003–2015, which explicitly identified Non-formal Education (NFE) as one of the four priority areas requiring strategic interventions. The main intervention of this project was the introduction of an NFE management information system and the training of its users from the national to the provincial and district levels. The project commenced in December 2009 and ended in June 2011. The author was tasked to conduct the final evaluation of the project.

The evaluation found that the intended outcomes of the project were not achieved. However, the project resulted in four positive unintended outcomes not necessarily associated with capacity development. Firstly, there was an increased awareness and interest on NFE programmes among communities that participated in the project. Adjunct to this observation was the increased commitment and sense of fulfilment among NFE stakeholders. Thirdly, the project resulted in an increased number of NFE knowledge products and content. Fourthly, the project validated the importance and need for an NFE-MIS among policymakers, programme planners, and implementers and renewed their commitment to establish one. None of these four outcomes were identified as immediate or intermediate outcomes in the project document.

5 Conclusion

The debate on the impact of the information society on the Global South is ongoing and the jury is still out. In this chapter, we attempted to provide context and perspective to this debate.

The misgivings of development planners, governments, and donors regarding the outcomes of ICT4D projects were reviewed. The contradictions attendant to evaluating ICT4D impacts were articulated. We discussed The Hague framework, described how it came about, and proposed a way forward, which was to construct theories of change for specific projects or programmes.

The chapter presented a generic theory of change that established causal links between attributes of information society and the Millennium Development Goals. It developed indicative ToC maps or pathways to change applicable to eAgriculture, ICT for education, and KM for climate change adaptation.

We capped the chapter by describing a possible downside to the use of theories of change. We said that ToCs may guide us in establishing causal links between ICTs and development in the Global South, but we can get blindsided by them. The parameters that we set in our impact evaluations sometimes act as horse blinders, denying us of our peripheral vision and preventing the full appreciation of the information society phenomenon. At a certain point in the evaluation process, we will have to remove these blinders and explore unintended outcomes or impacts.

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