



# Scaling up Climate Resilience Solutions for Burundian Smallholders

Annex 2 Pre-Feasibility Study, GCF SAP Proposal  
Draft 4\_ Clean

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# 1 Executive Summary

Burundi, with its dense rural population heavily reliant on smallholder agriculture, faces significant climate vulnerability. This is compounded by widespread poverty and food insecurity. Despite being among the *world's lowest greenhouse gas emitters*, the country is highly vulnerable to climate change, ranking poorly in readiness and vulnerability indices. Burundi is exposed to climate hazards such as rising temperatures, altered precipitation patterns, soil erosion, deforestation, and extreme weather events.

Smallholders in Burundi often don't employ best practices in managing their farmland, exacerbating their vulnerability. Without intervention, many smallholders use inefficient methods like broadcasting fertilizer and seeds, leading to issues such as overcrowding, runoff, compaction, and soil infertility. These practices, compounded by factors such as improper crop rotation and underuse of compost, worsen vulnerability to climate change by depleting soil nutrients and decreasing crop yields.

This project, “Scaling up Climate Resilience Solutions for Burundian Smallholders”, will address these issues — and bolster national-level climate resilience — by facilitating One Acre Fund’s increased services to 303k additional smallholder households by 2029, helping the organization to serve a total of 649k households. It will help these farmers adopt climate smart techniques, increase profits, and create resilience against changing conditions. The project will also lead to mitigating environmental impacts through smallholder agroforestry-related tree planting initiatives.

The GCF-funded project will ensure these services are sustained for years past the end of the project period. Through the provision of training services and farm inputs and products to farmers — combined with the annual recovery of farmer contributions at low levels of leakage — One Acre Fund (1AF) will help Burundian smallholders achieve bigger, more resilient harvests with less resources, increased profits, and increased assets in a cost-effective, sustainable manner. Because of the nature of how inputs are provisioned and reimbursed, these results will continue for years after the end of the project. The tree planting initiatives envisioned by this project will further contribute to farmers’ assets and contribute to climate mitigation through carbon sequestration.

This project will scale up the existing work of 1AF in Burundi, which has already proven its financial and operational feasibility. 1AF has operated in Burundi since 2012 and today serves over 290,000 smallholder households with its bundle of services: distribution of farm inputs / products at the colline level (see *definition of ‘colline’ on page 5*), provision of climate smart agricultural extension trainings to farmers and agroforestry support. These services create a proven impact on farmers profits and asset levels. Compared to non-members, and measured through quasi-experimental impact evaluations, 1AF member farmers see an average annual increase in profit of \$100 from farming activities, and are also equipped to accumulate \$400+ in additional assets over time, on average.<sup>1</sup> These results will be scaled through the project, which will result in more deeply entrenched climate outcomes. Additionally, this project has support from the Government of Burundi with which 1AF enjoys a strong collaborative relationship.

This pre-feasibility study includes: a country profile of Burundi, the climate rationale for this project, specific details on the project itself (as an overview and elaboration of the Full Proposal and Annex 2a Logical Framework), a summary of 1AF’s track record in Burundi, an overview of financial options, a description of farmer economics in Burundi, and the project’s redress mechanisms.

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<sup>1</sup> See Farmer Asset study outcomes on page 90

## 2 Country Profile

### 2.1 Country Overview

#### Geography

Burundi is a landlocked Central African country bordered by Tanzania, Rwanda, and the Democratic Republic of the Congo.<sup>2</sup> Located along Lake Tanganyika in the African Great Lakes region, Burundi covers an area of approximately 27,830 sq. km.<sup>3</sup> Burundi has 5 eco-climatic regions: the Imbo Plain, Mumirwa, the Congo-Nile Divide, the Central Plateaus, and the Kumoso and Bugesera Depressions. Its terrain is largely mountainous and hilly, although there are lowlands in the Depressions (North and East) as well as the plateaus in the eastern and central regions. The Imbo Plain, generally the lowest-lying part of the country, lies in the West, along the banks of Lake Tanganyika. The economic capital and largest city, Bujumbura, is located in this region.<sup>4</sup> Gitega, the country's administrative capital, is in the Central Plateaus.<sup>5</sup> Burundi's highest point is Mount Heha, at about 2,760 meters.<sup>6</sup>

The climate is generally warm and humid, with two rainy seasons: one falls between February and May, and the other between September and December. Average high temperatures hover around 25 degrees Celsius, with average lows at about 15 degrees Celsius. Temperatures are highest in the lowlands, while mountainous climates are mitigated by the elevation. Precipitation is heaviest in the mountainous regions, where annual rainfall averages 1600mm.<sup>7</sup> As such, much of Burundi's largely rural population lives in these areas, using the fertile volcanic soil found there to farm for their sustenance and livelihoods.<sup>8</sup>



<sup>2</sup> <https://www.countryreports.org/country/Burundi/geography.htm>

<sup>3</sup> <https://www.cia.gov/the-world-factbook/countries/burundi/#geography>

<sup>4</sup> <https://reliefweb.int/report/burundi/burundi-critical-corporate-initiative-climate-response-analysis-adaptation-december>

<sup>5</sup> <https://www.britannica.com/place/Gitega>

<sup>6</sup> <https://www.britannica.com/place/Mount-Heha>

<sup>7</sup> <https://reliefweb.int/report/burundi/burundi-critical-corporate-initiative-climate-response-analysis-adaptation-december>

<sup>8</sup> <https://www.cia.gov/the-world-factbook/countries/burundi/#geography>

*Fig. 1: Population density map of Burundi.<sup>9</sup>*

Burundi struggles heavily with deforestation; the total forested area has fallen from between 30-50% of the country's land area to approximately 11%.<sup>10</sup> Only 6.6% of the original forested area remains, while deforestation continues at an annual rate (as of 2011) of 1.4%.<sup>11</sup> Forests are cleared for use (such as construction materials) and to make room for expanded farmland. Farming is Burundi's main industry — by a wide margin — but farms are losing productivity due to the effects of global warming. This, in turn, leads farmers to clear forests in search of more arable land.<sup>12</sup>

## Administrative System

Burundi is a democratic presidential republic, wherein the President is both the Head of State and Head of Government.<sup>13</sup> The country's legislature has two chambers, the Senate and the National Assembly. The presidency is determined through a two-round election, and the winning candidate selects their vice-president, prime minister, and cabinet ministers.<sup>14</sup> Members of the 123-seat National Assembly and 39-seat Senate serve five-year terms; National Assembly districts are drawn based on proportional representation, and delegates are publicly elected.<sup>15</sup> Senators are chosen via an electoral college through "communal councils," which are 116 deliberative bodies situated throughout the country. Council membership is decided by direct election.<sup>16</sup>

Regarding administrative divisions, Burundi has 18 provinces, which are subdivided into 117 communes.<sup>17</sup> (Bujumbura does not have a communal council.) These communes are further divided into 2,638 *collines*, a term which translates to "hills."<sup>18</sup> These will change in 2025 as part of an administrative consolidation<sup>19</sup>.

<sup>9</sup> <http://www.geo-ref.net/m/burundi.png>

<sup>10</sup> <https://data.worldbank.org/indicator/ag.lnd.frst.zs?locations=bi>

<sup>11</sup> [www.globalforestwatch.org/dashboards/country/BDI/?category=summary](http://www.globalforestwatch.org/dashboards/country/BDI/?category=summary)

<sup>12</sup> <https://reliefweb.int/report/burundi/burundi-critical-corporate-initiative-climate-response-analysis-adaptation-december>

<sup>13</sup> <https://www.cia.gov/the-world-factbook/countries/burundi/#government>

<sup>14</sup> <https://constitutionnet.org/news/burundi-parliament-approves-vice-president-and-prime-minister-nominated-under-new-constitution>

<sup>15</sup> [https://www.indexmundi.com/burundi/legislative\\_branch.html](https://www.indexmundi.com/burundi/legislative_branch.html)

<sup>16</sup> <https://www.worldbank.org/en/country/burundi/publication/reforming-local-governance-in-burundi-to-improve-access-to-social-services-in-rural-communities>

<sup>17</sup> [https://www.nationsonline.org/oneworld/map/burundi\\_map2.htm](https://www.nationsonline.org/oneworld/map/burundi_map2.htm)

<sup>18</sup> <https://www.gazellefoundation.org/blog/2021/3/25/province-and-colline-of-burundi>

<sup>19</sup> <https://regionweek.substack.com/p/why-burundi-will-only-have-5-provinces>



Figure 2: Map of provinces and communes in Burundi<sup>20</sup>

## Urban and Rural Development

Though Burundi has one of the highest population densities in Africa,<sup>21</sup> that population is overwhelmingly rural.<sup>22</sup> As of 2022, roughly 14% of the total populace lived in urban areas;<sup>23</sup> however, based on measurements taken the following year, the country is rapidly urbanizing with an annual urban population growth rate of 5.43%.<sup>24</sup> Still, most Burundians work in agriculture; a sector that employs approximately 86% of the population<sup>25</sup> — this is the highest rate of agricultural employment in the world.<sup>26</sup> Based on 1AF data, many of these agricultural workers are smallholder farmers, mostly cultivating land totaling less than 0.4 hectares.<sup>27</sup> Moreover, based on the same data, 83% of farmers rely on their farms for over half their annual incomes as well as for sustenance.

Meanwhile, despite the rapid urbanization, Burundi lacks urban industry. Manufacturing constitutes just 10% of the national GDP, with only about 40,000 people employed in industrial settings; many of these jobs are in food processing.<sup>28</sup> As Burundi's urban population grows, so too does the need for jobs in major cities like Bujumbura, Gitega, and Ngozi. Otherwise, Burundi risks facing high rates of youth unemployment.<sup>29</sup>

<sup>20</sup> <https://www.unocha.org/publications/map/burundi/reference-map-burundi-administrative-provinces-and-communes>

<sup>21</sup> <https://www.worldatlas.com/articles/african-countries-by-population-density.html>

<sup>22</sup> <https://www.cia.gov/the-world-factbook/countries/burundi/#geography>

<sup>23</sup> <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=BI>

<sup>24</sup> <https://www.cia.gov/the-world-factbook/countries/burundi/#people-and-society>

<sup>25</sup> <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=BI>

<sup>26</sup> <https://worldpopulationreview.com/country-rankings/employment-in-agriculture-by-country>

<sup>27</sup> Some sources, such as the International Fertilizer Development Center, determine the usual farm size to be 0.5 hectares.

<sup>28</sup> <https://ifdc.org/2022/04/21/climate-change-a-vulnerability-for-burundian-small-and-large-scale-farmers/>

<sup>29</sup> <https://www.ruskinfelix.com/country-highlights/bdi/burundis-manufacturing-advancement-catalyzing-growth/>



Currently, urban areas in Burundi rely on low to mid-rise housing developments. It is possible that, absent urban planning to increase housing density, incoming city residents will build and inhabit informal housing units.<sup>30</sup>

## Economy

Burundi's economy is largely agrarian, with roughly 86% of the population employed in agriculture. However, only about 27.6% of the total GDP comes from this sector; the plurality of economic activity is in services. Manufacturing/industry constitutes slightly above 10% of the GDP.<sup>31</sup> The main exports are gold, coffee, tea, and mineral ores.<sup>32</sup> The economy is growing at a rate of about 2.7% annually, although this is projected to grow to 3.8% in 2024. However, inflation is very high, at 27.3% in 2023.<sup>33</sup> In 2021, the Burundi Institute of Statistics and Economic Studies reported that 55.7% of individuals living in rural areas fell below the Burundi government definition of poor<sup>34</sup>. However, about 87% of the population lives below the World Bank's poverty line of US \$2.15 per day.<sup>35</sup>

## Demographics

Burundi has a population of approximately 13 million people, growing at a rate of about 2.7% annually.<sup>36</sup> The country has one of the highest birth rates in the world,<sup>37</sup> at about 36 births per 1000 people (based on data from 2023).<sup>38</sup> Burundi is a young country; 42.7% of the populace is aged 14 or under. Only 3.3% of Burundi is aged 65.

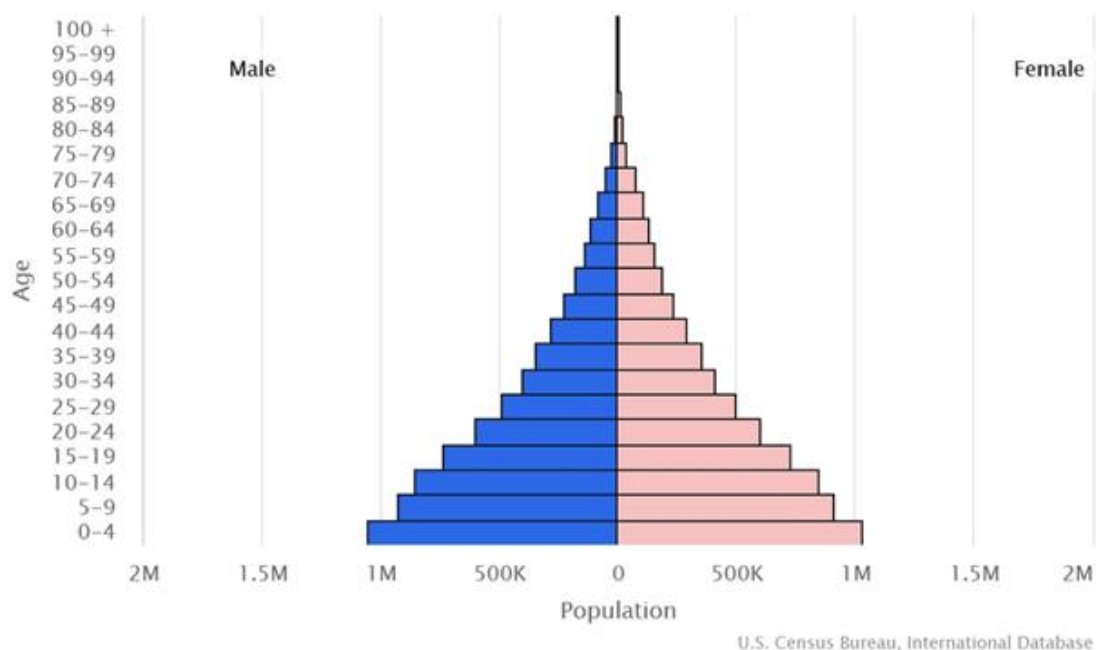


Figure 3: 2023 population pyramid in Burundi

<sup>30</sup> [https://link.springer.com/chapter/10.1007/978-3-030-96206-7\\_23](https://link.springer.com/chapter/10.1007/978-3-030-96206-7_23)

<sup>31</sup> <https://www.statista.com/statistics/451426/share-of-economic-sectors-in-the-gdp-in-burundi/>

<sup>32</sup> <https://oec.world/en/profile/country/bdi>

<sup>33</sup> <https://www.worldbank.org/en/country/burundi/overview>

<sup>34</sup> <https://www.iwacu-burundi.org/isteebu-presque-50-de-la-population-burundaise-est-pauvre/>

<sup>35</sup> <https://data.worldbank.org/indicator/SI.POV.DDAY?end=2020&locations=BI&start=2020&view=bar>

<sup>36</sup> <https://data.worldbank.org/indicator/SP.POP.GROW?locations=BI>

<sup>37</sup> <https://worldpopulationreview.com/country-rankings/birth-rate-by-country>

<sup>38</sup> <https://www.macrotrends.net/global-metrics/countries/BDI/burundi/birth-rate>



The four biggest ethnic groups in Burundi are Hutus, Tutsis, Twa People<sup>39</sup>, and South Asians. The official languages are Kirundi, French, and English; English is the least spoken of the three. Swahili is spoken in the country as well, although it is not an official language. The majority of Burundians, at about 59%, are Catholic, followed by Protestants at around 35%. A significant minority of Muslims live in Burundi as well, constituting 3.4% of the population.<sup>40</sup>

## 2.2 Food security

Although the majority of Burundi's population is engaged in agricultural work, the country experiences high rates of food insecurity. According to 2019 estimates, 86% of Burundians are dependent on agriculture; however, Burundi faces low per-farm productivity combined with a low total arable land area.<sup>41</sup> Overall, WFP classified 41.2% of the country's population (5.4 million people) as food insecure in 2023 and noted that this a value which could worsen over time.<sup>42</sup> The Global Hunger Index categorizes the hunger situation in Burundi as "alarming"<sup>43</sup>. In the peak of the lean period from April-May 2023, 2.3 million people experienced high levels of acute food insecurity.<sup>44</sup> Burundi also has the world's highest rate of chronic childhood malnutrition, at 55.9% and comparable rates of stunting<sup>45</sup>; this is particularly concerning given the demographic proportion of children in the country mentioned above, and what the evidence clearly shows the impact of stunting is on long-term child cognitive development<sup>46</sup>.

The causes of this lack of food security are varied. Smallholders are faced with several challenges including small land sizes (less than half a hectare on average) and insufficient access to quality inputs, extension services, financial services, and technology. Moreover, poor macroeconomics are a contributing factor. Year-on-year inflation reached 32.8% in March 2023, and 49% specifically for food prices. Inflation has decreased but still constrains smallholders ability to access adequate food and basic needs. Fuel, food (both domestically produced and imported), and raw material prices have increased. A growing trend of reliance on imports for food and key commodities has exposed the Burundian food markets to external shocks and inflated prices.<sup>47</sup> These factors worsen smallholder incomes and purchasing power which constrain access to nutritious diets.<sup>48</sup>

Food insecurity risk in Burundi is exacerbated by global warming and its felt effects, such as landslides and floods.<sup>49</sup> Moreover, considering that most of Burundi's farmers are smallholders living in rural areas, food insecurity risk is exacerbated by migration flows — both internal and international.<sup>50</sup> Burundi is host to approximately 56,000 refugees fleeing violence in the neighboring Democratic Republic of the Congo, as well as about 200,000 repatriated Burundian citizens. This equates to roughly 2% of the country's total population. Many of these migrants live in camps and are unable to farm for themselves, making them reliant on outside aid and causing potential strain on Burundi's vulnerable food system.<sup>51</sup>

<sup>39</sup> See Indigenous Peoples section

<sup>40</sup> <https://www.cia.gov/the-world-factbook/countries/burundi/#people-and-society>

<sup>41</sup> <https://www.wfpusa.org/articles/farmersandfoodwasteinburundi/> WFP

<sup>42</sup> [2023 Annual Report](#) WFP

<sup>43</sup> [Global Hunger Index - Burundi](#)

<sup>44</sup> [Burundi Country Strategic Plan 2024-2027](#) WFP

<sup>45</sup> [Country Brief January 2024](#) WFP

<sup>46</sup> [Economics and Human Biology: Early Childhood Stunting and Later Life Outcomes](#)

<sup>47</sup> [Profil des systems alimentaires](#) - Burundi FAO

<sup>48</sup> [Burundi Country Strategic Plan 2024-2027](#) WFP

<sup>49</sup> <https://www.wfp.org/countries/burundi>

<sup>50</sup> [https://executiveboard.wfp.org/document\\_download/WFP-0000135915](https://executiveboard.wfp.org/document_download/WFP-0000135915)

<sup>51</sup> [https://docs.wfp.org/api/documents/WFP-0000157015/download/?\\_ga=2.249323726.87855982.1712035195-518846728.1712035192](https://docs.wfp.org/api/documents/WFP-0000157015/download/?_ga=2.249323726.87855982.1712035195-518846728.1712035192)

Finally, food insecurity in Burundi is made worse by post-harvest loss and lack of arable land. While slightly less than 50% of Burundi's land is arable (a relatively high percentage internationally<sup>52</sup>) with 86% of the population of 13 million working in agriculture, the average land available to a household is small at around half a hectare.<sup>53</sup> Meanwhile, post-harvest loss aggravates low farm productivity.<sup>54</sup> For example, approximately 18% of corn grown in Burundi is lost post-harvest.<sup>55</sup>

## 2.3 Agriculture sector

The overwhelming majority of Burundians — roughly 86% of the population as of 2022 — are engaged in agricultural work<sup>56</sup> on 85% of the 2.6 million hectares of arable land in Burundi.<sup>57</sup> Per 2021 data, Burundi is the country with the highest rate of employment in the agriculture sector.<sup>58</sup> Most of these people operate as smallholder farms in rural areas, dependent on their land for both sustenance and income. As per 1AF research, 83% of Burundian farmers fit this description. Moreover, 90% of Burundian *households* (note: “households” is not meant to denote individual citizens) practice sustenance farming on their small parcels of land.<sup>59</sup> These farms are rain-fed, meaning they do not rely on irrigation;<sup>60</sup> this also makes them susceptible to adverse weather conditions such as drought, which can delay planting and affect germination.<sup>61</sup> Over 55% of Burundi's agricultural workforce is women, which is the eighth highest percentage worldwide.<sup>62</sup>

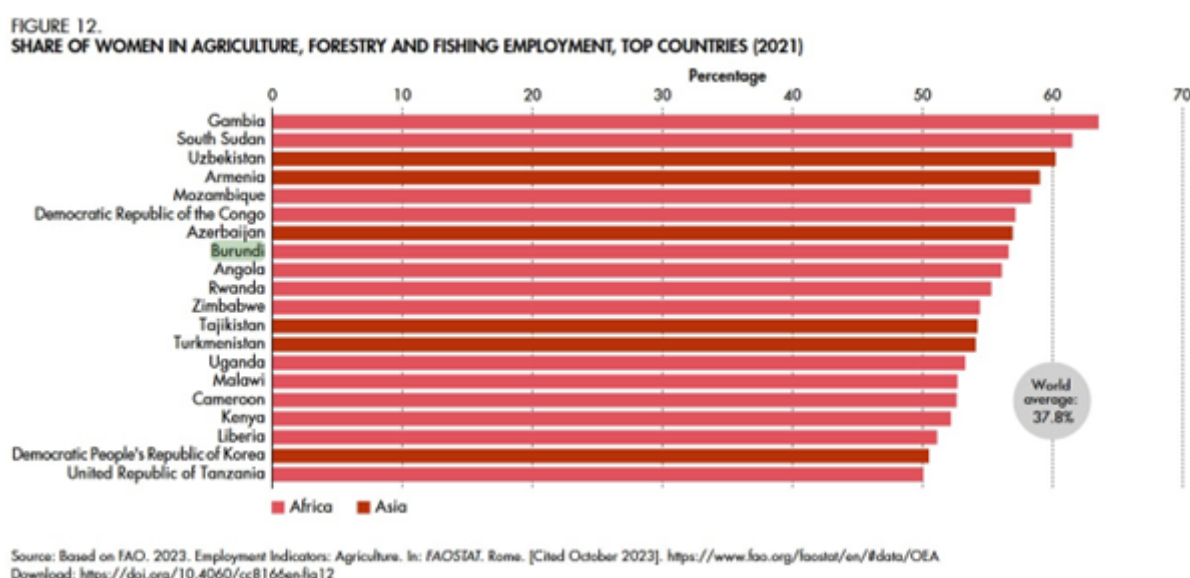


Figure 3: Countries ranked by share of women in their agricultural workforce

<sup>52</sup> [https://data.worldbank.org/indicator/AG.LND.ARBL.ZS?locations=BI&most\\_recent\\_value\\_desc=true](https://data.worldbank.org/indicator/AG.LND.ARBL.ZS?locations=BI&most_recent_value_desc=true)

<sup>53</sup> [Profil des systèmes alimentaires](#) - Burundi FAO

<sup>54</sup> Post-harvest loss refers to food waste occurring after harvest. It can take the form of spoilage, field rot due to adverse weather conditions, and damage during transportation. <https://www.wfpusa.org/articles/farmersandfoodwasteinburundi/>

<sup>55</sup> <https://www.aphlis.net/en/data/tables/dry-weight-losses/BI/all-crops/2022?metric=prc>

<sup>56</sup> <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=BI>

<sup>57</sup> [Burundi Country Strategic Plan 2024-2027](#) WFP

<sup>58</sup> <https://worldpopulationreview.com/country-rankings/employment-in-agriculture-by-country>

<sup>59</sup> <https://link.springer.com/content/pdf/10.1007/s10113-022-02018-7.pdf>

<sup>60</sup> <https://link.springer.com/content/pdf/10.1007/s10113-022-02018-7.pdf>

<sup>61</sup> <https://fews.net/east-africa/burundi>

<sup>62</sup> <https://www.fao.org/3/cc8166en/cc8166en.pdf>

Subsistence farmers grow staple crops such as maize, beans, rice, and cassava.<sup>63</sup> Burundi does grow crops for export as well, namely cash crops such as coffee, tea, and tobacco.<sup>64</sup> However, the total volume of cash crops produced is substantially lower than that of subsistence staple crops.<sup>65</sup> Maize, beans, rice, and wheat dominate Burundian agriculture, taking up 96% of the total area harvested according to 2020 data from the Food and Agriculture Organization (FAO).<sup>66</sup>

Crops are planted and primarily grown during Burundi's two rainy seasons; the first falls between February and July, while the second lasts from September to January.<sup>67</sup> Crops are planted in September and October for harvest in December and January — this is known as the Season A harvest.<sup>68</sup> In other words, crops sown in September 2023 and harvested in December 2023 are considered “2024 A” crops. Season B crops — on the other hand — are planted in February and March, to be harvested in May, June, and July.

The remaining 15% of crops are harvested during Season C, a shorter dry-season agricultural season mostly limited to valleys irrigated by rivers and streams. Most staple crops (maize and beans) are grown during Seasons A and B, as seen in Figure 4.

In the 2024 B season, planting was delayed due to lack of rainfall, which is expected to adversely impact total 2024 B outputs.<sup>69</sup> This is an immediate concern, as Season B is the largest harvest, constituting about 50% of the country's annual crop yields, compared to 35% thereof in Season A.

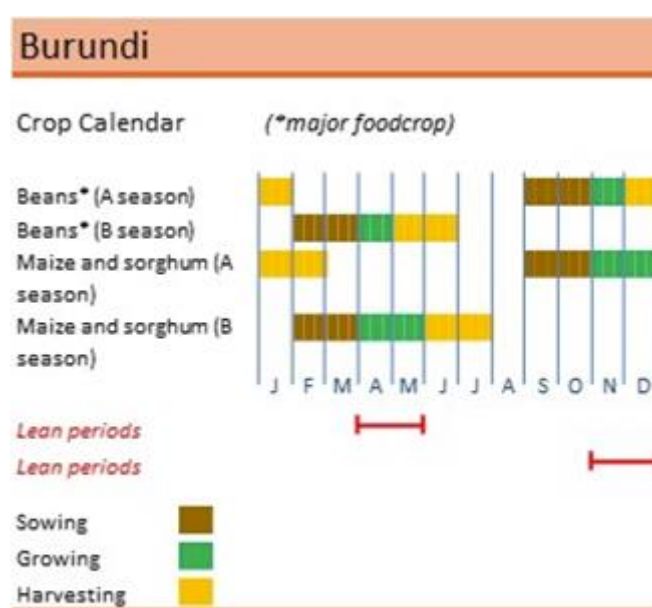


Figure 4: Staple crop calendar for Burundi.<sup>70</sup>

<sup>63</sup> [https://www.worldfoodprize.org/documents/filelibrary/youth\\_programs/2019\\_gyi\\_papers/EndersLaurie\\_7F38F17D0266F.pdf](https://www.worldfoodprize.org/documents/filelibrary/youth_programs/2019_gyi_papers/EndersLaurie_7F38F17D0266F.pdf)

<sup>64</sup> <https://oec.world/en/profile/country/bdi>

<sup>65</sup> <https://www.fao.org/faostat/en/#data/QCL>

<sup>66</sup> <https://ageconsearch.umn.edu/record/317017/files/Burundi%20Country%20Report%202021.pdf>

<sup>67</sup> <https://reliefweb.int/report/burundi/burundi-critical-corporate-initiative-climate-response-analysis-adaptation-december>

<sup>68</sup> <https://www.fao.org/giews/countrybrief/country.jsp?code=BDI>

<sup>69</sup> <https://fews.net/east-africa/burundi/key-message-update/march-2024>

<sup>70</sup> <https://www.fao.org/giews/countrybrief/country.jsp?code=BDI>

## 2.4 Banking and MFI sector

Burundi's banking sector has fourteen commercial banks, most of which are privately owned. Three of these banks began operation during or after 2014, reflecting Burundi's low barriers to entry in its financial sector. Individual banks generally specialize in specific lending sectors. However, they maintain diverse portfolios, and the International Monetary Fund (IMF) does not consider them to be at risk of over-segmentation.<sup>71</sup> Burundi's banks are as follows:<sup>72</sup>

1. Banque Commerciale du Burundi (Burundi Commercial Bank) (BANCOBU)
2. Banque de Gestion et de Financement (Bank of Management and Financing) (BGF)
3. Banque Burundaise pour le Commerce et l'Investissement (Burundi Bank of Commerce and Investment) (BBCI)
4. Banque de Credit de Bujumbura (Bujumbura Credit Bank) (BCB)
5. FinBank Burundi (FINBANK)
6. Interbank Burundi (IBB)
7. Ecobank Burundi (ECOBANK)
8. Diamond Trust Bank Burundi (DTB)
9. KCB Burundi (KCB)
10. CRDB Bank Burundi (CRDB)
11. The Women's Investment and Development Bank (BIDF)
12. Banque d'investissement pour les Jeunes (BIJE)
13. Banque de l'Habitat du Burundi (Burundi Housing Bank) (BHB)
14. United Bank for Africa (UBA)<sup>73</sup>

While commercial banks are engaged in capital flows and foreign exchange, control thereof is vested heavily in the country's Central Bank.<sup>74</sup> Alongside the Central Bank, Burundi has several public sector financial institutions, such as *Banque Nationale de Développement Économique* (National Bank of Development Economics).<sup>75</sup> While Burundi's financial sector has weathered international crises, its banks are vulnerable to external shocks — particularly from coffee and oil prices, which constitute major Burundian export and import industries respectively.<sup>76</sup> Moreover, while Burundi's banking industry has remained profitable through internal crises as well, these profits obscure serious concerns in the sector. Namely, banks operate a narrow credit market, which excludes low and middle-income Burundians in favor of the country's upper classes.<sup>77</sup> In fact, most of the populace is unbanked.<sup>78</sup> While exact numbers are

<sup>71</sup> <https://www.elibrary.imf.org/view/journals/002/2022/258/article-A004-en.xml>

<sup>72</sup> <https://web.archive.org/web/20191220203851/https://www.brb.bi/fr/content/syst%C3%A8me-financier-burundais>

<sup>73</sup> <https://www.globalbankingandfinance.com/list-of-banks-in-burundi/>

<sup>74</sup> <https://www.elibrary.imf.org/view/journals/002/2022/258/article-A004-en.xml>

<sup>75</sup> <https://www.globalbankingandfinance.com/list-of-banks-in-burundi/>

<sup>76</sup> <https://openknowledge.worldbank.org/server/api/core/bitstreams/e17deac7-98c2-56e1-ac56-3ec04646ff20/content>

<sup>77</sup> [https://www.nber.org/system/files/working\\_papers/w18289/w18289.pdf](https://www.nber.org/system/files/working_papers/w18289/w18289.pdf)

<sup>78</sup> <https://thefintechtimes.com/burundi-fintech-landscape-and-potential-in-the-worlds-poorest-country/>

difficult to find, some sources suggest that only 7% of Burundians had bank accounts as of 2015.<sup>79</sup> The same year, World Bank data indicates even lower values: 3.3% of Burundians were banked in 2015.<sup>80</sup>

Lack of financial access is compounded by lack of communications access as well. As of 2022, only approximately 58% of people in Burundi had cellular phone subscriptions.<sup>81</sup> This prohibits much of the country from accessing mobile banking, meaning those with bank accounts must generally use in-person services. Unfortunately, most physical bank branches are in the country's major urban centers. For example, KCB Burundi has four locations in Bujumbura and zero upcountry.<sup>82</sup> Similarly, CRDB Bank Burundi has three branches — and all of its off-site ATMs — in Bujumbura, one branch in Ngozi, and no branches elsewhere.<sup>83</sup>

## 2.5 Economic issues

Burundi's Gross Domestic Product (GDP), as of 2022, is US\$ 3,378.72 million, placing it between the Danish semi-autonomous territory of Greenland and European microstate Andorra on the World Bank's ranking.<sup>84</sup> The GDP grew by 1.8% in 2022 (the most recent year for which data is available from the World Bank),<sup>85</sup> the third lowest growth rate in East Africa, above only Malawi and South Sudan and well below the regional average of 3.84%.<sup>86</sup> However, Burundi's GDP growth is expected to rise in 2024, to 3.8%.<sup>87</sup>

<sup>79</sup> [https://www.fstech.co.uk/fst/WorldRemit\\_Burundi\\_Mobile\\_Money\\_EcoCash.php](https://www.fstech.co.uk/fst/WorldRemit_Burundi_Mobile_Money_EcoCash.php)

<sup>80</sup> <https://fred.stlouisfed.org/series/DDAI01BIA642NWDB>

<sup>81</sup> <https://www.statista.com/statistics/501965/mobile-cellular-subscriptions-per-100-inhabitants-in-burundi/>

<sup>82</sup> <https://bi.kcbgroup.com/en/ways-of-banking/branches>

<sup>83</sup> <https://crdbbank.co.bi/en/about-us/locations/>

<sup>84</sup> [https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=BI&most\\_recent\\_value\\_desc=false](https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=BI&most_recent_value_desc=false)

<sup>85</sup> <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=BI>

<sup>86</sup> [https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2022&locations=BI-TZ-RW-KE-UG-SO-SS-ET-ER-DJ-MW-ZM-ZW-MZ-MG-KM-SC-MU&most\\_recent\\_value\\_desc=true&start=2022&view=bar](https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2022&locations=BI-TZ-RW-KE-UG-SO-SS-ET-ER-DJ-MW-ZM-ZW-MZ-MG-KM-SC-MU&most_recent_value_desc=true&start=2022&view=bar)

<sup>87</sup> <https://www.worldbank.org/en/country/burundi/overview>

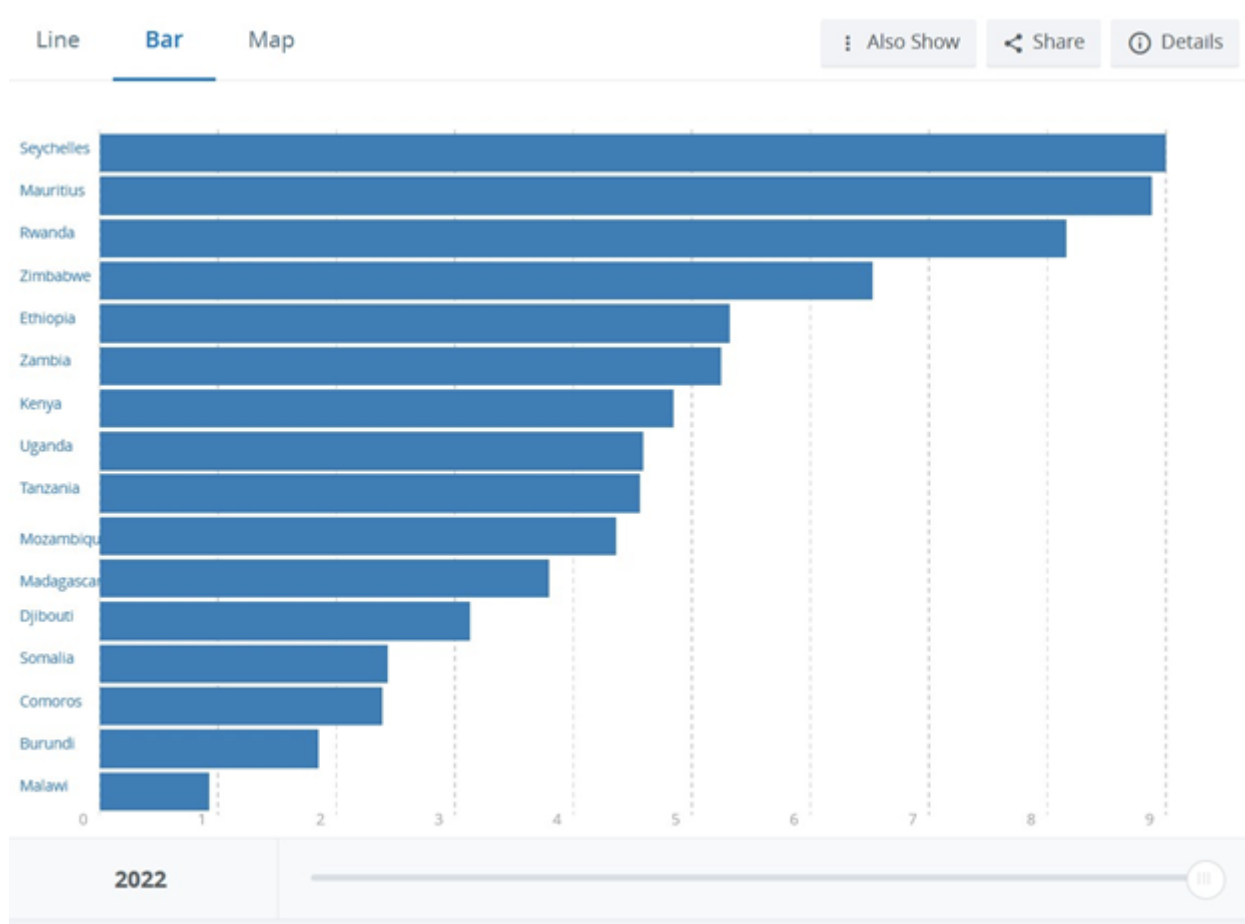


Figure 5: East African countries' GDP growth in 2022<sup>88</sup>

Burundi is also a low-income country, with a per capita Gross National Income (GNI) of US\$ 240—the lowest internationally, based on 2022 values.<sup>89</sup> Based on most recent available data, roughly 51.4% of the populace lives below Burundi's national poverty line.<sup>90</sup>

In-country poverty is exacerbated by Burundi's struggles with foreign exchange (hereinafter: forex) and lack of incoming finance, development assistance, and aid. Burundi's central bank banned foreign exchange bureaus nation-wide from February 2020 through October 2022. Ostensibly, this ban was implemented to shut down currency brokers violating the country's official exchange rate. Burundi lifted its regulations against foreign exchange bureaus after the parallel exchange market led to a 70% premium against the US Dollar.<sup>91</sup>

Similarly, Burundi has relatively few imports and exports. It is the 190<sup>th</sup> ranked country (as of 2022) in terms of total export value; most of its exports are gold and mineral ores, coffee, and tea. Burundi's import economy is also in the bottom half globally, with the main imports being refined petroleum, fertilizer, and medication.<sup>92</sup>

Finally, Burundi struggles with inflation. In 2023, inflation surged to 27.1%, compared to 18.8% the year before. World Bank predictions indicate that inflation could fall again in 2024, due to lower food and

<sup>88</sup> [https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2022&locations=BI-TZ-RW-KE-UG-SO-SS-ET-ER-DJ-MW-ZM-ZW-MZ-MG-KM-SC-MU&most\\_recent\\_value\\_desc=true&start=2022&view=bar](https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2022&locations=BI-TZ-RW-KE-UG-SO-SS-ET-ER-DJ-MW-ZM-ZW-MZ-MG-KM-SC-MU&most_recent_value_desc=true&start=2022&view=bar)

<sup>89</sup> [https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=BI&most\\_recent\\_value\\_desc=false](https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=BI&most_recent_value_desc=false)

<sup>90</sup> <https://www.iwacu-burundi.org/isteebu-presque-50-de-la-population-burundaise-est-pauvre/>

<sup>91</sup> <https://www.elibrary.imf.org/view/journals/002/2022/258/article-A003-en.xml>

<sup>92</sup> <https://oec.world/en/profile/country/bdi>

commodity prices.<sup>93</sup> Luckily, the current high inflation rates are coupled with increased public spending, as Burundi upped its national budget by 63.9% in 2023. This reflects governmental ambition in agriculture and social welfare. However, the Burundian Franc depreciated by 38% against the United States Dollar the same year, which will likely lead to rising import costs and could potentially reverse or lessen the World Bank's predicted decrease in inflation.<sup>94</sup>

## 2.6 Human Development Index

Burundi is ranked 187<sup>th</sup> (out of 193 countries) in the 2023-24 Human Development Report. This value reflects Burundi's low gross national income (GNI) per capita. The country is considered to have "Low Human Development," per the most recent Report. However, Burundi's Human Development Index (HDI) score has improved since 1990, with a substantial increase between 2000 and 2010.<sup>95</sup> Burundi is making improvements, especially in early childhood education.<sup>96</sup> Burundians are expected to spend 10 years in school, above the Low HDI country average and well above every other State in the Human Development Report's final ten spots other than Mozambique.<sup>97</sup> Unfortunately, due to high rates of poverty, Burundi struggles with education rates among adolescents. Due to nationally high levels of indigence, children may feel compelled to leave school early in order to work, usually on their family's farm.<sup>98</sup>

## 2.7 Policy and programs

### 2.7.1 National

#### *Nationally Determined Contribution (NDC)*

Burundi released its updated NDC in October 2021. Through this NDC, Burundi commits to a 3% reduction in greenhouse gas emissions by 2030, compared to a "business as usual" baseline.<sup>99</sup> Regarding its agricultural sector, Burundi commits to planting native and indigenous plants, promoting bio-pesticides to reduce contamination, and developing farming practices that mitigate the effects of climate change which aligns with the objectives of this project. On the point of the development of farming practices, the country commits to having potential practices developed by 2025. Success will be measured by the number of mitigating cultivation measures implemented.<sup>100</sup>

#### *National Development Plan of Burundi 2018-2027*

This project is well aligned with two of the main strategic goals of Burundi's National Development Plan.

- *Orientation stratégique 1: Boosting growth sectors*

This objective is focused on economic growth, and recognizing the majority of the economy is the agricultural sector, planning actions for intensive modernized agriculture to ensure food security and

<sup>93</sup> <https://www.worldbank.org/en/country/burundi/overview>

<sup>94</sup> [https://www.unicef.org/burundi/media/4546/file/ENG\\_National%20Budget%20Brief%202023-24.pdf](https://www.unicef.org/burundi/media/4546/file/ENG_National%20Budget%20Brief%202023-24.pdf)

<sup>95</sup> <https://hdr.undp.org/system/files/documents/global-report-document/hdr2023-24reporten.pdf>

<sup>96</sup> <https://www.unicef.org/burundi/education>

<sup>97</sup> <https://hdr.undp.org/system/files/documents/global-report-document/hdr2023-24reporten.pdf>

<sup>98</sup> <https://www.unicef.org/burundi/education>

<sup>99</sup> <https://climatepolicydatabase.org/policies/intended-nationally-determined-contribution-indc-burundi-2021>

<sup>100</sup> <https://unfccc.int/sites/default/files/NDC/2022-06/CDN%20%20%20Burundi%20ANNEXE%201.pdf?download>



promote improved financial outcomes for the sector. The proposed project is well aligned to Axe 1: “Development of agriculture, animal husbandry, and strengthening food security”.

- *Orientation Stratégique 3*: Protecting the environment, adapting to climate change and improving land-use planning

This objective is meant to ensure sustainable environmental management, mitigate climate change, and improve land use planning.<sup>101</sup> The proposed project is well aligned with Axes, 9 and 11 : “Sustainable environmental management” (sub objective: preserving and restoring terrestrial ecosystems, combating desertification) and, “Climate change and risk management” (sub objective Promoting development resilient to the adverse effects of climate change).<sup>102</sup>

#### *Vision Burundi Pays Émergent en 2040 et Pays Développé en 2060*

In this vision, the government aims to improve living conditions and farmers incomes through agricultural modernization and productivity increases<sup>103</sup>, an objective to which this project is well aligned.

#### *Environmental, Agricultural and Livestock Policy 2020-2027*

This project is well aligned to the Environment, Agricultural, and Livestock policy. Adopted in November 2020, the objective of this policy is to, among other goals, contribute to environmental protection within Burundi while allowing for better management of State-owned lands.<sup>104</sup> The policy, known as DOPEAE 2020, has five specific objectives:

1. Sustainable increase in livestock, fisheries, and agricultural production,
2. Expanding agricultural area through reclamation of public lands,
3. Valorizing production and facilitating market access,
4. Institutionally strengthening sectoral players, and
5. Environmental protection.

Some of the main expected results include, but are not limited to, an annual 5% increase in staple crop production; 90% of wetlands, lakes, and rivers protected; and national forest cover increased to 10%.<sup>105</sup>

#### *Burundi's REDD+ National Strategy and Action Plan*

The goal of this strategy is, by 2027, for Burundi to build its forest carbon stock.<sup>106</sup> In other words, Burundi plans to build its capacity to store carbon in its forested areas.<sup>107</sup> However, Burundi is currently losing forest cover; the REDD+ plan indicates a revised National Forestry Strategy was approved in 2021, which would

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<sup>101</sup> [https://climate-laws.org/document/national-plan-for-the-development-of-burundi-2018-2027-pnd-burundi-2018-2027\\_e36c](https://climate-laws.org/document/national-plan-for-the-development-of-burundi-2018-2027-pnd-burundi-2018-2027_e36c)

<sup>102</sup> [Plan National de développement du Burundi 2018-2027](#)

<sup>103</sup> <https://finances.gov.bi/index.php/2023/12/15/vision-burundi-pays-emergent-en-2040-et-pays-developpe-en-2060/>

<sup>104</sup> <https://www.fao.org/burundi/actualites/detail-events/fr/c/1638375/>

<sup>105</sup> <https://faolex.fao.org/docs/pdf/bur223883.pdf>

<sup>106</sup> [https://cdn.climatepolicyradar.org/navigator/BDI/2019/burundi-s-redd-national-strategy-and-action-plan\\_0a25b8f831a51528067e8b9fb35b8f85.pdf](https://cdn.climatepolicyradar.org/navigator/BDI/2019/burundi-s-redd-national-strategy-and-action-plan_0a25b8f831a51528067e8b9fb35b8f85.pdf)

<sup>107</sup> <https://www.canr.msu.edu/news/carbon-fluxes-and-carbon-stocks>



childhood malnutrition in Burundi's northern provinces by training families in nutrition and healthy dietary practices. The project also distributes seeds and plants to roughly 6000 families and gives them access to clean food storage facilities. The total cost is about US\$ 115 million, of which roughly \$37.5 comes from IFAD and approximately \$10 million comes from GCF. This project will run until 2025.<sup>112</sup>

*International Fertilizer Development Center (IFDC)*: IFDC operated the “Project Supporting the Agricultural Productivity in Burundi” (*Projet d'Appui à la Productivité Agricole au Burundi*)—or, PAPAB—from 2015 through 2019. The project, funded by the Netherlands and implemented through local partnerships, aimed to sustainably increase food production in Burundi.<sup>113</sup> Per IFDC, PAPAB improved conditions for thousands of farming households in Burundi through increased enrollment in and technical support for Burundi's National Fertilizer Subsidy Programme (PNSEB). This project also helped farmers to establish Integrated Farming Plans (PIPs), with 59,575 households implementing one. 80% of farmers with PIPs claim to have significantly increased their income over the course of the PAPAB's duration. The project officially concluded in May 2020.<sup>114</sup>

IFDC also operates the Private Seed Sector Development (PSSD) project, ongoing since 2018. This project is intended to incentivize local and international seed multipliers to expand operations in Burundi. Currently, the PSSD is working with 178,000 Burundian farming families, through these local and international seed multipliers.<sup>115</sup> IFDC also maintains presence in Burundi, such as by coordinating and hosting events.<sup>116</sup>

*International Monetary Fund (IMF)*: On 17 July 2023, IMF approved a 38-month Extended Credit Facility arrangement with Burundi. This arrangement, worth US\$ 271 million, immediately dispersed about US\$ 62.6 million. It is meant to protect Burundi from financial shocks as the government undertakes monetary policy reform to reduce debt vulnerability and recalibrate the exchange rate. One of these commitments is to unify the official and parallel exchange markets, which could result in a devaluation of the Burundian Franc on international markets.<sup>117</sup> IMF held discussions for its first review of the arrangement in January 2024.<sup>118</sup>

*World Bank*: The World Bank has approved no fewer than 137 total projects in Burundi.<sup>119</sup> Of these, 33 are related to agriculture, livestock, forestry, or agri-business in some capacity. Most of these projects have been closed; the three remaining active are as follows:

- Burundi Landscape Restoration and Resilience Project,
- Local Development for Jobs Project, and
- Additional Financing for the Burundi Landscape Restoration and Resilience Project.

This last project, the “Burundi Landscape Restoration and Resilience Project” aims to restore land productivity in degraded areas. It does so through technical assistance and training, landscape restoration in targeted collines in Bujumbura Rural and Muyinga, and improved management of protected areas. These protected areas are mainly forests. The project has been ongoing since 2018, with an original

<sup>112</sup> <https://www.ifad.org/en/web/operations/-/project/2000001146>

<sup>113</sup> <https://ifdc.org/projects/supporting-agricultural-productivity-in-burundi-papab/>

<sup>114</sup> [https://ifdc.org/wp-content/uploads/2020/09/PAPAB\\_EN\\_web-corrected2.pdf](https://ifdc.org/wp-content/uploads/2020/09/PAPAB_EN_web-corrected2.pdf)

<sup>115</sup> <https://ifdc.org/projects/private-seed-sector-development-pssd/>

<sup>116</sup> <https://ifdc.org/2023/03/09/ifdc-workshop-in-burundi-celebrates-international-womens-day/>

<sup>117</sup> <https://www.imf.org/en/News/Articles/2023/07/17/pr23266-burundi-imf-executive-board-approves-a-38-month-arrangement-under-the-ecf-for-burundi>

<sup>118</sup> <https://www.imf.org/en/News/Articles/2024/01/22/pr2419-burundi-imf-staff-conducted-discussions-for-the-first-review-under-ecf-arrangement>

<sup>119</sup> [https://projects.worldbank.org/en/projects-operations/projects-list?countrycode\\_exact=BI&os=0](https://projects.worldbank.org/en/projects-operations/projects-list?countrycode_exact=BI&os=0)

financial commitment of US\$30 million.<sup>120</sup> A further US\$ 6 million in financing was approved in 2021, to be paid by September 2024.<sup>121</sup>

Meanwhile, the “Local Development for Jobs Project,” also established in 2018, will conclude in June 2024. This project revolves around improvements to infrastructure, including in vulnerable rural areas. It also features a disaster risk reduction component, through its work on improving emergency responses in Burundi. The financial commitment is US\$ 50 million.<sup>122</sup>

European Union (EU): The EU and associated in-country Member States are collectively the largest public financier in Burundi (as of 2021). EU project financing in Burundi, between 2015 and 2021, totaled US\$ 908.2 million. These projects focused on several key sectors, including infrastructure and rural development.<sup>123</sup> In 2021, the EU launched its Multiannual Indicative Programme for Burundi, the first stage of which runs until 2024. This Programme targets Burundi’s agricultural sector by developing sustainable and equitable value chains. The aim is to establish sustainable, green job growth, and the EU has allocated 194 million EUR towards this project.<sup>124</sup> Finally, the EU has mobilized 83 million EUR for regional land use projects such as NaturAfrica, which is meant to conserve the Kibira-Nyungwe transboundary ecological corridor.<sup>125</sup>

Belgium: The Belgium government has maintained a post-colonial developmental presence in Burundi for over 50 years, largely through its development agency, Enabel. Enabel considers agricultural development to be a key area of focus. Belgium works to educate farmers in best practices, while also supporting micro agri-enterprise such as smallholder farms.<sup>126</sup> Currently, Enabel has one active agricultural project in Burundi: “Institutional and Operational Support Program for the Agricultural Sector” (*Programme d'Appui Institutionnel et Opérationnel au Secteur Agricole*, PAIOSA).<sup>127</sup> PAIOSA aims to assist Burundian farmers by increasing productivity on their land while simultaneously diversifying their income opportunities. This is done mainly through governmental capacity building, rather than through direct engagement with Burundian farmers. Moreover, PAIOSA seeks to preserve and protect natural resources. The project was established in April 2015 and will close in June 2024; its budget is EUR 33,499,999.90.<sup>128</sup>

USAID: USAID, partnered with TechnoServe, launched the “Burundi Better Coffee Initiative” in November 2023. This project aims to assist over 50,000 Burundian coffee farmers over the next five years, by enhancing the country’s coffee industry’s profitability and climate resilience. Specifically, the Initiative has three goals:

1. Increase coffee production in Burundi by 20%,
2. Improve Burundian coffee quality, and
3. Boost coffee farmer incomes by 30%.<sup>129</sup>

<sup>120</sup> <https://projects.worldbank.org/en/projects-operations/project-detail/P160613>

<sup>121</sup> <https://projects.worldbank.org/en/projects-operations/project-detail/P171745>

<sup>122</sup> <https://projects.worldbank.org/en/projects-operations/project-detail/P155060>

<sup>123</sup> [https://www.eeas.europa.eu/burundi/european-union-and-burundi\\_en?s=87](https://www.eeas.europa.eu/burundi/european-union-and-burundi_en?s=87)

<sup>124</sup> [https://international-partnerships.ec.europa.eu/system/files/2022-01/mip-2021-c2021-9995-burundi-annex\\_fr.pdf](https://international-partnerships.ec.europa.eu/system/files/2022-01/mip-2021-c2021-9995-burundi-annex_fr.pdf)

<sup>125</sup> [https://www.eeas.europa.eu/burundi/european-union-and-burundi\\_en?s=87](https://www.eeas.europa.eu/burundi/european-union-and-burundi_en?s=87)

<sup>126</sup> <https://www.enabel.be/country/burundi/>

<sup>127</sup> <https://open.enabel.be/en/projects/108/burundi.html>

<sup>128</sup> <https://open.enabel.be/en/BDI/2086/p/programme-d-appui-institutionnel-et-operationnel-au-secteur-agricole-paiosa-amlioration-de-la-comptitivit-du-secteur-agricole.html>

<sup>129</sup> <https://www.technoserve.org/news/technoserve-launched-the-burundi-better-coffee-initiative-in-new-bujumbura-office/>

The program will cost about US\$ 16.7 million.<sup>130</sup>

Concern Worldwide: International Non-Governmental Organization (INGO) Concern Worldwide has operated in Burundi since 1997. Currently, they are working with the World Food Programme and UNICEF to provide specialized nutritional inputs to Burundians in Kirundo and Karusi.<sup>131</sup>

World Food Programme (WFP): WFP has been operating in Burundi in some capacity since at least 1994.<sup>132</sup> Currently, WFP activities in-country focus heavily on combating malnutrition, especially in children. Some of this is done through the School Feeding Programme, which links Burundian smallholder farmers with local schools as part of its operations. This way, farmers benefit when schools use them to procure food for their students.<sup>133</sup> WFP is also working to build sustainable food systems, through the following activities:

- Providing meals to schoolchildren,
- Increasing access to technology and strengthening capacity building for smallholder farmers, and
- Providing livelihoods and livelihood support to food-insecure households.

Taken together, these activities aim to achieve the strategic outcome of vulnerable populations across Burundi having access to and contributing to resilient and sustainable food systems.<sup>134</sup>

## 2.8 Indigenous Peoples

Although the government of Burundi recognizes them as an ethnic rather than indigenous group, the Twa self-identify as indigenous peoples and meet the definition as indigenous people as per The UN Declaration on the Rights of Indigenous Peoples. Burundi did not take part in the ILO Convention #169 or UNDRIP of 2007, but given that the Twa meet four of the principles defining indigenous peoples, African Commission on Human and Peoples' Rights recognizes them as such.

There are estimated to be about 100,000-200,000 Twa in Burundi living in communities throughout the country. Precise numbers are difficult because they often do not have identity cards. While they traditionally lived and developed their livelihoods in the forests, the dwindling forest cover has largely removed that part of their livelihood and identity. Starting during the Belgian colonial period, new laws regarding hunting and land use in forest and marshes accelerated these trends. Today, many Twa do not have land and sustain themselves either through pottery making or as day laborers<sup>135</sup>.

The proposed project is not expected to generate negative impacts on the Twa. The Twa are not primarily farmers, but those who are and who live in the proposed operational areas, will be able to access the same project services as other farmers in Burundi.

<sup>130</sup> <https://dailycoffeenews.com/2022/12/02/technoserve-leading-5-year-usda-funded-burundi-coffee-project/>

<sup>131</sup> <https://www.concern.net/where-we-work/burundi>

<sup>132</sup> <https://www.wfp.org/history>

<sup>133</sup> <https://www.wfp.org/countries/burundi>

<sup>134</sup> [https://docs.wfp.org/api/documents/WFP-0000157015/download/?\\_ga=2.120457857.824089340.1713507634-518846728.1712035192](https://docs.wfp.org/api/documents/WFP-0000157015/download/?_ga=2.120457857.824089340.1713507634-518846728.1712035192)

<sup>135</sup> Country Technical Note on Indigenous Peoples' Issues Republic of Burundi, IFAD

The Twa community are not primarily agriculturalists and many do not have access to land. As such, the project will not be appropriate for the majority of Twa. However, there may be some Twa people for which the project will be appropriate. During enrollment periods, 1AF will attempt to contact Twa who happen to be farmers and live in our operational areas to invite them to join the program. Further, 1AF will liaise with a Twa right's organization such as UNIPROBA to understand how to do this well.

1AF recognizes the land rights of the Twa communities is poor, but does not foresee this project as having any risks or adverse impacts to those rights. If anything, the Twa who happen to farm and join the program will be able to use their profits to access additional land.

## 3 Climate rationale

### 3.1 Introduction and general overview of Burundi's vulnerability to the effects of climate change:

With a population that is at once dense and rural, and whose livelihoods and food systems are predominately sourced from smallholder agriculture, Burundi is one of the most climate-vulnerable countries in the world. A majority of its people live below the World Bank's poverty measure of US\$ 2.15 per day,<sup>136</sup> and roughly half the population struggles with food insecurity.<sup>137</sup> Climate change is expected to exacerbate these rates and aggravate other sociopolitical and environmental challenges throughout the country—through hazards such as rising temperatures, soil erosion, deforestation, altered precipitation patterns, and internal displacement. Moreover, due to a lack of viable international financial inflows and limited State resources the Burundian government will face challenges in addressing these issues at the level necessary going forward.

One Acre Fund (hereinafter: 1AF) seeks to address these vulnerabilities through its Burundi program workstreams. 1AF already operates in some of the most vulnerable regions in the country and is looking to further expand its operations into at-risk areas. GCF funding would allow 1AF to bolster and amplify its smallholder assistance, thereby reaching more people on the ground. Furthermore, 1AF would be able to make use of additional mechanisms—such as reforestation—to better address country-specific vulnerabilities at the regional and national level. Finally, through 1AF's innovative funding cycle, these projects are and would remain sustainable in the long-term. This will help overcome the restraints imposed by Burundi's lack of incoming international finance and limited State capacity.

#### **Burundi is one of the world's lowest greenhouse gas (GHG) emitters.**

Burundi's greenhouse gas (GHG) emissions profile is characterized by a relatively low level of emissions compared to most other nations: the country contributed just 0.01% of the world's total GHG emissions in 2022<sup>138</sup>, ranking 171st out of 210 countries across the world; less than 0.1 Tonne per capita<sup>139</sup>. The country's emissions primarily stem from agriculture, deforestation, and energy consumption, with the majority of its population relying on traditional biomass for cooking and heating. Deforestation, driven by agricultural expansion and fuelwood extraction, is a significant contributor to Burundi's GHG emissions, given the country's reliance on subsistence agriculture. Figure 7, below, shows Burundi's GHG emissions between 1990 and 2020, as compared to Belgium and Bolivia (chosen because they have similarly sized populations as Burundi).

<sup>136</sup> <https://data.worldbank.org/indicator/SI.POV.DDAY?end=2020&locations=BI&start=2020&view=bar>

<sup>137</sup> <https://reliefweb.int/report/burundi/burundi-ipc-acute-food-insecurity-analysis-june-2021-march-2022-published-december>

<sup>138</sup> Emissions Database for Global Atmospheric Research (EDGAR): [GHG emissions of all world countries report](#), 2023

<sup>139</sup> [Burundi: CO2 Country Profile](#). Our World in Data.



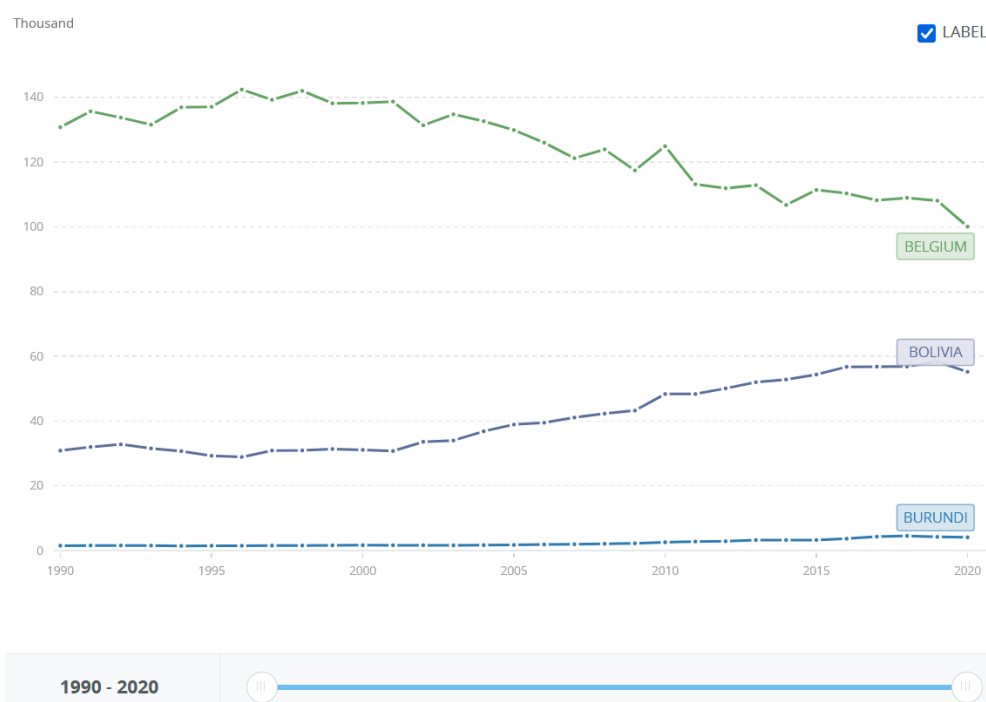


Figure 7: Total greenhouse gas emissions (kt of CO2 equivalent) in Burundi, Belgium, and Bolivia from 1990-2020<sup>140</sup>

Burundi is expected to continue being one of the lowest per-capita emitters through 2050. In fact, according to data from the Potsdam Institute for Climate Impact Research, only Afghanistan will have fewer GHG emissions per capita than Burundi.<sup>141</sup>

The main focus of the following sections addresses concerns related to adaptation. For more information about the mitigation analysis of the tree planting initiatives of this project, please refer to Annex 14.

**Despite being one of the lowest GHG emitters, Burundi is one world's most vulnerable countries to climate change, with high levels of vulnerability across the regions where 1AF operates.**

Burundi is incredibly vulnerable to climate change, ranked 169th out of 185 according to the ND-GAIN Matrix (2021)<sup>142</sup>. On the basis of the same Index, it is the 19th most vulnerable and the 172nd least ready country in the world, emphasizing the need for swift action and investment. Climate change in Burundi is mainly manifesting through hazards like rising temperatures, rainfall variability, shortening of the rainy seasons, higher intensity rainfall during the rainy seasons, more frequent dry spells during the rainy seasons, increased duration and severity of dry seasons, and increased exposure to floods and soil erosion.

Figure 8 below outlines One Acre Fund's current (green) and proposed (yellow) operating geography over the extent of this program. Figure 9 is the World Bank's composite index of vulnerability across Burundi at the colline level, based on the INFORM index<sup>143</sup>. Per this metric, the entire country is considered vulnerable (*moyen*), while Ruyigi, Kirundo, and Karusi specifically, three areas in which 1AF will expand its activities through this project<sup>144</sup>, have only a handful of collines rated as less than 'Very High' (*très élevé*).

<sup>140</sup> <https://data.worldbank.org/indicator/EN.ATM.GHGT.KT.CE?end=2020&locations=BI-BE-BO&start=1990&view=chart>

<sup>141</sup> <https://epi.yale.edu/epi-results/2022/component/ghp>

<sup>142</sup> [Rankings // Notre Dame Global Adaptation Initiative // University of Notre Dame \(nd.edu\)](#)

<sup>143</sup> Joint Research Centre (European Commission) et al., 2017, Index for Risk Management - INFORM: Concept and Methodology, Version 2017

<sup>144</sup> 1AF intends to expand operations within some of the green provinces as well, see the expansion methodology section for more details.

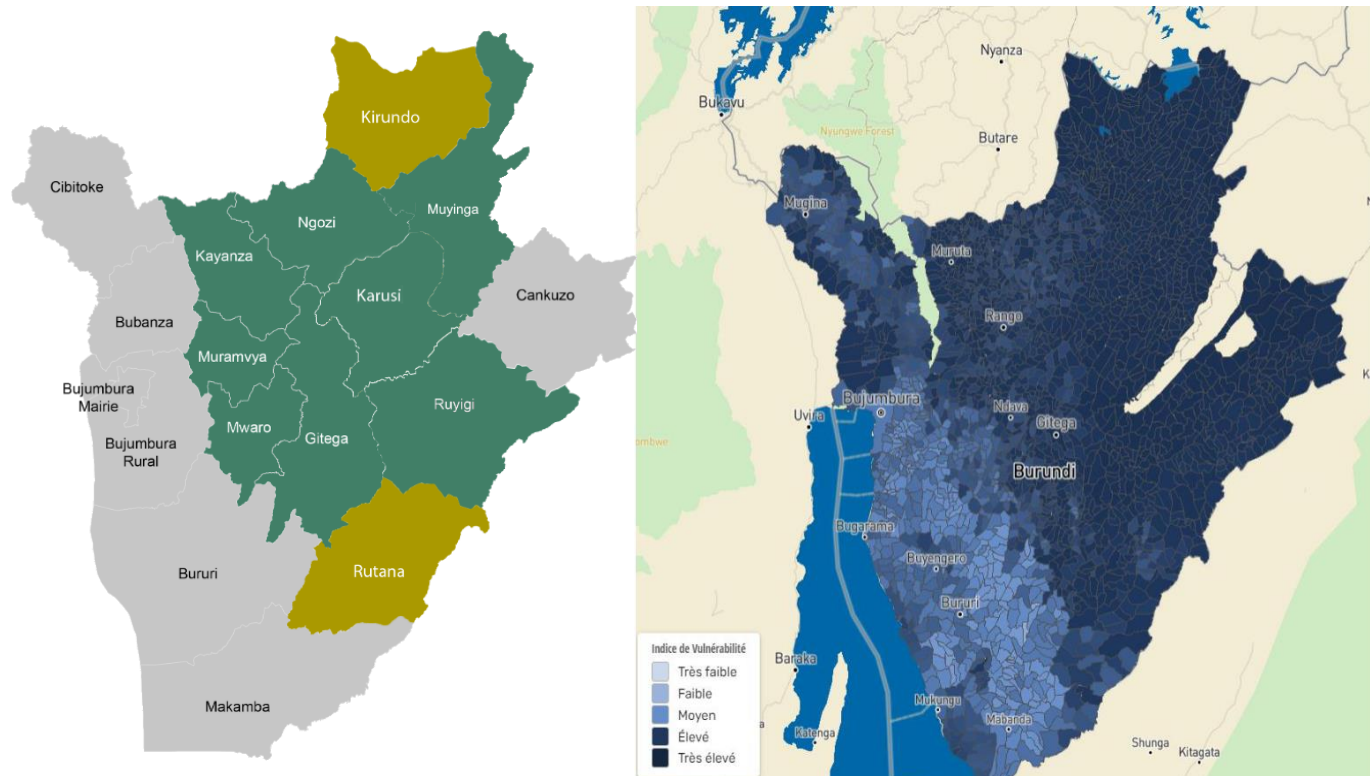


Figure 8: (Left): Map of One Acre Fund Burundi's target provinces of operation in green (current) and yellow (proposed).

Figure 9: (Right): Composite index of Burundi's most vulnerable collines to the effects of climate change

**The country remains one of the world's poorest, with widespread food insecurity and malnutrition.**

Extensive in-house Monitoring, Evaluation and Learning (MEL) surveys by 1AF indicate that the majority of the organization's Burundian supported farmers fall into the category of extremely poor rural farmers. On average, they cultivate ~0.94 acres (0.4 hectares) of land. Although 83% of farmers rely on farming for more than half of their income, they often struggle to feed their families. More than 46% of newly enrolled 1AF supported farmers report eating less than they should due to lack of resources. By the age of five, more than 50% of Burundian children experience stunted growth.<sup>145</sup> As a result of these realities, the Global Hunger Index consistently ranks Burundi as one of the world's hungriest countries.<sup>146</sup>

In the below table, some of the climate vulnerabilities in Burundi are laid out, alongside their effects on agricultural production and how 1AF helps to mitigate their risks and adapt to their outcomes. Each of the hazards, areas most at risk of exposure thereto, and vulnerabilities derived therefrom will be discussed in greater detail throughout this document.

<sup>145</sup> [https://docs.wfp.org/api/documents/WFP-0000157015/download/?\\_ga=2.249323726.87855982.1712035195-518846728.1712035192](https://docs.wfp.org/api/documents/WFP-0000157015/download/?_ga=2.249323726.87855982.1712035195-518846728.1712035192)

<sup>146</sup> [World Bank data; Global Hunger Index 2022](#)

Climate Change Hazards	Areas at Risk of Exposure	Agricultural Vulnerabilities	Adaptive & mitigative measures proposed
Rising temperatures	Imbo Plain, Northern Lowlands, Eastern Arid Plateaus	Reduced yields	<p>Offering inputs to farmers and offering only vetted high quality inputs;</p> <p>Climate smart agriculture techniques to ensure that farmers are getting great yields in potentially shorter / more variable growing periods;</p> <p>Support services for commercial crops to build assets and increase income;</p> <p>Tree distribution: both contributing to mitigation (removing some carbon) and adaptation by helping farmers build assets that help them deal with climate related shocks</p>
Changing rainfall patterns	Whole country	Reduced yields Flooding and waterlogging	
Soil erosion	Eastern Lowlands, Eastern Arid Plateaus	Reduced yields Loss of entire crop / livelihood	
Flooding and Droughts	Imbo Plain, Northern Lowlands, Eastern Lowlands, Eastern Arid Plateaus	Reduced yields Waterlogging Loss of entire crop / livelihood Landslides	
Extreme weather events	Imbo Plain, Eastern Lowlands, Eastern Arid Plateaus	Reduced yields Waterlogging Loss of entire crop / livelihood	

Figure 10: Summary table of Burundi climate hazards, areas of exposure, agricultural vulnerabilities, and measures proposed

## 3.2 Burundi's exposure to Climate Hazards

### 3.2.1 Hazard 1- Rising temperatures:

#### **Global temperatures are rising, with compounding impacts on crop growth.**

Per International Energy Agency (IEA) data, the global average temperature is likely to rise by 2.0 degrees Celsius by 2050 and over 2.5 degrees Celsius by 2100.<sup>147</sup> Rising temperatures have already contributed to increased frequency and severity of extreme weather events, as well as a rise in sea temperatures.<sup>148</sup>

#### **Burundi is particularly vulnerable to rising temperatures.**

Burundi typically observes temperatures between 15 and 25 degrees Celsius, with two rainy seasons: season 1, lasting from February to July, and season 2, lasting from September to January. Figure 11 highlights the changes already underway, with mean temperatures rising across the country, and rainfall decreasing in season 1 but heavily increasing in season 2.

*Legend: Top set of lines = Max Temp, Bottom set of lines = Min Temp, Bars = Rainfall*

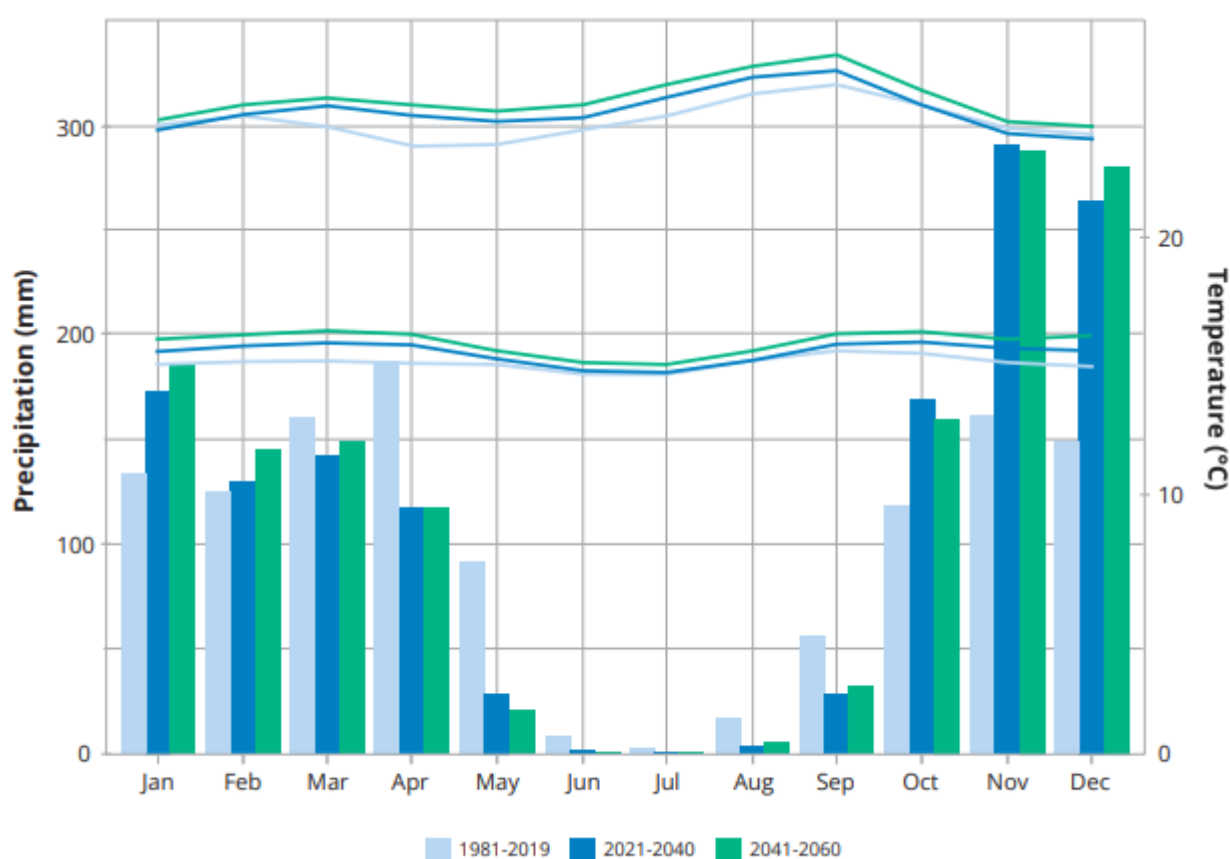


Figure 11: Historical and projected temperature and precipitation in Burundi<sup>149</sup>.

In Burundi, although the country's total annual rainfall is projected to increase, the simultaneous rise in temperatures could lead to loss of arable land throughout agricultural areas. Higher temperatures lead to quicker evaporation after rainfall occurs.<sup>150</sup> Per the African Development Bank, temperatures in Burundi are

<sup>147</sup> <https://www.iea.org/reports/world-energy-outlook-2021/scenario-trajectories-and-temperature-outcomes>

<sup>148</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_SPM.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf)

<sup>149</sup> Burundi: Critical Corporate Initiative: [Climate Response Analysis for Adaptation \(December 2021\)](#)

<sup>150</sup> <https://www.afdb.org/en/documents/burundi-national-climate-change-profile>

expected to rise by up to 2.5 degrees Celsius by 2050 (compared to 2019 levels).<sup>151</sup> Meanwhile, based on the SSP2 - RCP4.5 scenario (SSP stands for 'Shared Socioeconomic Pathway'), temperature variability in 2021-2050 (compared to 1991-2020 period) is expected to increase by 23.8%.

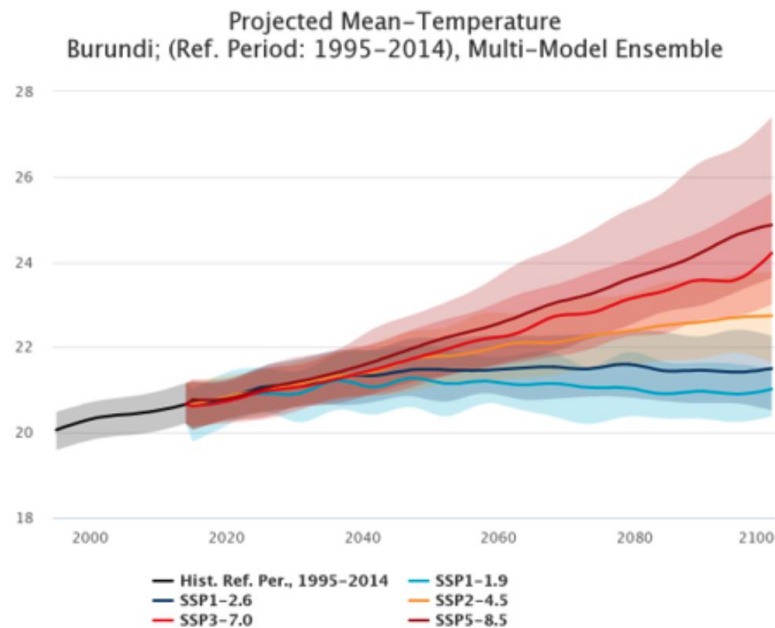


Figure 12: Projected Mean Temperatures in Burundi under various SSP/RCP scenarios.

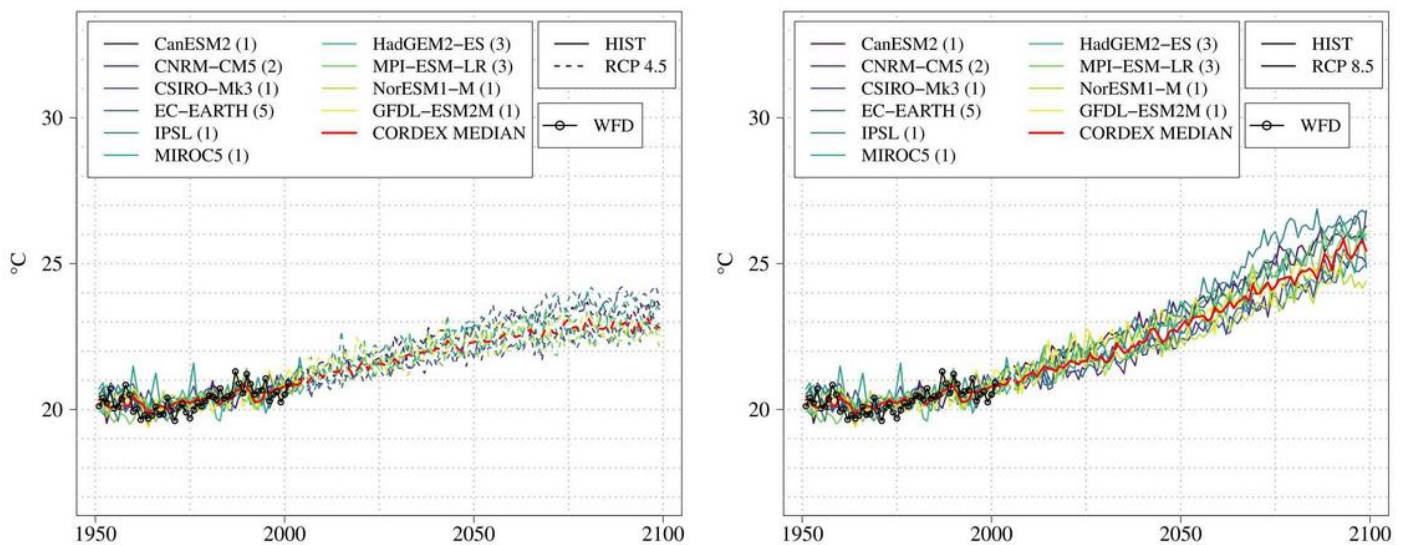


Figure 13: Historical temperature data and projected future trends under RCP 4.5 and RCP 8.5 Scenarios

Already, Burundian farmers have noted dramatic increases in temperature, including heat waves that have led to crop and vegetation breakdown.<sup>152</sup> In nearby Ethiopia, extreme heat (coupled with drought) has resulted in a 30% reduction in crop yields, according to a 2022 study.<sup>153</sup> In Burundi, the most extreme heat increases are projected to occur during the dry seasons; this could cause or exacerbate drought conditions as well.<sup>154</sup> In Burundi, temperature increases are projected to lead to higher rates of evapo-transpiration,

<sup>151</sup> <https://www.unep.org/news-and-stories/story/farmers-adapt-climate-crisis-burundis-precarious-hillsides>

<sup>152</sup> <https://link.springer.com/article/10.1007/s10113-022-02018-7#Tab1>

<sup>153</sup> <https://www.nature.com/articles/s43017-022-00368-8>

<sup>154</sup> <https://www.sciencedirect.com/science/article/pii/S2214581822001434?via%3Dihub>



thereby reducing the total water available for crop growth and reducing yields throughout the country. For example, in the below figure, maize production is seen to drop between 5% and 25% across Burundi.<sup>155</sup>

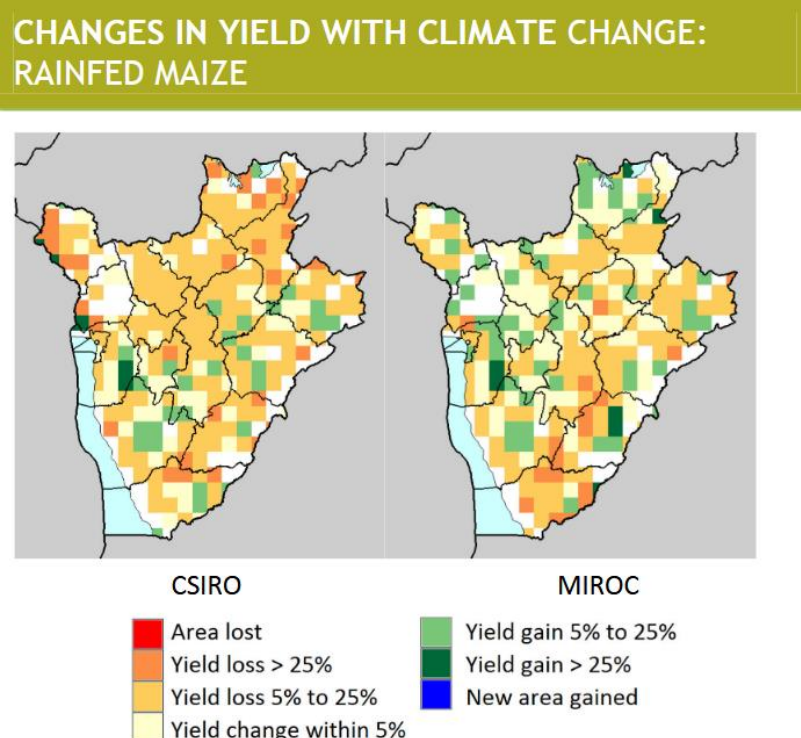


Figure 14: Predicted maize crop yield loss by 2050 due to extreme heat and drought, compared to 2005 levels.

### 3.2.2 Hazard 2 - Changing rainfall patterns

#### Rainfall will become increasingly variable with more extremes.

Global warming affects both evaporation and rainfall, with compounding effects on water availability and food and agriculture security. These effects are felt globally, as rising temperatures affect atmospheric weather patterns, pushing cold air streams further South and warm air streams further North.<sup>156</sup> These confluences lead to exposure to phenomena such as atmospheric rivers, polar vortexes, and superstorms—extreme weather events likely to increase in both frequency and severity as the global temperature rises.

However, climate change affects rainfall patterns in less obvious ways as well. For example, areas with both high precipitation and high rates of seasonal rainfall variation—such as Burundi—may not necessarily see increased or decreased rainfall levels. Instead, they will be exposed to increased rainfall *variability*, which in turn, can lead to inconsistent water supplies. This is exacerbated by an overall increase in evaporation rates globally, a trend that holds true regardless of precipitation levels or variability.<sup>157</sup> In other words, Burundi's dry seasons are getting dryer, while its wet seasons are becoming wetter.

In particular, models predict a ~10% increase in the south (see Fig. 15 and 16 below)<sup>158</sup>, and precipitation variability is expected to increase by 22.7%. Climate projections also indicate that rainfall will trend towards a decrease in March/April and August/September by 10-25%, prolonging the dry periods and significantly increasing vulnerability to drought, particularly in the south. Rainfall is then expected to increase

<sup>155</sup> [https://khub.asareca.org/sites/default/files/2021-12/Burundi\\_sk-gcn\\_tt\\_v2.pdf](https://khub.asareca.org/sites/default/files/2021-12/Burundi_sk-gcn_tt_v2.pdf)

<sup>156</sup> <https://www.sciencedirect.com/science/article/abs/pii/S0160412005000553>

<sup>157</sup> <https://www.nature.com/articles/s41467-020-16757-w#Sec6>

<sup>158</sup> Rivas-López, M. Rocío, et al. "Potential Hydro-Meteorological Impacts over Burundi from Climate Change." *Journal of Hydrology: Regional Studies*, vol. 42, 2022, p. 101130, <https://doi.org/10.1016/j.ejrh.2022.101130>.

dramatically between October and January. As a consequence, high intensity rainfall during the short wet season will increase, particularly in the north<sup>159</sup>.

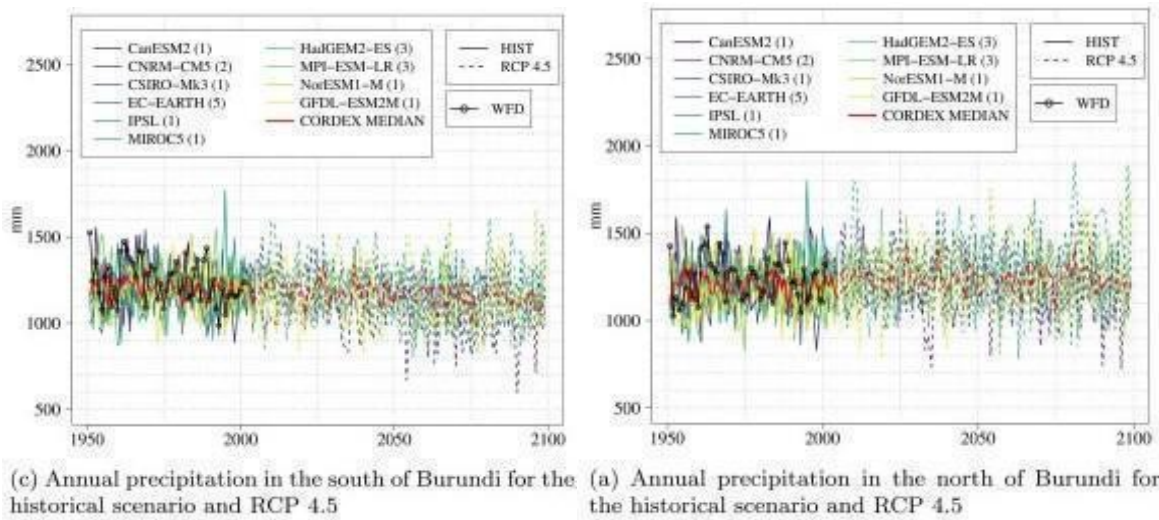


Figure 15 and 16: Annual precipitation figures in the north and south of Burundi based on the RCP 4.5 scenario

These variations in rainfall patterns have already begun to affect Burundi's farms and crop yields. Burundian farms are mostly rain-fed, with little irrigation; this makes them vulnerable to changes in precipitation year-over-year. Moreover, regional differences within the country will result in different outcomes. For example, heavy rainfall during the wet season will waterlog the Imbo Plain and Eastern regions, negatively impacting bean production.<sup>160</sup> Similarly, dry conditions during key stages of the growing season impede the development of both maize and beans.<sup>161</sup> As this changes yearly, farmers struggle to predict when the wet season will begin properly, which has already led to food insecurity crises—especially in the North and East.<sup>162</sup> Figure 17, below, shows the historical and projected total number of days with moisture stress and waterlogging, while figure 18 depicts anomalous rainfall patterns in 2022 and 2023 which led to poor harvests and crisis-level food insecurity in Burundi.

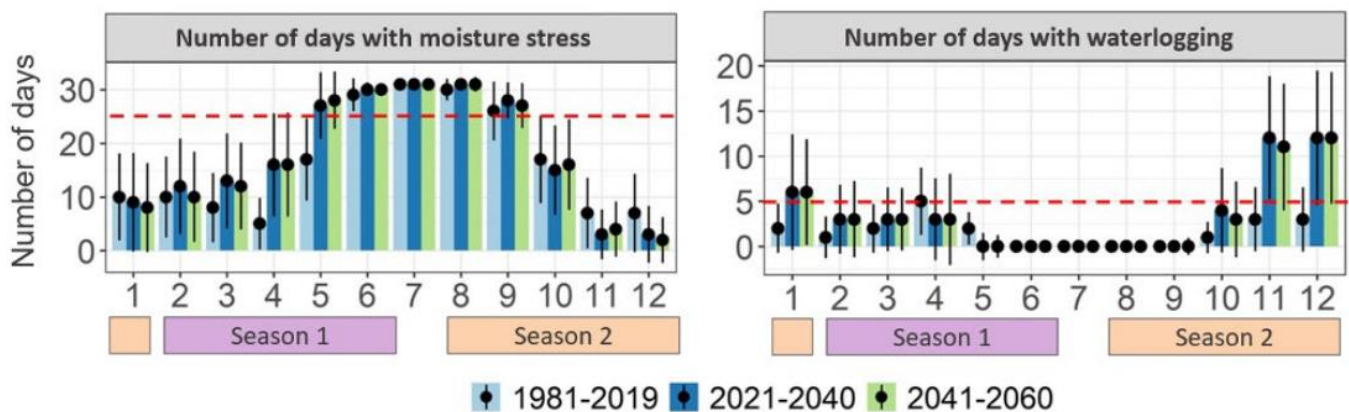


Figure 17: Historical and projected days, per month, with moisture stress and waterlogging in Burundi.<sup>163</sup>

<sup>159</sup> Rivas-López, M. Rocío, et al.

<sup>160</sup> <https://reliefweb.int/report/burundi/burundi-critical-corporate-initiative-climate-response-analysis-adaptation-december#:~:text=In%20the%20next%2010%20to,crop%20suitability%2C%20and%20food%20security>

<sup>161</sup> <https://reliefweb.int/report/burundi/burundi-key-message-update-below-average-2022-season-bean-and-maize-harvest-likely>

<sup>162</sup> <https://fews.net/east-africa/burundi/food-security-outlook/february-2023>

<sup>163</sup> <https://reliefweb.int/report/burundi/burundi-critical-corporate-initiative-climate-response-analysis-adaptation-december#:~:text=In%20the%20next%2010%20to,crop%20suitability%2C%20and%20food%20security>.



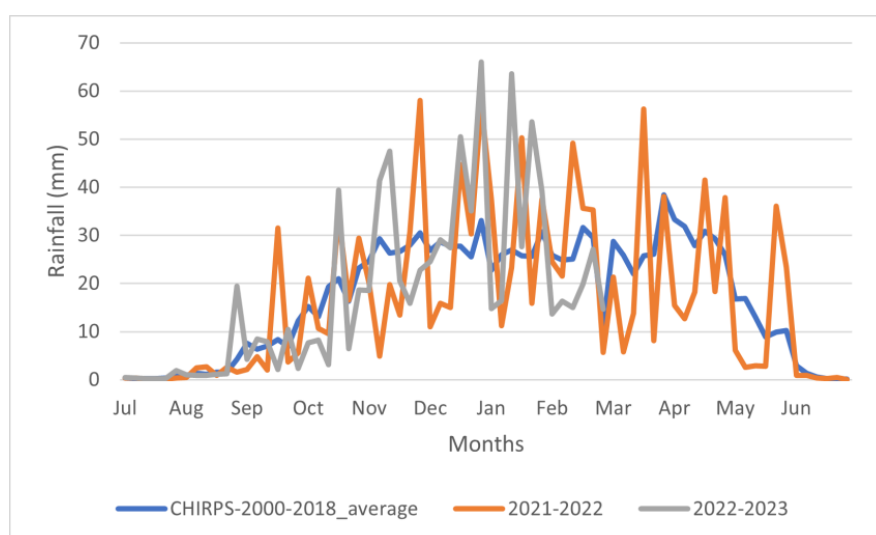


Figure 18: Rainfall anomalies in Burundi between 2021 and 2023.<sup>164</sup>

### 3.2.3 Hazard 3 - Flooding and Droughts

Burundi is particularly vulnerable to hazards such as floods, droughts, and landslides, all of which are likely to be exacerbated by global warming. In fact, at time of writing in April 2024, flooding along Lake Tanganyika's coast is currently displacing nearly 100,000 Burundians, necessitating calls for international assistance.<sup>165</sup> Recently, contaminated flood waters caused a cholera outbreak in the country.<sup>166</sup> According to a 2019 report by the UN Office of Humanitarian Coordination, floods and related hazards will affect an estimated 1.8 million Burundians in the near future.<sup>167</sup> Data from the Internal Displacement Monitoring Center indicate that approximately 75% of displaced persons in Burundi relocate due to floods.<sup>168</sup> Moreover, between 2010 and 2021, the number of Burundians forced to relocate within the country as a result of flooding increased from 1,500 to approximately 94,000 people.<sup>169</sup> Floods wash away farms and inundate crops, severely negatively impacting yields in affected areas.<sup>170</sup> In particular, beans are extremely vulnerable to flood conditions and inundation. A study from a neighboring country with similar topography and weather conditions makes note of bean yields' volatility during years of excess rainfall.<sup>171</sup>

As flood severity increases in Burundi, so too does drought severity, especially during the dry seasons. Historically, while floods have been the biggest hazard in Burundi in terms of the total number of people affected, severe droughts have impacted the most people at a time. In 2005, 2008, and 2009, drought in Burundi affected more people than any other hazard or disaster. This can be seen in Figure 19 below.<sup>172</sup>

<sup>164</sup> <https://fews.net/east-africa/burundi/food-security-outlook/february-2023>

<sup>165</sup> <https://apnews.com/article/east-africa-flooding-burundi-appeal-lake-tanganyika-b83fbf6ca05533425e7725ffb22e78cd>

<sup>166</sup> <https://reliefweb.int/report/burundi/iom-burundi-thousands-people-displaced-floods-may-2023>

<sup>167</sup> <https://reliefweb.int/report/world/global-humanitarian-overview-2020-enarfrzh>

<sup>168</sup> <https://storyteller.iom.int/stories/face-persistent-floods-families-burundi-reel-recurring-losses>

<sup>169</sup> <https://www.internal-displacement.org/database/displacement-data/>

<sup>170</sup> <https://news.un.org/en/story/2021/07/1095802>

<sup>171</sup> [https://www.researchgate.net/profile/Kseniia-Mikova/publication/282526901\\_Effect\\_of\\_Climate\\_Change\\_on\\_Crop\\_Production\\_in\\_Rwanda/links/561fb14a08ae93a5c9241c9a/Effect-of-Climate-Change-on-Crop-Production-in-Rwanda.pdf](https://www.researchgate.net/profile/Kseniia-Mikova/publication/282526901_Effect_of_Climate_Change_on_Crop_Production_in_Rwanda/links/561fb14a08ae93a5c9241c9a/Effect-of-Climate-Change-on-Crop-Production-in-Rwanda.pdf)

<sup>172</sup> <https://climateknowledgeportal.worldbank.org/country/burundi/vulnerability>

## Key Natural Hazard Statistics for 1980-2020

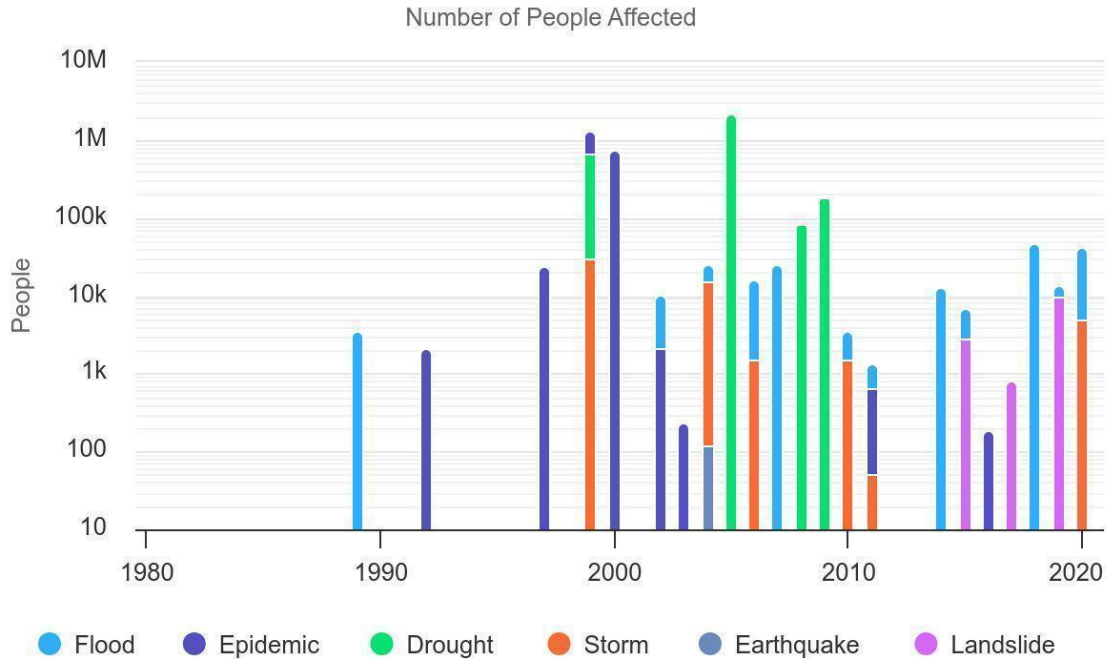
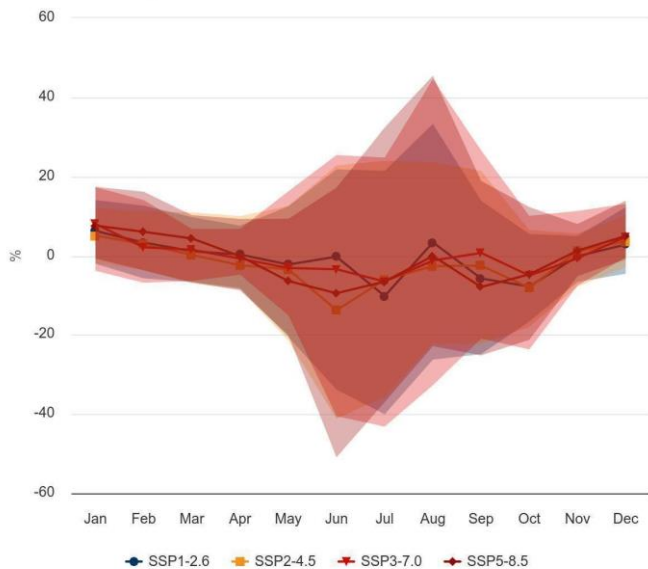


Figure 19: Total number of people affected by various hazards in Burundi between 1980 and 2020

In the future, dry and drought conditions are projected to worsen, especially during the dry seasons. This remains true across RCP scenarios, as seen in the below Figures 20 and 21. On the left, projections show a loss in precipitation from 2014 baseline levels across all RCP scenarios by 2040; on the right, the same can be seen by 2060. In the worst case RCP 8.5 scenario, precipitation during the dry season is expected to drop by 25% from 2014 baseline levels by 2060.<sup>173</sup>

**Projected Precipitation Percent Change Anomaly for 2020-2039**  
Burundi; (Reference Period: 1950-2014), SSP1-2.6, SSP2-4.5, SSP3-7.0 & SSP5-8.5, Multi-Model Ensemble



**Projected Precipitation Percent Change Anomaly for 2040-2059**  
Burundi; (Reference Period: 1950-2014), SSP1-2.6, SSP2-4.5, SSP3-7.0 & SSP5-8.5, Multi-Model Ensemble

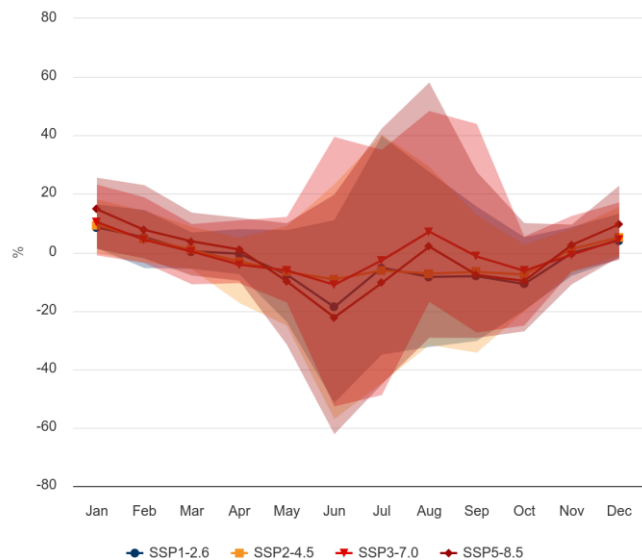


Figure 20 (left) shows precipitation decreases in Burundi across RCP scenarios by 2039, while Figure 21 (right) shows the same by 2059.

<sup>173</sup> <https://climateknowledgeportal.worldbank.org/country/burundi/climate-data-projections>

Per a 2021 study, using data collected from 1981-2017, drought conditions profoundly negatively affected crop yields in Burundi.<sup>174</sup> Another study, using the same years' data, determined that drought conditions can explain approximately 50% of any downturn in maize yields in Burundi occurring under particularly dry periods.<sup>175</sup>

### 3.2.4 Hazard 4 - Extreme Weather Events and Extreme Precipitation:

The country has long been exposed to extreme climate events that have had significant effect on the agricultural population - between 1996 and 2016, over 3 million people were affected by severe drought, with tens of thousands more losing their lives and homes to flooding<sup>176</sup>. Climate change is already increasing the frequency and intensity of these extreme weather events;<sup>177</sup> over 90% of Burundi's displaced population are due to climate and environment-related disasters, like flooding and drought<sup>178</sup>.

**Extreme weather events also have varying levels of effect across the country; between 2018 and 2022, the country faced at least 520 extreme weather events affecting over 300,000 people, while large areas of the country are particularly susceptible to flooding.** As of early 2024, Burundi was dealing with the effects of excessive rainfall linked to El Nino including flooding, landslides, torrential rain, hail, and violent winds. From October 2023 to January 2024, over 50,000 hectares of crops had been destroyed.<sup>179</sup> While exposure to climate hazards is felt by smallholders across Burundi, the country's geography and landscapes mean that certain areas of the country are more prone to the effects of climate hazards. Figure 22 shows the number of people affected by torrential rains, flooding, strong winds and landslides by province, highlighting the vulnerability of certain areas of the country.

The country's central plateau provinces like Muramvya and Gitega were least exposed to these disasters, but others, like Rutana in the southeast (a proposed One Acre Fund expansion region) and Ngozi in the north (where we currently operate) saw significant numbers of their primarily agricultural population affected.<sup>180</sup>

<sup>174</sup> <https://link.springer.com/article/10.1007/s00704-021-03680-3>

<sup>175</sup> <https://link.springer.com/article/10.1007/s42106-021-00178-w>

<sup>176</sup> Interactive Country Fiches; [Burundi](#)

<sup>177</sup> [https://pure.iiasa.ac.at/id/eprint/19093/1/IPCC\\_AR6\\_WGI\\_Chapter11.pdf](https://pure.iiasa.ac.at/id/eprint/19093/1/IPCC_AR6_WGI_Chapter11.pdf)

<sup>178</sup> UN IOM - [Multisectoral Location Assessment Report \(May 2023\)](#)

<sup>179</sup> WFP [Country Brief January 2024](#)

<sup>180</sup> Tackling Climate Change, Land Degradation and Fragility: Diagnosing Drivers of Climate and Environmental Fragility in Burundi's Colline Landscapes: Towards a Multi-Sector Investment Plan to Scale up Climate Resilience - [World Bank, 2023](#)

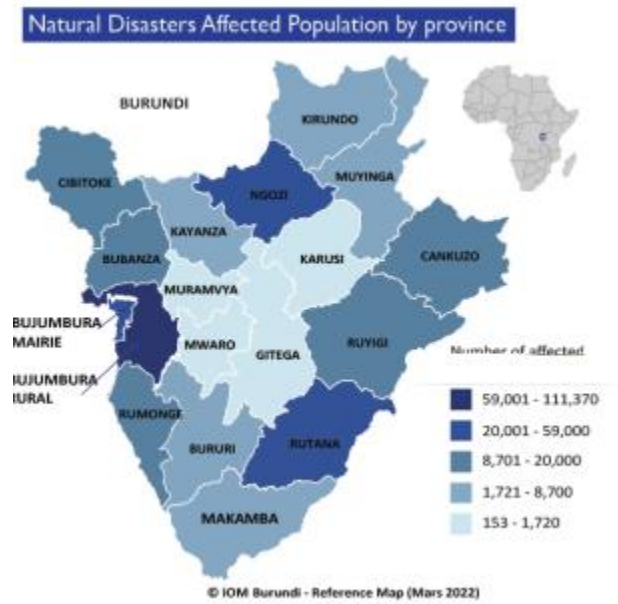


Figure 22: Disasters linked to climate-related hazards in Burundi, January 2018–March 2022, IOM 2022

Figure 23 shows flood risk by colline, highlighting the vulnerability of certain areas of the country. One Acre Fund’s proposed expansion regions through a GCF partnership, including Rutana, Ruyigi, and Cankuzo in the East, and Kirundo in the north, have some of the highest expected flood hazards across the country, highlighting the urgent need for adaptive strategies for smallholders in these regions.

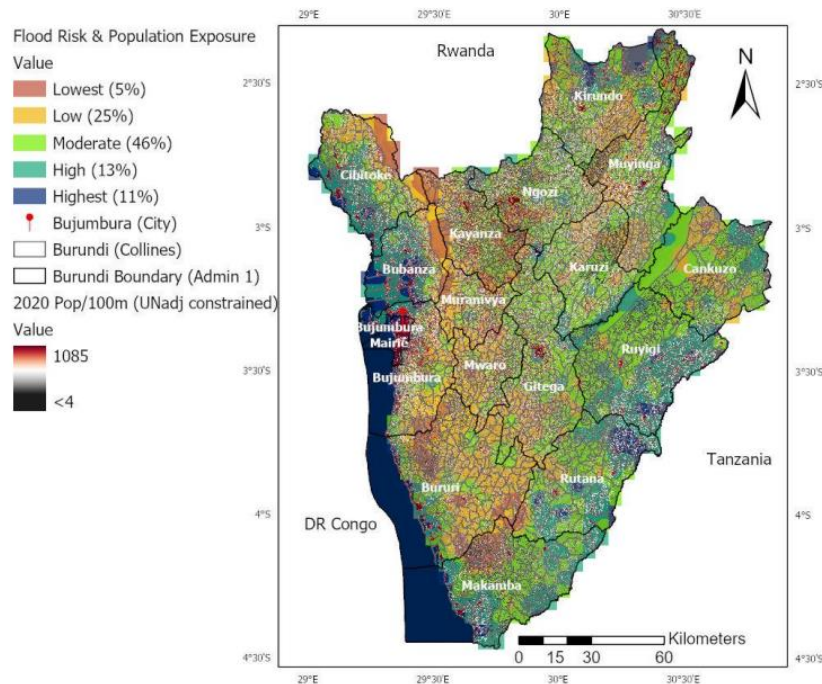


Figure 23: Flood Risk and Population Exposure, Burundi, 2020

In particular, Burundi is vulnerable to extreme rains. Between 1950 and 2020, the country’s largest one-day precipitation increased dramatically. If an average of each month’s highest one-day rainfall is collected, recent years tend to have the highest standard deviations thereof. As seen in the below Figure 24, this

indicates that anomalous extreme rainfall is increasing in intensity.<sup>181</sup> Beyond causing floods and washing away farms, as discussed in the previous section, this high precipitation contributes to run-off and soil erosion, thereby negatively affecting crop yields.<sup>182</sup>

Change in Event Intensity of Average Largest 1-Day Precipitation;  
1951-2020; Burundi

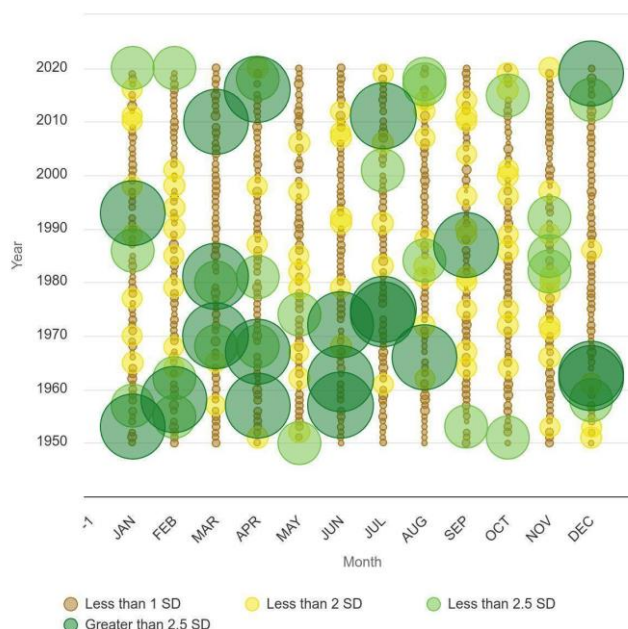


Figure 24: Change in rainfall intensity between 1951 and 2020

### 3.3 How Climate Change Hazards Adversely Affects Burundian Farmers, with the Potential to Exacerbate the Country's Overall Vulnerability

Each of the hazards discussed above has an uneven impact across Burundi; some regions are less vulnerable to specific risks than others. For example, erratic rainfall patterns seem to affect eastern regions the most. Figure 25 below (top) outlines three key agro ecological zones in Burundi, which we will map to One Acre Fund operating geographies. It is worth noting that 1AF operates in the Western half of Burundi (Gray) as well, as has been discussed previously in this document. This region, which includes Gitega, Mwaro, Muramvya, Ngozi, and Kayanza is subject to climate vulnerabilities, exacerbated by—and exacerbating to—agricultural systems and practices in the area. GCF funding would allow 1AF to bolster its activities here as well, by allowing 1AF to organize trainings more frequently, reach more farmers, and provide more—and higher quality—materials to the communities served.

- LHZ 1: Imbo Plain (Purple): No 1AF operations yet
- LHZ 2: The Eastern Lowlands (Yellow): Areas with current or proposed 1AF operations: Ruyigi, Rutana
- LHZ 3: The Northern Lowlands (Red): Areas with current or proposed 1AF operations: Kirundo, Muyinga
- LHZ 4: The Eastern Arid Plateaus (Green): Areas with current or proposed 1AF operations: Ruyigi, Karusi, Muyinga, Rutana, Ngozi

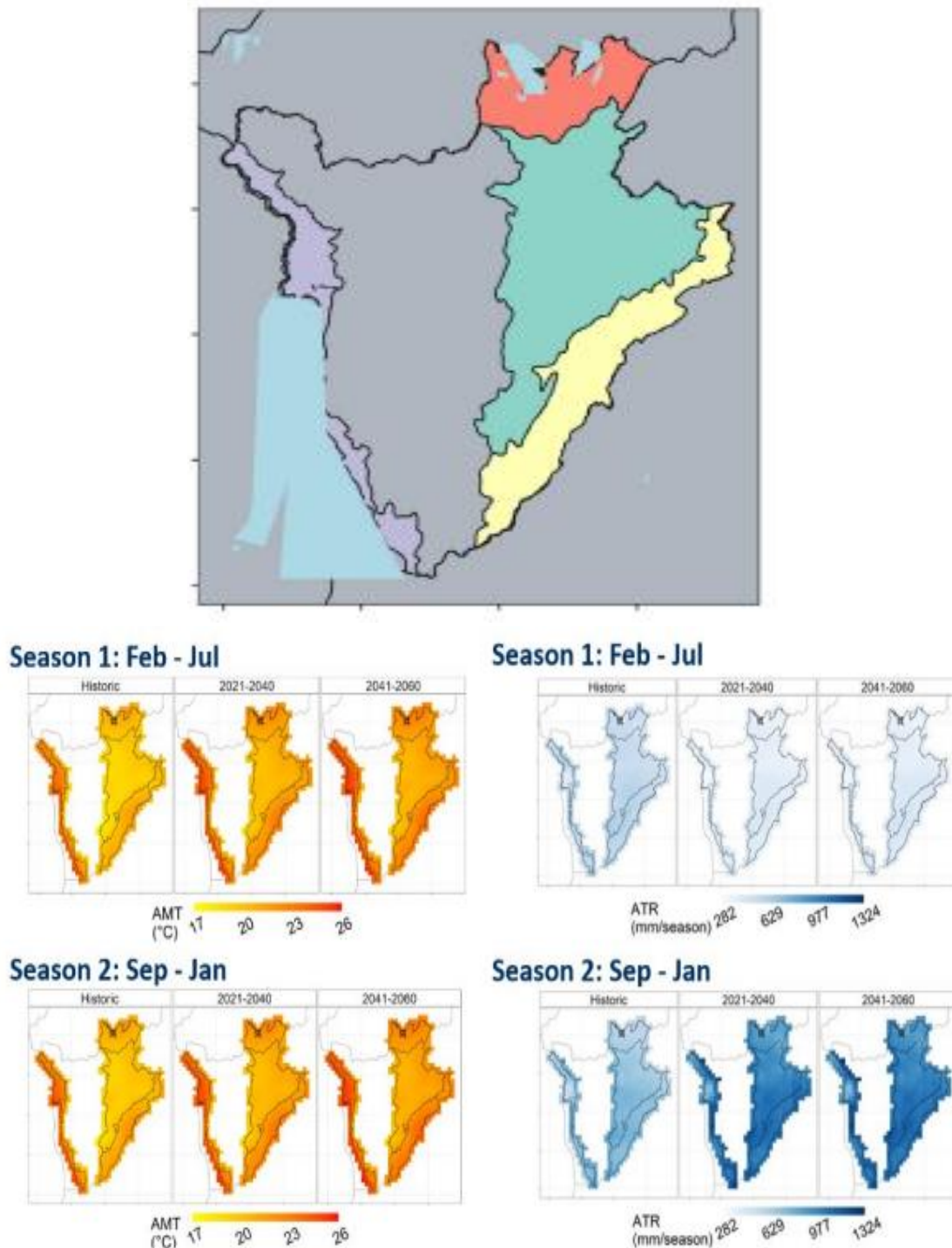
<sup>181</sup> <https://climateknowledgeportal.worldbank.org/country/burundi/trends-variability-historical>

<sup>182</sup> <https://repository.uneca.org/bitstream/handle/10855/24211/b11882906.pdf?sequence=1&isAllowed=y>



- Gray zone: Areas with current or proposed 1AF operations: Muramvya, Kayanza, Gitega, Mwaro<sup>183</sup>

Figure 26 (bottom, left) highlights the expected changes in temperature, while figure 27 (bottom, right) illustrates the steep increase in precipitation during Season 2 and sharp decline in Season 1 across these LHZs.<sup>184</sup>



<sup>183</sup> From desk research, we were not able to find maps that include data on these areas but we assume the trends will be largely similar.

<sup>184</sup> Burundi: Critical Corporate Initiative: [Climate Response Analysis for Adaptation \(December 2021\)](#)

Figure 25, 26, and 27: Selected Livelihood Zones and their respective historical and projected annual mean temperature and Precipitation (World Food Programme 2021)

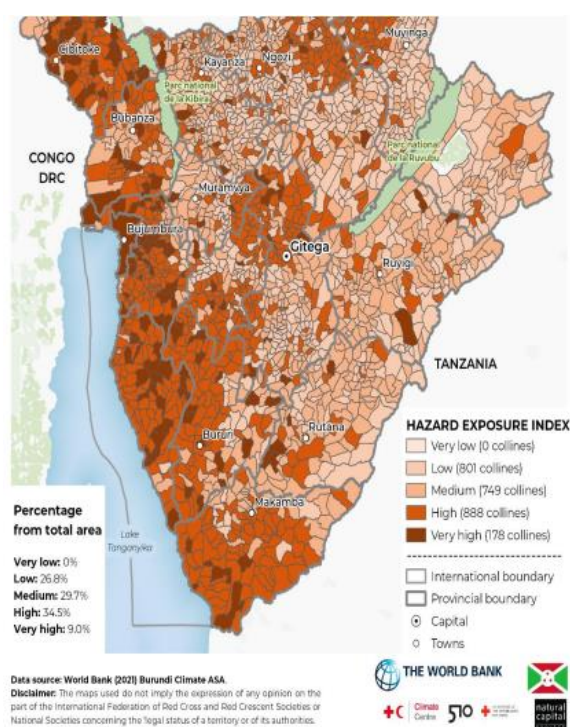


Figure 28: Composite climate hazard exposure map developed by the World Bank (2021)

Although 1AF already operates broadly throughout Burundi, partnership with GCF would allow 1AF organization to expand and improve its operations in-country . Significant portions of our current and target operating geography include collines with high or very high hazard exposure risk in Gitega, Muramvya, Ngozi and Musinga, emphasizing the need to support smallholders in these regions in building resilience and adaptive capacity . Figure 28 (above) shows a composite index developed by the World Bank and guided by the INFORM index<sup>185</sup> highlighting the collines most vulnerable to three of the most prevalent climate hazards in the country: drought, flooding, and landslides<sup>186</sup>. Figure 29 (*below*), meanwhile, identifies the collines most vulnerable to the adverse effects of climate change *overall*, therefore requiring the most urgent adaptive support for smallholders in these regions.

<sup>185</sup> Joint Research Centre (European Commission) et al., 2017, Index for Risk Management - INFORM: Concept and Methodology, Version 2017

<sup>186</sup> Tackling Climate Change, Land Degradation and Fragility: Diagnosing Drivers of Climate and Environmental Fragility in Burundi's Colline Landscapes: Towards a Multi-Sector Investment Plan to Scale up Climate Resilience - [World Bank, 2023](#)



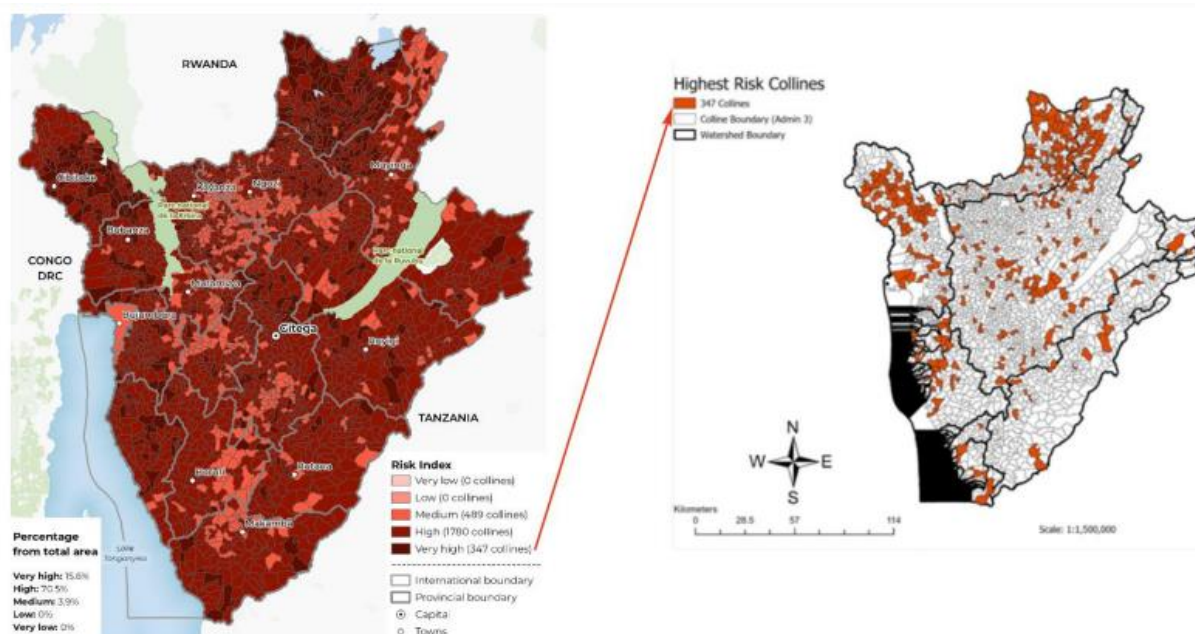


Figure 29: A map of the highest-risk collines in Burundi based on WB assessment (2021)

Many of the highest-risk collines are in Kirundo and Ngozi districts in the north—which are proposed and current One Acre Fund operating geographies respectively. Moreover, this project would allow 1AF to move closer to our goal of operating across Burundi. In other words, even though there are high-risk collines in which we do not expect to begin work *during* this project, we do expect to eventually begin work in them *because of* this project. GCF funding would allow 1AF to build resilience for farmers nationally against major vulnerabilities, such as rising temperatures, changing weather patterns, soil erosion, extreme weather events, and deforestation.

**Climate change hazards, particularly droughts, heavy rains and interannual rainfall variability, have intensified and they are triggering major impacts to the agricultural production, food and water security in our proposed operating geographies.**

Higher temperatures directly affect crop growth. Significant temperature increases in the Spring—during the plants' reproductive stages—lead to a decrease in overall yield. This occurs even if higher nighttime temperatures positively affect grain yields. In other words, increased output from fewer overall crops still results in a lower output *in total*.<sup>187</sup> Increasing heat waves and prolonged periods of high temperatures are projected to impact agriculture, affecting crop yields by increasing plant transpiration, exacerbating water shortages. Essentially, with higher temperatures, vegetation uses more water. Researchers found that for every 1 degree Celsius increase in temperature, rice yields declined by 10%. Moreover, once temperatures exceed 30 degrees Celsius, bean and corn yields decrease by over 30%.<sup>188</sup> Generalized research has also indicated a substantial inverse relationship between temperature rise and crop yields, with maize in particular being vulnerable to heat. For every 1 degree Celsius increase in global temperatures, worldwide maize production drops approximately 7.4%.<sup>189</sup>

<sup>187</sup> [https://www.researchgate.net/profile/Al-Alhayany/post/How\\_extremes\\_temperature\\_impact\\_on\\_plant\\_growth\\_and\\_development/attachment/5a69734fb53d2f0bba4da673/AS%3A586568511291393%401516860239717/download/5\\_Effect+of+Temperature+Rise+on+Crop+Growth.pdf](https://www.researchgate.net/profile/Al-Alhayany/post/How_extremes_temperature_impact_on_plant_growth_and_development/attachment/5a69734fb53d2f0bba4da673/AS%3A586568511291393%401516860239717/download/5_Effect+of+Temperature+Rise+on+Crop+Growth.pdf)

<sup>188</sup> [https://www.scrip.org/html/10-2171462\\_103123.htm](https://www.scrip.org/html/10-2171462_103123.htm)

<sup>189</sup> [https://www.researchgate.net/publication/363845575\\_Effects\\_of\\_High\\_Temperature\\_on\\_Crops](https://www.researchgate.net/publication/363845575_Effects_of_High_Temperature_on_Crops)

**This yield loss will be particularly pronounced for smallholder due to the unpredictable rainfall patterns and lack of available irrigation<sup>190</sup>.**

This is because the vast majority of the farmland cultivated by Burundian farmers is rainfed (with just 1.6% of all cropland utilizing man-made irrigation systems). With the vast majority of the population dependent on agriculture for their livelihoods, and with such a high concentration of farmers focused on two crops - maize and beans - which are at significant risk for yield reductions, Burundian farmers are uniquely vulnerable to the adverse effects of climate change.

In sum, the direct consequences of the climate hazards on agriculture are a shortening of the increased variation of rainfall patterns with prolonged dry periods and increasing drought risk across the country. In addition, a reduction in the productive potential of agroecosystems (reduction in arable land due to their degradation, diminished soil fertility, and increases in deforestation) further threaten food production across the country. Human-induced deforestation, land degradation and desertification processes have compounded climate change impacts, increasing smallholders' food and water insecurity across the majority of the country.

Table 1 outlines the expected trends and impact of each climate-related hazard on the various LHZs across the country, as highlighted by the World Food Programme's Climate Response Analysis for Adaptation report<sup>191</sup>. Overall, Figure 30 highlights the hazards posed by increased rainfall variability across Burundi. As discussed in **Hazard 2- Changing rainfall patterns**, Burundi is vulnerable to wetter rainy seasons combined with longer, dryer dry seasons. This, in turn, makes much of the country vulnerable to water deficiency and flooding simultaneously. While the dry seasons erode and dehydrate soil, increased precipitation during the rainy seasons is likely to waterlog the dried earth. This exposes the Burundian agricultural system to further hazards, such as losses in crop yields, which then increases vulnerabilities elsewhere. The Imbo Plain, East, and Eastern Dry Plateau are most susceptible to flooding, while the East and the Northern Depression face the greatest exposure to drought.

<sup>190</sup> "Burundi." LandLinks, 20 June 2018, [www.land-links.org/country-profile/burundi/#land](http://www.land-links.org/country-profile/burundi/#land).

<sup>191</sup> Burundi: Critical Corporate Initiative: [Climate Response Analysis for Adaptation \(December 2021\)](#)

	Hazard	Trends	Impacts
<b>LHZ 1: Imbo Plain</b>	<b>Water Deficit</b>	Temperatures in Season 1 are projected to increase up to 2°C by 2050.	Higher temperatures increase evapotranspiration and soil moisture loss, resulting in reduced crop productivity. Higher temperatures and heavier rains elevate conditions for pests, such as fall armyworm and locusts, which are particularly harmful to rice and corn.
	<b>Flooding</b>	Precipitation during Season 2 is projected to increase up to 35% leading to more frequent occurrences of flooding and landslides, especially in areas with or nearby steep slopes.	Increased rainfall during Season 2 can lead to waterlogging problems and loss of production for vegetable crops.
	<b>Landslides</b>		Delay of Season 2 rainfall will shift the sowing season later in the year, elongating the lean season and reducing the growing period.
<b>LHZ 2: East</b>	<b>Drought</b>	Drought will increase significantly by 2050.	Periods of drought can kill crops entirely.
	<b>Flooding</b>	Waterlogging will increase significantly by 2050.	Increased rainfall during Season 2 can lead to waterlogging problems and loss of production for beans and cassava. Flooding during the growing season can increase aflatoxin growth in beans and maize and accelerate post-harvest rot of all crops.
<b>LHZ 3: Northern Depression</b>	<b>Drought</b>	Reductions in precipitation lead to increased drought stress, especially towards the end of Season 1.	Periods of drought are highly destructive and can lead to total crop failure.
<b>LHZ 4: Eastern Dry Plateau</b>	<b>Water Deficit</b>	Temperatures in Season 1 are projected to increase up to 2°C by 2050.	Higher temperatures increase evapotranspiration and soil moisture loss, resulting in reduced crop productivity. Higher temperatures and heavier rains elevate conditions for pests, such as fall armyworm and desert locusts, which are particularly harmful to corn.
	<b>Flooding</b>	Precipitation during Season 2 is projected to increase up to 35%.	Increased rainfall during Season 2 can lead to waterlogging problems and loss of production for beans and cassava.
	<b>Landslides</b>	Waterlogging and drought will increase by 2030, leading to increased conditions for landslides.	Flooding during the growing season can increase aflatoxin growth in beans and maize and accelerate post-harvest rot of all crops.

Figure 30: Climate hazards, trends, and impacts in Burundi (World Food Programme)

Figure 31 below outlines the expected impacts on agriculture of the key climate-related threats in Burundi's LHZs.

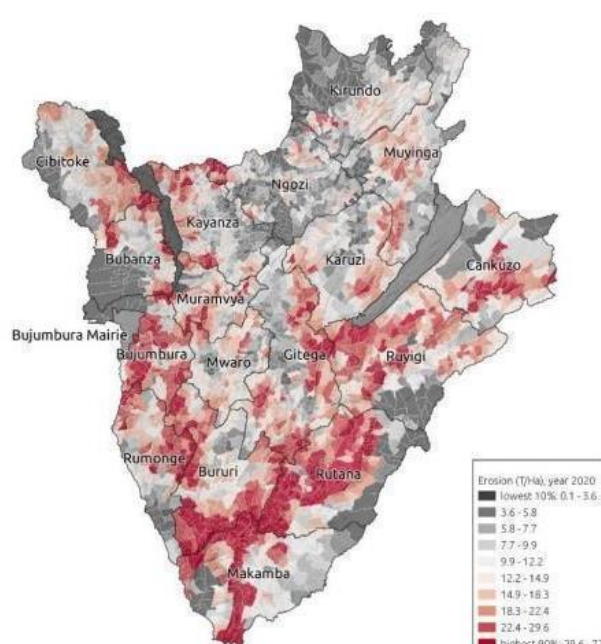
Threats	Affected LHZs	Impacts	Contributing factors
<b>Climate-related threats</b>			
<b>Droughts</b>	2, 3	Reduced yields	Lack of irrigation infrastructure
<b>Water deficits</b>	1, 4	Reduced yields	Water management, sediment management, overexploitation
<b>Landslides</b>	1, 4	Road closures/transport impediment	Deforestation, land degradation, heavier rains
<b>Flooding</b>	1, 2, 4	Reduced yields; increased landslides	Poor infrastructure

Figure 31: Impacts of various climate-related threats on yields and livelihoods in Burundi<sup>192</sup>

<sup>192</sup> Burundi: Critical Corporate Initiative: [Climate Response Analysis for Adaptation \(December 2021\)](#)

**Yield reductions will be exacerbated by soil erosion, especially due to hazards such as flooding and extreme precipitation.**

Erosion and reduced soil fertility are pervasive; a World Bank study using the InVEST-SDR model found that nearly 64% of Burundi's land experiences very severe erosion, classified as more than 200 mt/ha of soil per year<sup>193</sup>. Soil erosion is only worsening, and could see sediment loss increase by 69% by 2030 (from 2020 levels), and up to 200% by 2050.<sup>194</sup> Rutana and Ruyigi districts, two of One Acre Fund's proposed expansion areas for this intervention in the east of the country, demonstrated some of the country's highest soil erosion rates in 2020. Other 1AF operating districts, including Gitega, Cankuzo and Kayanza, also contain significant soil erosion hotspots.



**Figure 32: Soil erosion rates by colline in 2020, based on results from the InVEST-SDR model**

As of 2019, roughly 64% of Burundi had experienced severe or very severe soil erosion, especially in the Imbo Plain and Burundi's western regions; however, soil erosion is endemic to the entire country. Figure 33, below, depicts annual soil loss across Burundi.<sup>195</sup> According to a 2024 study in Ethiopia, 90% of farmers surveyed report lower crop yields due explicitly to soil loss and erosion.<sup>196</sup> Similarly, per a study in Zimbabwe, maize yields drop precipitously, by 13.9% compared to a healthy baseline, with even slight erosion—here defined as plots in which 5cm of top soil must be excavated to reach productive earth. In severely degraded plots, maize yields decreased by 75.9%.<sup>197</sup> Meanwhile, in

<sup>193</sup> Nijimbere, Gilbert, and Christian Riveros Lizana. "Assessment of Soil Erosion of Burundi Using Remote Sensing and GIS by Rusle Model." RUDN Journal of Ecology and Life Safety, vol. 27, no. 1, 2019, pp. 17–28, <https://doi.org/10.22363/2313-2310-2019-27-1-17-28>.

<sup>194</sup> Vogl, A.L., J. Leon, and N.K. Dampha. 2021. "Landslide/Soil Erosion Risks and the Potential for Nature-Based Solutions for Burundi's Colline Landscapes." Burundi Climate and Fragility Advisory Services and Analytics, Technical Report 2. Washington, DC: World Bank.

<sup>195</sup>

[https://www.researchgate.net/publication/332275707\\_Assessment\\_of\\_soil\\_erosion\\_of\\_Burundi\\_using\\_remote\\_sensing\\_and\\_GIS\\_by\\_RUSLE\\_model/link/5dd13e0692851c382f447b3a/download?\\_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19](https://www.researchgate.net/publication/332275707_Assessment_of_soil_erosion_of_Burundi_using_remote_sensing_and_GIS_by_RUSLE_model/link/5dd13e0692851c382f447b3a/download?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19)

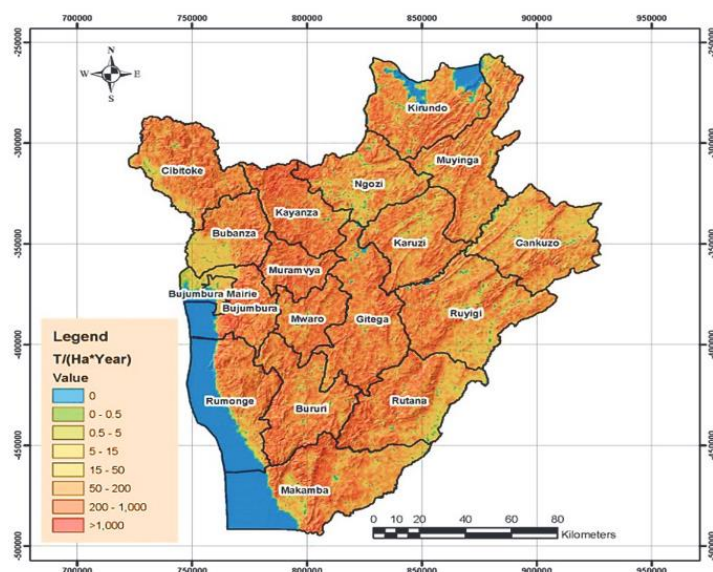
<sup>196</sup> <https://www.nature.com/articles/s41598-024-59076-6>

<sup>197</sup>

[https://www.researchgate.net/publication/251679666\\_Maize\\_grain\\_yield\\_as\\_affected\\_by\\_the\\_severity\\_of\\_soil\\_erosion\\_under\\_semi-arid\\_conditions\\_and\\_granitic\\_sandy\\_soils\\_of\\_Zimbabwe/link/5b0d32054585157f871d40c2/download?\\_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19](https://www.researchgate.net/publication/251679666_Maize_grain_yield_as_affected_by_the_severity_of_soil_erosion_under_semi-arid_conditions_and_granitic_sandy_soils_of_Zimbabwe/link/5b0d32054585157f871d40c2/download?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19)



Burundi, 22% of the country's land experienced a drop in productivity between 2000 and 2015, as crop yields lessened in the degraded soil.<sup>198</sup>



**Figure 33: Annual soil loss due to erosion in Burundi.**

**Soil erosion is compounded by deforestation, which leads to further crop loss and increases vulnerability to hazards such as flooding.**

The loss of forest cover disrupts local ecosystems and affects rainfall patterns, while exacerbating other climate vulnerabilities. Furthermore, deforestation is a primary driver of soil erosion, which increases Burundi's vulnerability to several climate change-related hazards. Natural forests once covered 30-50% of the country's territory, but human activities have vastly reduced this. From 1990 to 2005, Burundi's forest area decreased by over a third (37.3%), and in 2015 only approximately 6.6% of forest area remained in the country. World Bank and Global Forest Watch estimates confirm this rate of forest loss. Namely, from 2000 to 2011, Burundi saw an average deforestation rate of 1.4%, which was almost three times as much as the sub-Saharan Africa average (0.5%),<sup>199</sup> and in the period from 2001 to 2022, the country lost ~33,400ha of tree cover ( equivalent to 14.9mt of CO<sub>2</sub>e emissions<sup>200</sup>). This extreme deforestation is likely to worsen further, absent intervention, as farmers clear more trees to make room for arable land. Less productive soil leads to fewer crops, which in turn, leads to a need to expand the total space available for growing.

**Yield reductions are likely to be particularly damaging for maize and beans - the most important staple crops in Burundi for smallholders.**

It's worth noting that studies have shown that the effects of climate change on maize yields are complex and vary based on regional climate patterns, local agronomic practices, and crop varieties. However, there is strong evidence that maize yields are at a high risk of falling. A study of maize yields in Latin America and Sub-Saharan Africa predicts a 15% decrease in maize yields in 2055 from a baseline in the year 2000, with Burundi in particular at risk of seeing maize yields decrease by 250 KGs per hectare (Fig 25 below)<sup>201</sup>. This yield reduction is due to increased temperatures during the growing season, increased risk of drought, and areas experiencing variable rainfall patterns. The soil degradation also poses a risk to maize yields, given the significant loss of valuable topsoil. A study in Zimbabwe demonstrated soil degradation to

<sup>198</sup> <https://dicf.unepgrid.ch/burundi/land>

<sup>199</sup> World Bank, 2015. Environmental Analysis of Burundi

<sup>200</sup> Vizzuality. "Burundi Deforestation Rates & Statistics: GFW." Global Forest Watch, [www.globalforestwatch.org/dashboards/country/BDI/?category=summary](http://www.globalforestwatch.org/dashboards/country/BDI/?category=summary). Accessed 11 Aug. 2023.

<sup>201</sup> JONES, P, and P THORNTON. "The Potential Impacts of Climate Change on Maize Production in Africa and Latin America in 2055." *Global Environmental Change*, vol. 13, no. 1, 2003, pp. 51–59, [https://doi.org/10.1016/s0959-3780\(02\)00090-0](https://doi.org/10.1016/s0959-3780(02)00090-0).

significantly decrease maize yields, with standard farming practices being unable to make up for yield decreases after ~10cm of topsoil has been lost<sup>202</sup>.

Similarly, a study on the impact of bean cultivation in China found that while increased precipitation has a positive effect on bean yield, year-on-year temperature increases have a significant negative effect on bean yields<sup>203</sup>. This is echoed in similar studies, which found that temperatures above 30 degrees Celsius have a negative impact on bean crop yields. The same study finds negative impacts on corn yields begin at 29 degrees Celsius.<sup>204</sup>

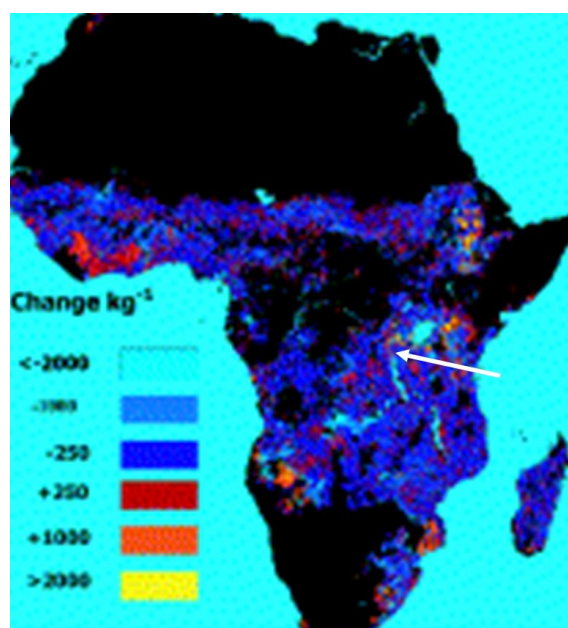


Figure 34: Expected decrease in maize yields across Sub-Saharan Africa

Taken together, each of the discussed hazards will contribute to reduced maize and bean yields in Burundi—although this might not be immediately apparent. Compared to a 2020 baseline, under worst-case RCP8.5 scenarios, overall maize production in Burundi is expected to *increase* by 60.1% by 2050. However, this value is 9.8% *lower* than it would be absent global warming and its effects. In other words, even though the total volume of maize produced in Burundi is expected to increase substantially in the coming decades, that increase is, itself, substantially *less than* it would be without climate change. Meanwhile, bean production is already dropping precipitously in Burundi, with yields decreasing by approximately 28.4% between 2000 and 2020. Climate change is likely to worsen this, with an RCP8.5 scenario lowering bean yields by 20.3% by 2050, compared to 2005 levels.<sup>205</sup>

Crop	Emission scenario	Yield change (%) in 2050
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<sup>202</sup> Maize grain yield as affected by the severity of soil erosion under semi-arid conditions and granitic sandy soils of Zimbabwe

<sup>203</sup> Li, Sidan, et al. "Impacts of Climate and Environmental Change on Bean Cultivation in China." *Atmosphere*, vol. 12, no. 12, 2021, p. 1591, <https://doi.org/10.3390/atmos12121591>.

<sup>204</sup> [https://www.researchgate.net/profile/Ali-Alhayany/post/How\\_extremes\\_temperature\\_impact\\_on\\_plant\\_growth\\_and\\_development/attachment/5a69734fb53d2f0bba4da673/AS%3A586568511291393%401516860239717/download/5\\_Effect+of+Temperature+Rise+on+Crop+Growth.pdf](https://www.researchgate.net/profile/Ali-Alhayany/post/How_extremes_temperature_impact_on_plant_growth_and_development/attachment/5a69734fb53d2f0bba4da673/AS%3A586568511291393%401516860239717/download/5_Effect+of+Temperature+Rise+on+Crop+Growth.pdf)

<sup>205</sup> [https://books.google.co.kr/books?hl=en&lr=&id=iLn3EAAAQBAJ&oi=fnd&pg=PP8&dq=burundi+projected+maize+yields+2030&ots=g58UJ3affS&sig=u2FXA54ypaqOr73QsO6x5hXKjbs&redir\\_esc=y#v=onepage&q&f=false](https://books.google.co.kr/books?hl=en&lr=&id=iLn3EAAAQBAJ&oi=fnd&pg=PP8&dq=burundi+projected+maize+yields+2030&ots=g58UJ3affS&sig=u2FXA54ypaqOr73QsO6x5hXKjbs&redir_esc=y#v=onepage&q&f=false)

<u>Maize</u>	RCP 4.5	-10%, compared to 2018 values*
	RCP 8.5	-9.8%, compared to projected 2050 values absent climate change-related hazards
<u>Beans</u>	RCP 4.5	-14%, compared to 2018 values*
	RCP 8.5	-20.3%, compared to 2005 values
<u>Sorghum</u>	RCP 4.5	-4%, compared to 2018 values*
	RCP 8.5	-8.4%, compared to 2005 values
<u>Rice</u>	RCP 8.5	-21.1%, compared to 2005 values
<u>Wheat</u>	RCP 8.5	-16.6%, compared to 2005 values
<u>Potatoes</u>	RCP 4.5	-10%, compared to 2018 values*
	RCP 8.5	-16%, compared to 2018 values*
<u>Sweet Potatoes</u>	RCP 4.5	No change in yield, compared to 2018 values*
	RCP 8.5	-3%, compared to 2018 values*

Figure 34a: Yield change in staple crops under various RCP scenarios<sup>206207</sup>

Moreover, Burundi is projected to lose crop suitability throughout large swaths of the country by 2040. Between global warming and its resultant hazards, and farmers' practices and will be discussed in the following section, Burundian farms are vulnerable to significant losses in productivity. This can be seen in the below figure 35, where crop suitability is assessed from 0 to 102, with 0 being "not suitable." Values

206

[https://books.google.co.kr/books?hl=en&lr=&id=iLn3EAAAQBAJ&oi=fnd&pg=PP8&dq=burundi+projected+maize+yields+2030&ots=g58UJ3affS&sig=u2FXA54ypaqOr73QsO6x5hXKjbs&redir\\_esc=y#v=onepage&q&f=false](https://books.google.co.kr/books?hl=en&lr=&id=iLn3EAAAQBAJ&oi=fnd&pg=PP8&dq=burundi+projected+maize+yields+2030&ots=g58UJ3affS&sig=u2FXA54ypaqOr73QsO6x5hXKjbs&redir_esc=y#v=onepage&q&f=false)

<sup>207</sup> \*Values marked with an asterisk are taken from a study done in a country in nearby proximity to Burundi with near-identical climates, topographies, and demographics. <https://www.mdpi.com/2071-1050/12/10/4116>



below 33 are considered “marginally suitable,” and cover significant land area in Burundi—especially in the southern, eastern, and western regions.<sup>208</sup>

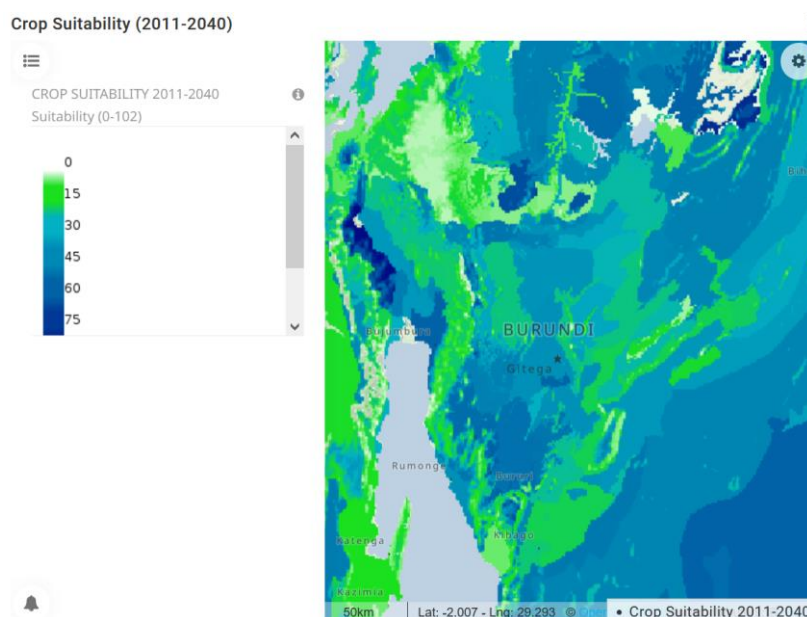


Figure 35: Projected crop suitability in Burundi between 2011 and 2040

This decrease in crop yields, and loss in crop suitability over time, combined with an increase in Burundi's population, will increase vulnerability to hunger over time. Already, Burundians are highly vulnerable to food insecurity, as seen in the below Figure 36.<sup>209</sup> This is because each individual harvest is, in and of itself, vulnerable to the various hazards of climate change. As such, harvests vary from season to season, as seen in the subsequent table.



Figure 36: Vulnerability to food insecurity in Burundi, 2024

## Climate-induced internal migration threatens to increase Burundi's vulnerability even further

Burundi has one of the highest population densities in Africa, and more than 90% of this population depends on agriculture for their livelihood. The population has grown at a steady rate of ~2.7% per year over the last five years, and the agricultural sector contributes ~40% to the nation's Gross Domestic Product (GDP). The percentage of the population living in rural areas has been consistently decreasing since 1960, when 98% of the population lived in rural areas, and while this decrease is expected to

<sup>208</sup> <https://dicf.unepgrid.ch/burundi/climate-change#section-impacts>

209 [https://dash-aa.unepgrid.ch/supersets/explore/?form\\_data\\_key=TALRJ586RABK7CNPOv7nF3vQgJp\\_UliUC-pi5lgoAAmVTPeQdKAebQS2h\\_5waqy&slice\\_id=1491](https://dash-aa.unepgrid.ch/supersets/explore/?form_data_key=TALRJ586RABK7CNPOv7nF3vQgJp_UliUC-pi5lgoAAmVTPeQdKAebQS2h_5waqy&slice_id=1491)

continue the rural share of the population remains very high at 86%, with the majority of these farmers dependent on farming for their livelihoods.

The combination of high rural population density with livelihoods based on subsistence farming could—and likely will, if insufficient adaptation measures are taken—lead to massive migration. Often referred to as “climate migration,” this phenomenon occurs when people are forced to relocate due to environmental stresses either brought on or exacerbated by global warming and its effects. Climate migrants generally lack formal protection, regardless of whether they are displaced internally or forced to relocate across international boundaries. If crossing borders, they are not eligible for refugee protections and are rarely afforded legitimate status or adequate aid.

In Burundi, rural farmers would be most likely to relocate to the capital, Gitega, and largest urban center, Bujumbura. However, Bujumbura lacks the resources to accommodate a sudden influx of potentially millions of Burundian smallholders. Moreover, due to Burundi’s lack of industrial output, migrants would be largely unable to find employment. This has the potential to worsen the already-extreme rates of poverty in the country, which in turn, could drive Burundians across national borders in search of employment and housing.

Burundi is particularly susceptible to internal displacement because of its populace’s dependency on subsistence farming. As will be seen in the next section, Different regions in Burundi face different levels of climate-related risks. While Bujumbura itself is distinctly vulnerable, many of the hardest-hit collines are projected to be in the Eastern and Northern Lowlands and the Eastern Arid Plateaus. Farmers will be forced to vacate their plots if their farms lose viability, and because the rural parts of the country are already so densely populated, there will not be any secondary plots available. As such, Burundi faces an extreme risk of migration crises due to climate change.

1AF is already operating in many of the prospective problem areas (as seen in a subsequent section as well) and seeks to expand into a significant percentage of the remaining. By building adaptation practices throughout Burundian agricultural land, 1AF will alleviate the potential number of climate migrants. This would, in turn, alleviate the potential burden on Bujumbura and neighboring States, which would have knock-on effects in terms of maintaining and increasing resilience.

### 3.4 Why Burundian Subsistence Farming Practices Worsen Farmers’ Vulnerability to Climate Change Hazards

Smallholders do not always undertake best practices when managing their farmland. For example, the broadcast method is widely utilized for both fertilizer and seeds, but is an inefficient method of planting. These methods often result in common issues like overcrowded seeds competing for resources and fertilizer being used in areas of a field where no seeds are present. This contributes to runoff, compaction, soil infertility, and the accumulation of heavy metals and other pollutants and soil acidification<sup>210</sup> while lessening the fertilizers’ positive effects on crop growth. When combined with other concerns, such as improper crop rotation, underuse of compost, and lack of anti-erosion measures, these practices put farmers in comparatively worse positions to adapt to climate change, thereby increasing vulnerability throughout Burundi. Improper crop rotation risks stripping the soil of its nutrients, such as nitrogen. For example, maize takes nitrogen out of the earth as it grows, while beans are nitrogen-fixing and acts as a natural replenisher. Farmers who grow only maize, without rotation, would see their soil stripped of nitrogen, resulting in a decreased crop yield. Similarly, underuse of compost negatively impacts crop yields.

<sup>210</sup> Kessler et al. “Mobilizing farmers to stop land degradation: A different discourse from Burundi” *Land Degrad Dev.* 2020;1–12.

Compost, especially in combination with mineral fertilizers has been shown to increase maize production; in fact, the combination of compost and mineral fertilization is more effective than mineral fertilization alone.<sup>211</sup> Finally, Burundian smallholder farmers do not always engage in proper anti-erosion measures, exposing their land to soil erosion and crop loss. To protect their farms' vitality, farmers could engage in practices such as terracing and intercropping.<sup>212</sup> Research among smallholder farmers indicates that more—and more frequent—anti-erosion campaigns increase the uptake of anti-erosion measures.<sup>213</sup>

1AF addresses this through its training programs, which instruct farmers on modern agricultural techniques like crop lines, effective fertilizer usage (through microdosing), and crop rotation to affix and replenish soil nutrients. An in-depth overview of 1AF practices will be presented in a subsequent section (**How the One Acre Fund Will Help Address Climate Vulnerability in Burundi**).

### 3.5 Smallholders lack of adaptive capacity

#### Resource constraints for the Burundian Government

In recent years, the Burundian Government has made strides in creating plans to address climate risks in Burundi, but it has not had the resources to put those plans into action on the ground. The Burundian Government has successfully created different documents that highlight the country's commitment to fight adverse effects of climate change including but not limited to: Burundi National Development Plan 2018-2027 (PND BURUNDI 2018-2027), the Environment (DOPEAE 2020) and the National Strategy for the Conservation of Forest Ecosystems Sustainable Forest Management and enhancement of forest carbon stocks (REDD+). Additionally, under the 2015 Nationally Determined Contribution (NDC)<sup>214</sup> in the forestry sector, Burundi committed to reforesting 4000 ha per year for 5 years or 20 000 ha by 2020. And in 2022, the Burundian government embarked on tree-planting campaigns as the army implemented the Ewe Urumbaye program—which has planted over 15,000 trees since its launch.<sup>215</sup>

Although many of these plans could legitimately help address vulnerabilities within and throughout Burundi, the State lacks the financial capacity to implement them at scale.<sup>216</sup> This is not due to governmental failure, but rather, to a lack of financial resources, as WFP notes that existing social protection programmes are constrained by fiscal deficits<sup>217</sup>. International investment and development finance have thus far failed to appreciably affect the Burundian economy. And while overseas development assistance (ODA) has shown positive outcomes, the overall incoming flows have been limited—especially in comparison with nearby States.<sup>218</sup> In 2018, ODA given to Burundi totaled approximately US\$600 million.

#### Poor adoption of climate smart practices

Despite the existence of a government agriculture extension program, it is largely insufficient<sup>219</sup> due to the lack of resources highlighted above. As a result, farmers lack knowledge about climate smart practices. WFP reports that few people are trained in agricultural activities, farmers lack understanding of how to intensify agricultural production on small plots of land sustainably, farmers do not choose seed varieties resistant to climatic hazards<sup>220</sup>.

<sup>211</sup> <https://onlinelibrary.wiley.com/doi/full/10.1002/jpln.202200270>

<sup>212</sup> <https://www.cambridge.org/core/journals/experimental-agriculture/article/reducing-soil-erosion-in-smallholder-farming-systems-in-east-africa-through-the-introduction-of-different-crop-types/7AD736FDCED90AA5CD4D287DE50DC9E1>

<sup>213</sup> <https://www.sciencedirect.com/science/article/pii/S2666154323000194>

<sup>214</sup> Burundi [2020 Revised NDC](#)

<sup>215</sup> <https://abpinfo.bi/2022/12/21/lancement-du-programme-ewe-burundi-urumbaye-sur-la-colline-muzenga/>

<sup>216</sup> <https://www.tandfonline.com/doi/abs/10.1080/10242694.2023.2232971>

<sup>217</sup> [Burundi Country Strategic Plan 2024-2027](#) WFP

<sup>218</sup> <https://kiss.kstudy.com/DetailOa/Ar?key=52284850>

<sup>219</sup> [Climate Response Analysis for Adaptation - Burundi](#) 2022 WFP

<sup>220</sup> Ibid.

### **Lack of financial resources and financial services**

Farmers typically have only 0.5 hectares of land to farm, and WFP notes that many people do not have sufficient land to meet their financial or food requirements.<sup>221</sup> As mentioned above, WFP classified 41.2% of the country's population (5.4 million people) as food insecure in 2023,<sup>222</sup> and Burundi has the highest rate of poverty worldwide, at around 75% based on 2017 data.<sup>223</sup> WFP notes that the high cost of soil amendments, fertilizer, and improve/adapted seeds prevent farmers from using them adequately<sup>224</sup> to grow themselves out of poverty.

Farmers in Burundi do not have access to financial services to fall back on. WFP notes that the majority of households do not have access to microcredit, and that traditional microfinancing schemes are for sums too low to create sufficient access to farm inputs / products<sup>225</sup>.

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<sup>221</sup> Ibid.

<sup>222</sup> [2023 Annual Report](#) WFP

<sup>223</sup> <https://hdr.undp.org/system/files/documents/hdp-document/2023mpireporten.pdf>

<sup>224</sup> [Climate Response Analysis for Adaptation - Burundi](#) 2022 WFP

<sup>225</sup> Ibid

### 3.6 How One Acre Fund Will Help Address Climate Vulnerability in Burundi

Problem Analysis							Response Narrative		
Hazard	Observed change	Future/Predicted Change			Observed impact on food security	Future impact on food security	Current barriers to food security	Why the proposed solution will help	How this solution will guarantee adaptation and mitigation outcomes
		RPC2.6	RPC4.5	RPC8.5					
Temperature rise (approx. degrees C)	0.5	1.5	2.4	5	Crop and vegetation breakdown.	5%-25% reduction in maize yields	Certain crops and variants are better suited to increased temperatures, but farmers are not aware of which.	1AF identifies crops which show adaptability to current climates.	Farmers will plant crops better suited to changing conditions.
Changing rainfall patterns (%change anomaly from 2014 baseline)	N/A	-10% in dry season; +8% in wet season	-13.7% in dry season; +5.1% in wet season	-9.5% in dry season; +7.6% in wet season	Yearly differences in rainfall lead to annual changes in total crop yields, exacerbating seasonal hunger risk	No exact value; impacts are seasonal and variable	The adverse effects of changing rainfall patterns can be mitigated with fertilizer, but farmers do not properly fertilize their crops.	1AF teaches farmers how to "microdose" fertilizer and provides smallholders with necessary materials.	Fertilized crop growth will mitigate the seasonal variance from changing weather patterns.
Soil erosion	64% of Burundi has experienced soil erosion.	N/A	N/A	N/A	22% decrease in crop yields between 2000 and 2015	In severely degraded plots, maize yields could drop up to 75% from current baselines.	Soil erosion severely negatively impacts crop growth, especially for maize and beans.	1AF will mitigate soil erosion through its tree planting program.	Deforestation worsens soil erosion; by slowing or reversing deforestation, the effects of soil erosion will be mitigated.
Floods and droughts (mm precipitation increase and decrease from 2014 baseline)	Flooding displaced roughly 100,000 people in 2024. Severe droughts in 1999, 2005, 2008, and 2009.	-13.6mm in dry season; +10.9mm in wet season	-11.9mm in dry season; +9.2mm in wet season	-6.2mm in dry season; +16.6mm in wet season	Floods wash away farms and inundate crops, while drought prevents healthy germination.	Floods and drought could cause a 15% decrease in crop yields by 2055. Bean yields are particularly vulnerable to floods.	Floods inundate and wash away farms and cause severe displacement. Droughts adversely affect crop yields.	1AF will educate farmers on land management practices to mitigate the effects of hazards like floods and drought.	Farmers will become more efficient in their land use and growing patterns, thereby lessening the impacts of these hazards.
Extreme weather events (average largest 5-day cumulative precipitation over 2014 baseline in mm)	N/A	+7.9mm	+5.6mm	+7.5mm	Excessive rainfall destroyed 50,000 ha of crops between Oct. 2023 and Jan. 2024.	Extreme weather events inundate crops and exacerbate hazards such as flooding and soil erosion.	Excessive rainfall destroys cropland and displaces people, while contributing to other hazards like soil erosion and flooding.	1AF will identify adaptable crops and educate farmers on land management best practices.	Farmers will plant crops best suited to current conditions while learning how to care for them in the most efficient way possible.

Figure 37a: Summary of problem analysis and response narrative

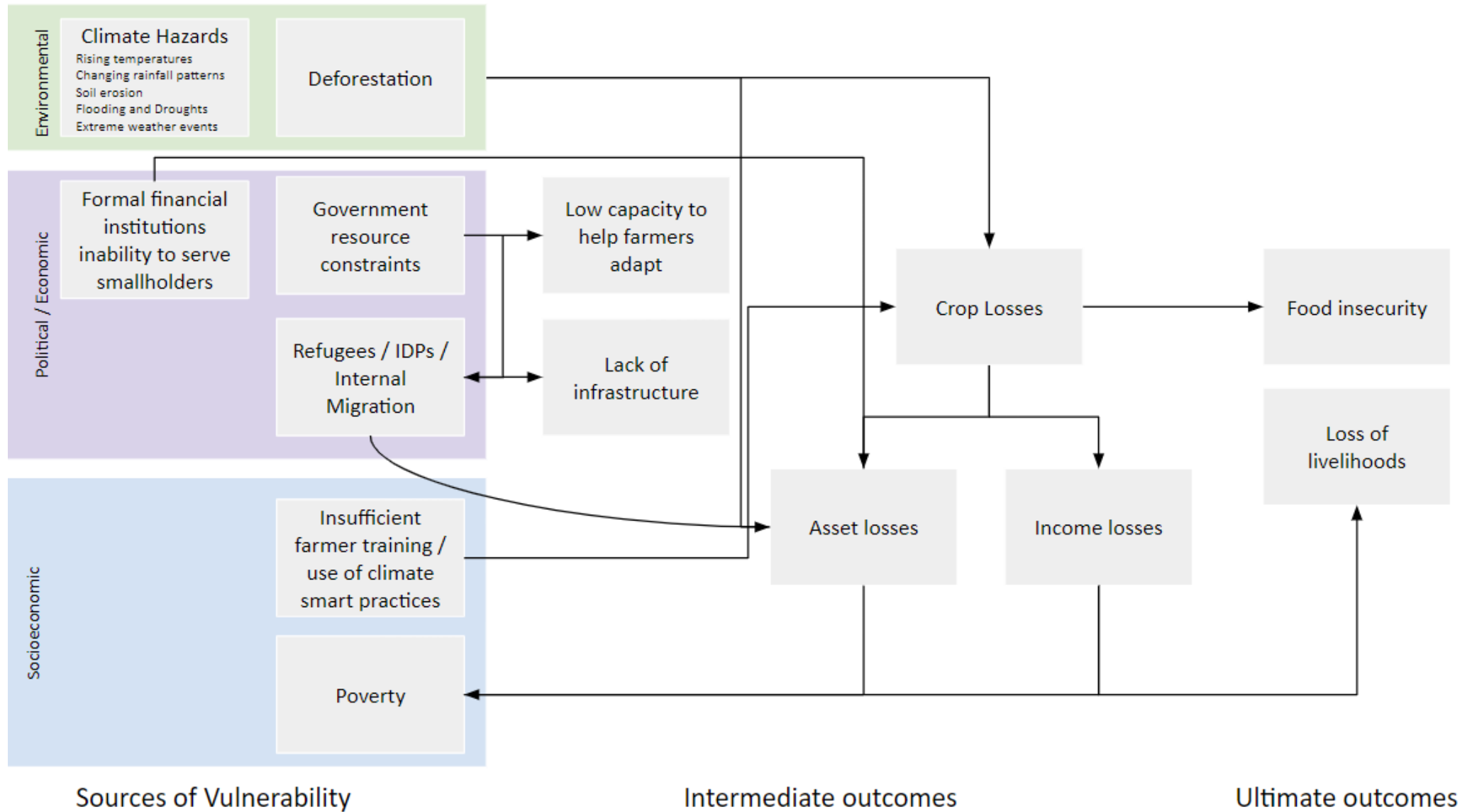


Figure 37b: Summary visualization of sources of vulnerability, intermediate outcomes, and ultimate outcomes for Burundian smallholders

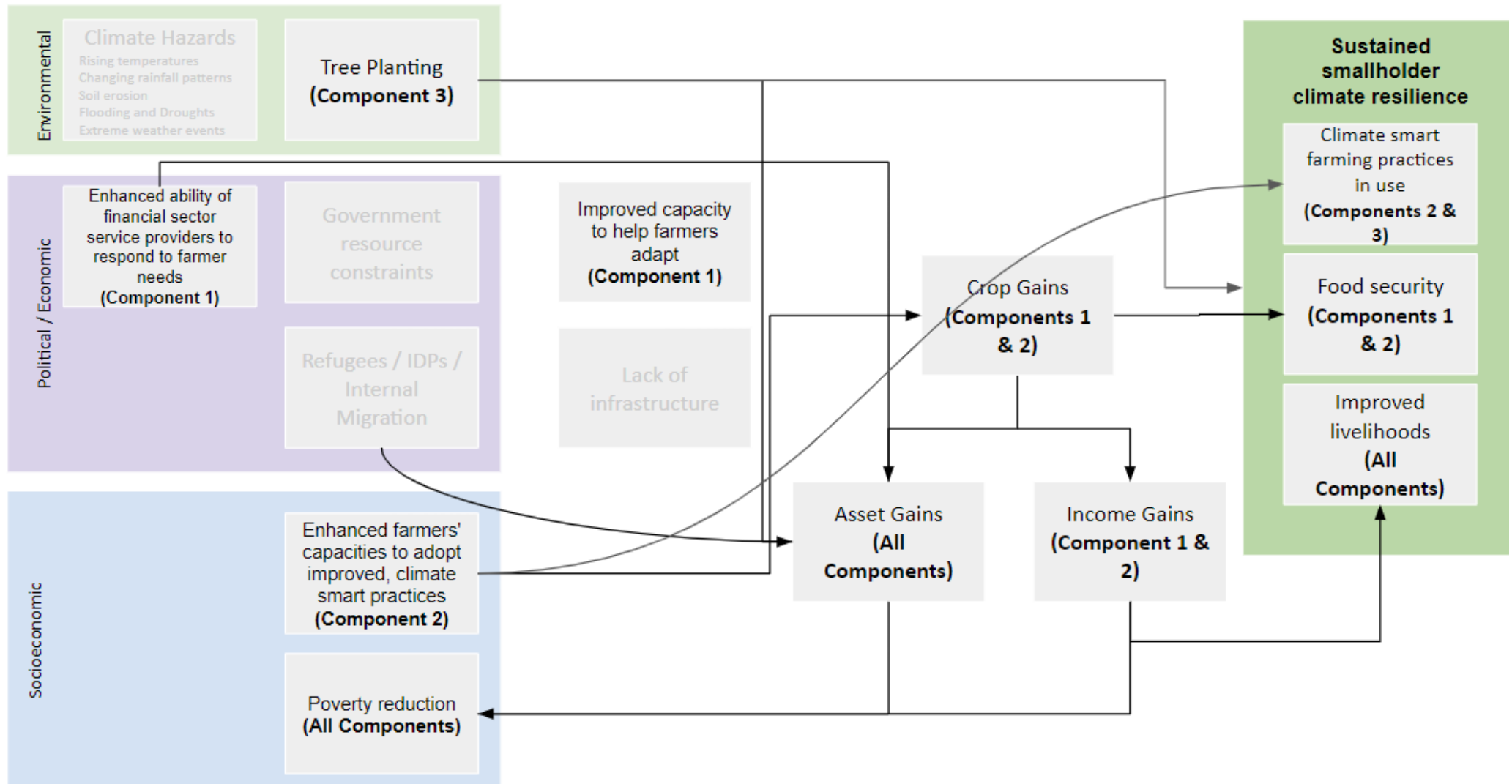


Figure 37c: Summary visualization of how the proposed project addresses vulnerabilities and creates positive outcomes for Burundian smallholders



## How One Acre Fund Will Help Address Climate Vulnerability in Burundi (continued)

1AF addresses the discussed climate change hazards issues through its farmer services.

Offering agricultural inputs to farmers helps ensure they have access to the quantities of farm inputs they need to maximize their harvests. The additional profits help farmers deal with financial shocks in the short term and build assets in the long term. This gives farmers a financial cushion to allow them time to adapt to changing conditions caused by climate change.

Training programs<sup>226</sup> supplement efforts led by the Burundian government to better educate rural smallholders on land management best practices. They include instruction, in the local language, as to how best to rotate crops, affix nitrogen, sustainably plant seeds, make/use compost, and “microdose” fertilizer for maximum effectiveness with minimal risk of environmental contamination. Microdosing, meanwhile, describes the application of chemical fertilizers at rates well below their standard recommendations — recommendations, it should be noted, intended to maximize profits, rather than sustainability. By applying less chemical fertilizer in a more-targeted manner, farmers still see substantial crop-yield increases, even with substandard soil quality, per a study undertaken in Busia County, Kenya. Moreover, per the same study, fertilizer microdosing allows soil to recover more quickly and leads to lower rates of subsoil contamination.<sup>227</sup>

1AF offers support services for cash crops to test and identify crops which show promise in terms of adaptability to current and future conditions as well as potential for additional profit over traditional staple crops. 1AF then introduces the inputs for these crops along with training and field followup to make sure farmers benefit as much as possible. This adds to the financial and asset cushion offering a layer of protection for farmers against the changing conditions of climate.

Reforestation, meanwhile, is widely considered to be one of the easiest ways to combat climate change. Trees, alongside the plant life that grows underneath their canopies, are the most effective tools available to draw carbon from the air. 1AF seeks to contribute to carbon capture and reduce pressure on existing forests through its Tree Program, having already planted over 5.3 million trees through 180,000 participating farmers in 2022 alone.<sup>228</sup> This will allow smallholders to adapt their farms to the changing climate, rather than needing to seek out new patches of arable land.

Taken together, this package of services helps Burundian farmers develop climate resilience. Increased access to inputs through input funding, using improved practices, and adopting new higher-value crops, all increase the efficiency of the usage of resources and increase farmer profits and assets. This reduces harmful waste and creates a financial shield against changing climate conditions. Planting trees reduces pressure on existing forest and helps sequester carbon.

## 3.7 Conclusion

Burundi is one of the most climate-vulnerable countries in the world, and that vulnerability is both exacerbated by and a threat to the country’s agricultural system. Burundi’s unique demographics—densely populated, yet heavily rural—and reliance on smallholder and subsistence farming put it on a collision course with the worst effects of global warming. Hazards such as soil degradation, increased rainfall variation, and rising temperatures combine to threaten three key interlocking crises:

<sup>226</sup> <https://oneacrefund.org/what-we-do/areas-focus/training>

<sup>227</sup> [https://www.researchgate.net/publication/273764068\\_Micro-Dosing\\_of\\_Lime\\_Phosphorus\\_and\\_Nitrogen\\_Fertilizers\\_Effect\\_on\\_Maize\\_Performance\\_on\\_an\\_Acid\\_Soil\\_in\\_Kenya](https://www.researchgate.net/publication/273764068_Micro-Dosing_of_Lime_Phosphorus_and_Nitrogen_Fertilizers_Effect_on_Maize_Performance_on_an_Acid_Soil_in_Kenya)

<sup>228</sup> <https://oneacrefund.org/what-we-do/countries-we-serve/burundi>

- Hunger: Collapsing crop yields threaten to expose Burundi to widespread hunger, alongside loss of income, making the country vulnerable to a serious health and humanitarian crisis.
- Deforestation: Farmers seeking arable land will contribute to Burundi's ongoing deforestation crisis, which will exacerbate other climate hazards.
- Migration: A collapse in Burundi's food system could lead to a regional migration crisis and increased vulnerabilities both within the country, and across international borders.

1AF is positioned well to help given our existing track record of work in the country—with a GCF partnership catalyzing the sustainable, long-term delivery of climate resilience services to a significant portion of Burundi's smallholder farming population. By providing farmers with the necessary inputs and information to build resilience on their land, 1AF is able to build Burundi's adaptive capacity. A changing climate necessitates changing agricultural practices to mitigate and prevent food system collapse. GCF funding would allow 1AF to continue, improve, and expand its work in Burundi. 1AF's work is sustainable; through its innovative funding cycle, a little bit of money goes a long way. This would likely have knock-on effects as well, as these funds could lead to increased FDI and ODA, growing Burundi's economy and better insulating it against climate change.

Burundi is vulnerable, but it has already proven itself resilient, bouncing back from a tumultuous history. Now, with help from the GCF, Burundi will prove itself resilient once more—this time, to the warming earth.

## 4 Project Specific Information

### 4.1 Project beneficiaries and selection criteria

#### Direct Beneficiaries

Almost all farmers in Burundi are smallholders and struggle with the effects of poverty without easy access to credit or market services. A 2021 study showed that less than 16% of people across Burundi had access to credit from banks or MFIs and notes that access is even lower in rural areas<sup>229</sup>. In 2019 while only 11% had access to electricity across the country, only 2% had access to electricity in rural areas<sup>230</sup>. Burundian farmers have on average less than 0.94 acres and the majority live below the World Bank's poverty measure of \$2.15 per day<sup>231</sup>. Prior to 1AF, these farmers generally use traditional farming practices which exacerbates their climate vulnerability through practices, such as broadcasting fertilizer/seed, lack of crop rotation, underuse of compost, and lack of anti-erosion measures, that more quickly degrade soil health and do not provide enough harvest for self-sufficiency.

This project's direct beneficiaries will therefore be defined as:

- Rural Burundian smallholder farmers and their families.
  - Our definition of "smallholder" is that at the time of joining 1AF, they farm at or near the average land size, and they earn income at or near the poverty line level, defined above.
  - However, because of the impoverished economic situation of most farmers in Burundi, almost all farmers are eligible to join 1AF (ie. we do not evaluate their income levels before enrollment, which would present an unnecessary obstacle to our operational ability to scale our services).
- Farmers who are already at a commercial scale are not eligible, and they exist in negligible numbers in Burundi.
  - These farmers typically already use better practices, have access to inputs, and access to financial services, and therefore do not need 1AF's services.
- The selection criteria to identify new farmers are discussed below; commercial farmers self-select out of the program because they will not get the volumes of inputs they need, and don't want to give a contribution for services directed towards less commercial farmers.

#### Indirect beneficiaries

This project's indirect beneficiaries will be the neighbors of 1AF member farmers. These are smallholders who live side by side with 1AF member farmers who have chosen not to or have not yet had a chance to become a 1AF member. They will receive indirect benefits from this project from training spillover. By observing/talking to member farmers and seeing positive results, nonmember neighbors will adopt some of the climate smart practices taught to members by 1AF. Nonmembers who adopt member practices are referred to as spillover farmers by 1AF. According to prior evaluations, spillover farmers on average adopt some but not all member farmer practices and implement the practices at lower levels of compliance. As a result, spillover farmers see harvest / profit benefits compared to non-spillover farmers but at smaller levels compared to members.

#### Selection criteria

##### *Expansion methodology*

<sup>229</sup> <https://publication.aercafricalibrary.org/server/api/core/bitstreams/2c457b27-823d-4dfd-8b76-f151f6da35c2/content>

<sup>230</sup> <https://projectsportal.afdb.org/dataportal/VProject/show/P-BI-F00-004>

<sup>231</sup> <https://data.worldbank.org/indicator/SI.POV.DDAY?end=2020&locations=BI&start=2020&view=bar>

In order to grow the program in such a way that allows for the continued strong performance of the field team, expansion follows a controlled pace that allows for Field Managers and Field Directors to be developed and promoted internally. While this requires more gradual growth, it provides the time for leadership and management competencies to be developed on the team. This is especially important for the 1AF approach to scale, which is designed to build sustainable operations that can continue serving farmers for many years after specific project cycles are completed. This is implemented on the ground in two ways:

- **Site growth** - Once a new commune or set of communes is identified, 1AF will open an operational “district” in a central location. Districts are established with 1 Field Director, 1 Field Manager, and 9 Field Officers (FOs). As discussed in the Field Operations Team Structure section below, FOs are assigned to a colline. Every year, 1AF will add FOs/collines to that district and the appropriate amount of FMs to manage them. After ~4 years, the district reaches its full capacity at 40 FOs/collines.
- **Farmers within site growth** - In order to ensure that FOs learn to perform their jobs well, 1AF assigns farmer targets to FOs depending on the number of seasons of experience. During the FO's first season, their farmer target is only 250. At season two, their target is increased to 350. Finally from season three, the farmer target is increased to 425.
- **As such, once 1AF starts in a new province, it requires 4+ years for 1AF to reach the maximum number of farmers that can be served in that province. Geographic coverage expands and converges over time. Within collines, full capacity is reached only after 1.5 years, or three agricultural seasons.**

Through this measured growth pace, 1AF's target of 303,000 additional enrolled farmers during the GCF project period will be met through a process that will allow for sustained service delivery for many years after the project has ended.

### *Geographic selection*

In creating its expansion planning 1AF follows a three step process:

- **Province and commune internal evaluation** - Provinces and communes are evaluated based several criteria:
  - Proximity to existing operations
  - Exposure to climate hazards
  - Climate vulnerability of the average farming household
  - Rainfall amount and timing
  - Major crops
  - Access and use of fertilizer
  - Access to credit
  - Infrastructure
  - Demographics and farmer density
- **Collaboration with Government on Province and Commune Prioritization**
  - Meetings with government authorities at the national and communal level to prioritize areas of intervention
- **Collaboration with Government on Colline prioritization**
  - Meetings with government authorities at the communal and colline level to prioritize areas of intervention

This process ensures that 1AF expands operations to areas that are simultaneously appropriate for the services we offer and are identified to be high priority by the government.

### *Farmer selection*

Farmers choose to join the 1AF program based on a series of promotion and enrollment activities that 1AF undertakes in their colline. Once hired, the first job of the FO is to promote 1AF services to farmers in that colline and explain the enrollment process. FOs explain the benefits of the program as well as the expectations 1AF has of member farmers - including presence at trainings, working together during planting, and group responsibility for reimbursements. If a farmer decides to join the program, he/she forms a group with other interested farmers, elects a group leader, and submits their individual order alongside their group members' orders during the enrollment process.

To join, farmers must meet some basic criteria. A member must meet the following selection criteria:

The farmer must be from the colline of operation
The farmer must be a smallholder
The farmer must be willing to:
Enter into a group solidarity arrangement for reimbursement with their other group members
Be willing to attend trainings in their colline
Be willing to pay the sliding scale contribution

Figure 38a: Selection Criteria

Commercial farmers are generally not interested in 1AF services and self-select out of the enrollment process. Farmers with large amounts of land / resources generally already have access to credit/inputs and already use many of the practices 1AF teaches.

Farmers with extremely limited resources are still able to access 1AF service because of the way the contributions are structured. Because the contributions are on a sliding scale, more orders leads to a higher amount of required contribution. However, the smallest farmers who take very small orders are not not required to give any contribution to make sure the program is still accessible.

#### *Selection criteria for tree nurseries:*

1AF works with farmers in the collines (villages) of operations to produce the tree seedlings that are distributed as part of component 3. The selection criteria are as follows:

- The nurseries must be located in the colline (villages) where we are operating. The number of nurseries (1-2) per colline is dependent on the farmers served in the colline.
- Nursery managers must:
  - Be a farmer member of 1AF
  - Have enough land for the nursery
  - Have appropriate land for the nursery
  - Have access to water in case of rainfall disruptions
  - Be capable and committed to do the work of setting up, tending to, and distributing from the nursery
  - Accept the payment conditions (fixed rate per tree successfully distributed)

## 4.2 Component 1 - Sustainable Access to Climate-Resilience Inputs

This component will make access for agricultural inputs and other products available for 303,000 smallholder households across Burundi - an essential part of the overall package of services that together reduce smallholder vulnerability to climate hazards.

### **Output 1.1: Increased availability and affordability of climate-resilience inputs in a sustainable long-term model**

This output will increase access to high quality farm inputs / products for smallholder farmers during both the project period and years into the future past the end of the project.

#### **Activity 1.1.1: Awareness raising and farmer enrollment in the program**

##### *Description*

1AF will enroll farmers in the program several months in advance of the agricultural season. During this process, 1AF will hold meetings with smallholders to explain the 1AF program including the 1AF services, potential benefits, and farmer responsibilities. Farmers will communicate their orders for farm inputs and other products to their 1AF FO. 1AF will promote, take orders for, and give training for the proper use of the following climate-smart farm inputs/products to farmers:

Lime	Lime is essential to turning back soil acidity endemic across the country and ensuring that nutrients in the soil are more available to plants.
Hybrid Maize	Hybrid maize varieties are more productive and more resistant to climate change hazards like changing rainfall patterns.
Hoes	The hoe is an essential tool for many tasks on a smallholder's farm including land preparation. Land preparation practices reduce the effects of erosion and make nutrients more available to plants.
Improved Cookstoves	Improved cookstoves use less wood than the traditional three stone fires used by smallholders for cooking.
Harvest Drying Sheets	Drying sheets dry grains more quickly and avoids the effects of rot and aflatoxin, which is a growing concern with changing rainfall patterns.
Watering cans	Watering cans facilitate farmers' work to ensure crops get enough water despite changing rainfall patterns.
PICS bags	PICS bags are hermetically sealed grain bags that allow farmers to store their harvest in a way that protects it from insects without the need of pesticides. Better storage helps farmers either sell when prices are higher, or maintain food stocks to better navigate shocks.
Optimal amounts of organomineral / chemical fertilizer	Fertilizer is essential as a scalable means to adding nutrients to the soil that do not currently exist on-farm, and is a critical component of achieving food security. 1AF limits its fertilizer purchasing and recommendations to avoid overuse; training farmers to microdose fertilizer to avoid the problems with overuse, including runoff and acidification. 1AF also trains farmers to make compost and only use fertilizer in conjunction with compost, which



	better ensures long-term sustainability by adding in organic matter. <sup>232</sup>
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Figure 38b: Farm inputs / products offered to farmers by 1AF

1AF will ensure that it will not finance directly or indirectly under this or any other project any activities that result in the introduction of products/crops/species that are unapproved by the Government of Burundi or invasive.

#### *Justification*

Enrolling farmers into the program is the first step to accompanying farmers on their journey to greater climate resilience.

### **Activity 1.1.2: Provision and delivery of farm inputs/products**

#### *Description*

Based on farmers' orders in activity 1.1.1, using working capital from the revolving fund, 1AF will purchase inventory from various suppliers, negotiating volume-based unit price discounts where possible. 1AF will conduct quality control checks to ensure the inventory delivered by suppliers conform to what was ordered. Once complete, these products will be stored in 1AF warehouses until the runup to the agricultural season when they will be distributed to farmers.

In the weeks prior to the agricultural season, 1AF will identify temporary stocks in the collines where it operates and then begin the logistical work of delivering the products to these colline-level stocks through trucking contracts and casual laborers engaged for loading / unloading. Once the government opens the agricultural season, 1AF FOs will begin distributing the farm inputs and other products to farmers according to their orders. The farmers will sign contracts including the inputs/products and quantities taken as well as acknowledgement of reimbursement deadlines and other responsibilities.

#### *Justification*

Having sufficient farm inputs and products is essential to growing large enough harvests for farm families to reach self-sufficiency and to begin to accumulate assets to help build resilience against climate hazards.

As described in the "Farmer Economics" section below, smallholder farmers in Burundi are financially squeezed at the beginning of the agricultural season and, without support, do not have the financial means to purchase all of the farm inputs they need to maximize their production. While credit would be helpful, MFIs and banks find it difficult to serve farmers who often need to travel long distances by foot to reach those services and who often do not have any credit history.

### **Activity 1.1.3: Recovery of input costs to re-purchase for next season**

#### *Description*

1AF FOs begin collecting reimbursements from farmers from the point of distribution of farm inputs/products. Farmers self-select into "solidarity groups" that share responsibility for reimbursing the inputs taken by the entire group. FOs collect reimbursement primarily after trainings but also through follow up visits. The value of most inputs/products must be reimbursed before the end of the agricultural season (~5 months), however some more expensive products, like harvest drying sheets, may be reimbursed over

<sup>232</sup> 1AF plans - through the GCF project - to test the feasibility of smallholders avoiding chemical fertilizer altogether in a trial by the end of 2027. This will test the harvest outcome as well as the resource costs of using a to be determined alternative methodology such as a fully organic fertilizer product or a multi-colline scale compost production strategy.

the course of multiple seasons. Farmers reimburse little by little at a pace they set themselves as long as they meet the overall deadline. 1AF has historically collected 99%+ of reimbursable cost in Burundi each season (though we've estimated our overall "leakage" rate to be slightly higher to account for other losses).

#### *Justification*

In addition to ensuring that farmers have access to the quantity of inputs they need to maximize their productivity, this arrangement gives farmers a low-risk opportunity to prove their financial responsibility, which the financing sector in the country should recognize as a proxy for farmers ability to repay loans (see more in Activity 1.2.2). The solidarity groups provide a layer of risk mitigation and informal assistance. The collection of reimbursement creates the revolving pool of funding that allows for the purchase and offer of farm inputs/products season after season.

### **Output 1.2 - Enhanced ability of agriculture and financial sector service providers to respond to farmer needs**

This output will make it easier for the financial sector to serve Burundian smallholders and help smallholders access financial services.

#### **Activity 1.2.1: Best practice sharing and program calibration for subsequent seasons**

##### *Description*

Each year, 1AF will hold meetings with the National Advisory Council (NAC). The NAC includes representatives from the Ministry of Environment Agriculture and Livestock, Ministry of Interior, Ministry of Foreign Affairs, and private sector. These will be opportunities to share progress made as well as receive feedback from government and sector stakeholders.

1AF will organize a one-time workshop to bring together a wider set of stakeholders within the agricultural sector to facilitate knowledge sharing and dissemination of best practices related to offering agroforestry, extension, and financial services to smallholder farmers in Burundi. The workshop will include actors from various sectors including government agencies, MINEAGRIE (Ministry of Environment, Agriculture and Livestock), the Ministry of Interior, the Ministry of Foreign Affairs, and private sector representatives. The workshop will serve as a forum for discussing key mechanisms crucial for widespread adoption of practices, such as financing models.

##### *Justification*

This activity will be a key to contributing to the replicability of 1AF's services and developing the enabling environment towards offering adaptation and mitigation services to smallholder farmers across Burundi.

#### **Activity 1.2.2: Improved creditworthiness of farmers through issuance of certificates**

##### *Description*

Members who complete 6 seasons, or three years, of reimbursement successfully will be presented with certificates detailing their achievement including the amounts repaid. The certificates will include other details that local banks / MFIs will have pre-agreed constitute creditworthiness. These certificates will therefore aid farmers to obtain formal financial services outside of 1AF.

##### *Justification*

Recognizing that financial services are essential to helping farmers adapt to changing climatic conditions, this activity will remove one of the main barriers farmers face to obtaining such services: a lack of credit history. MFI representatives at the National Stakeholder Consultation Workshop confirmed this would help them serve farmers with much more confidence.

## 4.3 Component 2 - Climate Extension & Advisory

This component is focused on ensuring farmers adopt practices that will efficiently use their limited resources and maximize their productivity while reducing their vulnerability to climate hazards.

### **Output 2 - Enhanced farmers' capacities to adopt improved, climate smart practices**

Having learned climate smart practices, farmers will use them to simultaneously increase their harvests and improve their soils thereby increasing their farm-level resilience.

#### **Activity 2.1: Refinement of climate-smart agriculture training materials in partnership with MINEAGRIE (Ministry of Environment, Agriculture and Livestock)**

##### *Description*

1AF will continue to work with the Ministry of Environment Agriculture and Livestock in order to ensure that the climate smart agriculture trainings offered by 1AF conform to technical guidance approved by the Ministry and integrate lessons learned as well as best practices offered by the sector. Once a farmer training is initially created or changed substantially in terms of the technical lessons being taught, 1AF engages with the appropriate office of the MINEAGRIE to have it validated. 1AF regularly engages with the agriculture sector in order to gather additional best practices for integration into the training regimen.

##### *Technical justification*

1AF values alignment with the government and wider sector to ensure that smallholders receive the best advice possible to grow bigger harvests and improve their resilience to climate change.

#### **Activity 2.2: Provision of climate-smart ag training support for crops and soil health practices**

##### *Description*

Through its network of Field Officers, 1AF will deliver trainings and field follow up to members centered on maximizing farm productivity/profit and building/maintaining soil health through climate smart agricultural practices. Some trainings will focus on agriculture: staple (eg. maize, beans) and cash crops (eg. avocado, japanese plum, banana). Topics for these trainings on staple and cash crops will include:

- Seed selection
- Row planting
- Proper spacing
- Compost application
- Fertilizer microdosing
- Weeding
- Integrated pest and disease management
- Harvest
- Post-harvest storage
- Crop rotation

Soil health topics will include:

- Creating compost
- Erosion control techniques
- Lime application
- Fertilizer Microdosing

##### *Justification*

Smallholders in Burundi fight against the effects of poverty and food insecurity on a daily basis. This increases their vulnerability to current and future climate hazards. However, their reliance on traditional farming practices exacerbates their vulnerability because these practices can waste resources and result in

poor harvest outcomes. These training topics reduce climate vulnerability because they help farmers do more with less resources, gain experience growing new crops, gain and maintain self-sufficiency / food security, and build a financial cushion by growing bigger harvests.

Nutrient management practices optimize the combined use of mineral and organic resources to ensure efficient resource utilization and ecosystem sustainability, mitigating soil and water degradation. Techniques such as precise fertilization methods produce efficiently and minimize environmental impacts. Furthermore, nutrient management intertwines with other sustainable agricultural practices, such as Integrated Pest Management, by reducing pest susceptibility, weed competition, and runoff, thereby preserving agricultural biodiversity and essential pollination services.<sup>233</sup> Taken together these practices can slow and in some cases turn around the negative effects that climate change is having on soil and their harvests.

## 4.4 Component 3 - Agroforestry

This component is focused on mitigation through farm-level tree planting and carbon sequestration.

### **Output 3 - Large scale adoption of agroforestry practices**

Equipped with seedlings and proper training, farmers grow and maintain trees, contributing to carbon sequestration.

#### **Activity 3.1: Cultivation and delivery of agroforestry seedlings to farmers**

##### *Description*

Prior 1AF experience and research shows that farmers are much more likely to plant and maintain trees when they receive healthy seedlings as opposed to tree seeds and tree nursery training.

Depending on the species, 1AF will either produce tree seedlings or purchase them from multipliers. Where 1AF is producing the seedlings, they will use the decentralized nursery model. In every colline where 1AF operates, the Field Officer will select a farmer who has sufficient land to become a tree nursery manager. 1AF will pay the nursery manager for use of their land and pays a set amount of money per tree seedling produced and successfully distributed. 1AF will support the nursery manager with the initial setup of the nursery, providing the tree seeds purchased from the Ministry of Environment Agriculture and Livestock, and giving the nursery managers the required training to grow the seedlings. Close to the end of Season A, 1AF will distribute the seedlings to members and nonmembers at no charge in the case of agroforestry trees. In the case where 1AF is not producing the seedlings, 1AF will buy the seedlings from multipliers and distribute them to member farmers close to the end of Season A.

In addition to these on-farm focused activities, 1AF will pilot hillside agroforestry and anti-erosion planting to test the feasibility required to explicitly address the hazards of landslides and flooding at scale. While 1AF cannot commit to reducing the probability of these hazards at this time, the proposed project will reduce the impact of these hazards through improved farmer ability to absorb shocks.

##### *Justification*

Agroforestry trees offer four main benefits: sequestration, timber, anti-erosion, and secondary benefits. Trees sequester carbon through photosynthesis which results in carbon being locked away in the tree's roots, stems, branches, and leaves. Timber provides a source of savings and asset building for

<sup>233</sup><https://www.fao.org/agriculture/crops/thematic-sitemap/theme/spi/scpi-home/managing-ecosystems/integrated-plant-nutrient-management/ipnm-what/en/#b>

smallholders who are often unbanked. These long term investments provide further financial cushion against shocks. Farmers, who do not have access to electricity or other fuel sources, can use the wood from these trees for fuel without needing to harvest trees from Burundi's very limited forests. While fuel usage releases carbon, trees that are used for building material/furniture keep carbon sequestered<sup>234</sup>. Trees planted perpendicular to slopes and around field perimeters benefit farmers by holding soil in place despite the hilly nature of Burundi. Finally, trees provide secondary benefits like stakes for beans, fodder for animals, and additional organic material for compost.

Fruit trees offer many of the same benefits with the addition of a sustainable source of income from fruit harvests.

### **Activity 3.2: Training provision on agroforestry, including tree planting, care and maintenance**

#### *Description*

Through its network of Field Officers, 1AF will deliver trainings to members to teach them how to properly plant and maintain their trees. Topics will include:

- Transplantation
- Fertilization
- Watering
- Maintenance
- Integrated pest and disease management

#### *Justification*

As with crops, farmers need to follow the correct set of practices to ensure good survival through the fragile first years of tree growth. This training and followup is key to preventing seedlings going to waste due to poor practices and neglect.

## **4.5 Implementation arrangements**

### **4.5.1 Executing Entity**

One Acre Fund—the Accredited Entity (AE)—is registered as a non-profit 501(c)(3) in the U.S. One Acre Fund (AE) has a regional branch office in Burundi— as such One Acre Fund (AE) is also the sole Executing Entity (EE) of this project. 1AF will be responsible for procurement, implementation, monitoring, internal activity reporting, for compliance supervision (policies), project milestone/deliverable review, and external reporting to GCF.

### **4.5.2 Stakeholder Consultation**

2023

#### **July**

Over the course of July 2023, 1AF held three consultative engagements with Diomede Ndayirukiye who is Director General PATI of MINEAGRIE and the National Designated Authority (NDA). In each meeting Mr. Ndayirukiye expressed unequivocal support for this project.

In the first meeting, on July 6, 1AF Burundi's Country Director, Ryan Martin, and Government Relations Associate, Ornella Hautungimana introduced the PSAA process and 1AF's interest in applying. Mr.

<sup>234</sup> To maintain conservativeness, 1AF did not include this in sequestration calculations, only trees that stay in the ground.

Ndayirukiye voiced his support for 1AF in Burundi, the work 1AF does with farmers, and its level of alignment with the National Development Plan. He recommended that 1AF double check the accreditation requirements.

In the second engagement, on July 14, after gaining clarity on the PSAA process and that this would be a project proposal, Mr. Ndayirukiye recommended that 1AF schedule more time to present more details for this project.

In the final meeting, on July 20, 1AF presented a near complete version of the project pitch deck and requested for a No Objection Letter. Diomede voiced his support for the project and its appropriateness to the Burundian context. On the basis of the presentation, he signed the No Objection Letter.

## **December**

On December 5th, at COP28 in Dubai, 1AF Global Policy Director, Colin Christensen met with the NDA and the Minister of Agriculture to discuss the proposal. They explored the ways the proposal fit into the Minister's wider vision for agricultural development in the country, and the Minister expressed his enthusiasm for finalizing the application expeditiously and scaling the partnership.

2024

## **March - National Stakeholder Consultation Workshop**

**Date: March 26, 2024**

**Location: Bujumbura, Burundi**

### **Participants:**

#### **1) MINEAGRIE:**

- a) Permanent Secretary ai: Emmanuel Niyungeko
- b) DG PATI/NDA: Diomede Ndayikurikiye
- c) DGA: Estella Niyonkuru
- d) DGMVA: Clement Ndikumasabo
- e) IGEBU: Ines Manirakiza
- f) DG OBPE: Berchmans Hatungimana
- g) DGEREA: Leonard Butoyi

#### **2) MININTER:**

- a) ANACOOOP: Giovanni Kwizera
- b) Ruling Party: Appolinaire Sibomana
- c) CIAP: Sylvestre Ndayisaba

#### **3) MDNAC:**

- a) Chef du Conseil d'Administration Ewe Burundi Urambaye: Col Padon Ninteretse

#### **4) MFIs:**

- a) DIFO: Jean Claude Niyomwungere
- b) Twitezimbere: Jean Paul Rudigi

#### **5) NGOs:**

- a) WFP: Ernest Vyizigiro

#### **6) Private Sector:**

- a) FOMI: Jean Pierre Nzobandora (Commercial Director)
- b) FOMI: Gustave Nkurunziza (Research Director)



7) 1AF

- a) Country Director: Barthelemy Cabouat
- b) Interim Senior Program Director Growth Unit: Ryan Martin
- c) Government Relations Associate: Ornella Hatungimana
- d) Government Relations Consultant: Chartier Niyungeko
- e) Communications: Yvan Marre Itungane

**Agenda**

- Overview of 1AF's work in Burundi
- Overview of the climate trends and hazards affecting Burundi
- Explanation of and request for feedback on
  - The potential project with GCF
  - Theory of Change
  - Baseline, Objective and Project Contribution for the Potential Paradigm Shift
  - Baseline, Targets, and Means of Verification for Project Results Areas
  - Baseline, Targets for Enabling Environment
  - Baseline, Targets, and Means of Verification for project specific outcomes and outputs and co-benefits
  - Level of alignment ongoing strategies, indicators, and processes underway

**Meeting notes**

There was robust participation especially from the participants from MINEAGRIE. In general, participants were enthusiastic about the project and committed to supporting its implementation given that its overall objective aligned with the government perspectives in responding to environment issues on one hand, and on the other in promoting resilient agriculture to climate change threats. In the same way, they confirmed that the GCF project fits in the revised national development plan / NDP.

Participants also gave constructive feedback around the targets for some of the indications, implementation and MEL of the tree program, various minor items to highlight in the project documents, and the forthcoming administrative map which will reduce provinces in Burundi from eighteen to five. Participants also gave various ideas for additional activities which, while falling outside of the scope for this project, will be considered for future work.

### Liste des participants - Atelier One Acre Fund

Imbere na mbere abarimyi

Date: 26 Mars 2024

Lieu: Hôtel Club du Lac Tanganyika, Bujumbura





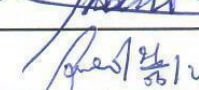

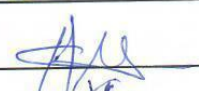


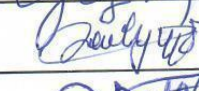







Noms et Prenoms	Nom de l'Institution	Email	Signature
1. SIBOMANA Apollinaire	SNI	sibomapol@gmail.com	
2. VYIZIGIRO Ernest	PAM	ernest.vyizigiro@wfp.org	
3. NDAKIMANA Sylvester	DG CIAP	ndacavestez@gmail.com	
4. MANIRAKIZA Inès	IGEBU	manirines77@gmail.com	
5. NAKUMANAABO Clément	AGRIAT	clementndakumanaaboo@yahoo.com	
6. NYOMWONAN J. Jean	DIFD MF	j.nyomwonan@difo.bi	
7. NKURUNZIZA Gustave	FOMI	nkur_g1980@yahoo.fr	
8. MUYOKURU Estelle	DGA/MIHEAGRIE	estellemuyokuru@yahoofr	
9. XAN MARIE DITONGANDU	ONE ACRE FUND	Xanmarie@gmail.com	
10. NYUNGWE OHAHIERE	ONE ACRE FUND	chaute.nyungwe@oneacrefund.org	
11. MUTE GIOVANNI KINTZERA	DG/ANACOP	twizera76@yahoo.fr	
12. MIBURU Zacharie	PRESIDENCE	zacharie176@gmail.com	
13. DR. BUTAYI Léonard	DGEREA	butale2014@gmail.com	
14. Col NINTERENGE Padm	MANAC	mintpa@gmail.com	
15. HATUNGIMANA Berclimans	COPE	hatungimanaberclimans@yahoo.com	
16. NZOBANDORA J Pierre	FOMI	nzobandora575@gmail.com	
17. RUDIGI Jean-Paul	DG/TWITERIBERE MICROFINANCE	jprudigi@gmail.com	

Figure 39: Attendance list March 26, 2024 page 1







Figure 41: Photos from workshop March 26, 2024

## **April - Regional Stakeholder Consultation Workshop**

**Date: April 3, 2024**

**Location: Gitega, Burundi**

### **Participants:**

- 1) Administration:
  - a) Venant Manirambona: Gouverneur Gitega
  - b) Euphrem Ndikumasabo: Gouverneur Muramvya
  - c) Col. Gaspard Basanzwe: Gouverneur Mwaro
  - d) Désiré Minani: Gouverneur Ngozi
  - e) Col. Rémy Cishahayo: Gouverneur Kayanza
  - f) Emérencienne Tabu: Gouverneur Ruyigi
  - g) Jean Claude Batungwanayo: Gouverneur Muyinga
  - h) Devote Nizigiyimana: Gouverneur Karusi
- 2) BPEAE (Bureau Provincial de l'Environnement, de l'Agriculture et de l'Elevage) Directors:
  - a) Uwikunda Oscar: BPEAE Gitega
  - b) Ali Kassim: BPEAE Muramvya
  - c) Nzokirantevye Libère: BPEAE Mwaro
  - d) Kubwimana Emile: BPEAE Ngozi
  - e) Niyonsaba Adelin: BPEAE Kayanza
  - f) Rénovat Simuzeye: BPEAE Ruyigi
  - g) Havyarimana Celestin: BPEAE Karusi
- 3) Cooperative representative:
  - a) Joseph Bwampamyé: Provincial manager of Sangwe cooperatives in Gitega
- 4) Farmers:
  - a) Juvenal Ntahonshikiye from Muramvya
  - b) Ndamanisha Concilie from Gitega
  - c) Ntibashimirwa Daniel from Muyinga
- 5) 1AF
  - a) Government Relations Associate: Ornella Hatungimana
  - b) Government Relations Specialist: David Bizimana
  - c) Government Relations Specialist: Jean Claude Yamuremye

### **Agenda**

- Overview of 1AF's work in Burundi
- Overview of the climate trends and hazards affecting Burundi
- Explanation of and request for feedback on
  - The potential project with GCF
  - Baseline for the Potential Paradigm Shift
  - Baseline, Targets, and Means of Verification for Project Results Areas
  - Baseline, Targets, and Means of Verification for project specific outcomes and outputs and co-benefits
  - Level of alignment ongoing strategies, indicators, and processes underway

### **Meeting notes**

Participants recognized the project's positive impact on their communities and were happy to have participated in this strategy development workshop, noting that getting their buy-in from the beginning will

increase the chances of success. They vowed their support in helping the project reach the finish line. They recognized 1AF's positive impact on their farming communities and thanked 1AF for the quality of its services to farmers. Participants provided a range of feedback on their needs and challenges, and we discussed which could be addressed through the GCF project, and which would be addressed in future partnerships.

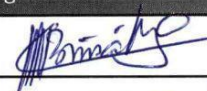
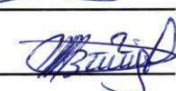
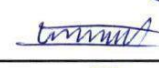
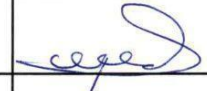



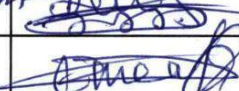


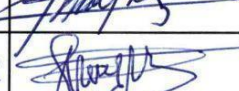



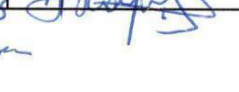




### Liste des participants - Atelier One Acre Fund

Imbere na mbere abarimyi

Date: 03 Avril 2024

Lieu: Hôtel Helena, Gitega

Noms et Prenoms	Nom de l'Institution	Email	Signature
1. BIZIMANA Moïse	BPEAE NGOU	bizimose178@gmail.com	
2. BITANGIMANA Félicien	BPEAE KAYABA Cultivateur	bitangimanasfelicien@gmail.com 61779151	
3. NDAMANISHA CONCILIE	BPEAE GITEGA Cultivateur	65542109	
4. Ntashondikiye Jukeur	BPEAE MUYINGA Cultivateur	69509984	
5. NTIBISTHIMIRWA Daniel	BPEAE MUYINGA Représentant du Gouverneur MURAMVYA	emmanduwa7@gmail.com	
6. NDUWAYO Emmanuel	Gouverneur RWARO	gasanzwe00261@gmail.com	
7. Col GASANZWE Gaspor	Province KARURU	midevate85@gmail.com	
8. NIZIGISHIMANA Sévère	Province RUYIGI	temmencienne@yahoo.com	
9. TABU Emmerencienne	Province GITEGA	tabukusegood@yahoo.fr	
10. SABUKUNZE Léves	BPEAE GITEGA	mwikuoscard@gmail.com	
11. UWIKURAA Oscar	BPEAE MURAMVYA	kassimaki8710@gmail.com	
12. ALI Kassios	BPEAE RUYIGI	reuvrat.8muyeye@yahoo.fr	
13. SHUREYE Réuvrat	BPEAE MURAMVYA	libere20kiranterye@gmail.com	
14. NIZIGISHIMANA Sévère	BPEAE MURAMVYA	jeanseverinsevère@gmail.com	
15. Jseverin SHUREYE Sévère	BPEAE MURAMVYA	jeanseverinsevère@gmail.com	
16. BWAMPAMYE Joseph	BPMCA	Josephbwampamye@gmail.com	
17. Col CISHAYOYO R.	Gouverneur MURAMVYA	ashchayoyo1973@gmail.com	



Imbere na mbere abarimyi

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Figures 42, 43, 44 Attendance sheets and workshop photo Regional Stakeholder Consultation Workshop in Gitega April 3, 2024

### 4.5.3 Government engagement

1AF will consult the government of Burundi for purposes of geographic selection prioritization as well as alignment of proposed activities with national priorities. This will take place through individual engagement with national and regional officials from the Ministry of Environment Agriculture and Livestock (MINEAGRIE) as well as through meetings of the 1AF National Advisory Council which includes members from the Ministries of Agriculture, Foreign Affairs, Interior as well a representative from the Office of Strategic Studies in the office of the President as well as other stakeholders in the Agriculture sector.

1AF will continue to report to various Burundi government authorities about development metrics as requested on a semi-annual basis. 1AF will work with the NDA and Burundi MINEAGRIE to establish a mutually agreed reporting mechanism for climate related country level metrics.

1AF is committed to working closely with MINEAGRIE as follows:

Central services:

- The DGAEVMA for close supervision with particular emphasis on outreach centers and hill cooperatives, capacity building, organization and structuring of producers, harmonization of extension approaches and tools;

- The DGA for the availability of more efficient and sustainable agricultural inputs (fertilizers, seeds, phytosanitary products and other agricultural inputs....) for the development of agricultural sectors and non-timber forest products;
- The DGPEAE for aspects of agricultural and livestock environmental monitoring and planning;
- ISABU for applied research and the development of innovation or any other support deemed necessary;
- The ONCCS for seed certification and quality control;
- The DGE for livestock development;
- The DGEREA and OBPE for environmental and sanitation aspects;
- The DGATI for development, watershed protection and irrigation aspects;

#### Decentralized services

- Provincial Environment, Agriculture and Livestock Offices (BPEAE) for coordinating and monitoring activities in One Acre Fund intervention zones.
- Agronomists to monitor activities and mobilize farmers in the intervention zones as needed
- Moniteur Agricoles to take part in training courses on modern agricultural practices and mobilize members to set up champs de rayonnement.
- Local administration (Communal Administrators) to identify decentralized colline tree nurseries and monitor activities and mobilize farmers in the intervention zones
- The committee in charge of coordinating Sangwe hill cooperatives at communal level to monitor the services offered to colline farmers.

#### Collaboration and monitoring of activities:

The NGO One Acre Fund undertakes to facilitate collaboration through the following modalities:

- Joint planning meetings twice a year with all the General Directorates concerned for the coordination of project activities;
- Two joint monitoring visits per year with the General Directorates concerned as planned;
- Joint implementation field visits with the Provincial Environment, Agriculture and Livestock Offices;
- Each year, the NGO One Acre Fund undertakes to contribute to environmental protection priorities by donating forest trees through the BPEAE.

In the event of field visits and/or joint meetings requiring the travel and participation of MINEAGRIE authorities, the 1AF undertakes to provide payment in accordance with the current scale of in-country mission expenses.

## 4.6 MEL plan

### Annual Performance Reports

1AF will submit an APR by the end of March in 2026, 2027, 2028, 2029. The APR will include:

- Narrative report
  - Project information
    - Activities - qualitative and quantitative assessment of activities mentioned in the logical framework, progress actuals on adaptation and mitigation indicators, and any updated workplans/timelines
    - Finances - actuals and any updated projections
    - Paradigm shift / Enabling environment - qualitative progress updates
  - Additional information
    - Environmental and social safeguards - updates if available
    - Gender action plans - progress updates
- Quantitative data - summary report of adaptation, mitigation, project specific, and co-benefit indicators

1AF will collect the data against the indicators mentioned in the logical framework using its in-house Monitoring, Evaluation, and Learning team using rigorous methodologies that will evaluate project beneficiaries against carefully selected comparison farmers.

Harvest measurements survey	This includes physically weighing harvests (maize and beans) in kg from a randomly selected portion of a farmer's fields and then extrapolating a per acre harvest estimate. This is done for a representative sample of members and nonmembers. This survey is used to report on <b>farm productivity</b> (Outcome 2).
Market price survey	This is obtained from a weekly market price survey, collected from local markets. 1AF then computes an average monthly price between harvest and the next planting (this is when farmers sell their harvests) and use it as a selling price to calculate total in new farming income. This survey is used to report on <b>household income from farming</b> (Outcome 1).
Crop mix survey	In this survey, farmers self-report how much seed, fertilizer, and other inputs they used in kg. 1AF then layers on its data on input prices to determine the total costs of production, and local market price survey data to determine the new <b>household income from farming</b> across enrolled and non-enrolled farmers (Outcome 1).
Enrollment survey	1AF will collect annual gender-disaggregated enrollment data to determine the total number of overall farmer enrollments in the project, together with the specific itemized breakdown and cost of inputs ordered per farmer. These farmer enrollments will be tracked in 1AF's internal database system, in order to measure the scale of the project, as well as the geographic and demographic breakdown of enrolled individuals. The survey data will be used to measure and report on the overall <b>availability and affordability of climate-resilience inputs</b> (Output 1.1).
Household climate-resilience practices surveys	1AF defines a smallholder 'climate resilience practice' as one that offers a protective 'layer' around household farm and livelihoods. These 'layers' offer a buffer and protection in climate change events - e.g. drought, flood, new pest emergence, and staple crop failure. 1AF surveys a representative sample of farmers to determine the percentage that adopt each practice: <ul style="list-style-type: none"> <li>● Tree planting - To support nitrogen-fixing, erosion control, and water management</li> <li>● Crop diversification - Defined as adopting non-staple crops including tubers, legumes, and horticulture</li> <li>● Organic composting</li> </ul>

	<ul style="list-style-type: none"> <li>• Lime application - To reduce soil acidity</li> <li>• Soil erosion control - One or more practices to control soil erosion, such as contour terracing</li> <li>• Correct plant spacing - Aimed at improving crop yields</li> <li>• Fertilizer microdosing - Aimed at applying the optimal amount of mineral fertilizer</li> </ul> <p>These surveys are used to determine the <b>number of farmers that adopt 4+ climate resilience practices</b> (Output 2).</p>
Household income survey	While the methodology for this survey is not yet established, 1AF plans to employ a combination of techniques. First, 1AF will gather self-reported data about income from members and nonmembers during a household-level survey. Second, 1AF will use farmer diaries with a smaller set of farmers to understand at a detailed level household financial inflows and outflows. The findings will be used to determine and report on the <b>increased annual income that supports household graduation from poverty</b> (Co-benefit 1).
Household hunger survey	This survey borrows from FANTA—Food and Nutrition Technical Assistance under USAID—survey questions to determine the percentage of enrolled farmers that report “moderate to severe hunger” on the Food Insecurity Experience Scale (FIES), compared to non-enrolled farmers. <sup>235</sup> 1AF will use one of the FANTA questions: “in the past [4 weeks/30 days], did you or any household member go to sleep at night hungry because there was not enough food?”, compare a representative sample of newly enrolled (<1 year in the program) to veteran farmers, and controlling for location. This survey is used to report on improvements in <b>food security</b> (Co-benefit 2).
Tree planting survey	1AF will conduct annual monitoring and evaluation to determine the survival rates of trees planted. This will include two rounds of in-person visits to farmers; the first immediately after planting (to measure the planting rate), and the second twelve months later (to measure survival rate), across a representative sample of 800-1900 randomly selected enrolled and comparison (non-1AF) farmers. Only additional (incremental) trees are counted—those that will be planted as a result of GCF funds and co-funder contributions. These surveys are used to report on the <b>adoption of agroforestry practices</b> (Output 3).
Tree survival survey	

Figure 45: Existing and planned surveys by 1AF MEL

### Paradigm Shift / Enabling Environment

1AF will engage an external evaluator to conduct an evaluation of the project’s contribution to Paradigm Shift and progress against Enabling Environment indicators. These evaluations will take place in Q3-Q4 2027 (*midline evaluation*, for inclusion in the March 2028 annual report) and Q4 2029-Q1 2030 (*endline evaluation*, for inclusion in the March 2030 final report).

<sup>235</sup> There are six overall FANTA questions about hunger experienced in the past 30 days that are used to determine an internationally vetted relative hunger score

## 5 1AF Track Record in Burundi

### 5.1 The work of 1AF in Burundi

After a successful pilot in 2011 with just a few hundred smallholder farm families, 1AF fully launched its program in 2012 as Tubura, 1AF's local branding. Due to high alignment with farmers' needs and strong execution, Tubura has expanded to its current operational footprint of serving over 290,000 smallholder farm families across 7 provinces.

As is demonstrated below, 1AF's work and results over the past 12 years are proof of the strength of its track record of continued services in Burundi and are strong evidence of the feasibility of bringing these services to additional farmers across the country.

1AF works with farmers through 3 pillars of work in Burundi: the core program, the cooperative programs, and the tree program.

#### 5.1.1 Pillar 1 Core Program

1AF started offering the Core Program originally in Kenya in 2006. Although the core program in Burundi focuses on a different set of crops and offers a few new products, the focus of the core program is largely the same as it was in Kenya. While 1AF strives to make improvements to its operations, 1AF believes it is important to continue a consistent set of services for its smallholder member farmers as long as the impact on farmers remains strong.



Figure 46: 1AF services

The Core Program is focused on four main services: Input Funding, Distribution, Training, and Market Facilitation.

#### Input Funding



In advance of season A and season B in Burundi, 1AF enrolls members for the next season and takes their orders for farm inputs like fertilizer and seed as well as products like harvest drying sheets, grain storage bags, solar lamps, and cookstoves. The enrollment process is the opportunity for 1AF to explain/remind farmers about the benefits and terms of becoming a 1AF member. 1AF asks farmers to form solidarity groups between 6-25 members and elect a group leader.

Based on farmers' orders, 1AF uses revolving fund money to purchase the inputs and products so that they will be available in time for the next season. This aggregated demand results in better prices than farmers could find on their own for many of the products.

For the proposed project, ~91% of purchases for farming inputs and other products will be made in Burundi in Burundian francs, ~6% will be purchased in the region in USD, and ~3% will be purchased outside the region in USD. While depreciation effects are possible, 1AF has dealt with those in two ways for the proposed project: 1) we conservatively budgeted for estimated depreciation; and 2) the proposed numbers of beneficiaries was designed to be conservative so that 1AF would achieve that number even if depreciation is worse than expected.

1AF distributes these reimbursable farm input / products to farmers. For farm inputs and products under a certain level of expense, farmers have the entire season, ~5 months, to reimburse the value of the inputs and products. For more expensive products like a solar home system, 1AF divides the reimbursement over 4 seasons to ensure that more farmers can find such products to still be financially accessible. Farmers can reimburse as quickly or slowly as they like during a season but 1AF does encourage them to stay on the 'healthy path' to avoid needing to reimburse too much at the end of the season.

Groups work together to make sure they reimburse on time. The entire group must meet the reimbursement deadline otherwise all the farmers in the group cannot enroll for at least 1 season. These farmers may join other farmer groups after sitting out 1 season and reimbursing their balance. 1AF invests heavily into customer protection efforts. Field staff are trained on and sign customer protection pledges that ensure that FOs never harass members. Further, member farmers are informed and encouraged to use the toll-free hotline to report any issues which are investigated and actioned quickly. Finally, 1AF conducts customer protection audits to make sure all processes are in place and working well.

Since 2012, farmers have reimbursed at 99+% every season. This is a strong indication that farmers greatly appreciate and wish to stay in the program. To read more about the experience of a typical nonmember farmer interacting with the agriculture sector, read more in the Farmer Economics section.

If extreme weather effects such as late rains or a large pause in rains required that farmers replant in a given season, 1AF would be able to provide assistance to its members. Depending on the time left in the season, 1AF may offer additional seeds at a discount and/or significantly lengthen the reimbursement period to create additional flexibility for farmers.

In 2023, 1AF distributed and collected reimbursement of inputs and products with a total value of over \$23 million USD in Burundi.

### **Distribution**

At the beginning of the agricultural season, 1AF distributes the inputs and products ordered by farmers. These distributions take place at the colline level. This proximity means that farmers do not have to travel very far to receive their orders. The vast majority of 1AF members need to travel less than 30 minutes by foot to arrive at a distribution point. This greatly increases access to important inputs and products.



Farmers greatly value this service, because, by contrast, nonmembers must undergo significant travel to receive even fertilizer. In order to receive subsidized fertilizer, a nonmember must first travel to a participating bank or MFI to prepay for a fertilizer voucher during the prepayment period. These banks or MFIs are often at the commune level. Only farmers who happen to live near a commune or provincial center find this arrangement convenient. At the beginning of the season, the farmer must travel back to that bank or MFI to pay the balance of their voucher and receive their fertilizer vouchers. Finally, the farmer must then travel to a participating fertilizer distributor to exchange their voucher for fertilizer. These distributors are often at the commune and sometimes at the zone level, but not at the colline level.

Products like hybrid maize, hermetic grain storage bags, high quality harvest drying sheets, and solar lamps are often not available even in provincial centers. Products like these must be found in Gitega and Bujumbura often for much higher prices than what 1AF is able to offer.

In 2023, 1AF distributed the following at the colline level in Burundi:

- 27,280 MT of fertilizer and lime
- 220 MT of maize
- 44,400 harvest drying sheets
- 10,100 storage bags
- 42,300 solar lamps and solar home systems

## Training

When not performing Enrollment or Distribution, 1AF offers trainings to farmers. 1AF offers 9 trainings per season or 18 per year. These are delivered by Field Officers to 2 farmer groups at a time to keep training sessions to a good number of participants. These trainings often are organized in a field offered up by one of the members so that the FO can demonstrate techniques and give opportunities for guided practice by members. Whenever possible, 1AF trainings are designed to heavily feature opportunities for members to get hands-on practice. Trainings offered by 1AF are on topics including but not limited to:

- Composting
- Land preparation
- Correct planting
- Integrated pest and disease management
- Weeding, staking, and top dress
- Crop rotation
- Harvesting and storage
- Seed selection
- Tree planting and care

These trainings have a direct impact on farmers' ability to be climate resilient. By using climate smart practices, farmers grow bigger harvests and reduce post-harvest loss which make them financially resilient. Trainings on compost help them replenish the soil. Trainings on planting help farmers make better use of their resources and prevent overuse of fertilizer. Trainings on pest management helps farmers deal with pests safely without using pesticide. Trainings on crop rotation and marketing around new crops help improve soil fertility and give farmers a basis for switching to more adapted crops. All of these trainings add up to a set of practices that make farmers more efficient with the land and resources they have today and more adaptable to the climate induced changes that will come tomorrow.

1AF respects our farmers and makes efforts to integrate their traditional knowledge into training design. 1AF trainings have evolved over time and will continue to do so through the efforts of the agriculture training team in the Field Operations department. This team regularly reviews trainings to make them as adaptable to farmers as possible. This requires taking feedback from farmers through Field Officers as well

as from farmer focus groups. Where appropriate, 1AF integrates traditional terminology and methods in various trainings. For example, the biting/crack method for testing appropriate dryness for maize kernels features in our post-harvest trainings. Additionally, traditional methods for in-field and post-harvest pest control have also been integrated as well as traditional composting methods.

### Market Facilitation

The goal of the work of market facilitation, or market access, is to help farmers graduate from self-sufficiency to more semi-commercial agriculture. This involves providing various services focused on commercialization support for existing crops, the introduction of more commercially viable crops, and facilitating linkages between smallholders and large buyers.

1AF offers products like harvest drying sheets and hermetic grain storage bags as well as trainings on best practices of harvest, drying, and storage. These reduce post-harvest loss and give farmers more opportunity to store harvest until market prices are more favorable.

1AF offers non-traditional cash crops that are adapted to the changing conditions and provide an opportunity for additional profit over staple crops - providing further resilience though creating a larger cushion against shocks for smallholder finances. Some of these crops include - avocado, tree tomato, and bananas. In addition to helping farmers to produce these valuable crops, 1AF is also trying to create linkages between smallholders and large buyers both for cash and staple crops. This will be discussed further in Pillar 2.

### Field Operations team structure

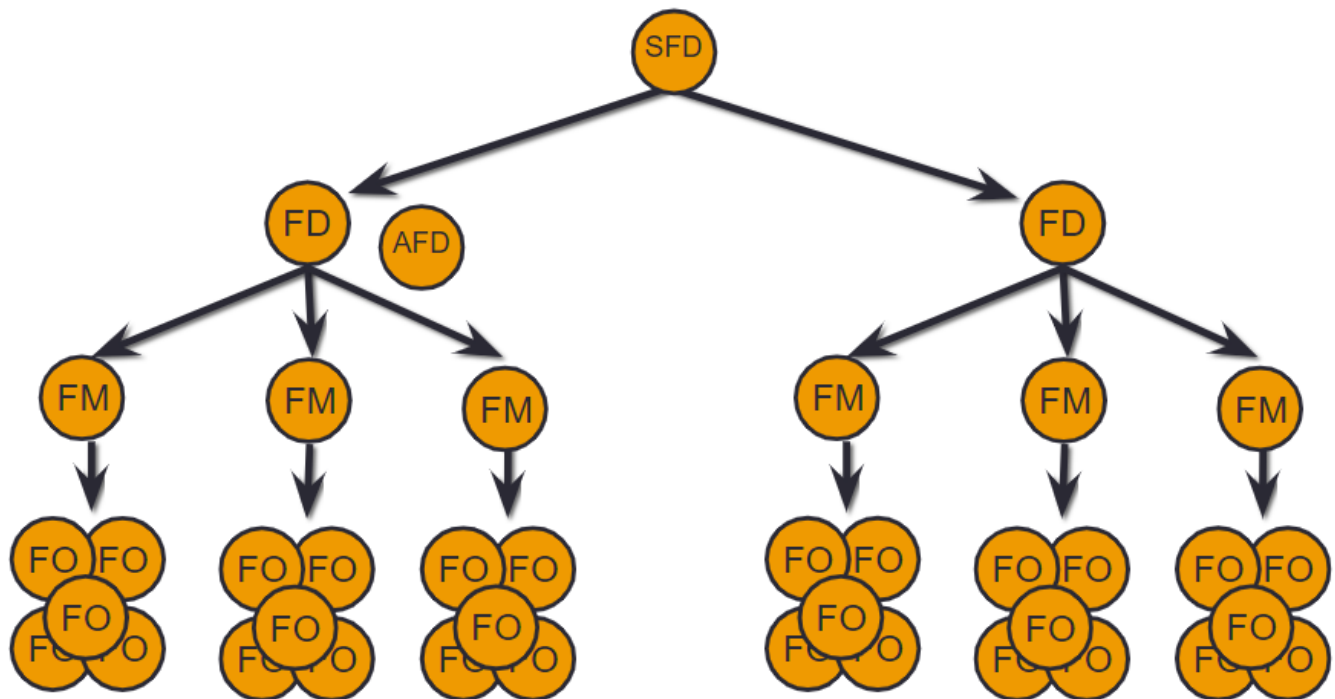


Figure 47: 1AF Field team structure

#### Current scale (2024)

- Senior Field Directors (SFD) - Number of staff: 10
- Field Directors (FD) - Number of staff: 40
- Field Managers (FM) - Number of staff: 99
- Field Officers (FO) - Number of staff: 800

The Core Program is focused around a professional team of Field Officers who are recruited from the very villages that they serve. This hyper-local knowledge helps Field Officers be more effective in their job. They can rely on existing relationships when doing the work of training and doing the hard work of collecting reimbursement. Further, Field Officers know their communities. If a farmer requests a quantity of inputs that would be associated with land much larger than the Field Officer knows the farmer cultivates, the Field Officer knows to ask more questions. Moreover, the Field Officers are particularly effective because they too were, and many continue to be, farmers. They serve as champions for climate smart practices because they have seen firsthand the positive impact and benefited from the improved harvests themselves. This personal conviction helps convince members to adopt these practices themselves.

1AF believes in staff development and providing opportunities for upward mobility. Therefore, all of the Field Managers, Field Directors, and Senior Field Directors that are responsible for managing the field team all started as Field Officers themselves. The field staff in management positions have long tenures of working with 1AF, often 5+ years, with some original senior field leadership having started their employment with 1AF over 10 years ago. This has created a team that continues to be tight knit despite its size and a team that is very committed to farmer outcomes.

The Field Officers are the primary touchpoint for 1AF member farmers. FOs take the orders, they distribute the inputs/products, they collect the reimbursement, they conduct the trainings, and they run follow-up 1 on 1 meetings in members' fields troubleshooting problems and encouraging compliance with best practices. On average, FOs serve around 470 households. FOs only serve farmers in their assigned colline, almost always the colline where they are from. To make this burden more manageable, FOs collaborate with Group Leaders (GLs). Farmers group themselves into groups of 6-25 and elect a Group Leader. These GLs are not paid by 1AF but receive incentives based on hitting certain performance targets. GLs assist FOs with tasks during the season especially around mobilizing members to meetings/trainings and helping to ensure compliance with best practices.

Field Managers (FMs) supervise the FOs and ensure good performance. They conduct visits throughout the season of all of their FOs to give feedback on all aspects of performance from training, to reimbursement, to compliance with filling workbooks and trackers. When an FO goes on sick or maternity leave, often the FM fills in for the FO for a temporary period.

FOs/collines are organized into districts for management purposes, and Field Directors (FDs), and Assistant FDs, oversee all of the FMs and FOs in their district. As of early 2024, there are currently 23 districts. A mature district has around 40 FOs. The FD is responsible for all aspects of performance of their district through visits and the district meetings. District meetings happen every 1-2 weeks and are primarily focused on motivating good performance and communicating the goals and trainings for the next one to two weeks. Every FO and FM attends these district meetings. District meetings are one of the most important parts of how 1AF motivates and tracks performance of its field team.

### 5.1.2 Pillar 2 Cooperative Program

1AF is testing serving farmers through cooperatives in order to potentially unlock more results in terms of market facilitation. As of early 2024, 1AF serves 50 cooperatives mostly concentrated in Gitega province.

In the Cooperative Program, 1AF assigns a Field Officer who offers the same range of services that are offered in Pillar 1 the Core Program. Farmers make household level orders and self organize into solidarity groups of 6-25. Just as Core Program members, they receive the services of Input Funding, Distribution, Training, and Market Facilitation as described in Pillar 1. However, in addition to that, the cooperative itself

may make orders for inputs for shared land which all of the cooperative members reimburse a portion. After proving creditworthiness, the hope is that 1AF will be able to offer to cooperatives more expensive storage products and value addition machinery than would be practicable at the household level.

1AF also uses Cooperatives as focal points for testing Market Access initiatives. For example, 1AF is trialing mushrooms as a cash crop with 3 cooperatives in partnership with SOVERT as a buyer. SOVERT (Société de valorisation de l'Espace Rural et de Transformation) is a private company specializing in the production, sale of mushroom seeds, training/support for cooperatives as well as wholesale of mushrooms.

1AF is engaged to work with the World Food Program to identify 11 cooperatives who will serve as aggregators for maize and beans which will then be purchased by WFP for their school feeding programs in Burundi.

Finally, 1AF is testing the offer of reimbursable small livestock, chickens, to 4 cooperatives through partnerships with local chicken suppliers.

As 1AF studies this pillar of work at a deeper level, current plans have 1AF holding the scale of this work constant at its fully funded scale of 100 cooperatives after 2024.

### 5.1.3 Pillar 3 Tree Program

Understanding the importance of trees to smallholder farmers long term success, 1AF runs a tree program primarily focused on agroforestry tree seedling distribution but also fruit tree seedling distribution.

1AF distributes millions of agroforestry tree seedlings to member farmers each year at no cost to the members. 1AF trains members on how to plant these trees and ensure their survival. 1AF encourages its members to plant trees both in ways that prevent erosion and ways that act as financial savings in the future. On average, 1AF MEL results show a survival rate of just over 30% for these agroforestry trees. Through this project 1AF has committed to a target of 15.6M trees planted between 2025-2029, with at least 5.2M surviving to 2+ years<sup>236</sup>.

Agroforestry tree varieties distributed so far in Burundi have been primarily Grevillea (90%) and Calliandra (7%). Advantages of Grevillea include strong pest and disease resistance, exceptionally good adaptability in high and low altitudes. Grevillea matures comparatively quicker than other tropical varieties. Grevillea is excellent for reforestation but also provides a key source of timber and energy. Advantages of Calliandra include high levels of adaptability to high altitudes. Calliandra also requires limited care and attention while providing key timber and organic matter for mulching and livestock feed from the leaves. Farmers also universally request both these varieties, and are most willing to adopt them versus other species.

1AF also offers fruit trees to farmers as a product in order for farmers to treat them as valuable investments. While still in trial stages, the most promising fruit tree varieties for the Burundi program are avocado, tree tomato, and banana.

#### Tree Nurseries

In each colline where 1AF works, 1AF identifies an independent nursery manager who has sufficient land and is committed to being a Nursery Manager. 1AF pays the nursery manager for use of their land and pays a set amount of money per tree seedling produced and successfully distributed. 1AF supports the

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<sup>236</sup> Because the first two years are the sensitive period for trees, 1AF assumes that the vast majority of trees that survive for at least 2 years will reach maturity.

nursery manager with the initial setup of the nursery, provides the tree seeds, and gives the nursery managers the required training to grow the seedlings.

1AF is obliged to source all tree seeds from the OPBE department of MINEAGRIE. This project will help the OPBE predict supply needs for the coming years to prevent under supply issues like was seen in 2023.

These nurseries have proven to be a very effective and efficient way to mass produce tree seedlings. In 2023 alone, 1AF produced over 6 million tree seedlings in this way.

Because fruit trees are more difficult to multiply, 1AF sources fruit tree seedlings / plants from local established multipliers.

## 5.2 1AF's work with the Government of Burundi

### 5.2.1 Regulatory Relationship

1AF enjoys a close partnership with the Government of Burundi mainly through the Ministry of Agriculture, Elevage, and Environment (MINEAGRIE), which acts as 1AF's line ministry, and the Ministry of Foreign Affairs (MINIRELEX), which oversee the work of all international NGOs. 1AF has been registered with MINIRELEX since 2011 and with the Ministry of Interior since 2018. 1AF is currently working under its 3rd renewable 5-year Protocol d'Execution, or MOU, with MINEAGRIE signed in September 2023.

As memorialized in the Protocol d'Execution, 1AF is committed to providing farmers with quality agricultural inputs and agricultural, nutritional and environmental materials and other products requested by farmers to increase harvests, improve the quality of life of rural populations, and protect the environment through the services described in section 5.1. Importantly, 1AF has its training materials approved by the Ministry prior to their delivery in the field. For its part, MINEAGRIE is committed to mobilizing its technical and sectoral services at all levels to actively participate in the various agricultural, animal and environmental activities of the projects implemented by the 1AF and is committed to collaborating with 1AF in the supply of fertilizers and seeds subsidized by the State within the framework of the national fertilizer subsidy program and national seed subsidy program.

### 5.2.2 Alignment with Government Priorities

At present, 1AF is one of the only INGOs operating at such a large scale within the country. 1AF has operated in Burundi since 2011 (under the brand name "Tubara"), establishing a deep and productive relationship with the country's government. This includes cooperation with government-established co-op groups promoting farm commercialization and income diversification for smallholders. Importantly, 1AF operates in partnership with the government, supplementing State activities and initiatives.

During the last public comprehensive evaluation of all international NGOs operating under the supervision of MINEAGRIE, in 2020, 1AF was ranked the best International NGO. This evaluation rated INGOs on their results, alignment with government priorities, and compliance with government reporting and transparency initiatives.

#### **National Development Plan (PND)**

1AF is a major partner to the Government of Burundi in helping it realize its National Development Plan (PND<sup>237</sup>). Most Directly, 1AF contributes to Axe 1: Development of agriculture, livestock, and food security:

<sup>237</sup> <https://presidence.gov.bi/strategies-nationales/plan-national-de-developpement-du-burundi-pnd-burundi-2018-2027/>


 <b>Axe 1:</b> <i>Development of agriculture, livestock and food security</i>	NDP STRATEGIC OBJECTIVE	1AF ACTION
	<ul style="list-style-type: none"> <li>Strengthening institutional and organizational capacities</li> </ul>	<ul style="list-style-type: none"> <li>Credit for the purchase of agricultural and non-agricultural products</li> <li>Management support for Sangwe cooperatives</li> </ul>
	<ul style="list-style-type: none"> <li>Improving the supply system for agricultural inputs and soil improvers</li> </ul>	<ul style="list-style-type: none"> <li>Access and distribution of fertilizers and seeds, including fruit trees at colline level</li> </ul>
	<ul style="list-style-type: none"> <li>Increased production of food crops</li> </ul>	<ul style="list-style-type: none"> <li>Intensified harvest thanks to training and monitoring</li> <li>Agroforestry tree distribution and reforestation program</li> <li>Model fields and block crops</li> </ul>

Figure 48: 1AF Alignment with PND

### Vision 2040-2060

In July 2023, Burundi launched a new national policy document called "Burundi, emerging country by 2040, developed country 2060"<sup>238</sup>. This vision outlines strategies that will serve as a roadmap for Burundi's economic and social economic and social development.

1AF's work directly aligns with the 3rd objective that aims to develop wealth-creating agriculture that guarantees food security while meeting ecological standards. 1AF services achieve increases in productivity, yields, and farmer incomes while teaching farmers to use climate smart practices.

### Extension Agent collaboration

1AF collaborates with Burundi government extension agents through training and through work on large combined fields (champs de rayonnement).

MINEAGRIE organizes its extension agents through a structure of BPEAE (Bureau Provincial de l'Environnement, de l'Agriculture et de l'Elevage) Directors at the Province level, Agronomes at the Commune Level, and Moniteur Agricole at the colline level. While there are Moniteurs Agricoles, or extension agents, in every colline of Burundi, their capacity to contribute to farmer behavior change is relatively low due to a lack of resources in addition to the fact that each Moniteur Agricole is expected to cover all farmers in a colline (which is usually number in more than 1000 households).

In order to help increase Moniteur Agricole capacity, 1AF FOs invite Moniteur Agricoles to our farmer trainings. This provides refresher trainings to the Moniteur Agricoles and provides a way for 1AF training content to reach nonmember farming households.

One of the priorities of the MINEAGRIE is to increase the adoption and productivity of large fields. Normally most farmers' fields are quite small across Burundi. To create these large fields, farmers with contiguous land must agree to put their land together. After large fields are created at the colline level, 1AF meets the costs of inputs upfront, delivers these inputs to farmers, provides training, and assists with field

<sup>238</sup> <https://finances.gov.bi/index.php/2023/12/15/vision-burundi-pays-emergent-en-2040-et-pays-developpe-en-2060/>

follow up. 1AF then recovers the cost of inputs through farmer contributions paid slowly over the course of roughly one year, at low levels of leakage.

### **Ewe Burundi Urambaye**

The government of Burundi runs a national reforestation program called Ewe Burundi Urambaye. This program is managed and executed by the Burundian military. Recognizing the alignment of goals, since 2021, 1AF donates over 100,000 agroforestry seedlings each year at no cost to aid with the efforts of Ewe Burundi Urambaye which are then divided into different provinces.

### **Support for cooperatives**

In 2019, the government of Burundi created a Sangwe cooperative in every colline across Burundi in order to boost production and participate in development efforts. In order to support this initiative, 1AF has targeted only these Sangwe cooperatives for the work described above in Pillar 2. Additionally, 1AF has worked with the Ministry of Environment Agriculture and Livestock to align towards government priorities, like mushroom cultivation.

## **5.3 1AF's Comparative Advantage**

### **5.3.1 Operations and Results**

By bringing to bear a team of over 1,100 full time staff, 1AF already serves over 15% of smallholders in Burundi and has operations in 7 of 18 provinces. At present, 1AF is one of the only organizations operating at such a large scale within the country. This large geographic footprint means that 1AF is well set up to scale services and create resilience for a large and growing proportion of Burundi's population of smallholders.

1AF has over 12 years of experience delivering strong results on the work required by this project:

- Delivering interactive climate smart trainings, which will be refined over the course of the project, directly to farmers and creating verifiable positive change in farmer behaviors
- Collecting over 99% of reimbursement from farmers each season since 2012 - a clear indication of farmer's belief in the value of 1AF services
- Last-mile colline level distribution of tens of thousands of metric tons farm inputs and products
- Offering tens of millions of dollars worth of inputs and products to smallholders on a reimbursable basis
- Production and distribution of millions of tree seedlings
- Increasing farmer profits by over \$100 annually

Additionally, 1AF has systems for gathering and responding to farmer feedback gathered by Field Officers and shared up the field team hierarchy and through the toll-free hotline. Additionally, 1AF runs farmer satisfaction surveys to understand what parts of our operations can be improved.

### **5.3.2 MEL**

From the outset, 1AF has put a lot of emphasis on Monitoring, Evaluation, and Learning. As exemplified in the 2022 MEL Impact report shared during the Concept Note stage, by investing in robust MEL, 1AF regularly measures and evaluates what works, what does not work, and what it can do to improve its services. This ethos led 1AF to create a set of annual impact evaluations that randomly samples both member farmers and comparison groups with as similar as possible nonmember farmers in order to rigorously attribute any improvements seen to the effects of its services. The best example of this is the



annual harvest evaluation where 1AF enumerators randomly position harvest boxes on the fields of over 1000 members and over 1000 statistically comparable nonmembers and conduct with and weigh the harvest from those harvest boxes. This direct observational data, along with market price surveys, give 1AF a very accurate picture of the effectiveness of 1AF services on member harvest and profit. In addition, the 1AF MEL team regularly conducts surveys on the types of crops planted, planting practices, tree outcomes, and farmer quality of life indicators.

This same learning ethos has also led 1AF to create an Innovations team which uses a phased system of thoroughly testing products and services prior to their offer at full scale to members. For example, agricultural products are tested at an in-house research farm, then scaled to a limited number of members who receive the product at no cost and support from Innovations staff. If outcomes still look positive for farmers, after this stage, the product is offered on a reimbursable basis to a moderate number of members. If results still look positive, the product is offered at full scale to all members. At each stage in the process, the Innovations team tests whether the product is creating better agricultural and financial outcomes for farmers as well as evaluating any logistical challenges that may arise in offering the product. In this way, 1AF has rejected many more products than are currently offered to members, and it ensures that products that are offered are high quality and will produce great outcomes for smallholders.

## 6 Financing Options

### 6.1 Overview

1AF is seeking grant resources for the proposed project that will allow a significant expansion of new climate resilience interventions for farmers in Burundi. The \$50m project budget (as reflected in the Detailed Budget Plan (Gross) tab of the project budget) - from both grants and farmer contributions - will be used in two ways: \$22M will be used for working capital needs in the revolving fund (under Component 1). \$28M will be used for operational expenses (under Components 1 - 3). These contributions will sustainably extend services to farmers well past the end of the 5 year project.

#### **Operational expenses (Component 1 - 3)**

1AF is a non-profit, but 1AF's programmatic model includes a farmer contribution for services they receive. This contribution lowers the amount of funding needed to cover the operational expenses and makes the model sustainable for long-term service delivery. In 2023, farmer contributions covered around 50% of total operating expenses. This makes 1AF much more financially efficient than most INGOs operating in the region.

Burundi ranks 187th in the HDI, and the per capita GDP is \$259. It is not feasible to expect farmers to cover the full amount. However, it is important that farmers make a contribution. This increases their buy-in and encourages them to follow practices taught in training.

It is not possible to use debt financing for operational expenses, as there is no viable pathway to paying back lenders because 1AF ends each year with a financial deficit.

#### **Working capital expenses (Component 1)**

1AF uses working capital expenses to buy farm inputs and products for farmers who then reimburse the value of those inputs and products. This creates a "revolving fund" which is used again and again for the same purpose each season. This means that GCF's \$22M investment will be used for farmers not just during the period of this grant but many years into the future.

While debt financing is possible in other 1AF countries of operation, it is not feasible to arrange for this scope of work in Burundi.

- Lack of availability of foreign exchange in Burundi - The Burundi government has kept the official rate low while the parallel market rate is much higher. Additionally, the Burundi government has kept very strict control over which organizations, agencies, and individuals are allowed to export dollars from Burundi. Having maintained these two policies for about a decade has resulted in very low amounts of private sector investment. This means there are not many dollars to be lent within the country. It also means that it is not viable for lenders outside the country to loan dollars to organizations or individuals in Burundi because they would have little hope of being paid back in dollars.
- Leakage - 1AF collects nearly the entire amount each season, but not quite 100%. This means that other funding must be used to cover leakage on top of any interest owed.
- Farmer climate resilience - Through grant-funded working capital, 1AF can ensure long-term recycling of farmer reimbursements, well past the end of the project, to maximize its value as a sustainable climate resilience tool.

## 6.2 Funding flow overview

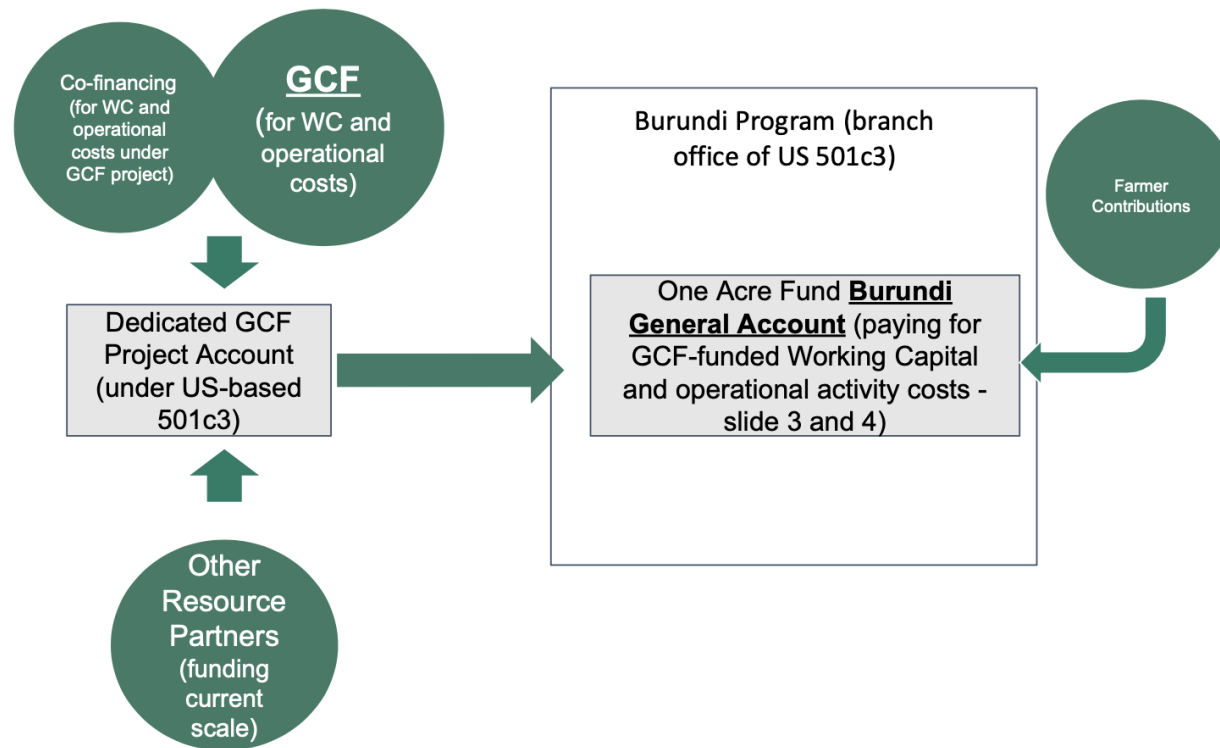


Figure 49: Funding flow overview

In the proposed project, GCF and co-financing partners will transfer funding to a dedicated GCF-project US account. A prearranged schedule and process of transfers will be agreed to between GCF and 1AF, as outlined in the project Term Sheet. When disbursed, the funding will be sent to the 1AF Burundi Program general account, an account denominated in Burundi Francs that is wholly owned by the 1AF US 501c3 and sits in Burundi. This will be used to process two types of project activity payments: 1) the revolving fund input purchases and farmer reimbursements and 2) general operational costs. 1AF will commit to specific details on how to ensure dedicated expenditure and receipt tracking for the GCF project expenses once in Burundi.

Reimbursements collected based on disbursement of this account will be added back to that account before being used again to buy farm inputs and products for the subsequent season. More on this below. Other resource partner funding will continue to be transferred to Burundi in order to fund working capital and operational costs needed at 1AF's current scale. The GCF funds and co-financing will be used to deliver services to the farmers covered under the GCF-project and the climate resilience focus of the project.

Farmer contributions are collected alongside reimbursement of the money used to purchase the farming inputs and other products. These contributions go into the general account and overall reduce the cost of 1AF's program cost.

### 6.3 Revolving fund - farmer order flow

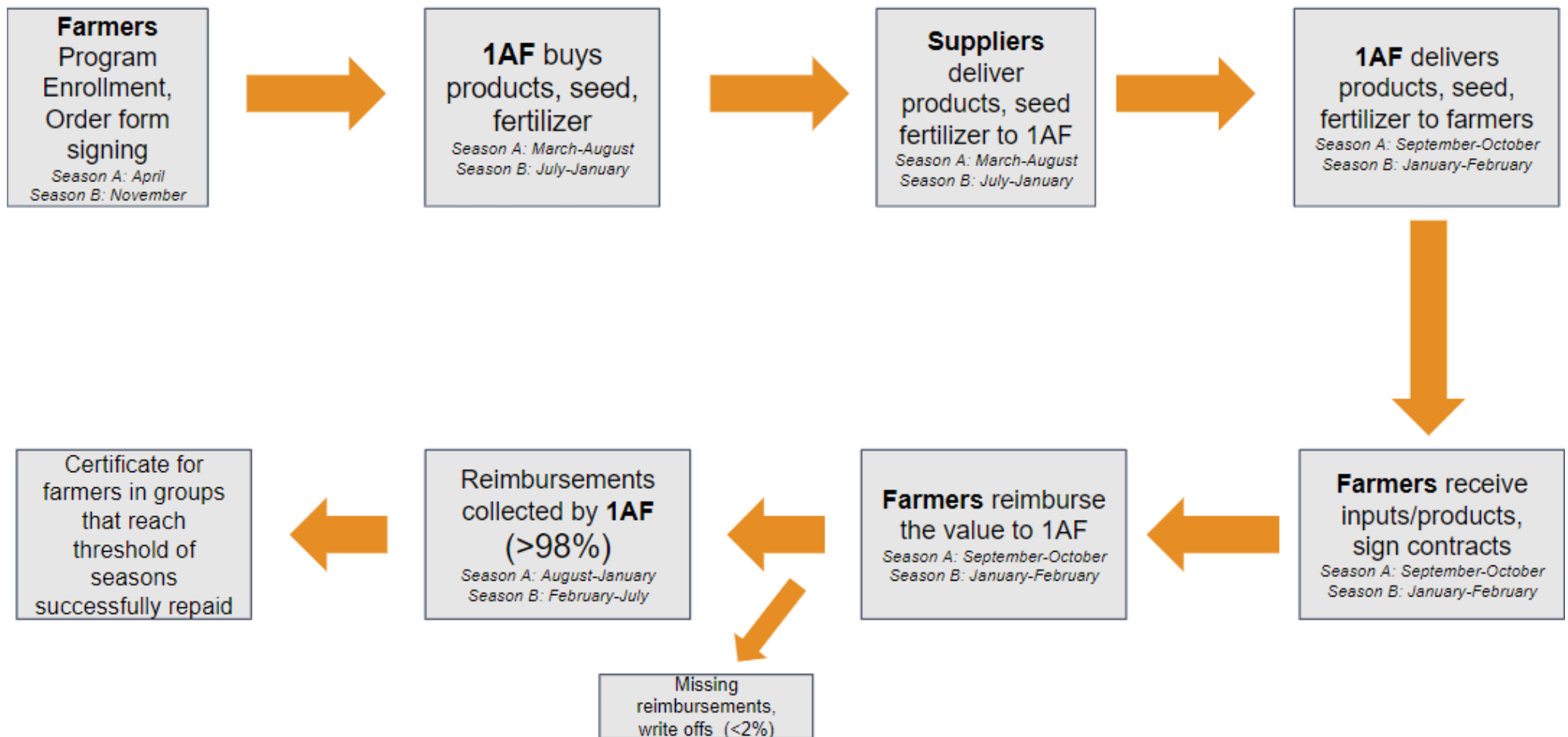


Figure 50: Farmer order flow

The above graphic gives an overview of the flow of the farmer experience from farmer orders to reimbursement. Farmers first enroll in the program and communicate their orders to 1AF, signing an order form. Based on farmer orders, 1AF uses the revolving fund to buy farm inputs and other products. For the proposed project, ~91% of purchases for farming inputs and other products will be made in Burundi in Burundian francs, ~6% will be purchased in the region in USD, and ~3% will be purchased outside the region in USD. The suppliers deliver the ordered quantities to 1AF's warehouses in Burundi. Ahead of the

planting season, 1AF delivers the ordered farm inputs and other products to distribution points at the colline level. Once the planting season begins, farmers receive their orders from 1AF. During the course of the agricultural season, farmers provide contributions to meet the total value of their input orders from 1AF. 1AF typically sees recovery rates at 99% or more, but for the sake of conservativeness, 1AF is committing to only 98% for this project - beating this expectation will result in more money being returned to the revolving fund.

Farmers that successfully complete 6 seasons of reimbursements will receive a certificate of creditworthiness.

## 6.4 Revolving fund - working capital flow

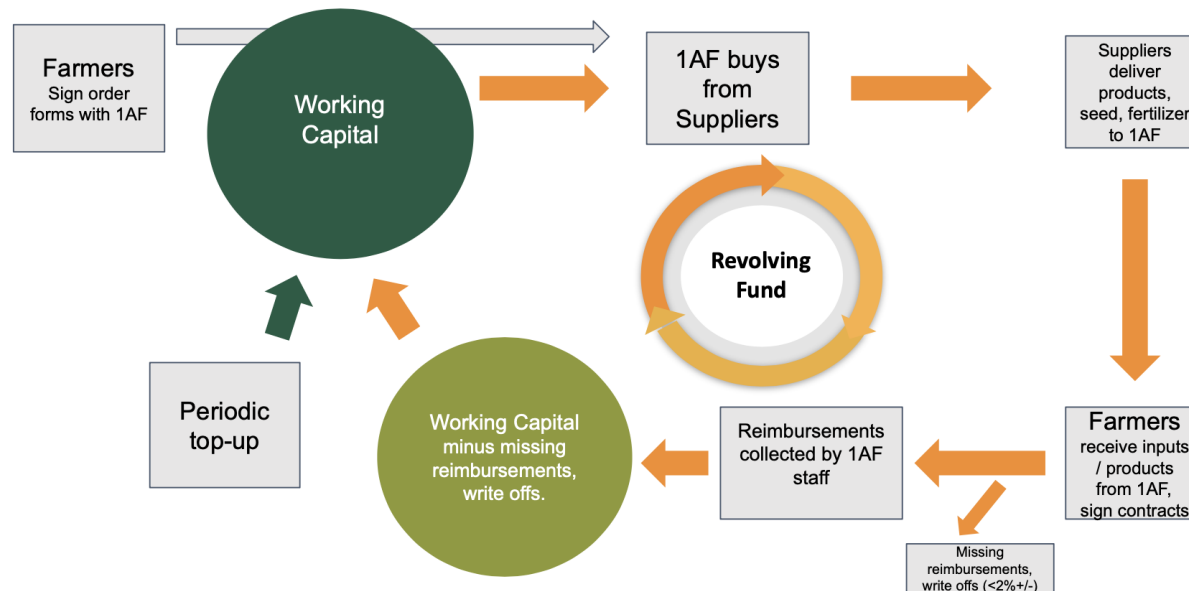


Figure 51: Working capital flow

The above graphic shows the sustainable design of the working capital in the revolving fund: how it is spent on farm inputs and other products, how those are delivered to farmers, and how the collected reimbursement for those inputs and products replenishes the working capital which gets used in the same way the next season. Periodic working top-ups are needed in order to make up for leakage and prepare for expansions in total farmers served.

## 6.5 Operational costs

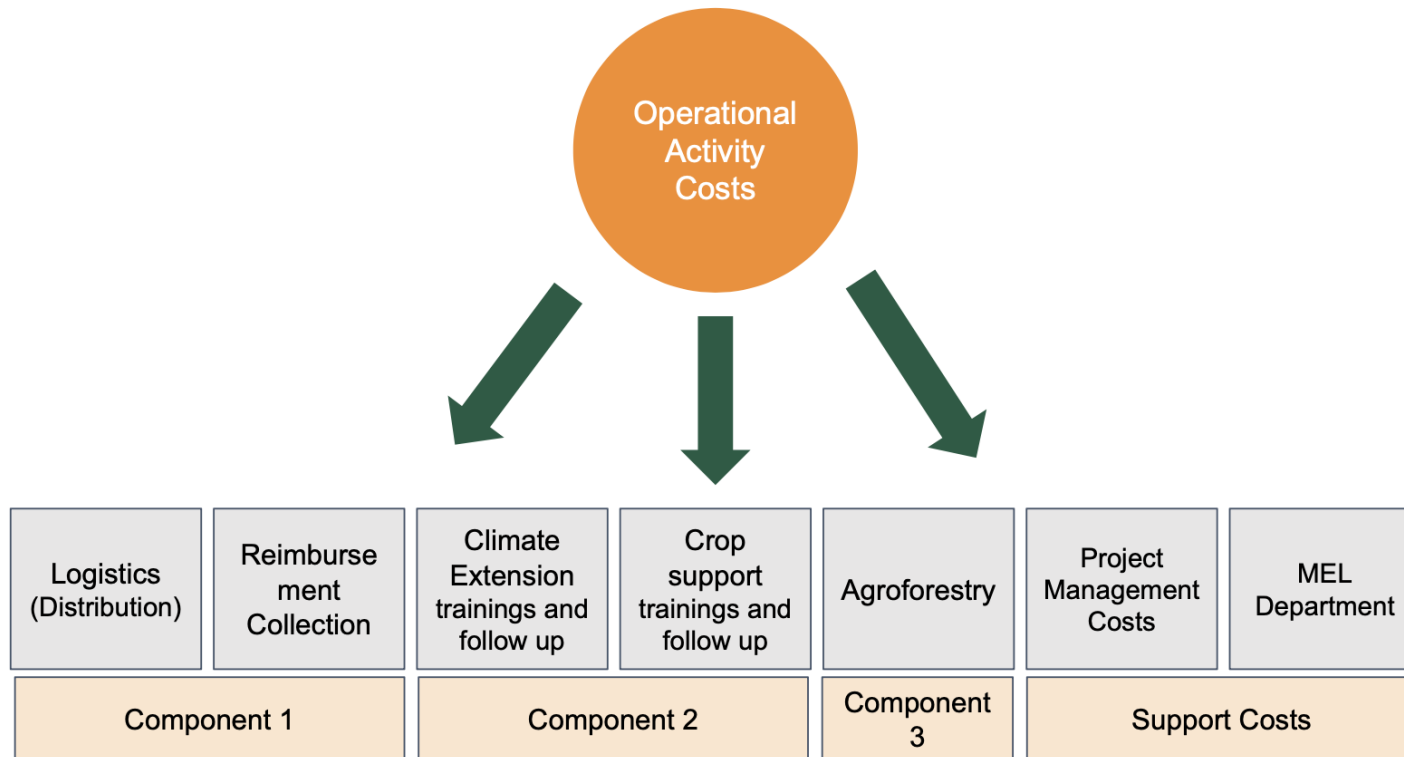


Figure 52: Operational costs

The above graphic gives an overview of how the Operational Costs are spent. Component 1 includes costs for logistics (warehousing and trucking to deliver the inputs and products to farmers) and reimbursement collection (field costs associated with collecting cash from farmers). Component 2 includes costs for climate extension (field costs associated with conducting climate smart agriculture trainings for farmers and following up in their fields) as well as crop support (field costs associated with conducting crop specific trainings and field follow up). Component 3 includes costs for agroforestry (seedling production, distribution, and training). Finally, PMC and MEL.

The following graphic brings the elements of the above pages together:



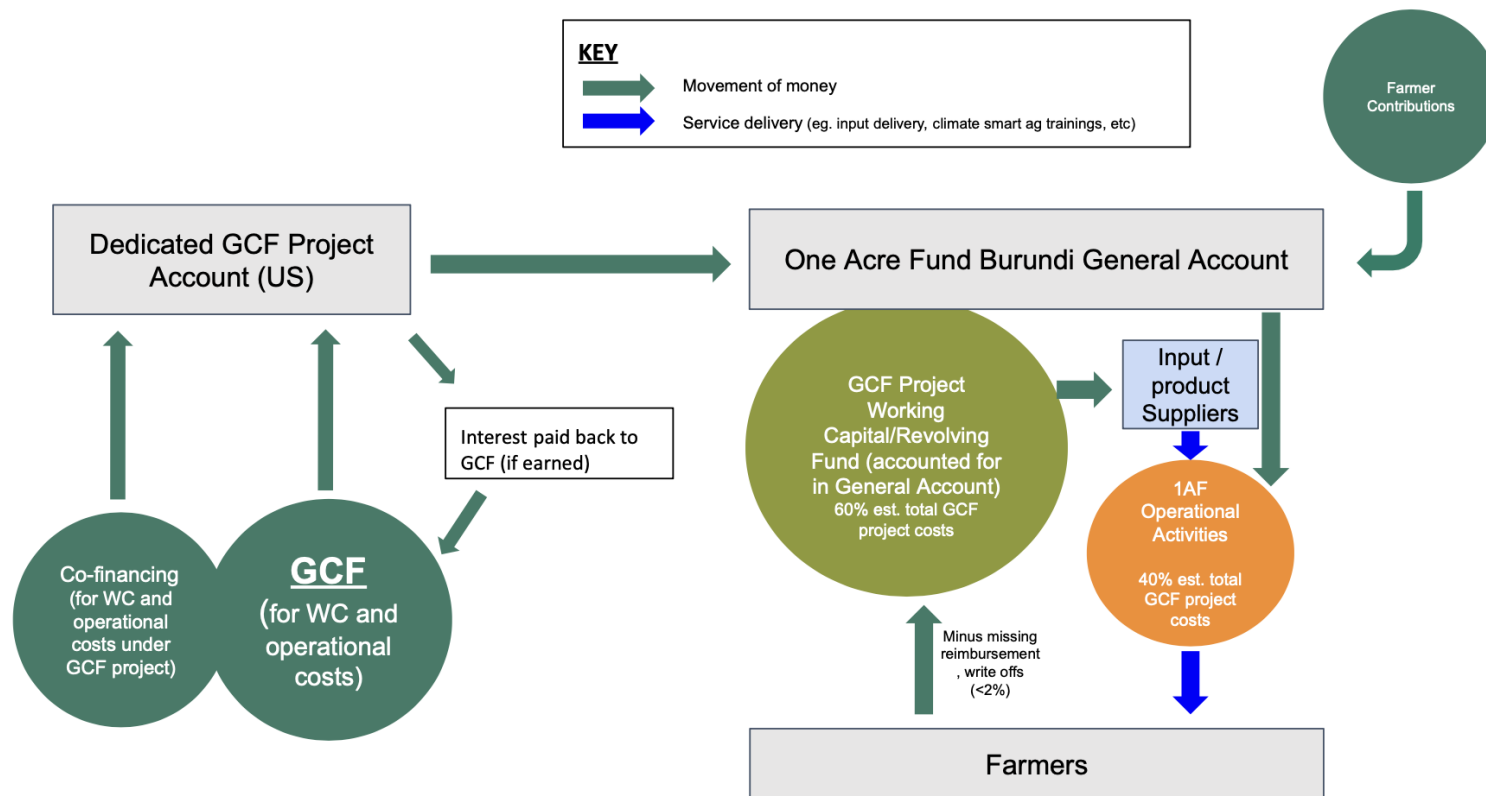


Figure 53: Summary of funding flows and services

## 7 Farmer economics in Burundi

### 7.1 The Value Proposition of One Acre Fund's Model

As explored in the Climate Reationale, Burundi is one of the poorest countries on the planet, and farmers face few agricultural service options. One Acre Fund exists to help fill this gap while the wider market is unable to provide these services. They help farmers overcome the obstacles of an otherwise immature market to obtain important inputs, products, financing, and training.

This section will illustrate the experience of two illustrative smallholder farmers in Burundi, one who is not a 1AF member, and one who is a 1AF member to demonstrate this need.

### 7.2 Access to inputs, products, financing, and training

#### Farming Inputs

A typical smallholder farmer in Burundi lives in a colline far from a commune or province center. These collines are only reachable by rough dirt roads, and usually do not have access to electricity. The only commercial activity might be a few small boutiques, or shops, set up in a small kiosk made of corrugated roofing material or a mud brick building. These boutiques sell very basic goods, beverages, and may sell the service of charging a mobile phone. Less than half of farmers have a mobile phone, so a typical farmer does not have one. However, they often have a friend or neighbor who does have a phone that they can sometimes access. Traveling by motorbike or the occasional car or van, is seen as a luxury. Farmers spend hours, and sometimes the better part of a day, traveling by foot to reach larger towns, often the commune or province center, in order to buy other goods and most often to sell their harvest in traditional markets.

Around the beginning of season A (September - January), farmers must buy inputs for their farms and pay for school expenses for their children. This is a crunch time for farmers' expenses.

The Burundi government helps farmers afford inputs through its fertilizer subsidy program - PNSEB, originally created in 2012. Farmers prepay and then pay the balance for vouchers that correspond to bags of fertilizer. These vouchers are exchanged for bags of fertilizer. In 2023, the government subsidy has reduced the price of fertilizer by 60%.

In order to buy fertilizer, a typical nonmember farmer must travel, often by foot, to a commune or provincial center in order to prepay per bag of fertilizer for a fertilizer voucher at a Poste or a participating bank or MFI. They must make this prepayment during a prepayment window established by PNSEB, the fertilizer subsidy program. Because vouchers correspond to bags of fertilizer, farmers must take fertilizer only in 25kg increments. Once PNSEB opens the balance payment period, fertilizer is allowed to be distributed. Farmers must return to the same place where they prepaid their voucher in order to pay the full balance of the fertilizer. Farmers do not have an option to receive a refund for their prepayment if their plans change. Farmers typically do not have access to loans from banks or MFIs to cover the cost of this payment and so feel financially squeezed needing to spend so much at once. With the voucher in hand, the farmer then must travel to another location to exchange their voucher for fertilizer. These fertilizer distributors are often at commune level. Farmers must arrange help carrying fertilizer back to their farms, sometimes employing the use of rented bicycle taxi or motorbike taxi if the farmer has the means to pay for them.

This process looks much different for a typical 1AF member. Through the program, they access inputs much closer to home, starting with an enrollment meeting in proximity to their home months in advance of the season (to give their order to the 1AF Field Officer). On behalf of its members, 1AF prepays the vouchers needed to fulfill farmers' orders. In the weeks leading up to the distribution, the FO will collect prepayment in amounts less than a typical nonmember would need to pay. Once fertilizer distribution opens, 1AF pays the balance of the vouchers on behalf of its members. A typical member needs to walk less than 30 minutes to reach the 1AF distribution point that is located in their colline to pick up their order. Members do not need to pay anything more than the prepayment amount on distribution day - they have ~5 months to reimburse the value of their inputs. If plans have shifted between enrollment and distribution, farmers have the opportunity to reduce their order quantity as much as they want with no penalty and even receive a prepayment refund if they no longer wish to participate at all. Members can also adjust up their orders if supplies are sufficient. Members either carry their fertilizer home or arrange for an affordable bicycle taxi to assist them transporting their inputs the relatively short distance to their farm.

Compared to fertilizer, the situation is worse for nonmembers when it comes to hybrid maize and trees. Supply of hybrid maize on the wider market is too insufficient and too inconsistent to allow a typical nonmember farmer to access this important technology. Tree seeds and seedlings are not formally available on the market outside of Bujumbura. While there is a government reforestation effort, these generally do not provide trees directly to households. However, 1AF makes both of these available at the colline level on a reimbursable basis in the case of maize and for free in the case of trees.

### **Additional Products**

1AF also offers additional products to members at the colline level that are typically very hard to access for nonmembers or are simply unavailable on the market in Burundi.

- Harvest drying sheets - Tarps are available on the market in Burundi, but are of such poor quality they deteriorate in the sun and cannot be used for more than two seasons even if treated with utmost care. The drying sheets offered by 1AF are sturdy enough to last years.
- Hermetic storage bags - These are not available on the market in Burundi. Most nonmembers store their harvest in poly bags which once held fertilizer.
- Improved cookstoves - the style offered by 1AF are not widely available on the market

### **Financing**

Nonmembers do theoretically have access to loans at banks and MFIs, but travel distances are an obstacle for uptake both at the point of seeking the loan and at the point of making payments. Additionally, that distance affects creditworthiness: banks/MFIs know that clients who live far away are at greater risk of default because of the travel required to make payments. A lack of credit history makes seeking loans of sufficient size difficult as well.

To fill this key market gap, 1AF meets the costs of inputs and products upfront, with farmers making contributions towards their total input order little-by-little, over the course of the entire agricultural season. Farmers are able to make these contributions easily because of the proximity of 1AF Field Officers. This allows 1AF to recover input costs at relatively low levels of leakage (<2%). For more costly products like solar lamps and solar home systems, farmers are able to make contributions towards the total product cost over the course of up to 4 seasons.

### **Training**

Nonmembers do not have comparable options in Burundi to receive the kind of hands-on-training and field follow-up 1AF offers - they simply do not exist in the market. Various NGOs offer trainings to farmers, but at a much more limited scale that often requires transporting farmers to central locations. The government

of Burundi runs an extension program and has colline level extension agents called Moniteurs Agricoles. However, the program is under-resourced and the outcomes are accordingly mixed. There are no private sector players offering in-person extension training services.

1AF members are invited to trainings led by their Field Officer near to their homes. More information about 1AF training topics can be found in Pillar 1 Core Program section.

## 7.3 Detailed Economic Model: comparable farmer costs, harvest, and profits

To help quantify these overall challenges more precisely, see below a more detailed economic model comparing the experience of the average 1AF member farmer and average non member navigating the typical agricultural season. Each season, 1AF measures farmer costs, harvest amounts, and farmer revenues in order to evaluate the impact of its services for farmers, this includes rigorous measurement of over 1000 1AF farmers and 1000 comparison farmers (non-members with similar characteristics). In 2023 we found (see next page):



Scaling up Climate Resilience Solutions for Burundian Smallholders										
2023	Beans (season 23A)			Maize (season 23A)			Beans (season 23B)			Discussion points
	1AF members	non-members	difference	1AF members	non-members	difference	1AF members	non-members	difference	This is a snapshot of household level results from seasons 2023 A and 2023B..
labor costs per acre*	\$41.64	\$41.29	0.85%	\$35.27	\$36.68	-3.84%	\$43.28	\$43.12	0.38%	
fertilizer costs per acre*	\$28.92	\$29.09	-0.58%	\$32.74	\$30.51	7.31%	\$31.58	\$27.37	15.38%	Fertilizer quantities are higher for 1AF members because they are able to access more thanks to proximity distribution and the fact that 1AF meets the upfront input costs (allowing farmers to make flexible contributions to the total cost over the course of the agricultural season). However, the costs per acre are more similar because nonmembers often resort to going to the black market outside of the government fertilizer subsidy program. Costs per kg of fertilizer are much higher on the black market. Because of these higher costs, nonmembers usually do not have as much fertilizer as they need. It is important to note that members are much more judicious in their usage of fertilizer thanks to 1AF training on microdosing.
imbura fertilizer kg per acre*	50.80	41.10	23.60%	48.90	35.60	37.36%	55.85	38.45	45.26%	
totahaza fertilizer (maize only) kg per acre*				8.20	4.10	100.00%				
seed costs per acre*	\$48.36	\$48.88	-1.06%	\$25.33	\$23.55	7.56%	\$76.03	\$77.99	-2.51%	1AF members use less quantity of seeds due to better planting practices. Bean seed costs are therefore lower. 1AF does not distribute bean seed. Maize seeds costs per acre are higher for 1AF members because they are buying mainly hybrid maize varieties which while are much higher-performing, are more expensive and much less available outside of the 1AF program.
seed kg per acre*	55.50	58.10	-4.48%	18.80	20.20	-6.93%	45.73	47.35	-3.42%	
tutor costs (beans only) per acre*	\$12.12	\$7.26	66.94%	\$0.00	\$0.00		\$8.46	\$6.16	37.27%	The difference here is a direct result of 1AF training. Members understand the importance of bean staking and therefore invest in bean stakes. 1AF does not distribute stakes, but when members plant the tree seedlings that 1AF distributes they grow a natural source of bean stakes.



fertilizer transport costs per acre*	\$3.75	\$3.33	12.61%	\$2.88	\$2.98	-3.36%	\$2.82	\$1.89	49.21%	Fertilizer transport costs are similar/higher for 1AF members because they are transporting more fertilizer. Nonmember transport costs are undercounting the true cost. The numbers here only account for the transport cost of bringing the fertilizer from the place of purchase back to their farms. It doesn't account for the multiple trips required to go to the bank to prepay, to return to the bank, pay the balance and pick up the voucher, and travel to another location to pick up fertilizer. These are costs that 1AF members avoid.
contribution total (members only) per acre*	\$0.18	\$0.00		\$0.18	\$0.00		\$0.17	\$0.00		
<b>total cost per acre</b>	<b>\$134.97</b>	<b>\$129.85</b>	3.94%	<b>\$96.40</b>	<b>\$93.72</b>	2.86%	<b>\$162.34</b>	<b>\$156.53</b>	3.71%	As a result of the above, the costs per acre are slightly higher for members.
Harvest kg per acre*	372.4	321.5	15.83%	1008.1	774.7	30.13%	526.4	425.3	23.77%	This is a direct result of the 1AF core package of services - training which leads to better practices, distribution on reimbursable basis which allows adoption of the correct amounts of fertilizer as well as increased adoption of better seed which farmers would otherwise only have limited access to.
Avg selling price*	\$1.34	\$1.34		\$0.67	\$0.67		\$1.01	\$1.01		
<b>revenue per acre</b>	<b>\$499.02</b>	<b>\$430.81</b>	15.83%	<b>\$675.43</b>	<b>\$519.05</b>	30.13%	<b>\$531.69</b>	<b>\$429.57</b>	23.77%	
<b>profit per acre</b>	<b>\$364.05</b>	<b>\$300.96</b>	20.96%	<b>\$579.03</b>	<b>\$425.33</b>	36.14%	<b>\$369.35</b>	<b>\$273.04</b>	35.27%	Thanks to 1AF services, members see bigger harvests and higher profits.
difference	\$63.09			\$153.70			\$96.31			
<b>total member benefit (hypothetical)</b>	<b>\$313.09</b>		31.33%							This is the average benefit (impact) a member would see compared to a nonmember across both seasons, if both the average member and average nonmember had a full acre dedicated to beans and a full acre dedicated to maize in A season and a full acre dedicated to beans in B season..
avg acres*	0.11	0.09		0.33	0.23		0.47	0.31		Land sizes are very small in Burundi. This increases the importance of efficient production and reduces the opportunities for letting land sit fallow and adequate compost production.

avg profit	\$40.05	\$27.09	47.84%	\$191.08	\$97.83	95.33%	\$173.59	\$84.64	105.09%	
difference	\$12.96			\$93.25			\$88.95			
<b>total member benefit (real)</b>	<b>\$195.16</b>		93.13%							This is an accurate measure of average benefit (impact) a member would see compared to a nonmember considering the amount of land an average member and average nonmember really cultivate.
profit assuming equal land	\$40.05	\$33.11	20.96%	\$191.08	\$140.36	36.14%	\$173.59	\$128.33	35.27%	
difference	\$6.94			\$50.72			\$45.26			
<b>total member benefit (reported)</b>	<b>\$102.92</b>		34.10%							<p>However, in reporting, 1AF maintains a conservative impact measurement by assuming nonmembers have the same amount of land as members. This removes any potential bias created by members having more land before joining the program.</p> <p>To put \$102.93 into perspective - Burundi has the lowest Per Capita GDP in the world - Currently \$228.82 <a href="#">according to IMF</a>.</p> <p>This additional profit is spent in several ways. 1AF farmers report less hunger, more asset accumulation, and an easier time paying for essentials like schools fees and medical expenses.</p>

\*Data collected by MEL each season

Figure 54: detailed economic model comparing the experience of the average 1AF member farmer and average non-member

## Farmer assets

1AF also sees evidence of members accumulating assets compared to nonmembers.

2020-2023			
	1AF members (2+ seasons)	newly enrolled 1AF members	difference
Average assets	\$1,539.40	\$1,120.47	37.39%

Figure 55: Farmer assets

Each year 1AF MEL also collects Quality of Life data which includes data on asset accumulation. These assets include physical assets, livestock, and financial assets. Looking across 4 years of the survey 2020-2023, veteran members had on average \$1539 in assets and newly enrolled members had on average \$1120 in assets. Newly enrolled members were chosen for this evaluation to remove any potential statistical bias that could be introduced when choosing nonmembers. However, we can still consider them as nonmembers as they have not yet benefited from 1AF services. Reportedly, members see gains mainly in physical and livestock assets rather than financial assets because of low access to banking services and farmer preferences for tangible/visible assets.

## 8 Project Level Redress Mechanism

One Acre Fund has in place a comprehensive system for reporting complaints around a range of possible allegations of wrongdoing, including fraud and sexual harassment. Cases are generally escalated to our Legal or Ombuds Team via several reporting channels, including:

- Direct Reporting through managers or to in country HR
  - This can include local HR Reporting lines
- Global hotline email that is publicized and manned by Global Legal
- Reporting to Global Ombuds via reporting form or email
- Anonymous Reporting Form that also goes to Global Legal
- Contacting a Global Legal Staff member directly
  - Legal normally reviews the cases to determine whether they are more appropriately handled by Ombuds or itself (usually whether the conduct alleged could result in termination or not)
- Farmers contact a toll free local hotline to report any grievances. Hotline staff direct those cases to field operations, HR, Ombuds, or legal depending on the type and severity of the case.

If Legal undertakes the investigation:

- In Burundi, a staff member will be assigned and overseen by a senior team member, except in instances where allegations are deemed serious enough to send a senior staffer from Rwanda or Kenya to manage it directly.
- Report is issued after an investigation where due process is followed and a recommendation provided
- If the report validates allegations, disciplinary action is taken
- If the victim agrees and the report validates the allegation, legal action can be taken after termination with which 1AF will support.

If the Ombuds Office is approached first:

- The Global Ombuds is immediately notified. (Only 3 of the 7-member Ombuds team are experienced or senior enough to independently review sexual harassment reports: the 2 female Kenya Ombuds team members and the Global Ombuds).
- The Ombuds Office triages sexual harassment reports in 3 main categories:
  1. Sexual Misconduct (Ex. Suggestive comments, jokes, innuendo, leering)
  2. Sexual Harassment (Ex. Unwanted sexual advances, forced physical contact, touching, groping, verbal abuse, gender-based harassment)
  3. Sexual Abuse/Exploitation (Ex. Paying for sexual contact, requesting/demanding sexual favours, sexual contact with minors, sexual coercion, rape, gender-based violence)
- Reports are reviewed confidentially and impartially to minimize bias, with a view to collecting as much helpful information as possible for the Legal team to pursue an investigation.
  - Any report which falls within the criteria of sexual misconduct, harassment or abuse/exploitation is escalated to the Legal team, along with all notes and/or statements collected by the Ombuds team. (Sexual harassment falls within the purview of criminal behaviour and is therefore, outside of the scope of the Ombuds Office. For this reason, all reports which meet the criteria described above are escalated to the Legal team.)
  - The Ombuds team often works with the relevant HR team to help the reporting party and/or the named victims access counseling services as well as any other workplace support they may require or be entitled to according to One Acre Fund policies.
- Cases which do not rise to the level of either sexual misconduct, harassment or abuse/exploitation are managed as workplace grievances, and fall within the mandate of the Ombuds Office. All Ombuds team members handle a wide range of grievance reports, from performance management, to bias & discrimination and working culture. More significant workplace conflict can be mediated by any of the 3 professionally trained and certified mediators within the team.

Whistleblower Policy: One Acre Fund also maintains a robust Whistleblower Policy (see [linked here](#)) for all reports done in good faith. We promise to prevent retaliation and ensure whistleblowers feel comfortable

coming forward to report wrongdoing. Certain country programs can also receive additional rewards for cases reported that result in validation and disciplinary action.

To go deeper into farmer protection measures, 1AF is committed to protecting members and invests in farmer protection mechanisms and the global level as well as in Burundi.:

- 1AF has dedicated global staff tasked with ensuring that all countries of operation, including Burundi, comply with farmer protection best practices. These staff conduct quarterly audits and share these scorecards with country directors and organizational leaders to ensure that any deficiencies are addressed promptly.
- Within Burundi, 1AF operates a toll-free hotline that farmers can call free of charge to ask questions and report any issues they have. 1AF has a dedicated hotline team that answers these calls, responds when possible, and reports any farmer protection issues through the proper channels. Farmer protection issues are routed through a prioritized set of steps that allows 1AF to quickly investigate and respond to any issues raised. This hotline number is included on printed materials that are distributed to every member farmer.
- Additionally, 1AF asks all field staff to sign farmer protection pledges. Any violation of these terms are treated strictly and result in disciplinary actions up to and including termination.
- Annually, the MEL team of 1AF conducts farmer satisfaction surveys that seek to understand what farmers appreciate and could be improved about our services. They also provide a channel for collecting farmer protection issues.

Finally, 1AF actively engages with government officials at the provincial and commune level to collect and address any issues related to farmer protection.

## 9 Post-implementation operations and management

By the end of the project, 1AF will be serving the 303,000 additional households on top of the existing 2024 scale of 346,000 households. After the project's conclusion, 1AF intends to continue serving the combined total of 649,000 households with the services described throughout the project proposal, building on its 12 year track record in the country and its enduring partnership with the Government of Burundi.

The provision for farm inputs/products will be facilitated by the low-leakage of the revolving fund that will continue for years into the future. Beyond the sustainability offered by the proven ability of farmers to contribute to the program, 1AF intends to use the “halo effect” of this project to catalyze additional fundraising that will help cover the future operational costs of the revolving fund leakage as well as the other services described in the proposal.

MEL and operational reporting lines between 1AF Global and 1AF Burundi will stay intact. Collaboration with the Burundi government and the wider sector will continue through the annual National Advisory Council meetings and other initiatives like the ones described in the section 1AF’s work with the government of Burundi.

Ultimately, the 300,000+ farm households that GCF is investing in through this project will therefore be served continuously for years into the future. The GCF/1AF partnership will ensure that they have better tools, knowledge and capacity to adapt to a worsening climate crisis; a crisis they are at the frontlines of, yet bear little responsibility for causing.