



For more information, contact:

Susan Tonassi, c/o Burness:

stonassi@burness.com / +49 160 9327 9327

EMBARGOED UNTIL 19 DECEMBER AT 12:30 P.M. CET

NEW REPORT: Kenya's Tana River Basin Could See a More than 40 Percent Increase in Rainfall Due to Climate Change

The most important water source in the country—suffering from declining rainfall and periodic droughts —will benefit from changing weather patterns, but destructive floods could outweigh benefits without proper planning

BONN, GERMANY (19 December 2017) – In contrast to recent years, which have seen declining rainfall, researchers report that, as a result of climate change, rainfall in Kenya's Tana River Basin will likely increase over the rest of the 21st century. Although the exact magnitude of the increase remains uncertain, a change of up to 43% in mean annual rainfall is possible. These findings are presented in a new study released today at the Global Landscape Forum (GLF) by the International Water Management Institute (IWMI). The good news is tempered with bad, however, as the study indicates that extreme climate events, especially flooding, will also increase.

"The large increase in the amount of water available in the basin will translate into more opportunities for deriving benefits from dams and other built infrastructure – meaning potentially more hydropower, water supplies and irrigation," said Matthew McCartney, leader of IWMI's Water Futures Research Group.

"The downside is that more water also means more risks," added James Dalton, coordinator of global water initiatives with the Global Water Programme of the International Union for Conservation of Nature (IUCN). "Bigger and more frequent floods resulting from increased rainfall variability could undermine new development opportunities."

For this study, researchers used a hydrological model, called the Soil and Water Assessment Tool (SWAT), to simulate processes affecting river flows in the future. Climate change input came from an ensemble of six models, simulating different greenhouse gas emission scenarios.

The researchers then evaluated climate change impacts by comparing these scenarios with the basin's current situation.

"The new results broadly confirm the findings of previous studies and are consistent with reports from the Intergovernmental Panel on Climate Change, or IPCC," said McCartney. "This is important, since modeling of climate change impacts on water resources is not an exact science and large uncertainties remain, which can lead to highly variable conclusions."

"How Kenya responds to both the opportunities and the challenge will make an enormous difference to people and the environment," said professor Eric Odada with the African Collaboration Centre for Earth System Science (ACCESS) at the University of Nairobi. Consumers in Nairobi get 80 percent of their water from the Tana Basin, he explained. It also delivers 70 percent of the country's hydroelectric power and 35 percent of its total electricity supply. The basin is home to 18 percent of the country's population, and its agriculture provides food and jobs for close to seven million people.

The new results come from a project called WISE-UP to Climate (Water Infrastructure Solutions from Ecosystem Services Underpinning Climate Resilient Policies and Programmes), led by IUCN. With support from Germany's Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, the project brings together a half dozen national and international partners.

Working in both the Tana Basin and West Africa's Volta River Basin, project researchers aim to demonstrate how "nature-based" solutions can contribute to climate change adaptation and sustainable development, explained Dalton. These draw on "portfolios" of both built and natural infrastructure, with the former consisting of dams, levees and so forth, and the latter encompassing wetlands, floodplains and watersheds.

"With another annual UN climate change conference just come and gone, the study results provide a helpful reminder that water is the primary medium by which economies, societies and landscapes will experience the impacts of climate change," said Julie van der Blik, director for partnerships and knowledge management at IWMI, which leads the CGIAR Research Program on Water, Land and Ecosystems (WLE).

How those impacts affect people depends a lot on what happens to "ecosystem services," according to the IWMI study. In the upper Tana River Basin, ecosystem services influence the delivery of water to dams and hence the provision of water for hydropower and irrigation as well as domestic and industrial use. In the lower basin, water-dependent ecosystem services, including fisheries, cultivation and cattle grazing on the river's floodplains, support the livelihoods of many hundreds of thousands of people. The impact of climate change on these ecosystem services depends greatly on how natural and built infrastructure interact and are managed under future climate conditions.

The new study focused specifically on ecosystem services that shape the ability of built infrastructure to deliver its intended benefits. These services typically correspond to key

hydrological features of a river basin. “Water flow” and “groundwater recharge,” for example, represent the total quantity of water available, while “flow regulation” suggests when river water is available.

“There are already five major dams in the basin, with several more planned,” said Dalton. “So, knowing in clear technical terms how climate change might affect the hydrology of the basin and, hence, the performance of these costly investments is extremely important for water managers and policy makers.”

“Climate change is acknowledged to be a significant threat to the future development of Kenya said Odada. “More built infrastructure can provide some solutions but will not by itself be sufficient. Kenyan specialists in water policy and practice must gain a better understanding of the role that natural infrastructure plays, and how natural and built infrastructure can work in tandem to ensure resilient and sustainable development in an era of climate change.”

WISE-UP to Climate has been working closely with decision makers, water managers and other stakeholders in the basin over the past 4 years. Approaches and results have been verified through discussion with local experts, including from the Kenyan Meteorological Department. The project will present a wealth of practical findings and insights when it officially closes in early 2018.

###

The **International Union for Conservation of Nature (IUCN)** is a membership Union composed of both government and civil society organisations. It harnesses the experience, resources and reach of its more than 1,300 member organisations and the input of more than 10,000 experts. IUCN is the global authority on the status of the natural world and the measures needed to safeguard it. www.iucn.org

The **International Water Management Institute (IWMI)** is a non-profit, scientific research organization focusing on the sustainable use of water and land resources in developing countries. Headquartered in Colombo, Sri Lanka, with regional offices across Asia and Africa, the Institute works with governments, civil society and the private sector to develop scalable agricultural water management solutions that have a significant impact on poverty reduction, food security and ecosystem health. www.iwmi.org

The **CGIAR Research Program on Water, Land and Ecosystems (WLE)** combines the resources of 11 CGIAR centers, the Food and Agriculture Organization of the United Nations (FAO), the RUAF Foundation, and numerous national, regional and international partners to provide an integrated approach to natural resource management research. WLE promotes a new approach to sustainable intensification in which a healthy functioning ecosystem is seen as a prerequisite to agricultural development, resilience of food systems and human well-being. This program is led by the International Water Management Institute (IWMI) and is supported by CGIAR, a global research partnership for a food-secure future. <http://wle.cgiar.org>

The **African Collaboration Centre for Earth System Science (ACCESS)** is a regional research centre based at the University of Nairobi, which aims to contribute to long-term research on the causes and consequences of global change in order to foster the creation of knowledge in this multidisciplinary science, and seeking to prepare a highly qualified team of researchers with the primary objective of achieving excellence in research, training and dissemination in order to provide support for policy formulation and institutional development in Africa.

Water Infrastructure Solutions from Ecosystem Services Underpinning Climate Resilient Policies and Programmes (WISE-UP to Climate) aims to demonstrate how natural infrastructure as a 'nature-based solution' contributes to climate change adaptation and sustainable development. The project has developed knowledge and options on the use of portfolios of built water infrastructure (e.g., dams, levees, irrigation channels) and natural infrastructure (e.g., wetlands, floodplains, watersheds) for poverty reduction, water-energy-food security, biodiversity conservation, and climate resilience. The project is working in the Volta River Basin (Ghana, principally, and also Burkina Faso) as well as the Tana River Basin in Kenya. The project is led by the IUCN and involves the Council for Scientific and Industrial Research - Water Research Institute (CSIR-WRI); ACCESS, University of Nairobi; IWMI; Overseas Development Institute (ODI); University of Manchester; and the Basque Centre for Climate Change (BC3). www.waterandnature.org or [www.iucn.org/water wiseup](http://www.iucn.org/water_wiseup)