

## PUTTING INNOVATION (S) AT THE CENTRE OF CLIMATE CHANGE, AGRICULTURE AND FOOD SECURITY IN ZIMBABWE

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**Abstract:** *This article puts innovation (s) at the center of climate change, agriculture and food security in Zimbabwe within the concept of opposing forces to innovation espoused by researchers and practitioners. The article traces the global actions in climate change, agriculture and food security, and what this means for the country. The main disquisition is whether the human species settles for (more-, less-, and non -) knowledge or ignorance when presented with a problem such as climate change which is global in nature. The article also addresses the rejection of ideas such as climate-smart agriculture, and what this means in the context of innovation. I also discuss the innovation opportunities in and related to climate science for young agripreneurs in Zimbabwe. At the heart of this article is the suggestion that Zimbabwe should address its nation's development and related challenges at the very basic and fundamental levels and not dodge such when called to action. The adoption of innovations partly requires daring, visionary, and playful minds and change agents. I establish that rejection, acceptance, and restraint are orthodox positions the human species appears to adopt when faced with decisive moments in innovation (s). The article recommends for dissection, in an apolitical and non-partisan manner, all evidence, facts, and reason presented by researchers, practitioners, and policy makers when dealing with urgent country problems, including, climate science.*

**Key words:** Agriculture, Climate Change, Food Security, Global Warming, Innovation.

### Introduction

When faced with problems such as climate change where will the human species turn to in order to comprehend how the Earth's climate system functions and impacts on food and agriculture? The United Nations Framework Convention on Climate Change (UNFCCC) (1992) defines climate change as "a "change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." There subsist valid arguments and counterarguments on climate change. The times periods show that "global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial levels".<sup>1</sup> Climatic changes also impact on Zimbabwe, and make the call for innovation (s) in climate change, agriculture and food security. Furthermore, the UNFCCC (1992) observes that, "[T] he ultimate objective of the Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." This article puts innovation (s) at the center of climate change, agriculture, and food security in Zimbabwe. By putting into context the concept of opposing forces to innovation within Zimbabwe, the article, broadly advocates for dissection, in an apolitical and

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<sup>1</sup> [https://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/spmssp-human-and.html](https://www.ipcc.ch/publications_and_data/ar4/wg1/en/spmssp-human-and.html)

non-partisan manner, all evidence when dealing with urgent development issues in the country.

## ANALYSIS

### Overview of Climate Change and its Impacts in Africa

The Food and Agriculture Organization of the United Nations (FAO) (2016) acknowledges that a sustainable future rests on supporting smallholders in adapting to climate change. Climate change adaptation and mitigation is indispensable in addressing the rapid changes in the world's climate (FAO, 2016). FARA (2015) states that continental and regional development policies and programs recognize climate change and its impacts, but there are limited climate change and adaptation considerations in national agricultural sector policies. Even where policies exist, implementation is hampered by the low priority given to funding adaptation as compared to natural resources e.g. forestry (FARA, 2015). Table 1 summarises the observed climate impacts and where innovation (s) can come in.

Table 1: Observed climate impacts and areas where innovation (s) comes in

Observed climate impacts	Areas where innovation (s) comes in
Unexpected changes in precipitation and temperature, changes in length of growing seasons, carbon uptake, and loss of soil fertility.	Improved climate modeling systems, research collaborations, and use of scientific advice by governments.
Increased frequency of extreme events such as droughts and floods in all regions.	Robust early warning systems; disaster preparedness and emergency response systems.
Increased pressure on resources, leading to food deficits and local conflicts.	Participatory approaches and governance in community development.
Disruption of ecological interactions that are the basis of insect dynamics in nature.	Monitored ecological interactions and development programmes and plans.
Changes in prevalence of human diseases and plant pests.	Improved health care monitoring systems and global databases.
Changes in availability of drinking water.	Planned human and animal settlements.
Glacial meltdowns.	Reduce major economic and commercial activities in affected regions.
Shocks on the sustainability of community livelihoods.	Capacity building and training programmes that build resilience among community members.

Source: Author's imagination and various research findings

### Institutional and Policy Platforms Addressing Climate Change Issues in Africa

FARA (2015) identifies a number of institutions and platforms that address climate change and related issues across Africa as: Ecosystem-Based Adaptation for Food Security; African Forum for Agricultural Advisory Services; Consultative Group on International Agriculture Research (CGIAR) – New Economic Partnership for Africa's Development (NEPAD) Collaboration to Support Vision 2025; Global Alliance for Climate-Smart Agriculture; African Union - NEPAD-INGO Alliance for Scaling Up Climate-Smart Agriculture Alliance in Africa or "Africa Climate-Smart Agriculture Alliance"; Economic Commission of West African States High-Level Forum on Climate-Smart Agriculture (CSA); Common Market for Eastern and Southern Africa CSA Country Programs; Southern African Confederation of Agricultural Unions CSA Program; African Youth in CSA Alliance; and Country-based committees and platforms.

### Innovation in Climate Change, Agriculture and Food Security

According to the United Kingdom Government Office for Science (2014), "Innovation is about changing the way we do things. It is about pushing the frontier of what we know in the hope of generating new and useful ideas, and then putting them into practice. Successful innovation raises productivity and living standards, expanding the range of goods and services available for individuals and society as a whole, and allowing us to live longer,

healthier lives.” Innovation can be useful to Zimbabweans as it cuts across policies, programmes, projects, approaches, and research and scientific evidence (cf. UNESCO, 2014). The appointment of a state scientific adviser/officer – as argued for by experts - is one suggestion to Zimbabwe. FARA (2015) states that the restoration of degraded lands, *Zai* pits, new drought tolerant maize and wheat varieties which target smallholder farmers are examples of climate-smart approaches. FARA states further that to support climate change adaptation planning, comprehensive policies and strategies across health, urban, and agriculture sectors, and the mobilization of scientists and researchers to create an informed evidence base within the continent are innovative actions in climate change, agriculture and food security.

### **Opposing Forces to Dynamics in Earth’s Climate System and Climate Change**

The main criticisms on climate change and global warming are a consequence of a convergence/divergence of business, political, ideological interests among parties concerned. This has also been prompted by the rush for new thinking and action in addressing the effects of climate change, especially reducing agricultural emissions (e.g. climate-smart versus climate-informed). Some critics have argued that climate change is “not real”, and that it is a “hoax”. Dyson (2005:5) argues that “the [climate] models solve the equations of fluid dynamics, and they do a very good job of describing fluid motions of the atmosphere and the oceans. They do a very poor job of describing the clouds, the dust, the chemistry, and biology of fields and farms and forests.” Other researchers caution climate change proponents on the complexity of the Earth’s system in self-regulation (Wielicki et al., 2002). The statements above means that changes in the climate itself can reverse the gains made in climate change mitigation and adaptation.

Concerning climate-smart agriculture<sup>2</sup>, critics claim that the concept is vague and not properly defined. They argue that certain large bodies and institutions have sinister motivations and objectives. Essentially the claim is that they seek to “control and perhaps, wipe out” the smallholders and their means of production. Agro-ecology, some critics argue, is a better approach than climate-smart agriculture. There are also concerns about “climate-smart” financing of agriculture, for example, how do we quantify soil carbon and the soil carbon market. It appears from all the critique that these are legitimate concerns on a number of fronts, chief among them how food production can be increased on the finite land resource and in recognition of the increasing global population (cf. Rosenstock et al., 2016).

Juma (2016), on the examination of societal forces that equivocate problem-solving technologies, observed that innovation can separate people from nature or their sense of purpose – two things fundamental to human experience. The study also noted that new technologies generate uncertainty about the future – and when making decisions under uncertainty, potential losses loom larger in people’s minds than potential gains (Juma, 2016). This observation was described by Steve Orvely<sup>3</sup> in a *Washington Post* on his commentary on some of the fears associated with new technologies. Steve stated that people sometimes oppose innovation even when it seems to be in their best interest, and that humans make decisions about new innovations with their gut rather than evidence. The human experience, therefore, decisively gives rise to an array of standpoints in any examination of innovation (s).

### **Climate Resilience and Young Agripreneurs in Zimbabwe**

Zimbabwe must hasten to address its development challenges at the very basic and fundamental levels. The Office of the President and Cabinet with the guidance of the Ministry of Environment, Water and Climate leads many programmes and initiatives in

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<sup>2</sup> <http://www.climatesmartagconcerns.info/rejection-letter.html>

<sup>3</sup> <https://www.washingtonpost.com/news/innovations/wp/2016/07/21/humans-once-opposed-coffee-and-refrigeration-heres-why-we-often-hate-new-stuff/>

climate change, agriculture and food security (Government of Zimbabwe, 2015). Effective use and adaptation of innovations to local contexts requires a variety of actors, and a consideration of what they offer in debates and dialogues (Table 2). According to the CGIAR Climate Change, Agriculture and Food Security Program<sup>4</sup>, the six ways in which resilience can be built among farmers in areas at risk of climatic impacts are: (i) Put the right technology into the farmers' hands; (ii) get farmers insured; (iii) deliver climate forecasts directly to farmers; (iv) enhance the national enabling environment; (v) inform global policies and processes; and (vi) scale up investments in climate-smart agriculture. The above-stated ways can build resilience and create innovation opportunities for agripreneurs in the country.

Table 2: Innovation Opportunities for Young Agripreneurs in Zimbabwe

<b>Category</b>	<b>Innovation Opportunities in Climate Change, Agriculture and Food Security</b>
<b>Theory</b>	<ul style="list-style-type: none"> <li>Collaborate on research and innovation projects focused on climate science.</li> <li>Assess critically the benefits of social networking.</li> <li>Align with the critical mass of scholars and practitioners in climate change.</li> <li>Critique available concepts, frameworks, paradigms, and strategies used as evidence to inform climate science and action in Zimbabwe.</li> <li>Enroll in online classes in climate change, agriculture, and food security.</li> <li>Contribute to leadership and agricultural development programmes.</li> </ul>
<b>Policy</b>	<ul style="list-style-type: none"> <li>Add your voice to discussions on climate change, agriculture and food security.</li> <li>Enhance understanding on biotechnology and biosafety issues.</li> <li>Present one's requests to policy and decision makers.</li> <li>Consider seriously and act on any political risks in one's quests.</li> <li>Develop research and communication tools and products.</li> <li>Improve one's communication skills.</li> <li>Get involved in policy debates, dialogues, and discussions.</li> <li>Lobby for financial resources and investments in climate-smart approaches, practices, and technologies.</li> </ul>
<b>Practice</b>	<ul style="list-style-type: none"> <li>Listen with intent to opposing forces to innovation (s).</li> <li>Volunteer for a social cause you believe in.</li> <li>Participate in the work of the Country Branch, Ecosystem-Based Adaptation For Food Security Assembly.</li> <li>Contribute to knowledge production and new curriculum (educational) development.</li> <li>Interrogate knowledge and ideas on Agricultural Coordination and Working Groups.</li> <li>Engage with rural advisory service providers.</li> <li>Create intelligence systems for use along the agricultural value chain (e.g. intelligent use of Big Data and Internet of Things).</li> <li>Craft clear "messages" as media practitioners and science communicators.</li> </ul>

Source: Author's imagination

## Conclusion

This article has pondered on the problem of climate change and its impacts on food and agriculture, and the suggestion that this daunting challenge ought to actuate the human species to pursue knowledge and ignorance, and shun inaction. In doing so, the article has argued for a consideration of a variety of actors in matters concerning basic country's development, with special reference to climate change, agriculture and food security in Zimbabwe. The article has also argued that the concept of opposing forces to innovation should be fastidiously managed as it illuminates the human experience, and standpoints. The continuous examination of opportunities across all spectrums – theory, policy, and practice – can uncover surprises in what the human species can do to address problems such as climate change. The article establishes that rejection, acceptance, and restraint are orthodox positions the human species appears to adopt when faced with decisive moments in innovation (s). In sum, I recommend for dissection, in an apolitical and non-partisan manner, all evidence presented by researchers, practitioners, and policy makers when dealing with country problems, including, climate science.

<sup>4</sup> <https://ccafs.cgiar.org/research-highlight/step-step-guide-climate-resilience-agriculture>

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## Additional Information

This article is an expanded version of the invited plenary presentation at the Zimbabwe Youth Agripreneurship Summit 2016, organized by the Zimbabwe Farmers Union, and held at ZESA Training Centre, Belvedere, Harare, Zimbabwe, on the 24<sup>th</sup> – 26<sup>th</sup> August, 2016.