The Grand Ethiopian Renaissance Dam:
An Opportunity for Collaboration and Shared Benefits in the Eastern Nile Basin

An Amicus Brief to the Riparian Nations of Ethiopia, Sudan and Egypt
From the International, Non-partisan Eastern Nile Working Group
Convened at the Massachusetts Institute of Technology on 13-14 November 2014
By the MIT Abdul Latif Jameel World Water and Food Security Lab

On November 13-14, 2014 the International, Non-partisan Eastern Nile Working Group[1] met at the Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts (USA), to hold a workshop to discuss the Grand Ethiopian Renaissance Dam (GERD)[2] and its implications for regional cooperation and economic development in the Nile basin. The workshop included the Working Group, non-governmental participants from all Eastern Nile Countries, and local academics with an interest in the Nile Basin. It was convened by the MIT Abdul Latif Jameel World Water and Food Security Lab (J-WAFS) as part of its mission to address broad, high-level questions in water and food-supply scarcity and to coordinate the efforts of MIT's faculty, labs, and centers to work in partnership with other institutions, foundations, industry, and governments to develop regionally appropriate solutions for water security for sustainable development. This meeting was convened under MIT's own authority. It was not sponsored by any of the Nile riparian governments, nor did official representatives of any Nile riparian country or any other government attend. Funding at MIT was provided by multiple independent contributors. Participants at the meeting included individuals with many decades of experience working on water resource issues in the Nile basin, as well as MIT faculty with broad knowledge of global water resources policy and management. MIT has a long history in contributing to trans-boundary river issues including the President of MIT's role as a named umpire in the Court of Arbitration of the Indus Waters Treaty.

The discussions over the two days were wide ranging, covering technical aspects of the design of the GERD; the potential advantages of water storage in Ethiopia for regional economic development; filling and operating strategies for the reservoir; potential downstream consequences of the GERD for Sudan and Egypt; and opportunities and risks for future basin-wide cooperation and economic development. The right of Ethiopia to develop its water resources for the well-being of its citizens was a point of unconditional agreement at the meeting. There was also group-wide agreement on the advantages of water storage in Ethiopia and the economic attractiveness of hydropower developments in the Blue Nile gorge. The group also noted favorably that the official policy of the Government of Ethiopia is that the GERD will be constructed and operated so that downstream countries (Egypt and Sudan) are not harmed. This "no harm" policy of Ethiopia is consistent with both international law and best professional practice.

The group supports the Ethiopian strategy of developing its water resources in the Blue Nile basin, and acknowledges that the GERD (now under construction) is the first, major step in the implementation of this economic development strategy. At the same time, we have identified several areas of concern regarding the present situation that we wish to bring to the attention of policy makers in the Nile basin, especially those in the three Eastern Nile countries most affected by the GERD: Ethiopia, Sudan and Egypt.

The purpose of this policy brief is to communicate our thoughts on four issues:

[1] The International, Non-partisan Eastern Nile Working Group is a group of 17 world-renowned water resources scholars and practitioners who received no compensation to attend the workshop and have certified that they have no conflict of interest in participating in the workshop or preparing this report. The members of the Working Group and their bios are presented in Annex A.

[2] The GERD is currently under construction in Ethiopia near the border with Sudan. It is approximately 40% complete.

1) Need for an agreement on the coordinated operation of the GERD with the Aswan High Dam (AHD);
2) Technical issues regarding design of the GERD;
3) Need for an agreement on the sale of hydropower from the GERD; and
4) Potential downstream impacts on Egypt and Sudan, particularly in agriculture.

It is important to emphasize that, in making these assessments, we did not have access to some of the relevant information about the GERD. Thus, some of our concerns may be assuaged when Ethiopia makes more information about the GERD publicly available to the international community. If new information shows that some or all of our concerns are unfounded, we will quickly and publically acknowledge this.

First, we believe that Egypt, Sudan and Ethiopia urgently need to reach agreement on the coordinated operation of the AHD and the GERD to ensure that they maximize the benefits of the GERD and equitably share Nile waters during periods of filling and prolonged drought. Nowhere in the world are two large over-year storage facilities operated without close coordination.

Second, we believe that the risks associated with the GERD's large saddle dam may not have been fully appreciated. We are also concerned about the location and capacity of the GERD's low-level release outlets, because of the important role that these will play in operation of the GERD, and in Ethiopia's commitment to do no harm to Sudan and Egypt.

The location and capacity of the low-level release outlets of the GERD define what is possible in terms of a joint operating agreement. If the level of the GERD's reservoir falls below the intakes for the turbines, downstream releases will be limited by the *level* of these outlets. This level will determine whether the outlets can be used to release water during filling or during periods of drought, while their *capacity* will limit the extent of releases that are possible in the event that they must be used.

Third, an agreement is urgently needed on the sale of hydropower from the GERD to ensure that:

1) The Ethiopian people receive a good financial return on their investment; and
2) Water can be released through the turbines to maintain downstream flow.

If there is no power trade agreement or if turbine installation and transmission line construction is not fully complete by the time the GERD becomes capable of generating hydropower, then water cannot be released through the turbine outlets. So without a power trade agreement and infrastructure in place to deliver the GERD's hydropower to users, the GERD's low-level release outlets will be the only means available to release water to downstream riparians, even if the reservoir level is above the intakes of the turbines. A power trade agreement and the agreement on the coordinated operation of the AHD and the GERD could be part of the same deal structure and could be negotiated simultaneously.

Fourth, we anticipate that ongoing salinization of the agricultural lands of the Nile Delta could rapidly accelerate due to increased upstream withdrawals (a large portion of which will be made possible by the change in seasonal Blue Nile flows resulting from GERD operation) resulting in Egypt having less water available to flush residual salts into the Mediterranean. In addition, changes in the seasonality of Blue Nile flows due to filling and operation of the GERD will affect soil moisture in areas of recession agriculture located in Sudan. Both of these changes, increased salinization in Egypt and the loss of flood recession agriculture in Sudan, demand immediate attention and additional study.

Our intention in writing this policy brief has not been to support one nation at the expense of the others. Rather the MIT-convened working group has strived to provide impartial, objective advice that we hope will be useful to all stakeholder nations. If any of the Nile riparians would like our group to clarify or elaborate on any of the issues described in this document, we stand ready to assist in any way possible.