

Mindscales and Landscapes: Learning to Adapt in Transnational Climate Adaptation Collaborative in Africa

Bob Offei Manteaw

Centre for Climate Change and Sustainability Studies, College of Basic and Applied Sciences, University of Ghana, Legon, Accra, Ghana, Email: rmanteaw@ug.edu.gh

ABSTRACT: This paper foregrounds notions of learning and how they are framed in transnational adaptive capacity building processes. While supporting emerging adaptation governance mechanisms that recognize the boundlessness of climate change impacts, the paper draws attention to learning and the role it plays in such processes. Learning, for the most part, is framed as an event rather than a series of conscious, reflexive, adaptive and multi-layered processes. Such framing, the paper argues, is limiting and is based on flawed understandings of adaptation to climate change. Instead, learning should reflect the underlying complexity of both the climate change phenomenon and socio-ecological systems change processes. This paper argues that current conceptualization of climate change fails to present climate change as emerging, evolving and complex and, in the process, influences how learning in adaptation is perceived, framed and pursued.

Keywords: Climate change, impacts, learning, adaptation, governance, transnational, collaborative

AUTHOR'S NOTE: With a background in socio-ecological systems change and sustainable development thinking and practice, my research, teaching and practice have focused on issues of social cognition, environmental learning and resilience building in complex socio-ecological systems. I am particularly interested in learning partnerships, change network actions and collaborative processes for social and ecological change. These interests are as a result of my different, but complementary professional experiences in academia, the private sector, government policy and international development practice from both developed and developing country contexts. My different experiences have been insightful and they continue to shape my research, teaching and practice interests and approaches. My works in climate change adaptation emerged out of my research interest in the social dimensions of global environmental change which eventually saw me move from academia in the United States to lead the province of Alberta's Climate Adaptation program in Canada. As Adaptation Strategy Coordinator for the province, I initiated and successfully completed the development of the province's first comprehensive climate change adaptation strategy which involved cross-government and cross-sector coordination and intense institutional learning processes which have been influential in my interest in climate adaptation governance and knowledge brokerage. I have since been particularly curious about emerging issues such as resilience learning, adaptive capacity building and learning innovations in environment and sustainable development processes. These are all premised on my firm conviction that climate adaptation, resilience building and sustainable development are 'learned' processes which require careful approaches to understand social and ecological systems interactions and how those interactions lead to systems changes or modifications. My works, therefore, seek to affirm my conviction in the role of intentional and anticipatory learning in both climate adaptation and sustainable development processes.

Introduction

Climate change impacts defy conventional national boundaries by reaching across borders (Dzebo and Stripple, 2015; Goldin and Mariathan, 2014. Steel et al. 2014; Wilder et al. 2010; Rose, 2018; Ruth et al., 2007; Cutter et al., 2014). While manifestations of climate impacts often remain localized, the larger impacts are global in reach and have compelled the global community to see climate change and associated impacts as a shared responsibility that requires collective and concerted

actions (Hoffmann, 2011). Thanks to globalization, cross-border interactions, and a deeper understanding of climate science (Benzie et al. 2019; Gualini, 2003; Hewitson et al. 2014; IPCC 2014). Thanks also to the Paris Agreement (2015), which acknowledged in no uncertain terms that climate "adaptation is a global challenge faced by all with local, subnational, national, regional and international dimensions..." (Article 7, Section 2).

The forceful recognition of climate change as a global challenge and a collective responsibility at the international level has set in motion the creation of new

collaborations and partnerships that transcends national borders (Gunderson and Light 2006; Hermwille, 2016; Hoffman, 2011; Scholtz and Stiffl 2005; Lockwood et al. 2010; Mattoo and Subramanian, 2013). Shared governance, particularly in climate adaptation, across jurisdictions and between countries has since emerged as an innovative approach to coordinate effective and efficient response actions to facilitate the development of new adaptation knowledge and the convenient transfer and application of such knowledge to build adaptive capacity and resilience at scale (Barnett 2010; Benzie & Person, 2019; Daniell et al. 2011; Goldin and Mariathasan 2014).

Learning, has in the process, become a central concern in contemporary climate adaptation governance arrangements and especially in those that thrive on transboundary or transnational partnerships and collaborations (Bellinson and Chu, 2019; Gonzales-Iwanciw et al., 2019). However, as the role of learning continues to be acknowledged and praised in such arrangements, notions and practices around learning in adaptation and resilience building have so far done little or nothing at all to bolster understandings of how learning should be framed and approached in planned adaptation processes (Tschakert and Dietrich, 2010; Walker et al. 2002).

In most recent adaptation planning programs, learning is largely framed as an event that should occur after certain actions or adaptive performances have taken place. Such assumptions are widespread in contemporary adaptation thinking and practice and are largely influenced by flawed understandings of climate change which presents climate change adaptation as a linear process with an expected stable endpoint. These are misconceptions which have also emerged out of underlying flaws in the perception and understanding of climate change impacts manifestation (Fisher and Dodman, 2019). Ultimately, such false characterizations of climate change impacts and adaptation processes strongly influence how learning in adaptation is framed and pursued.

This paper foregrounds notions of learning in transnational adaptation governance initiatives in selected adaptation initiatives in West Africa. While acknowledging that some transboundary and transnational governance approaches recognize the boundlessness of climate change impacts, this paper argues that most of current approaches to adaptation and resilience building processes are framed on assumptions of homogeneity and that generic adaptive solutions could be applied in a range of geographical and social contexts in spite of their unique particularities (Eisenack, Ludeke and Kropp, 2006; Folke et al., 2005). Such assumptions have variously and albeit wrongly influenced understandings of climate change and

adaptation processes; they have also shaped the framing of learning in that regard.

Focusing primarily on West Africa, the paper employs specific examples of transnational adaptation planning to demonstrate limitations in the framing of learning in transnational adaptation thinking and practice. The terms, “transnational” and “transboundary” are used interchangeably throughout the paper to describe adaptation programs that transcend conventional national borders (Busch et al., 2018; Gulani, 2003). “Transnational” and “transboundary” are not necessarily used to discuss adaptation programs planned and implemented among countries that share clearly defined socio-ecological and biophysical corridors of connectivity. Instead, they are used to describe the emergent practice of regional collaborative efforts that bring entities from countries and regions with similar or different geographical attributes together in joined adaptation programming.

The paper is structured as follows: a discussion on ‘mindscapes and landscapes’ will set the tone for an appreciation and understanding of human-nature interactions. This first section will deconstruct how a growing decline in people’s attachment to their local places, as well as disconnect from local ecologies, are impeding the development of the most appropriate adaptive responses. Following the first section is a detailed description of the methodology used for this study, as well as a presentation of the cases of study. The paper will conclude with a general overview of the meaning and practice of learning in adaptation.

Mindscapes and Landscapes

Africa, like many developing regions of the world, is faced with unprecedented challenges which are seemingly separate in appearance, but complexly interconnected in their manifestations and impacts (Churie et al., 2017; Sandler, 1997;). From food and water insecurity, biodiversity degradation, population growth, surge urbanization, health dilemmas, natural disasters to violent conflicts between and within nations (Kilroy, 2015), These are interconnected socio-ecological challenges which act together in different ways to endanger the socio-ecological security and well-being of Africa’s diverse populations. They are challenges which are also currently being exacerbated by the emergent reality of climate change. As these challenges persists in many local communities it is also a worrying concern that not many people living in their local places understand current realities. Their mindscapes are disconnected from the local landscapes that support their existence.

Even more worrying, perhaps, is the fact that at a time of increased awareness of climate impact manifestations and increased clarity around climate science, most people remain either ignorant or apathetic to the reality of climate change and socio-ecological systems changes and what they mean to the individual and to the communities in which they live (Ziervogel et al. 2017). While many people depend on available resources in their local communities for survival, most of these people remain cognitively disconnected from the natural systems that support their existence and this is mainly because they lack understanding and an appreciation of how social systems and natural systems interact and how such interactions, as led primarily by local people living in their diverse places, influence current changes (Simon and Leck, 2015).

These are underlying knowledge gaps in current climate adaptation and resilience building efforts in local communities across Africa and they are gaps that are proving counter-productive to adaptive capacity and resilience building processes (Schipper, 2007; Simon and Leck, 2015). Not many people have the natural dispositions to carefully observe local ecological realities and to appreciate on-going changes with ‘insight’. This, as Kraker (2017) observed, is a matter of human cognition and a learning deficiency which I describe in this work as ‘socio-ecological cognitive deficiency’ and one that impedes the insightful merger of people’s mindscapes with the natural landscapes.

Socio-Ecological Cognitive Deficiency

Socio-ecological systems change as is frequently implied in this work is rooted in ecology and describes the perpetuity of human-ecological interactions and how such interactions become both a function and cause of change in those systems (Plummer, 2011) These changes, which are either sudden or slow onset, have become increasingly common in most communities and are also becoming negatively impactful to both social and natural systems (Benzie, et. al., 2019). The impacts of these changes are also being exacerbated by the impacts of the emergent reality of climate change. As climate-induced changes become pervasively evident and more intense in local communities across Africa, it has also become a matter of great concern that in spite of the fact that human-nature interactions play different roles in creating some of current socio-ecological changes, not many Africans know or understand current ongoing changes and what to do in response (Parnell and Walawege, 2011).

The growing inability, or perhaps failure, of local people to connect their inner mindscapes to outer

landscapes is what I describe as ‘socio-ecological cognitive deficiency’. Broadly, this description exemplifies the notion of a disconnect between mindscapes and landscapes as implied in this work and represents what seems to be a growing global challenge. Orr (1992) sees this deficiency which is on the increase around the world as the inability of individuals and communities to consciously link their welfares and well-being to the ecosystems that surround them. They fail to relate to the place on earth in which they live. David Orr observes that “People who do not know the ground on which they stand miss one of the elements of good thinking which is the capacity to distinguish between health and disease in natural systems and their relation to health and disease in human ones” (p.86).

At the heart of this deficiency is the normalized tendency of humans to dominate nature’s resources (Milfont and Sibley, 2014). While science and education continue to equip humans with the necessary knowledge, skills and technology to take and transform nature to serve almost all our needs, our development-focused actions and inactions have also demonstrated our lack of awareness of the potential consequences that may exist (Orr, 2016). From this perspective, some of the current flawed assumptions and understandings of climate change and the role of learning in climate change adaptation and socio-ecological systems change processes become understandable.

In ‘mindscapes and landscapes’, therefore, I draw attention to a missing foundational piece in contemporary socio-ecological systems change processes that shapes people’s perceptions about climate change and how adaptation should be approached. With the disconnection of mindscapes from local landscapes, the underlying complexities of socio-ecological changes and the roles of individuals and communities in the process are lost to many (Pinho et al., 2015). Adapting to climate change is therefore approached as a well-organized linear process in which the identification of the problem—impacts and vulnerabilities—and the application of certain mechanistic and technological solutions is expected to logically lead to the building of adaptive capacity (Brooks and Grist 2008; Tompkins and Adger, 2005). While such assumptions are flawed, they also highlight existing notions of linearity and expectations of a stable end point in adaptation and in ways that trivializes underlying complexities of climate change and socio-ecological systems change.

The lack of understanding and appreciation of the underlying complexity of both climate change and socio-ecological systems change impedes effective adaptation processes. Such wrong conceptualizations of the adaptation process also, invariably, influence the framing

of learning in adaptation and by extension how learning is pursued. The consequence is the growing numbers of failed adaptation projects and rising incidences of maladaptation (Bunce et al., 2010; Conway and Schipper, 2011). As the climate change reality becomes more intense in local communities and the need for more proactive and effective adaptation measures become even more urgent, the imperative for new approaches also become critical. If adaptation, planned or autonomous, is a response to climate change and socio-ecological changes in vulnerable communities, then failure to understand the dynamics of human-nature interactions and socio-ecological systems changes can act as a barrier to effective adaptation.

People need to know and understand their roles in socio-ecological systems interactions; they also need to appreciate climate change as both a cause and a function of changes in this system. It is in this regard that both climate change adaptation and resilience building processes become learning issues (Loff, 2011; Fazey et al., 2007), which necessitates current adaptive capacity and resilience building efforts in local communities, particularly in Africa, to purposefully re-conceptualize what constitutes learning as well as the approaches employed in pursuing the goals of learning.

Research Methodology

In line with the stated aim of this study, a mix of methodological approaches were employed to advance efforts to establish what constitutes successful adaptation to climate change and the role of learning in that regard. To answer the principal organizing question of whose learning counts and how learning is framed in climate adaptation program processes, a case study approach was employed as a vehicle to intimately examine the conceptualization of learning in two transboundary adaptation projects that had brought different entities from different parts of Africa and Asia together.

As a researcher and participant in some aspects of the programs, I was privileged to have had direct access to some of the programs and to observe at very class range how learning is framed and applied. The processes of observation and close study of some aspects of the two programs were complemented through what has been described as Systematic Analysis. This is a rigorous approach to document analysis and to investigate knowledge gaps, critical issues and novel approaches. While the case study approach focused on specific aspects of the project implementation and in this case the framing of learning in those programs, systematic analysis was employed to formulate

questions to guide the review of how 'learning' has been framed and employed in adaptation practice.

Thus, the study primarily adopted a qualitative approach that systematically examined existing notions and practices of learning in adaptation processes, as represented in various literature and the two programs. Using keyword searches such as 'climate change,' 'adaptation,' 'knowledge,' 'learning,' and 'adaptation progress' in over 105 relevant publications on climate change adaptation, I closely studied trends, gaps, framing and usage of 'learning' in adaptation processes across a range of contexts, such as institutional and community-based climate change adaptation programming.

As in most instances of systematic analysis, this process was conducted in three different stages: document identification and selection, data examination using Leximancer software, and manual coding of relevant data into identifiable themes. Leximancer as a data analysis tool was used to extract different themes, concepts, and ideas in ways that teased out relational differences and similarities of contextual usage and application of learning in adaptation processes (Leximancer, 2016). The tool also proved particularly helpful in helping to reduce human bias in data coding by analyzing learning in adaptation from a range of contexts. The software uses proximity in texts and word correlation to analyze large streams of qualitative data. The analysis also considered the time frame of publications to be possibly responsible for variations in framing of both adaptation success and the role of learning in the process.

These analyses provided an initial context for the framing of learning in adaptation. The dominant framing of learning in adaptation, as an event, signaled a correlation between understanding of climate change impact manifestations and adaptation. This correlation provided a context for the observation and scrutiny of how these framings are demonstrated in aspects of the two regional adaptation programs described below. Systematic analysis of literature thus provided a framework for the close observation of how learning in adaptation was framed and pursued in aspects of the two programs and in relation with stated or demonstrated understanding of the aims of an adaptation project.

It needs to be pointed out, however, that there were some limitations in the systematic review process. A key limitation was the fact that adaptation to climate change is a broad topic that is applicable to different contexts. Thus, though the research interest was to examine the framing of learning in adaptation processes through relevant keyword searches, it was evident that the use of keywords was not enough to produce a comprehensive list of relevant

literature to depict the diversity of applications and implications of learning in adaptation processes. Learning, or knowledge development and exchange, in adaptation processes could be implicit in different programs without being labelled as such. Such instances became clearly evident in the process; however, the original methodology of keyword searching was maintained for consistency.

Transboundary Adaptation Planning in West Africa

Vulnerable communities and nations in Sub-Saharan Africa have experienced and continue to face climate change impacts that impede sustainability efforts (Brown, Hammil & McLeman 2007; Cook and Vizzy, 2012; Hope, 2006; Mutanga et al, 2013; Twomlow et al. 2008). Preoccupied by the need for innovative solutions, regions have seriously responded to climate change impacts by forming creative partnerships and collaborations as avenues to explore adaptive solutions at scale.

Central in most of these transnational and collaborative adaptation planning programs is the notion of learning—the desire to uncover new knowledge, to gain new understandings through comparative experiences and to exchange knowledge to build the requisite adaptive capacity to respond to current and potential future climate change impacts (Barnet, 2010; Danielle et al. 2011). Learning to adapt has therefore become a driving force behind the creation of some of these transnational adaptation governance mechanisms in the West African region. They have seen a number of adaptation programs that have made learning a key aspect of their programs.

The Adaptation Learning Program (ALP) and Adaptation at Scale in Semi-Arid Regions (ASSAR) are two of such programs which served as cases for the verification of the framing of learning as emerged from the Systematic Analysis. Following the systematic analysis of relevant literature, the process of learning in adaptation generally became clearer and prompted verification in specific real-world adaptation programs. A systematic review of the literature on learning in climate change adaptation gave a picture of a correlation between the understanding of climate change as a phenomenon and the conceptualization of adaptation.

Most of the literature perceived adaptation as an event or an endpoint that logically follows the execution of certain activities such as workshops, forums, and meetings. Adaptation is not seen necessary as a learned, experiential or evolving process. Learning in adaptation seems to be generally framed as additional to climate

adaptation program activities and requiring deliberate arrangements to make it happen.

This study focused specifically on designated adaptation planning processes that had learning as either an objective or part of its activities. The interest was to explore the conceptualization of climate change in the different programs and to see how such conceptualizations influenced a certain understanding of adaptation and how to pursue it. By focusing primarily on transnational adaptation governance initiatives in the West Africa region, the study aimed to gain a fuller understanding of how learning, which is increasingly becoming, mainstream issue in adaptation. The two programs are described below and with insights of how learning is depicted in them.

Adaptation Learning Program (ALP) and Adaptation at Scale in Semi-Arid Regions (ASSAR)

The Adaptation Learning Program (ALP) in Africa and the Adaptation at Scale in Semi-Arid Regions (ASSAR) project are good examples of transnational adaptation governance programs that involve African and Asian countries. Both programs have concluded. The ALP was wholly Africa-focused and made up of countries from Ghana, Niger, Kenya and Mozambique. The ASSAR program involved a combination of seven countries in Asia and Africa: India, Mali, Ghana, Namibia, Botswana, Ethiopia, Kenya.

Three West African countries—Ghana, Mali and Niger were in both programs. Ghana is the only English-speaking country of the three. While the mode of selection of countries for the ALP programs have not been explicitly indicated in both programs, it could be assumed that similarities in the variety and levels of vulnerability were taken into consideration to feed into the program's purpose of developing the capacity to respond appropriately to climate change. The ASSAR program was largely defined by geography and specific socio-ecological factors that characterized specific locations within the selected countries. In other words, within individual countries, there were underlying biophysical and socio-ecological similarities that informed the selection of the countries.

In contrast, the Adaptation Learning ALP was a four-country program initiated and implemented by CARE International in early 2010. The program aimed to increase the capacity of vulnerable households in Sub-Saharan Africa to adapt to climate variability and change through the implementation of innovative approaches to Community-Based Adaptation (CBA). According to the program's website: the multi-year program was originally scheduled

to run between 2010 and 2015, but was extended by another two years through the magnanimity of another donor to build on the achievements of the first five years of implementation.

The specific focus given to the ALP extension was to take lessons from what the program website describes as a “comprehensive and learning oriented ‘final’ evaluation” done in 2015 and at a time when it was believed that the program was ending to add learning, rigor and credibility of CBA and its contribution to increasing climate resilience in Africa. CBA was the principal organizing methodology for the ALP. This included a range of approaches at multiple levels which aimed to support and empower vulnerable communities in the specific country communities to adapt to both current and future impacts of climate change. The eventual extension of the ALP was therefore intended to build on earlier gains made in the program and had specific objective to “deepen learning and to scale up successful practical adaptation approaches across Africa.”

The Adaptation at Scale in Semi-Arid Regions (ASSAR) program, was five years long (2014-2018 international interdisciplinary research program that brought together a mix of research and practitioner organizations. It was a partnership program between five lead institutions and twelve partner organizations and was a part of the Collaborative Adaptation Research Initiative in Africa and Asia (CARRIA) program which was funded by Canada’s International Development Research Centre (IDRC) and the United Kingdom’s Department for International Development (DFID). The ASSAR program was therefore one of different CARRIA initiatives that used what IDRC describes as the ‘hotspot’ and ‘consortium’ approaches. Hotspot refers to regions of dire vulnerabilities of similar nature; they are seen as areas that need urgent attention, but with deep insights.

CARRIA focused on three climate change hotspots: semi-arid regions, delta regions and glacier- and snow-fed river basins. These are areas or regions with considerable vulnerabilities that require deeper understanding of the nature of vulnerabilities and the appropriate adaptation options. Thus, using the different hot spots as lenses for research and comparability, the CARRIA initiative formed a consortium to research common themes and challenges across different contexts, gaining deeper insights to uncover emerging opportunities. The consortium operated on the understanding that research on climate change adaptation demands collaboration across disciplines. They also take the view that changes and manifestations of impacts in

these hotspot regions have comparable biophysical, social and ecological implications within each hotspot which will facilitate new knowledge development, learning, new capacities and better informed policy and practice at scale.

Each consortium supported by CARRIA brought together five institutions with a range of regional, scientific and socio-economic development expertise to explore the physical, social, economic and political dimensions of vulnerability and adaptation options. Such an approach brought fresh and diverse perspectives to the identified problems and enabled the different consortiums to reach out to different regions of the world and to facilitate learning and knowledge exchange especially in South-South relationships. The ASSAR project was one such consortia that specifically focused on climate change adaptation in Semi-Arid regions in Asia and Africa.

ASSAR described its purpose as research to understand the impact dynamics of climate change and to explore effective adaptation responses. The program took the view that as global impacts of climate change became more clearly understood, and so too is the need for people to acquire the capacity to effectively respond and adapt to these changes. This, the program believed, was even more urgent in Semi-Arid regions in the developing world where hundreds of millions of people face perennial vulnerability. Although many people in these regions already display remarkable resilience, many interconnected stressors are expected to worsen in the coming decades because of climate change. Therefore, the ASSAR program saw an imperative to understand the complexity of these problems and facilitate the development of adaptation policy responses that could empower local people, organizations and governments to adapt to climate change both now and in the future.

Ultimately, both the ASSAR program and the ALP program were driven by the need to use research to enhance learning. Research, practice and learning at different scales and in multiple regions defined the programs’ aims of turning research in action and through learning by doing to produce future-focused and socially-relevant knowledge of potential pathways to a climate resilient adaptation.

Learning, thus, was an underlying issue in both programs. While it may not have been highlighted as a priority focus, its relevance cannot be underestimated in any research process as research essentially aims at uncovering new knowledge to serve the purposes of knowledge development, learning, knowledge uptake and utilization.

**Learning in Transnational Adaptation Planning
— ALP and ASSAR**

With increasing clarity, the public acknowledges that climate changes do not follow the conventional state boundaries. Droughts, floods, and other extreme weather events transcend national and regional borders and, as a result, attract varying governmental responses. The emergence of cross-border adaptation planning has aimed at using novel governance mechanisms to achieve effective and equitable results across the territories under different jurisdiction (Barnett, 2010; Daniell et al., 2011). Knowledge development and transfer have become a defining aspect of these processes. However, both the conceptualization and the pursuit of this knowledge lack clarity. Processes and activities that are supposed to lead to knowledge development and learning are not well-structured and as a result make it difficult, for the most part, to effectively evaluate what kinds of knowledge are developed and the quality of learnings that come with it. There are instances also where learning and knowledge development are focused on program participants or leaders with very little or no attention given to the learning and knowledge development needs of people living in local communities and facing the direct impacts of climate impacts. These lapses are clearly reflected in the descriptions of both the ALP and ASSAR programs where their learning goals were not clearly defined. Both programs failed to clearly determine their respective scopes and concepts of learning and to state what learning approaches are to guide the different processes or activities.

The main challenge, as was evident in the two programs, laid in the need to clearly articulate what constitutes learning in the process and to frame learning approaches, as well as the expected goals and outcomes. Both programs focused on adaptive capacity building processes that approached adaptation as a stable end point which could be reached through linear processes such as the identification of soil fertility problem and the application of fertilizer as an adaptive solution. Thus, once specific actions are taken in the name of adaptation the general expectation is that the adaptive capacity of people, and in this case farmers, will be built. Such approaches ignore the critical reality of climate change being a constantly evolving phenomenon with underlying uncertainties. Thus then contradicts the widely-held wrong perceptions and assumptions which portray and treat climate change as a stagnant and uniform phenomenon. Climate change is an evolving process which also makes it a requirement that adaptation processes should necessarily respond to such challenges with continuous and reflexive learning

agenda (Armitage, Mischake and Plummer, 2008; Vare and Scott, 2007).

The two programs, instead, approach adaptation as a linear process with a stable end point. This, as indicated, is a flawed thinking which leads to wrong conclusions that specific short-term adaptive actions as solutions could facilitate a speedy arrival at this alleged endpoint. Such perspectives, reduce adaptation and adaptive capacity building to performative actions which, with very little efforts, are expected to build adaptive capacities. Klein et al (2017) have described this practice as “the urgency to do adaptation”, which affirms the idea of performative actions to create an obvious impression of doing something. This again is a reductionist approach; it does not only reduce the underlying complexities of climate change impacts, but also ignores what Oshbahr’s (2007) observation that successful adaptation is a learned process.

The reality, however, remains that “without learning, or unlearning, neither adaptation nor transformation is possible...” (Lof, 2010, p.529), and as a matter of necessity it is important that programs such as these acknowledge the critical importance of developing cognitive competencies that would prepare individuals and communities to respond to both sudden and gradual, slow onset changes..

In addition to the lack of intentionality, many programs also reduce learning to vertical processes of identifying impacts and applying ready-made solutions. This simplistic approach contributes to the “climate-proofing” culture, which provides a false sense of hope in many adaptive capacity building processes. It also validates earlier notions of ‘doing adaptation’ which as clarified above highlights what I consider as adaptation learning deficit. Thus, by overly relying on standard, ready-made adaptation solutions, a “climate-proofing” culture shifts adaptation thinking and practice towards the simplified and predictable linear processes. Such approaches, as evident from the failures of ALP and ASSAR programs, are based primarily on flawed understandings of climate change and also on adaptation processes that fail to approach adaptation as a learned process (Folke, 2012; Lof, 2011; Osbahr, 2007).

As Davidson-Hunt and Berkes (2003) have posited, to adapt well means to *learn* to adapt and to acquire the capacity and competency to function effectively amid complex socio-ecological changes (Adger, 2003; Fabricius et al., 2007). Therefore, the understanding of adaptation and resilience building as an iterative and evolving process remains central to the adaptive capacity quest which then also makes the role of learning critical to any process (Simon, and Leck, 2015; Lonsdale et al., 2010). The

understanding and appreciation of the role of learning in adaptation is therefore the starting point for adaptive capacity building processes. Learning helps individuals and communities develop the requisite capacity to understand the complexities and uncertainties associated with climate change impact manifestations and to develop the needed anticipatory skills to respond to them. The acquisition of this understanding also allows individuals and communities to challenge pre-existing flawed assumptions, such as the belief or perception that climate change impacts are constant and predictable.

The processes of building adaptive capacity and promoting resilience through learning require certain intentionality, which requires that learning is given the requisite attention in program planning processes (Ensor and Harvey, 2015; Grantham et al. 2010; Lonsdale et al., 2010; Sterling, 2010). Thanks to the increased understanding of climate science and appreciation of climate change as emergence and evolving (Ratter et al., 2012), there is a gradual increase in calls for adaptation programs to move from mechanistic and regimented applications of ready-made solutions and in generic approaches to longer-term solutions that recognize both climate change and sustainable development as learned processes.

Thus, the occasional workshop-type gatherings, where key program participants share and exchange knowledge such as those organized by ALP and ASSAR, provide a good example of the reductionist approach, where learning in adaptation is framed as a vertical process to serve program's pre-conceived interests.

It is from such a perspective that learning approaches in adaptation and resilience building processes must be reconsidered. Mainly, the approaches used should reflect the critical importance of underlying uncertainties and evolving nature of both climate change and socio-ecological systems change processes. (Davidson-Hunt and Berkes, 2003; Folke, 2011; Chapin III et al. 2009; Keen et al. 2005). Both the ALP and ASSAR programs demonstrate a belief in learning as the foundations of the successful adaptation. However, despite all their efforts to make learning visible in the process, the two programs were still not able to clearly demonstrate what constitutes good, effective learning and how it should be pursued (Tschakert and Dietrich, 2010). Hence, by not articulating the goals of learning and also providing well-structured approaches to pursue the goals of learning, the two programs confused the use and application of learning in their programs. Learning in both programs was applied loosely as an event rather than as an iterative, reflexive and intentional process.

Towards a new Learning Agenda in Adaptation Planning

In order to challenge current mindsets and practices about adaptation and resilience building, understanding and appreciating the nature of climate change adaptation and socio-ecological change processes are needed (Blackmore, 2007; Folke et al., 2002). The first step is processes that simplify understanding and appreciation of the complexity of climate change and socio-ecological systems change. It is also important that such efforts provide deeper insights into how these complexities inform learning approaches.

In other words, adaptive learning processes should create opportunities for the critical appreciation of emergence, uncertainties and the logic of non-linearity in adaptation to climate change. It is from this perspective that current weaknesses in the framing of learning in adaptation becomes evident. It is also in such a context that the need for the reconceptualization of learning in adaptation becomes imperative. Adaptive and resilience learning efforts could be improved by aiming to increase the capacity for anticipation. That is to say that processes of learning and action should strengthen people and communities to be able to anticipate and imagine plausible future scenarios, and respond from previous adaptive strategies and anticipatory actions.

It is only through such processes and proactive adjustments that potential shocks and surprises could be averted (Nelson, et al 2007). Ability to perceive and anticipate risk, to imagine plausible future scenarios and to respond accordingly and promptly is in itself evidence of adaptive capacity and resilience and an indication of learning to respond to socio-ecological shocks and disruptions (Inayatullah, 2006; Sterman, 2000). The question then becomes what forms of learning could facilitate changes in current adaptation approaches that rely essentially on notions of linearity and the expectations of a stable outcome.

One suggestion to disrupt existing flawed notions of and approaches to learning in adaptation is Social Anticipatory and Action Learning (SAAL). Taking its roots from social learning and scenario planning processes (Adger, 2010; Collins and Ison, 2009), SAAL's philosophical underpinnings are grounded in the fact that adaptability and resilience building in complex socio-ecological systems changes are cognitive issues; they are learning issues which require individual and collective engagements at multi-levels (Lof, 2009). SAAL, therefore, combines the essential attributes of transformational and experiential learning processes to develop individual and social

cognitive competencies that facilitates the development of awareness and understanding of the underlying complexities of both climate change and adaptation processes.

SAAL combines collaboration, participation, iteration and reflexivity to deepen understanding and appreciation of climate change adaptation and resilience building as evolving processes of shared learning and communal knowledge brokerage. The capacity to build new knowledge and the ability to utilize the different knowledge forms emerge out of the changing manifestations of climate change impacts. Learning then emerges from collaborative and participatory processes that allow a shared sense of meaning to be arrived at by people whose existential realities are challenged by climate change impacts or other manifestations of socio-ecological systems changes (Ensor and Harvey, 2015). Through experiences of self-observation and insightful awareness of local ecologies and realities, people living in their communities are able to self-organize through what Chambers (1983) has long described as “Self-Critical Epistemological Awareness”. Here people living in their places learn to see, literally, and are able to understand the nature of changes in their communities and to take appropriate actions as a response.

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