

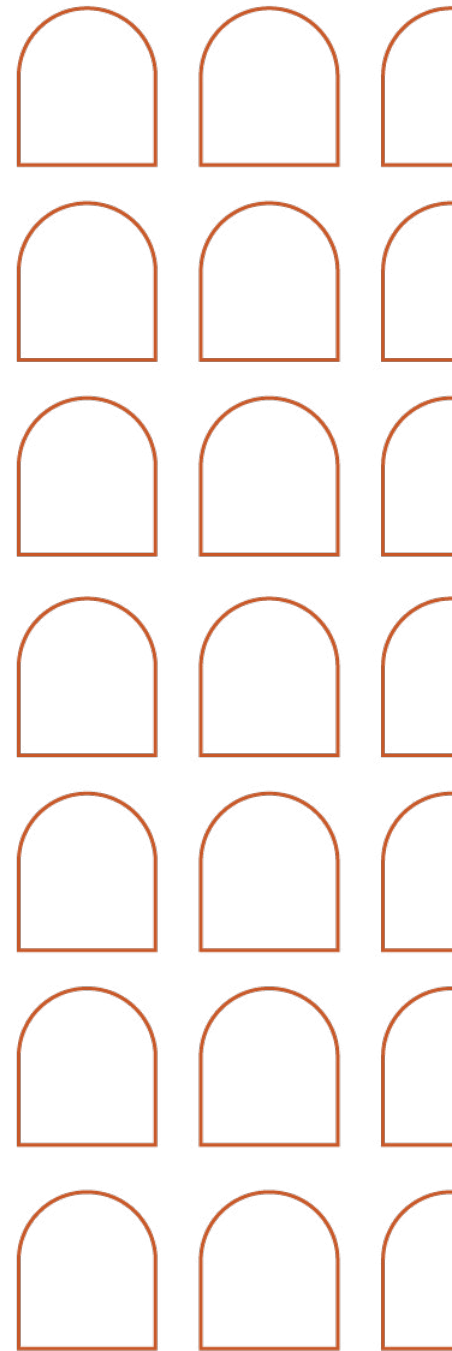
STG Policy Papers

POLICY ANALYSIS

**WE CANNOT DO WITHOUT
INDIGENOUS SEEDS TO FEED THE
WORLD AMID THE CLIMATE CRISIS**

Author:

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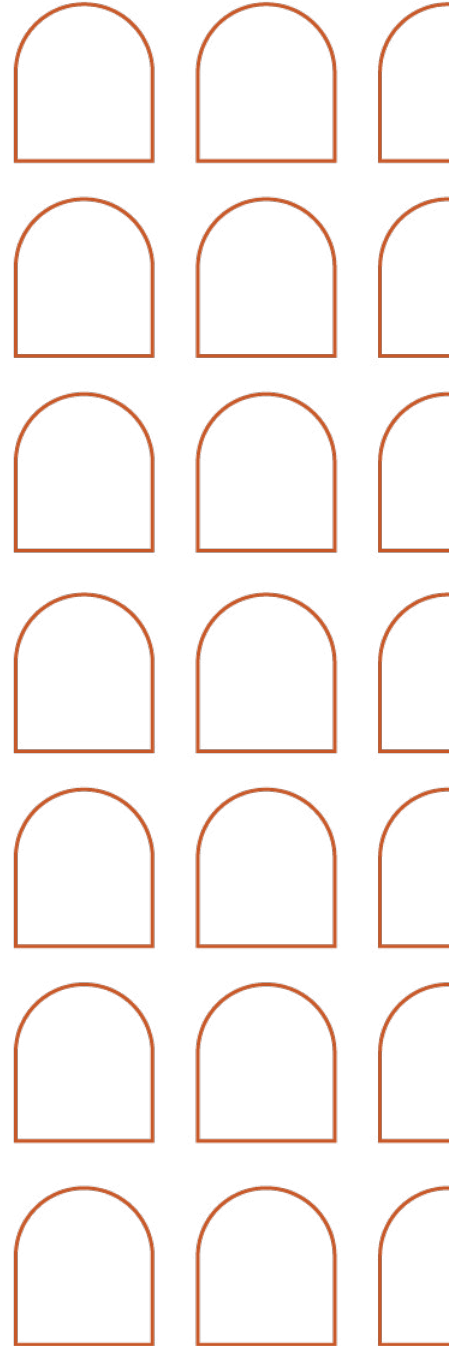
EXECUTIVE SUMMARY

In the face of an increasingly dire climate crisis, the agriculture sector in Africa and beyond needs indigenous seeds to achieve food security. A law that recognises indigenous seeds and legalises the production, commercialisation, promotion and exchange of the heritage of seeds is a key tool that is much needed to ensure food security and sustainability in the agriculture sector. Unstable rainfall seasons have contributed to increases in humidity and temperature which amplify the frequency with which crop diseases appear. Extreme weather events such as floods and droughts make land unsuitable for farming, destroy crops and significantly reduce crop yields, resulting in major economic and social losses such as in people's access to food, particularly in Africa. Native seeds are [climate-resilient](#) and are the best fit for climate change impacts, unlike foreign hybrid seeds, which are less resistant to plant diseases and climate change, sterile and cannot be replanted. However, many countries and particularly in Africa lack tools to exploit the acknowledged role of native seeds in ensuring food security in climate change times. To bridge this gap, it is crucial for the African Union to move forwards with the implementation of its immediate Strategic Action Plan for Agriculture and Native Seeds (SPANS). This action plan includes breaking with the forced harmonisation of industrial seeds, a fake solution to ensure food security in a time of inevitable climate change. Instead, a free market for indigenous seeds to promote the potential of their genetic heritage and their integration in agriculture will be formed. The plan also covers taking full advantage of the practices and knowledge that farmers and researchers in sustainable agriculture have developed based on the genetic heritage of each country fostered by its climate.

Thinking SPANS is an important step forward to absorb global shocks of food insecurity such as the Ukraine-Russian war, which is a great contributor to crop shortages worldwide, in addition to climate change and water scarcity.

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1. THE FOOD SECURITY SITUATION IN NUMBERS

Nearly one in three people (2.37 billion) in the world did not have access to adequate food in 2020. Around the world, an estimated 2 billion people lack access to sufficient safe nutritious food. According to a Food and Agriculture Organization of the United Nations World Food Programme (FAO-WFP) [report](#), the number of people who are experiencing acute food insecurity who will need urgent assistance is likely to climb to 222 million people in 53 countries and territories, with 140 million people facing acute food insecurity only in Africa according to the [2022 Global Report on Food Crises 2022 Mid-Year Update](#). According to the [World Health Organization \(WHO\)](#), children under 5 years of age carry 40% of the foodborne disease burden, with 125,000 deaths every year.

[The Food and Agriculture Organization of the United Nations](#) has revealed a sad and intriguing reality, declaring that “the world has not been generally progressing either towards ensuring access to sufficient safe nutritious food for all people all year round (SDG Target 2.1) or to eradicating all forms of malnutrition (SDG Target 2.2),” a clear affirmation that the currently adopted food system model is failing to stand strong in the face of crisis, to be of use to everyone with no exclusion and to fit the actual needs of nations in term of food security and sovereignty in this time of climate change.

2. THE ROLE OF INDIGENOUS SEEDS IN ENSURING FOOD SUFFICIENCY AND SECURITY

According to the FAO, among the [six key ways](#) to help to achieve zero hunger and provide answers to food insecurity and climate change is to use native species of crops, which are better adapted to local contexts and are often more resistant to drought, altitude, flooding and other extreme conditions. If they are used more widely in farming, these crops could help build the resilience of farms now facing a changing more extreme climate. As was [emphasised by Kent Nnadosie](#), the Secretary of the International Treaty on Plant Genetic

Resources for Food and Agriculture, “local seeds are more tolerant of weather shocks and invasions by new pests.” By reintroducing indigenous seeds back into the agricultural system, farmers can set aside a small part of the harvest to sow next season, something that is impossible with imported modern hybrid genetically modified seeds, which cannot be replanted as they are sterile. In this way African states can be free from monopolies that control the worldwide seed market.

According to the United Nations, in [Madagascar](#), where the world’s first climate-change-induced famine is taking place, [Action Against Hunger](#) is working with local communities to supply the tools and knowledge to grow climate-resilient crops like carrots, eggplants and Chinese cabbage. “This project saved my life,” stated Alfred Efahaken, a farmer working with Action Against Hunger. To escape drought and food shortages in the south, many Malagasy people are abandoning their habitats and lands and are [migrating to the north](#). Nations are at a critical crossroads. Unless the necessary solutions are immediately implemented, lost lives and migration flows will be the price to pay. We certainly do not want to see this situation duplicating elsewhere across Africa and beyond. Early relatively easy actions can also help reduce the necessary emergency budget for food insecurity. In March 2022, UN special rapporteur and expert on the human right to food [Michael Fakhri declared that](#) “If we don’t address seeds in the immediate term, we’re going to continue losing life to the point where we might hit a tipping point where it’s too late.” He argued that crop diversity is key to coping with future climate conditions, especially those which we cannot predict.

3. THE CASE OF TUNISIA AND ITS CURRENT SEED LAW

3.1 The status quo of seeds in Tunisia

Nowadays countries are strongly dependent and reliant on imports of hybrid genetically modified seeds. Every year farmers are forced to buy new seeds, which are associated with fertilisers and pesticides, from the same corporations to combat crop

diseases and increase productivity. When it was freshly independent, the first Tunisian government had to [distribute hybrid seeds](#), which had already been brought to the country by the French coloniser, for free for years to Tunisian farmers. Consequently, Tunisian farmers abandoned indigenous seeds and found themselves dependent on multinational companies which provided them with seeds to plant, a different way of colonisation and dependence. About 50% of global seed production is controlled by three multinational companies. In this way, deprived of their autonomy from market forces on prices and misled by promises of enrichment and development, farmers lost control of their work and are forced to adapt to market prices controlled by big industrial monopolies. This is the case of Tunisia, which was once the breadbasket of Rome. Tunisian farmers have to buy new seeds every season [and import 70% to 80%](#) of foreign seeds each year. The needs and prices are sky high with limited availability of food, crops affected by climate change and the war between Russia and Ukraine, two very important contributors to food production worldwide. Tunisia only produces [10-30%](#) of its bread flour and about half of its grain imports come from Ukraine. According to a recent report by the [International Crisis Group](#), Tunisia is in debt to Ukraine to the tune of \$300 million. The war has also increased the cost of transporting crops. Apart from the logistical issues created by the war, food shortages are a manifestation of Tunisia's serious economic problems. [Implementing a grain hub in Nigeria](#) might mitigate this situation as it will be a promising gate or bridge to transport grain to other African countries. Ukraine will consider a proposal from the Federal Republic of Nigeria to build a logistics hub for grain and food product deliveries.

3.2 Local initiatives confronted with rigid old seed laws

In this situation, according to the [World Food Programme \(WFP\)](#) 25.1% of Tunisians faced food insecurity between 2018 and 2020. Additional costs needed to fill this gap in food supply put extra weight on farmers' shoulders, and as a result farmers decided to turn to the past with local efforts and initiatives and

move forwards by reviving the use of native seeds as an effective alternative to ensure food security in times of climate change. This led Tunisia to accept an emergency loan from the International Monetary Fund (IMF) for \$750 million. According to a 2021 report by the academic climate consortium [Cascades](#), "Tunisia is considered to be one of the countries most exposed to climate change in the Mediterranean." Tunisia's economic position continues to weaken, and its food insecurity worsens.

However, farmers are confronted with a stubborn government seed law and a challenging reality: there is no easy way back to native seeds. Farmers continue to push for the implementation of a legal framework to reintroduce, produce and conserve genotypes of their indigenous seed heritage, which are known for better yields, to ensure food sovereignty and security. Farmers have been fighting for years to make their voices heard, despite being subjected to threats and intimidation by monopolies and being victims of the actual seed law ([No 99-42 of 10 May 1999, Article 44 of Chapter IV](#), crimes and sanctions), which is used by the government to punish them with up to TND 50,000 fines ([the penalties in articles 43 and 44](#) can be doubled in the case of recidivism) and criminalise them with up to one year in prison and/or a fine of up to TND 20,000 ([Articles 7, 9 and 14](#)) for the simple act of commercialising and exchanging native seeds among farmers, and promoting indigenous seeds in the Tunisian territory as a tool for sustainable agriculture and economic growth to fight climate change impacts. In April 2022, Hafedh Karbaa in Monastir was forced to stop producing, multiplying and distributing his seeds for free and to dispose of the seeds he had. As was declared in the media and stated in a recent document, he was prohibited from pursuing his project. On 1 September 2022, the Tunisian Association of Permaculture (TAP) [published a press release](#) announcing the cancellation of the yearly festival of peasant seeds, an occasion in which all the farmers across Tunisia gather to introduce, exchange and sell their native seeds. The event is open to all citizens to encourage permaculture using native seeds.

“In the absence of a legal framework that recognises our heritage of native seeds, such gatherings will be suicidal and could cause problems, mainly for farmers.” declared the TAP.

The TAP, the NGO active in the field of sustainable development and biological agriculture, has launched an initiative to create the first ‘[seed homes or seeds Diyar](#)’ in three governorates in the south of Tunisia – Tataouine, Djerba and Zarzis – to preserve the heritage of the native local seeds in Tunisia, distribute, multiply and reintroduce them in agriculture. It is a way to stand up to the pressure of industrial agriculture on the ancestral genetic heritage. The Tunisian Institute for Strategic Studies stated in its study ‘Enhancing Food Security for Tunisia in 2022-2023’ that Tunisia will benefit from investing in sustainable food systems. However, the implementation of reform policies remains weak at the government level.

A unique characteristic of the Tunisian ecosystem is the power of civil society to exert pressure to influence and make changes to the current national strategy. Individual initiatives led by farmers started to take place a few years ago to reintroduce native seeds back into agriculture.

Mohamed Lassad ben Saleh, a Tunisian farmer from the region of Jedeida located a few kilometres to the north-west of the capital Tunis, emphasised the productivity of native seeds in the Tunisian genetic heritage when he switched to one of the traditional variety of wheat known as [Al-Msekni](#). The wheat harvested from each hectare is weighed separately, so the production of each plot is harvested and weighed separately. “The results are good,” Ben Saleh said. His traditional seeds are producing five tonnes a hectare, compared to the national average yield in recent years of 1.4 tonnes a hectare. He added that his seeds had been more resistant to drought and disease since he switched to the use of traditional seeds nine years ago. “The new varieties are weak and quickly affected by mould,” he said. “A return to local or native seeds is one of the conditions needed to reach food sovereignty,” said Aymen Amayed, a researcher in agricultural

policies.

This analysis has focused on the case of the restrictive law in Tunisia, but many other African countries such as Mali, Ghana, Mozambique, Niger and Tanzania suffer from severe restrictive [seed laws](#). Once, the continent had distinct geographical tags for specific foods. Malawi was known for its potatoes, Zambia produced tasty nutritious maize, West Africa had millet and [North Africa](#) was full of rice, grown mostly along the banks of the Nile. A “[\\$30,000 fine, or 20 years of imprisonment](#); that is the punishment for trading so-called uncertified or fake seeds in Malawi, laid down in recent seed approving legislative instruments to regulate the production, processing, certification, sale, import and export of seeds. Many farmer groups and civil society organisations see the law as commercial seed companies entering the market to ultimately take over the indigenous seed system. Ulemu Chilapondwa, Vice-chairperson of the Parliamentary Committee on Agriculture and Food Security, cautiously said that “Multinational seed companies are overshadowing the domestic seed companies due to their resource advantage.” There is therefore a need for the government to put in place mechanisms that will protect local seed companies. In February 2022, an independent evaluation by US-based consultancy Mathematica said that the Alliance for a Green Revolution in Africa (AGRA), which led the industrialisation of the seed sector, “did not meet its headline goal of increased incomes and food security for 9 million smallholders.” No country is on track to reach the goal of doubling productivity. Three countries, Burkina Faso, Kenya and Nigeria, have shown a decline in productivity, with only Ethiopia and Malawi showing staple crop yield growth of 50 per cent by 2020. As a result, the Alliance for Food Sovereignty in Africa (AFSA) sent a letter on 7 September 2021 to urge all donors to stop funding this false solution and shift their support to agroecology, a healthy, sustainable, resilient and culturally appropriate food system for Africa. An evaluation published in the journal *Agricultural Economics* in November 2013 stated that AGRA grants for improvised seeds led to huge government expenditure on inputs. High-yielding hybrid seeds need more

inputs like fertilisers and irrigation facilities. This evaluation, covering 2010-11, [stated](#) that while AGRA disbursed \$40-50 million a year, total government expenditure on inputs reached \$1 billion a year, or more than 20 times the funding by AGRA. If such losses were based on an evaluation in 2010-2011, how would the losses generated in these recent years be? They are pushing AFSA to call for urgent immediate changes. This is really questioning the utility and need for such corporations in Africa. Barbara Hachipuka Banda, Chief Executive Officer of the non-profit Natural Agriculture Development Program Zambia, which promotes native crop varieties, said “The seed harmonisation initiative has not taken into consideration the great diversity in our agricultural practices. These laws are a kind of one-size-fits-all model. Every country has a distinct circumstance and landscape. By making the continent one unit, you only help the multinational companies to trade well.” In November 2021, various farmers’ organisations in Ghana appealed to the Supreme Court against the country’s Plant Variety Protection Act (Act 1050), which was adopted in 2020. The Peasant Farmers Association of Ghana, Food Sovereignty Ghana (FSG) and the Centre for Indigenous Knowledge and Organizational Development declared that “the considered legislative act was tailored to strengthen multinational seed companies, would ultimately put Ghanaian seed companies at a disadvantage and would threaten indigenous knowledge and practices of saving, using, multiplying, stocking, exchanging and selling seeds and other propagating material.” Similar seed issues are emerging in both [the Americas and Asia](#) and there are hopes that the situation will be quickly changed to better alternative laws in favour of indigenous seeds. [According to Fakhri](#), farmers and indigenous peoples have saved, used and bartered seeds for thousands of years, resulting in rich diverse gene pools. [Current laws](#) favouring commercial seeds used in industrial agriculture are posing a threat to this knowledge. [Such laws](#) are erasing a huge heritage, not only of biodiversity knowledge but also crops and plant species able to feed the world amid climate change conditions.

4. IT IS NEVER TOO LATE TO MAKE USE

OF THE POTENTIAL OF INDIGENOUS SEEDS TO ENSURE FOOD SECURITY

4.1 A free market for free indigenous seeds and farmers

Plant genetic resources may provide seeds that can tolerate or thrive amid greater aridity, frost, flooding or soil salinity. Policies that anticipate future needs and plan the management of genetic resources as a pivotal reservoir and tool can help build more resilient agricultural and food production systems. This can only be achieved with a free market for native seeds being the umbrella under which any type of behaviour and practices become legal while recognising our heritage of native seeds. Unless a free market for native seeds, traditionally managed by farmers, is implemented to legalise the reintroduction of native seeds and promote them as a key element to build sustainable and resilient agriculture, the food security and sovereignty situation will remain critical and could even worsen and become irremediable. The least we can do, as humans, policymakers, experts, researchers, scientists, farmers, associations and organisations but as citizens and consumers too, is to abandon selfishness for a while and think about future generations. A legal framework in which farmers can practise their right to save, use, multiply, produce, plant, stock, exchange and sell native seeds would greatly contribute to the reintroduction of indigenous seeds in the agriculture sector to ensure food security and the sovereignty of nations.

4.2 Decentralisation of gene banks and other similar structures

The United Nations Organization for Food and Agriculture (FAO) [has raised concerns](#) about the increased use of foreign and hybrid seeds and considers it a threat to indigenous varieties and to local genetic heritages considered best suited to the environment and essential to achieve food security in a sustainable way. It has confirmed that over the past century around three-quarters of the diversity in world crops has disappeared. According to the [National Gene Bank of Tunisia](#), there are more than 11,000 samples of Tunisian indigenous seed genotypes stored in foreign gene banks

and by international organisations. So far 7,000 samples of this despoiled living heritage have been recovered and the bank is working to reclaim its genetic heritage. Organising the native seed heritage of African countries in databases is crucial to claiming sovereignty and intellectual property as a way to escape privatisation and exploitation by agribusiness corporations, which are a great threat to farmers nowadays.

By decentralising gene banks and creating other similar structures more locally, indigenous seeds will reach all farmers across the country. This initiative will bring experts and researchers closer to farmers and vice versa, especially when gene banks redistribute indigenous seeds for free for farmers, associations and even citizens to sow them. Similarly, farmers in different regions within the same country can feed the local gene bank branch with a wide range of resilient varieties of indigenous seeds they have already preserved to enrich the national database of resilient indigenous seeds. Moreover, decentralisation of gene banks could serve as the greatest supplier of high-quality resilient seeds, making them easily accessible and available to mainly small farm holders. [According to Reuters](#), researchers rely on the diverse genetic material that seed banks store to breed plants that can withstand climate change or disease. They have become increasingly vital to ensure enough food is produced each season to feed 7.9 billion people as the world's weather becomes more extreme. [Stefan Schmitz, Executive Director of Crop Trust has emphasised](#) that "Seed banks are a kind of life insurance for mankind. They provide the raw materials for breeding new plant varieties resistant to drought, new pests, new diseases and higher temperatures. He added "It would be a tragic loss if Ukraine's seed banks were destroyed" as they are at risk of being lost as the war goes on. Therefore, copying gene banks elsewhere is also necessary to prevent the loss of a priceless genetic heritage of indigenous seeds.

4.3 Valorisation of farmers' knowledge as sustainable inputs

Shifting toward a sustainable agriculture scenario based on indigenous seeds requires

not only full commitment and engagement by associations, national and international research institutions such as the Consultative Group on International Agricultural Research (CGIAR), gene banks, policy advisors, high-level decision-makers and policymakers such as the UN's Food and Agriculture Organization and continental bodies such as the African Union and government entities, but also and most importantly the recognition of inputs by farmers to achieve sustainable agriculture. Along with researchers, farmers can play a major role in preserving indigenous seeds. They can help identify seed varieties and provide information such as their names, where they come from and in which region they grow best. In this way correct documentation of the genetic heritage of indigenous seeds is guaranteed. Traditional farmers are also key to sustaining knowledge via the transfer of their know-how to new generations of farmers and new learners. They conduct initiatives to conserve, multiply, promote, and commercialise indigenous local seeds in consolidated efforts with other farmers and associations. Farmers also closely work with civil society to support initiatives that encourage families to grow food themselves and be food sufficient. Within this framework, the FAO can play a more efficient role. Ideally and in collaboration with other stakeholders, it can build on farmers' initiatives, adapt them and scale them up. Additionally, the UN FAO as a leading world organisation must acquire a sense of coherence among its declarations and the status quo on the ground. In fact, declaring that indigenous seeds cope best with climate change to ensure food security is not enough. Instead, it should be associated with a policy to integrate them in agriculture so governments can follow. This policy gap is only speeding up the seed homogenisation and industrialisation process, which is erasing the heritage of indigenous seeds not only in Africa but worldwide. The FAO should be more present locally to closely follow up in the policy implementation process.

4.4 The Strategic Action Plan for Agriculture and Native Seeds (SPANS) as a major agriculture governance reform

Africa needs to not only specify what

sustainable agriculture should include but also move forwards with its implementation. Africa is a different context to Europe. Rich but more complicated seed ecosystems in which reforms are most needed characterise Africa. The [African Union Commission \(AUC\)](#) has declared that areas that are dedicated to agriculture are yet to be sustainable. The AUC is meanwhile pushing towards industrialisation, harmonisation of the seed sector, promotion of hybrid seeds and biotechnology as keys to increasing productivity and adopting high-yielding varieties, fertilisers and other inputs. However, pushing toward seed industrialisation together with the use of hybrid seeds that require pesticides, fertilisers and other inputs does not go hand in hand with sustainable agriculture and climate change mitigation, in fact the opposite is likely to occur. At a different pace, Africa can make progress in sustainable agriculture and take advantage of the potential that indigenous seeds which are specific to each country, each soil and climate have. It recognises the input of indigenous seeds in food security and biodiversity, yet there is no clear coherent common strategic action plan to make use of the potential of indigenous seeds. Instead at a more local scale, countries mainly in Africa, Asia and both Americas have come up with laws which ban indigenous seeds in favour of corporations. A package of combined factors associated with consolidated efforts by farmers and countries can make Africa self-sufficient in food and it is doable. The SPANS will be discussed by farmers, experts, researchers and policymakers in each African country to set indigenous traditional seeds at the heart of a new transformative food system, as the optimal alternative to the actual hybrid and genetically modified seeds amid the climate crisis. They are all that small landholder farmers have to secure their own food and income. Therefore, there is an opportunity to see the agriculture sector thriving in the most sustainable way in Africa and beyond by using the heritage of native seeds and the best practices and knowledge that farmers have. Each country should come up with a detailed SPANS best tailored to its ecosystem, decisions that will be supported by the AUC. It will be the umbrella under which

farmers are free from market forces and can develop pilot experiences with researchers to make use of the potential that the heritage of native seeds has in a sustainable manner. Multiplying, exchanging, selling, buying and distributing authentic native seeds within each country will no longer be restricted. It is an excellent opportunity to ensure the food-independence of countries. African countries' SPANS and outputs on implementation at the country scale should be communicated to the AUC to scale up successful SPANS models and learn from failures to be prepared for risks of different types. To do this, SPANS should be preceded by radical seed and management law reforms which break from forced seed harmonisation laws and free farmers from control by the worldwide seed market. The farmer seed management system should be supported and promoted not only because the agriculture sector employs more than 60% of the continent's labour force, largely as small farm-holders in the poorest countries, but also because industries and corporations are not going to necessarily design the best seeds for life to continue flourishing. [According to Fakhri](#), they will design the best seeds that serve market demand under climate change conditions that generate a profit. He added, "Farmer seeds are the precondition for everything. If you're a country that wants a commodity seed system, that's your sovereign right. But don't do that until you first have a robust legal system that protects farmers' rights to save, use, exchange and sell seeds." [According to the UN declaration on the rights of peasants adopted by the General Assembly in 2018](#), peasants have "the right to save, use, exchange and sell their farm-saved seed or propagating material." Therefore, there is no need to force farmers to fit in the box of corporations and seed harmonisation initiatives, most of which are launched with no prior reflection about their consequences in the near future in terms of food security and sovereignty in Africa. Farmers should be free and have the right to choose what seeds (hybrid or native) they want to sow with no external pressure from governments and/or corporations.

Drawing on takeaways from the AU, Africa

should plan a sustainable agriculture strategy best tailored to the European ecosystem. This is very much necessary. The AU should step up reforms considered painful for corporations and governments.

These will be integrated transformative milestones with which an inclusive plan best accustomed to the African ecosystem can quickly turn climate change into an opportunity and contribute to ensuring food security and sovereignty of African countries in a sustainable way. This mechanism should also welcome farmers' initiatives and suggestions to foster discussion about food security as a feasible process using what exists in terms of rich genetic heritages and farmers' knowledge. Such a bottom-up approach would contribute to the inclusion process of the most important actors in the agriculture supply chain: farmers, who are best qualified to contribute to strategic actions plans to achieve food security and sovereignty of nations. In a speech¹ at the UN Food Systems Pre-Summit in July 2021, economist and SDG advisor Jeffrey Sachs confirmed the need to shift to a different food system based on the principles of sustainability, human dignity, economic rights and sovereignty. According to an article published by [Solidaridad](#) in September 2021, this could be achieved first and primarily by ensuring that the producers of our food – millions of farmers and workers – have an equal say in decision-making processes concerning the food system. Farmers are essential stakeholders in the food system and must be part of the solution. A radical shift of power and a genuine transformation that benefits the people at the beginning of value chains where sustainability should be reclaimed are strongly needed.

4.5 Increasing the climate finance quota for small farm-holders

According to the International Fund for Agricultural Development (IFAD) [small scale farmers](#) only receive 1.7% of climate finance. Boosting the quota for small landholders would contribute to the development of their work, reduce their dependence on corporations

and governments, and sustain their income. Specific attention should be given to women, who if they have access to the same resources as men could increase the yields from their farms by up to a third.²

It is also necessary to onboard the research component in agriculture and agronomy and invest in it to contribute to the sustainability of the agriculture sector. In this context the Alliance of Biodiversity International and the International Centre for Tropical Agriculture and its institutions are actively involved in pilot field experiences with farmers and researchers in Africa. This has led to the establishment of multifunctional community seed banks spearheaded by researchers in eastern African countries³ as a step forward to promote and invest in resilient and indigenous seeds to ensure diversity and food security. Researchers and farmers should work hand in hand to follow up on the native seeds sown by drawing up seed records. In this context, eco-social initiatives, such as ones led by small farmer families to become independent and self-sufficient in food, require sustainable funds. If it is given the opportunity to build on farmers' success stories and knowledge in sustainable agriculture using the seeds corresponding to the climatic and environmental properties of every corner of Africa, the continent could be secure in terms of food.

1 https://www.youtube.com/watch?app=desktop&v=WZ1xc491mnU&ab_channel=UThant Accessed on June 27 2023

2 <https://www.facebook.com/photo/?fbid=594413986049987&set=a.322014326623289> Accessed on June 27 2023

3 [Researchers lobby for seed banks to ensure diversity, food security \(April 2021\),The Alliance of Bioversity International and CIAT is part of CGIAR, a global research partnership for a food-secure future.](#) Accessed on June 27 2023

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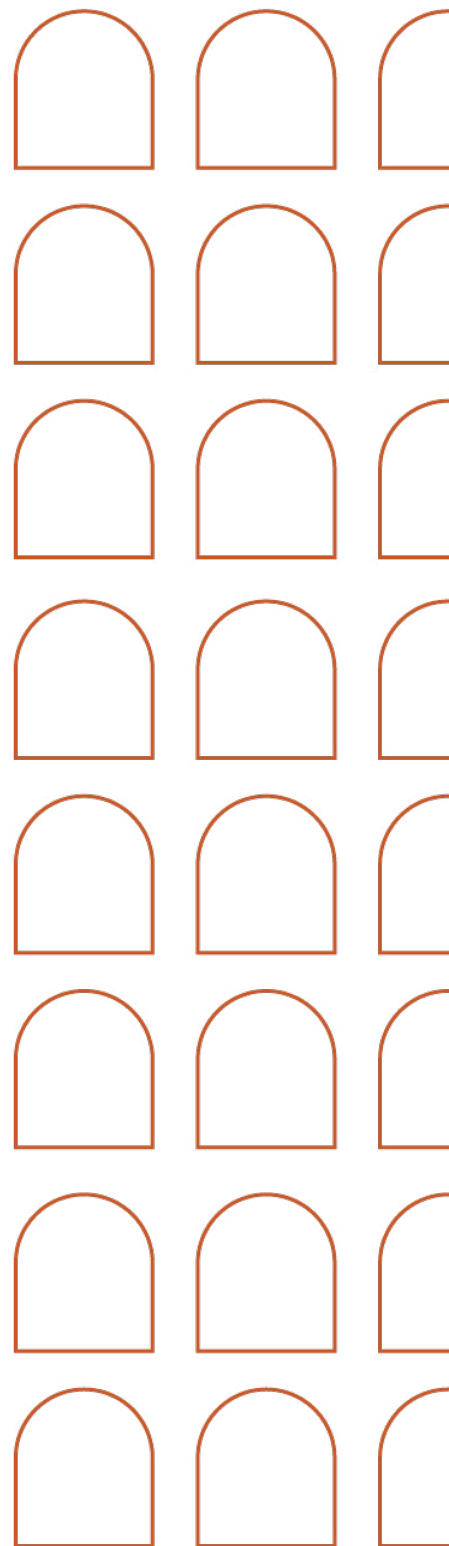
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Co-funded by the
Erasmus+ Programme
of the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

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doi: 10.2870/711188
ISBN: 978-92-9466-422-8
ISSN: 2600-271X
QM-BA-23-023-EN-N

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