Developing National Response Strategies for Enhanced Resilience of African Economies: Lessons from the 2015/16 El Nino impacts

A. Bogale;

Africa Union Commission, Rural Economy and Agriculture, Ethiopia

Corresponding author email: ayalnehb@africa-union.org

Abstract:

Smallholder farmers which contribute the majority of food production in Africa are in the frontline of the impacts of El Niño and climate change related risks. The ecosystems on which they rely are increasingly degraded and their access to suitable agricultural land and water resources is declining. In 2015/16, the African agriculture sector was ravaged by drought that has devastated crop yields, scorched grazing land and undermined the resilience of the production systems and livelihoods. Rising food prices reduced real income, forced the poor to sell their assets, decrease food consumption, and further create poverty traps. By the end of 2015, an estimated 60 million people across sub-Saharan Africa didn't have enough to eat. Since there is convincing scientific evidence that the 2015/16 El Niño was not the first and will not be the last and will obviously result in recurrent disasters in Africa, there is compelling need for the continent to learn from past and prevent similar disasters and strengthen response and recovery efforts. This paper examines response strategies proposed by African countries to build their resilience and explore the appropriate preventative and risk reduction measures and enhance knowledge on effective response and recovery policies and strategies.

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Introduction

El Niño Southern Oscillation (ENSO) is a recurrent weather phenomenon that results from local warming of surface waters that takes place in the entire equatorial zone of the central and eastern Pacific Ocean and which affects the atmospheric circulation worldwide. The phenomenon lasts approximately 1 year before the weather conditions reverse. During El Niño episodes, the normal patterns of tropical precipitation and atmospheric circulation are disrupted, hence triggering extreme climate events around the globe: droughts, floods and affecting the intensity and frequency of hurricanes.

There is increasing evidence that the El Niño episode has strong effects on the performance of the economy and food security of eastern and southern African countries which largely depend on smallholder agriculture to generate employment, foreign exchange earnings and remain to be the main source of livelihoods for the majority of the population. Agriculture is one of the main sectors of the African economy that could be severely affected by El Niño weather phenomenon as such hazards can spoil food, destroy crops, livestock, fishing, food processing infrastructure, assets, inputs and production capacity. It interrupts market access, trade and food supply, reduces income, depletes savings and erodes livelihoods.

Scientists are developing several medium and long-range weather forecasting tools which are quite valuable in providing early warning of droughts triggered by El Niño. The El Niño weather phenomenon is a cyclical pattern fueled by solar energy that results in the earth's oceans and atmosphere to follow a cyclical pattern of change. Sunshine warms the ocean waters each day, and during periods when all of this heat is not lost overnight, the waters begin to warm very slowly.

The warming ocean waters, particularly in the large Pacific Ocean basin, warm the air, causing it to rise, eventually leading to changes in global atmospheric circulation patterns. The warm air over the ocean increases evaporation, resulting in cloudiness and rainfall that block the sunshine and eventually lead to cooling of the waters. After ocean temperatures cool to normal levels, the atmosphere also returns to previous circulation patterns, completing the El Niño cycle.

Weather patterns in many parts of the world appear to be related to different phases of the El Niño cycle, and one of the stronger relationships is between the warm-ocean phase of the El Niño and drought in eastern and southern Africa. Warm episodes beginning in April or May have a particularly strong relationship with drought in these regions. Relationships to weather patterns in other parts of Africa are less clear, although there is a tendency for wetter weather in east Africa during a warm El Niño phase and there are some indications that a severe warm event is related to drought in western Africa (FEWS Project, 1996).

National Oceanic and Atmospheric Administration (NOAA) and other regional organizations (including ICPAC) periodically issue an El Niño advisory that a warm event is developing in the central and eastern Pacific Ocean. It is imperative for national governments and other relevant groups to monitoring these events carefully to track the development and determine the likely effect on weather and crops in order to minimize the negative impact and ensure that such phenomena will not develop to disasters from which thousands may die due to drought and famine.

Climate Change and El Niño Weather Phenomenon

El Niño refers to a pattern of unusually warm water stretching across the surface of eastern equatorial Pacific that influences weather patterns around the world and occurs every 3-7 years. It is a weather phenomenon that disrupts normal weather patterns, bringing heavy rains and drought to different parts of the world. El Niño is often followed by La Nina, which typically brings heavy rains, floods and tropical cyclones.

Obviously the El Niño and La Nina don't just operate in isolation. They're part of the broader climate system, which means that climate change could theoretically change how they operate-make them develop more frequently, for example, or less frequently, or be more or less pronounced (Lemonick, 2011). Climate scientists have been wrestling to establish this relationship for a while now, and they still don't really have a definitive answer. Some climate models have suggested that global warming has already begun to cause subtle changes in El Niño cycles, and that the changes will become more pronounced later this century.

However, to determine the relationship between the El Niño cycle and global climate change has remained to be a challenge for scientists for a number of years. A recent study by Cai, et al. (2014) suggests that while the overall number of El Niños is unlikely to increase, particularly strong "super" El Niños are likely to significantly increase in frequently in a warming world. Specifically, the results show that the likelihood of super El Niños doubles from one every 20 years in the previous century to one every 10 years in the 21st century. Under climate change the eastern equatorial Pacific warms faster than the surrounding regions making it easier to have maximum sea surface temperatures in the eastern equatorial Pacific, and hence more occurrences of extreme El Niño events, according to Cai, et al. (2014).

However, it is worth noting that while the results show an increase in the number of abnormally strong El Niños, they don't show a change in the total number of El Niños. Furthermore, the study also shows that the current influence that El Niño may have on climate change. It was argued that while climate change appears to make super El Niños more frequent, El Niños return the favor by giving a short-term stimulus to atmospheric global warming. This is because the spread of warm waters across the tropical Pacific results in a release of heat energy from the oceans into the atmosphere.

El Niño: What is at Stake for African Agriculture and Food Security?

The effects of El Niño can be sometimes be erratic and not always be predictable (Mason, 2016). Disasters associated with El Niño such as soaring food prices reduce real income, force the poor to sell their assets, decrease food consumption, reduce their dietary diversity and access to safe and quality food and further create poverty traps that increase the prevalence of food insecurity and malnutrition.

Smallholder farmers which contribute the majority of food production in Africa are in the front line of the impacts of El Niño and other climate change related disaster risks. The ecosystems on which they rely are increasingly degraded and their access to suitable agricultural land and to forest resources is declining. Many smallholder farmers produce on marginal rain-fed land that is affected by increased water scarcity and erosion, while declines in fish and marine resources threaten other essential sources of income and nutrition.

The study by FAO shows that the areas where El Niño is most likely to negatively affect agriculture causing drought conditions, with ensuing reductions in agricultural production and potential food security implications (Rajas, et al., 2014). In these areas, governments should be ready to implement mitigation programmes to increase the resilience of farmers during El Niño events.

Various reports confirm that the 2015/16 El Niño was on par with the 1982-83 and 1997-98 seasons, which were the most extreme on record dating back to about 1950. While the 2015/2016 El Niño is characteristically distinct from the 1982-1983 and 1997-1998 events, it still can be considered as the first extreme El Niño of the 21st century (Santoso, et al., 2017). Its extremity can be attributed in part to unusually warm condition in 2014 and to long-term background warming. As a result, the African agriculture sector, particularly in eastern and southern Africa, had been ravaged by drought and weeks of heat waves that have devastated crop yields and scorched grazing land, forcing livestock owners to slaughter or sell animals. This will create new livelihood crises, especially in low-income countries, jeopardize sustainable development, and exacerbate migration and conflict. By the end of 2015, The International Federation of the Red Cross and Red Crescent Societies (IFRC) reported that an estimated 60 million people across sub-Saharan Africa did not have enough to eat and indications are that the food production situation is set to deteriorate with the El Niño set to strengthen and persist into early 2016, even though the severity and coverage varies from one region to the other.

Southern Africa suffered its driest year on record in 2015, as reported by the South African National Weather Service. The drought has threatened the vital maize crop, hit economic growth and showed no sign of abating. Even though global food prices plunged 19 percent in 2015

following a fresh decline in December 2015 on the back of plentiful supplies and a slowing global economy, staple prices in Southern Africa were on average at 27 percent higher over the previous year which has resulted in food to be out of reach for many and pushed poor households into poverty.

The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) reported that in West Africa, initial conditions in 2015 were aligning in a similar way to the massive 1972 drought that devastated the Sahel with widespread food insecurity at or beyond crisis levels (OCHA, 2016). However, while seasonal vegetation development in the region indeed showed effects of early-season rainfall deficits in 2015, which translated into delays in planting and early crop development in the Sahel, the suspected El Niño effect seems to have been counterbalanced by various oceanic and meteorological systems in the Atlantic resulting in a relatively normal rainy season later in the year. Therefore, a direct and detrimental influence of El Niño during the critical time for agricultural production in the West African region and Central Africa seems to have been weak.

In some years, it looks like El Niño is leading to above-average rainfall in some places and, in other places not too far away, leading to more drought. That kind of dichotomy is getting even more exacerbated in the future. The 2015/16 El Niño has resulted in heavy rainfall in some parts of East Africa and flooding in Uganda, Kenya and South Sudan have destroyed people's livelihoods and infrastructure. On the other extreme, Ethiopia has witnessed the strongest impact of El Niño in the past 60 years.

The 2015/16 El Niño event had wreaked havoc on Ethiopia's summer rains. This came on the heels of failed spring rains, and had driven food insecurity, malnutrition and water shortages in

affected areas of the country. Even though a well-coordinated response was initiated quickly and expanded rapidly, the scale of the escalating emergency exceeded resources available even to date. According to the 2016 Humanitarian Requirement Document for Ethiopia (GoE, 2016) and Famine Early Warning Systems Network (FEWS NET) Food Security report for Ethiopia, consecutive failed and poor rainy seasons in 2015 reduced harvest yield, limiting household food availability and exposing about 10.2 million people to food insecurity with an estimated cost of US$1.4 Billion for emergency humanitarian aid.

Malawi has reported more than half of its 15 million population (8.4 million) requires food assistance whereas Zimbabwe requested a total of $1.4 billion in food assistance after an El Niño-induced drought decimated crops. The effect is expected to extend to significant loss of agricultural labour opportunities, impacting household income source and purchasing capacity. If not properly managed, this may escalate to triggering increases in food prices with negative impact on real income of households. In the medium and long term, this can erode the growth gains that the country has registered during the past decade, threaten sustainable development, undermine resilience, impair the capacity to recover and absorb losses from these events and reinforce cycles of poverty across the nation.

Salient Features of Response and Recovery Measures

The impact of the 2015/16 El Niño, amplified by climate change, was far-reaching and led to extensive drought in eastern and southern Africa exposing more than 60 million people for food aid. Cognizant of the severity and urgency of the problem, the Department of Rural Economy and Agriculture and the Department of Economic Affairs of the African Union Commission (AUC),

in partnership with African Capacity Building Foundation (ACBF), convened a Ministerial Roundtable on April 03, 2016 at the Economic Commission for Africa (UNECA) Conference Centre, Addis Ababa, Ethiopia. The event provided a platform through which ministers, central bank governors and experts could share their experiences and ideas on tackling the key challenges facing Africa countries, in particular that relates to severe droughts and floods due to the 2015/16 El Niño.

The Ministers reiterated that it is critical to address the pressing needs of African countries particularly vulnerable to the adverse impacts of climate change. In this regard, they urged all parties to engage in the ongoing process through assistance to African countries for their development and adoption of alternative economic pathways that are climate-resilient and not carbon-intensive, that build adaptive capacity and strengthen institutions to integrate information into national planning and that strengthen national climate data systems.

Furthermore, recognizing that agriculture is the backbone of Africa's economy and the critical role of smallholder farmers in the sector, and reaffirming that the agricultural sector can contribute to the achievement of Agenda 2063 and Agenda 2030 through greater agricultural productivity, food security and poverty reduction, the Ministers pledged to: (i) improve rural infrastructure, including water management and storage, and trade-related capacities for access to local and regional markets; (ii) promote sustainable management and improved resilience of the natural resource base and investments; and (iii) promote technologies that target rural smallholder farmers.

It is also important to take note of the progress made towards the implementation of the Comprehensive Africa Agriculture Development Program (CAADP) and continued effort to mobilize resources to strengthening resilience to climate related risks, attain food security and

reduce poverty. At the same time, the necessity of a substantial and sustainable expansion of food production in African countries by enhancing investments and productivity in the agricultural sector, including in small-scale farms, promoting rural development and intensifying agricultural research should be recognized. It is critical to eliminate barriers to food production, to improve processing and distribution over time and to have carefully targeted safety nets in the event of food crises.

Finally, it is imperative to recognize the centrality and primacy of prevention, mitigation, institutional infrastructure, capacity building and well-planned logistics for relief to the vulnerable where and when climate related shocks happen. Thus, greater emphasis should be put on the monitoring and management of drought and floods during normal years and not only during drought and flood periods.

Rationale for Mainstreaming Resilience into Development Policy and Strategy

Those countries that have invested in building resilience and put in place well functioning response institutions during the normal years (e.g. Ethiopia) have demonstrated the importance of enhancing capacity that ensures adverse stressors and shocks do not have long-lasting adverse development consequences. Since there is convincing scientific evidence that the 2015/16 El Niño was not the first and will not be the last, together with accentuated climatic shocks resulting from climate change and variability obviously will result in recurrent humanitarian crises in most regions of Africa and particularly the Sahel, the Horn of Africa and Southern Africa.

Since no two El Niño events are the same (WFP, 2016), there are considerable heterogeneities in the impacts and responses of different countries to El Niño shocks (Paul, et al, 2015). While some countries face a short lived fall in economic activity in response to El Niño shocks, other countries experience short-run inflationary pressure as both energy and non-fuel commodity prices increase. This has led bilateral and multilateral donors, along with other development partners, to begin to think differently about development issues. Rather than placing each humanitarian assistance, governance, food security and nutrition, and economic development assistance in a separate silo, there is a paradigm shift towards building resilience through systematic synergy of the myriad activities.

This degree of uncertainty in the outcome of an El Niño event underlines the importance of preparedness and contingency planning and adopting a no-regrets approach that can enables more timely implementation of response mechanisms, should they become necessary. Accordingly, a number of African countries have developed policies and strategies that deliberately address building resilience into their development policies, strategies and investment plans. In particular, the processes in the implementation of the Malabo Declaration on Africa Accelerated Agricultural Growth and Transformation provide an opportunity for such exercise. One on the commitments of the Malabo Declaration calls for African countries to enhance resilience in production systems and livelihoods to climate variability and other shocks. In response, a number of African countries have integrated building resilience into their agricultural investment plans. Furthermore, nothing that the recurrent food security crisis cannot be resolved by emergency assistance alone, most countries are resolute to longer-term solution that builds communities' resilience to better withstand shocks and avoid being plunged back into crisis.

For instance, Malawi has identified "Resilient Livelihoods, Production and Productivity" as one of the four major programs in its National Agriculture Investment Plan (2017/18 – 2022/23) which seeks to achieve a farmer-led agricultural transformation and commercialization, treating farming as a business, along with stimulating the non-farm and non-agricultural economy to provide alternative route out of vulnerability to poverty and food insecurity. The investment plan is considerate on the importance of ensuring that sectoral growth is inclusive, environmentally sustainable, resilient and climate-smart. Accordingly, it has integrated related policy areas, such as social protection, environment and climate change, early warning systems and nutrition in order to maximise synergies.

Rwanda, building on the lessons learnt from the impact and response to El Niño event in 2015/16 and the implementation of its previous agricultural investment plans, has integrated a set of preparedness and response activities at national and local level in the fourth Rwanda Strategic Plan for Agricultural Transformation (PSTA IV) (2018 – 2024). Of course, more than 50% of the resources allocated to PSTA IV goes to enhancing production, productivity and building resilience including activities that foster the preventive and adaptive capacity of communities to future shocks, in particular irrigation development and soil and water conservation practices.

Conclusion

Both the African Union, all the sub-regional groupings and member states have consistently talked about Africa's potential to feed itself, and the need for building resilience to climate change related and other risks which often drive millions of householders into food insecurity. A number of high level platforms have facilitated highly interactive dialogue and allowed participants to tap into

their collective experiences and commit themselves for mainstreaming resilience as well as identify viable interventions and programmatic responses to the challenges triggered by climate change, El Niño and other disaster risk. However, only few countries have dedicated resources for the purpose and demonstrated their resolve. A number of countries, on the other hand, are quick to forget the devastating impact of the 2015/16 El Niño and return to the "business as usual" scenario. It is imperative for researchers and policy advisers to keep on making the case for policy makers that the future is not "El Niño Proof".

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