

Transforming Investments in African Rainfed Agriculture

To ensure food security, Africa needs investments in rainfed agriculture. This is a cost-effective approach to improving agricultural productivity, climate resilience and building sustainable livelihoods.

Africa's dilemma

Africa is one of the two driest continents on earth with ongoing desertification and increasing population pressure rapidly reducing the available arable land per capita. Nearly 95 per cent of Africa's agricultural land is rainfed and accounts for close to 80 per cent of staple food production. Yet only 5 per cent of public agricultural water investments support rainfed agriculture.

The consequences are critical, far reaching and further exacerbated by climate change. One third of people across the continent are facing food insecurities and 22.7 per cent of the population in Sub-Saharan Africa are undernourished. Net food imports are predicted to reach \$110 billion by 2025. Africa's annual food import bill weakens economies, decimates agriculture and exports jobs from the continent.

Two thirds of the African population are trapped in a cycle of poverty which significantly reduces economic growth. There are high levels of degradation of land, forests and soil which reduces the productive capacity of land and agricultural output. At the centre of this crisis is the African farmer, typically engaged in rainfed subsistence farming in difficult conditions.

One solution is increasing rainfed agricultural yields which are typically very low and a quarter of their potential. Increased yields are dependent upon the availability of water.

Benefits of rainfed agriculture

- Enhanced local-level food security through access to stored and infiltrated rainwater;
- Catchment management services which can reduce soil erosion and dam sedimentation;
- More cost-effective than irrigation schemes;
- Increased sustainability through community ownership and participation, especially of women;
- Allowing rural communities to invest in themselves in areas such as education, healthcare and innovation;

For more information

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The opportunity of rainfed agriculture

Rainfed agriculture depends on infiltrated rainfall water which is stored in the upper layers of the soil and is available to plant roots. This is called green water. Capturing and maintaining soil moisture is the key to productive rainfed agriculture. Water capture increases water availability by reducing rainwater runoff and groundwater seepage, while water storage reduces evaporation.

Enhanced rainfed farming has the highest potential to improve food production and reduce poverty in Africa. Water security is increased by conserving green water and localized resources, providing a route out of the poverty trap and changing rural economies.

The estimated cost of green water management in rainfed small-holder farming is \$250-500 per hectare. This is the cost of small-scale rainwater harvesting and in-field soil moisture retention techniques and is largely low-technology and labour intensive.

The yield per dollar invested in improved rainfed agriculture is potentially nine times that of small-scale irrigation and six times that of large-scale irrigation. Over time, smallholders will play an important role in stimulating food production locally, creating jobs and contributing to economic growth, contributing to Africa's growth and well-being as a whole.

Approaches to rainfed agriculture have been available for decades and are based on well-established scientific findings that have been proved throughout the world. Yet, rainfed agriculture is not happening at scale. Given that 95 per cent of cultivable land and agricultural activity is rainfed, there is a massive opportunity to increase and improve practices across Africa.

Opportunities to capture and store green water must be promoted in conjunction with and in support of blue water and overall watershed management. Securing green water removes uncertainty and increases sustainability, but improved rainfed agriculture is just a first step in sustaining rural livelihoods. The key is to ensure, at a minimum, farmers do not fall below the subsistence point by securing green water, which will be available in all but the most persistent droughts.

Unlocking the potential of rainfed agriculture

It will take significant resources to achieve a step-change in rainfed agriculture and more investment is urgently needed. The public sector must lead large-scale programmes to improve rainfed agriculture, supported by the international development sector and where feasible, the private sector.

Public sector financing could include a range of different fiscal mechanisms and activities such as subsidies, public work programmes, farmer support and extensions services, micro-credit for inputs, market access roads and small-scale infrastructure such as small dams and rainwater harvesting systems. Multilateral development agencies such as the World Bank and the African Development Bank could provide governments with credit to invest in enhanced rainfed agriculture and regenerating rural economies. New innovative finance could increase opportunities for green funds to reclaim degraded lands through conservation agriculture or off-set financing to invest in green water and micro infrastructure accessing to increase climate resilience.

There are a range of potential sources of funding including redirecting existing sources of funding such as climate related funds, as well as identifying new sources.

There is an emerging cost-benefit rationale for the public financing of rainfed agriculture programmes but governments and other stakeholders need a more compelling rationale to prioritize increased investments. This includes increased awareness about the importance and management of green water.

Transforming Investments in African Rainfed Agriculture (TIARA)

Achieving these goals is complex and requires the involvement and engagement of many different players at all levels, including government commitment at the highest level. Transforming Investments in African Rainfed Agriculture (TIARA) is an emerging advocacy effort to scale up green water and enhance rainfed agriculture across Africa through financial investments and political leadership.

The idea for this initiative came out of the Malin Falkenmark Symposium at World Water Week in Stockholm 2016 where experts called for a water revolution to alleviate the world water

and hunger crisis. Discussions deepened in Kigali, June 2018 when experts came together to identify barriers and map out different pathways for action.

Led by Stockholm International Water Institute (SIWI), Stockholm Resilience Centre (SRC) and the Sustainable Development Goals Center for Africa (SDGC/A), the objective of TIARA is to increase the storage and capture of green water at scale to help move African farmers away from subsistence farming and towards more sustainable livelihoods within a 3-5 year time frame. Enhanced rainfed agriculture will contribute directly and indirectly to seven of the Sustainable Development Goals (SDGs): 1, 2, 3, 6, 8, 13 & 16. This will be achieved through knowledge, advocacy and investments.

1. TIARA aims to improve knowledge on rainfed agriculture in Africa and the related challenges and opportunities. This includes creating a platform to disseminate existing work, identifying best practice and assessing gaps and commissioning new work. The focus will be on understanding the costs and benefits of rainfed agriculture including the role of key stakeholders and enabling public policy.
2. TIARA will establish the business case for investing in rainfed agriculture and advocate the need for investment to key decision makers. TIARA will work with 5-6 leadership countries (e.g. Kenya and Tunisia) to enable high level leadership. These countries will act as beacons to encourage the take up of rainfed agriculture across Africa. In parallel, TIARA will enable political leadership at the highest level to mandate the public sector to prioritize improved rainfed agriculture at large scale.
3. TIARA will work to unlock public and private investments in green water across Africa. This will require building relationships and leveraging existing approaches to secure financing. There will also be the need to establish and test new financial instruments in support of green water.

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Reference

Abrams, L., (2018), Unlocking the potential of enhanced rainfed agriculture. Report no. 39. SIWI, Stockholm.

