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WeShareIt Game: Strategic foresight for climate-change induced disaster risk reduction

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Abstract

Nile Basin policy makers, at all levels, are constantly making quick decisions to address emergencies. The decisions are made in the context of a complex, uncertain, ever-changing and highly volatile basin. However, for these decisions to take into account future uncertainties, like climate-change induced disasters, policy makers need to enhance their capacity in strategic foresight. Strategic foresight helps them make more robust decisions that take into account deep uncertainties and thus buffer the basin from future natural disasters. The authors explore the contribution of serious gaming in enhancing the Nile Basin policy makers' capacity on strategic foresight. They present the findings from the application of a game-based, experimental study of a serious game known as WeShareIt. WeShareIt was played in Nairobi on 22 October 2015 by 11 participants from the Kenyan Ministry of Water and Irrigation and Moi University Centre for Public Sector Reforms. Data on the added value and contribution of the game to increased strategic foresight and disaster risk reduction were collected using pre-game, in-game and post-game questionnaires, together with a debriefing session and observations. The analysis shows that strategic foresight is an important element for effective disaster risk reduction. Observations in the game-based intervention provided evidence that the participants engaged in short term quick decision making and were not prepared for life-threatening natural disasters. The results of the experiment support the conclusion that serious gaming may be an effective and promising method for enhancing the capacity of policy makers on strategic foresight so as to prepare them for future climate induced natural disasters.

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Keywords: Strategic Foresight; Adaptation; Climate Change; Disaster, Risk Reduction; Decision Support; Serious Gaming; Deep Uncertainty; Nile; Water Management

1. Introduction

Policy making in Africa is a difficult role that often requires urgent decision making. Most of these decisions are aimed at addressing already occurring calamities. Therefore, African policy makers are constantly submerged in current affairs with limited room for strategic thinking and planning. Quick decision-making lacks strategic foresight, which is needed for disaster risk reduction. Coates (2010) defines foresight as "an image, an insight, a picture, a concept about some future state or condition" [1 pp.1428]. He further elaborates that this future normally comprises of a timeline of five or more years. Strategic foresight is distinguished from the normal operational planning by the breaking point of five years. The value of strategic foresight is: it broadens and enriches the traditional planning process; supports the process of adapting despite deep uncertainties; helps to better anticipate unexpected circumstances; stimulates creative thinking and broadens the number of futures and possible actions. Vechiatto (2011) explored how strategic foresight has been used by big international industries (Royal Dutch Shell, Nokia, BASF and Philips) in coping with environmental uncertainty [2]. After a thorough analysis of these industries, the paper concluded that the fundamental contribution of strategic foresight to these industries was not only to predict the future but also to prepare

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managers and policy makers in these industries to be well prepared to cope with the future uncertainties. One of these future uncertainties is climate induced natural disasters.

In this paper, we draw on the outcomes of applying the WeShareIt board game, as well as previous research and our own experiences on strategic foresight and disaster risk reduction, to answer one question that appears relevant to this special issue. We consider how serious gaming can contribute to strategic foresight of policy makers on climate induced disaster risk reduction. The research question that we sought to answer was: What is the contribution of the WeShareIt game to strategic foresight of Nile Basin policy makers on climate change induced disaster risk reduction? To answer this question, we conducted a game session with 11 participants from the Ministry of Water and Irrigation and Moi University Centre for Public Sector Reforms, in Nairobi Kenya. If accurate, the results of this paper can be used as a powerful tool to enhance learning on strategic foresight and its link to disaster risk reduction. Although the conclusions apply to the Nile Basin and cannot be juxtaposed on other river basins; we know that the issues that the paper addresses are generally recognized in various river basins. It is our hope that this article will contribute to developing a better understanding of the extent to which serious gaming can be used in the Nile basin and other river basins to enhance strategic foresight capacity and improve risk reduction of climate induced disasters.

2. Background Information

2.1. Nile Basin Climate-change Induced Natural Disasters

The Nile basin occupies one-tenth of Africa's landmass and comprises of eleven riparian states [3]. The 11 states are: Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania and Uganda. The basin is highly susceptible to climate induced natural disasters [4, 5]. According to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, African countries may experience high temperatures, decline in groundwater recharge, sea level rise, floods, droughts and desertification [6]. Martens (2011) states that a 1% temperature rise would lead to high levels of evaporation and a subsequent decline in the Nile flows [7]. Sterman (2009) explains that increased evaporation will lead to water stress in many parts of the basin [8]. According to the United Nations Economic Commission for Africa, none of the eleven Nile Basin countries will be able to meet their water needs by 2025 [9]. Increased water stress will have a high impact on the agricultural sector. Agriculture contributes between 12 percent and 43 percent of the Nile Basin countries gross domestic product (GDP). In addition, it provides employment to approximately 32% to 94% of the Nile Basin labour force. Water stress would lead to food insecurity, loss of livelihoods, decrease in the GDP and even loss of life.

The identified climate change hotspots in the basin are: the Nile Delta, the Nile valley, the Ethiopian Plateau, the Nile confluence, the Sudd and Mount Ruwenzori. The Nile Delta is sinking by 5 mm per year and threatening the lives and livelihoods of the 39 million Egyptians living in the Delta. Recent satellite imageries confirm that the lakes in the Nile Valley are drying thus leading to salt intrusion, biodiversity losses and water stress. Many streams in the Ethiopian plateau which is the main water tower that contributes 86% of the Nile annual flow, are drying. The largest wetland in the Nile Basin, the Sudd swamp, losses more than 50% of its inflow to evaporation, thereby leading to water stress. Mount Ruwenzori is an important water tower for the Nile Basin. Satellite images that were taken in 1995 and 2012 show a recession of the mountain glaciers. UNEP (2013) states that as the recession continues, the glaciers will disappear in 20 years [3].

To address the above uncertainties that pose a great threat to the basin, the Nile Basin governments under the umbrella of an inter-governmental body known as the Nile Basin Initiative (NBI), developed the Nile Decision Support System (Nile-DSS). The Nile DSS comprises of multiple modelling and information management tools aimed at supporting decision making [10]. It was completed in December 2012 and is currently being rolled out and the relevant government officials are being trained on its use. Through the Nile-DSS, riparian states are expected to have a better understanding of the river system, identify extreme events and make more informed decisions. However, the Nile Basin climate change challenges, as explained above, are as a consequence of very complex issues that are barely understood and cannot be completely represented in a decision support tool. The Nile- DSS is important in providing pertinent information that is required for informed decision making, but it is not sufficient to address complex problems. To be successful in addressing the climate change challenges, Nile Basin countries should divert some of their resources away from predicting the future towards enhancing continual individual and organisational capacities to adapt to environmental changes. To be able to effectively adapt to one's environment, one has to learn to shift away from current practice towards being more adaptive. Adaptive learning is not easy to grasp and internalise, it therefore requires an effective learning tool [11].

2.2. Effective Learning through Serious Gaming

This sub-section explains why serious gaming leads to effective learning. Wenzler characterises effective learning through four elements; visioning, knowledge of plausible futures, social learning and impartation of confidence while making decisions [12]. We expound on the four elements in relation to the PhD focus area. First, the Nile policy makers need to comprehend the big picture around climate change induced disasters. Many have termed this as 'think globally and act locally.' The parts of the Nile Basin system can only be understood when the person making the decision also has a picture of the entire sum of these parts. Second, the policy makers should be able to understand the plausible futures of the Nile Basin system. In complex basins,