



AGRICULTURE INITIATIVES AND COP22

A step towards fighting climate change



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Against the backdrop of population increase, changing dietary patterns, increased affluence and rising demands on land for the generation of biofuels, agricultural productivity is required to increase significantly in the coming years. This increase will take place in a context of constrained resources and a changing global climate requiring increased adaptive capacity and increased resilience of agricultural systems. At the same time, agricultural activities are contributing significantly to climate change, with agricultural production and the food supply chain being responsible for up to a third of total anthropogenic greenhouse gas (GHG) emissions.

Therefore, for the agricultural sector, both adaptation to new climate patterns, and mitigation through reduced emissions of greenhouse gases, will be needed in the coming years. With African agriculture expected to be disproportionately affected by climate change, initiatives to build adaptive capacity and mitigate emissions are needed.

This factsheet takes stock of key regional and global initiatives related to agriculture and climate change, which have been launched in the period from 2005 to 2016, identifying strengths, weaknesses, opportunities, and threats across these, as well as highlighting success factors. This analysis is undertaken in the context of the agriculture-related components of the Intended Nationally Determined Contributions (INDCs) submitted by Parties under the climate convention as part of the lead-up to the Paris Agreement in 2015 and re-submitted as Nationally Determined Contributions (NDCs) upon ratification of the Paris Agreement.



Paris Agreement

The Climate Convention (UNFCCC, 1992) states in article 4.1 that all parties should promote a range of activities that control, reduce or prevent GHG emissions in all relevant sectors, including agriculture. The Convention makes no further reference to specific initiatives or actions to be taken, in accordance with its framework nature (UN, 1992). The action, and hence initiatives to ensure the fulfilment of the objectives of the Convention has always been the discrete responsibility of the Parties to the Convention, individually or in cooperation. This distinction between domestic or cooperative action is further illustrated by the Kyoto Protocol: The Protocol promotes cooperative action in the form of technology transfer and flexible mechanisms. However, the Protocol is mostly sector-neutral in that it leaves the Party or Parties with the choice of where to act and how. The Paris Agreement (PA) builds on the same tradition, as it does not mention agriculture¹ or indeed agriculture related initiatives at all. However, in the preamble of the PA, Parties recognize the fundamental priority of safeguarding food security and ending hunger. They further highlight the vulnerabilities of food production systems to climate change impacts. Furthermore, in article 6 of the Paris Agreement, GHG sinks, reservoirs and forests are mentioned and a number of mechanisms are named including REDD+² and the Joint Mitigation and Adaptation Approaches. As represented by the "plus" in REDD, this mechanism has increasingly been scoped to cover agricultural drivers of deforestation, and thus agriculture and sustainable development as such.

National action on agricultural emissions is not promoted by the PA, although (I)NDCs, which are the building blocks of the agreement overwhelmingly prioritise actions in the sector. Any action taken that would lead to reduced emissions (e.g. reducing fertilizer use) or increased carbon reservoirs (e.g. planting of trees), would have to be identified and incorporated in the system for transparency of action, i.e. the reporting and accounting setup defined in the PA (c.f. art. 13). In that sense, the PA facilitates transparency on mitigation outcomes of domestic agricultural initiatives. The PA is clearer on promoting cooperative action: The flexible mechanisms based on the voluntary cooperation (c.f. art. 6), as well as the means of finance

¹ Agriculture in the UNFCCC merely covers non-CO₂ emissions from activities relating to animals, manure and liming among other. The land management part of agricultural activity, such as tilling, grazing and harvesting is covered under the category land use, land use change and forestry, in short LULUCF. This means there is and have never been one all-inclusive negotiation track or sector-specific target, measure or rulebook on accounting. Agriculture and its activities remain split into two domains. Despite this, in this paper agriculture refers to all agricultural activities, e.g. all livestock and all land management, and hence encompass two UNFCCC reporting categories.

² REDD+ is an acronym referring to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks.



The Paris Agreement arguably provides opportunities for cooperative initiatives in the agricultural sector, but does not promote it specifically.

(c.f. art. 9) and the technology transfer (c.f. art. 10) could all be used to promote agricultural initiatives if scoped for that purpose or targeted at the agriculture sector. In all these mechanisms, the basic concept is two or more parties cooperating on transfer of mitigation outcomes, finance or technology. Also, capacity building (c.f. art. 11) and training (c.f. art. 12) could be used to promote agricultural initiatives.

The adaptation elements of the PA do not as clearly differentiate between domestic and cooperative action as do the other mentioned elements. Article 7 on adaptation mentions all dimensions from local to international, and iterates the importance of "people, livelihoods and ecosystems," which in most developing country contexts involve agriculture. The text on adaptation is rather conceptual and sets out principles for adaptation action, but it gives no mechanism for action. Adaptation in the PA framework appears as an opportunity for agricultural action, but the framework does not facilitate or support concrete action.

Using one or more of the abovementioned opportunities to promote action in the agricultural sector is in principle merely a question of two or more parties agreeing to do so. If no decision is taken to use any of the opportunities, all climate action taken by all parties in order to deliver on the Nationally Determined Contributions (NDC) can be targeted at other sectors, such as energy or transport. On the other hand, since it is solely a question of scope, the PA arguably provides opportunities for cooperative initiatives in the agricultural sector, but does not promote it specifically.

As for the domestic action, outcomes of cooperative action would appear in the transparency framework for either action or support, and would have to be reported on by the involved parties. The transparency system set out by the PA and its decision does not as such point to agriculture, but does mention that the National Inventory Reports shall provide information on emissions by sources and removals by sinks. This is a continuation of current practice. The new part is that progress on implementing and achieving the NDCs needs to be documented and be subject to plenary assessment under the Global Stocktake. The process and content for providing such information is to be negotiated in the years to come, and in this work any specific mention or omission of outcomes of agricultural initiatives could be indicative of the level of action to be expected after 2020. In other words, the process promote transparency of action in agriculture, which is an opportunity for ensuring promotion of agricultural initiatives.

Agricultural adaptation measures in African countries

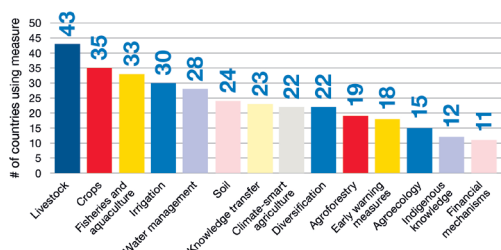


Figure 1. Agricultural adaptation measures mentioned in African INDCs. Source: African INDCs analysed for this project and Richards et al. 2016.

Agricultural mitigation measures in African countries

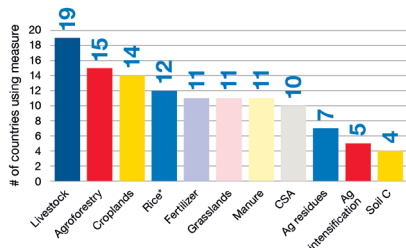


Figure 2. Agricultural mitigation measures mentioned in African INDCs. Source: African INDCs analysed for this project and Richards et al. 2016.

98% of African INDCs specify adaptation in the agriculture sector as a priority

The African case: What do the African INDCs say about agriculture

INDCs are national level plans for climate actions developed by countries and submitted to the UNFCCC, as building blocks of the global climate agreement adopted in Paris in 2015. The PA dictates that Parties must communicate their first NDCs upon ratification of the Agreement, and update their NDCs every five years thereafter, with increasing ambition in terms of GHG emission reductions. The PA at the global level and the INDCs at the national level, provide frameworks for climate actions. In the case of African countries, agriculture is given priority as a crucial sector for climate action (adaptation and mitigation). While globally 64% of the INDCs specified adaptation in the agriculture sector as a priority, in Africa the figure was 98% (Richards et al. 2016). 52 of the 53 African countries that submitted INDCs³ have indicated adaptation in the agricultural sector as a priority. Priority sectors for adaptation include: livestock (43 countries), crops (35 countries), and fisheries and aquaculture (33 countries).

One example of an INDC that is detailed on agricultural adaptation actions comes from Malawi. Malawi lists adaptation measures within priority sectors, such as agriculture and fisheries and highlight how their heavy reliance on rain-fed agriculture is their biggest adaptation challenge. The INDC mentions promoting financial mechanisms to support crop insurance targeting smallholder farmers and promoting growing tolerant crop varieties. Furthermore, the Malawian INDC includes adaptation actions such as implementing conservation agriculture and agroforestry practices as well as increasing irrigation on smallholder farms. Also, aquaculture initiatives are mentioned, such as supporting an expanded programme of constructing multipurpose dams for irrigation and aquaculture and promoting capacity building in aquaculture and cage culture fish farming practices in general. Furthermore, Malawi's INDC provides information pertaining to financing each action, such as unconditional actions and actions that require financial support from the international community.

African countries also recognize that while the agricultural sector is vulnerable to climate change, the sector can play an important role in mitigating GHG emissions. In this regard, 61% of the African INDCs have specifically included agriculture in their mitigation targets, which is similar to the global figure, wherein 63% countries with INDCs have included agriculture within their mitigation

³There are 54 African countries, but Libya did not submit an INDC

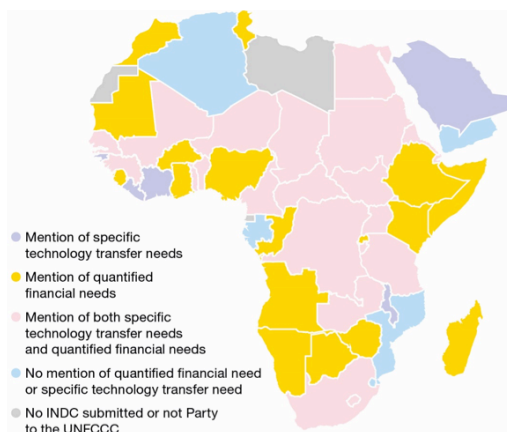


Figure 3. Quantified financial needs and specific technology transfer needs in their INDC/NDC. Source: After map 4 in IGES INDC database.

targets (Richards et al. 2016). The anticipated contributions from the agriculture sector ranged from 5 MtCO₂e/yr (Côte d'Ivoire) to 90 MtCO₂e/yr (Ethiopia), or 6.8% to nearly 50% of emissions, generally calculated against business-as-usual (BAU) emissions in 2030 (Richards et al. 2015). Eight of the African INDCs mention some potential mitigation actions in the agriculture sector, but the greenhouse gas reduction potential of these actions is not quantified.

The priority sectors for mitigation are: livestock (19 countries), agroforestry (15 countries) and croplands (14 countries), out of the 34 countries, whose INDCs include mitigation targets for agriculture. These priorities are also included in Togo's INDC, which is a good example of an INDC that details several agricultural mitigation actions and includes the estimated costs. Envisaged actions include supporting the promotion of local breeds and extensive livestock farming, promoting land use planning practices that boost carbon sequestration through agroforestry and supporting research into organic and synthetic enriching agents that release less GHG. Rice cultivation is a particular concern for Togo and the INDC outlines how they will target identification and promotion of varieties of rain-fed rice and support better use of organic matter on rice paddy fields. The estimated costs for the mitigation actions in the agricultural sector mentioned in Togo's INDC total 140 million USD.

African countries recognize the gender-differentiated impacts of climate change, and 22 countries include gender in relation to adaptation in their INDCs and eight of these countries specify gender in relation to agriculture and adaptation (Richards et al. 2016). Of the INDCs that include gender in relation to both agriculture and adaptation, there is a particular focus on capacity-building and strengthening of women's skills. For example, Sudan mentions in the section on mitigation actions in the agricultural sector that they intend to enhance women's adaptive capacity through the establishment of a rural women's development programme and women's cooperative societies. Similarly, Cameroon emphasizes strengthening capacity of young women and other vulnerable groups through sustainable crop production methods. 10 countries include gender in relation to mitigation in their INDC and 3 of these countries specify gender in relation to agriculture and mitigation. For example, Zambia's INDC highlights how the implementation of mitigation measures such as sustainable agriculture can lead to reduction of rural poverty particularly among women and youth.

Gender and INDCs in Africa

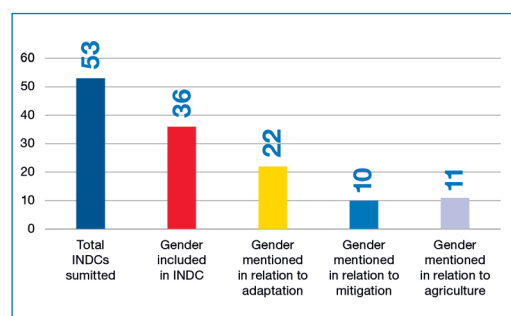


Figure 4. Reference to gender in African INDCs. Source: African INDCs analysed for this project and Richards et al. 2016.

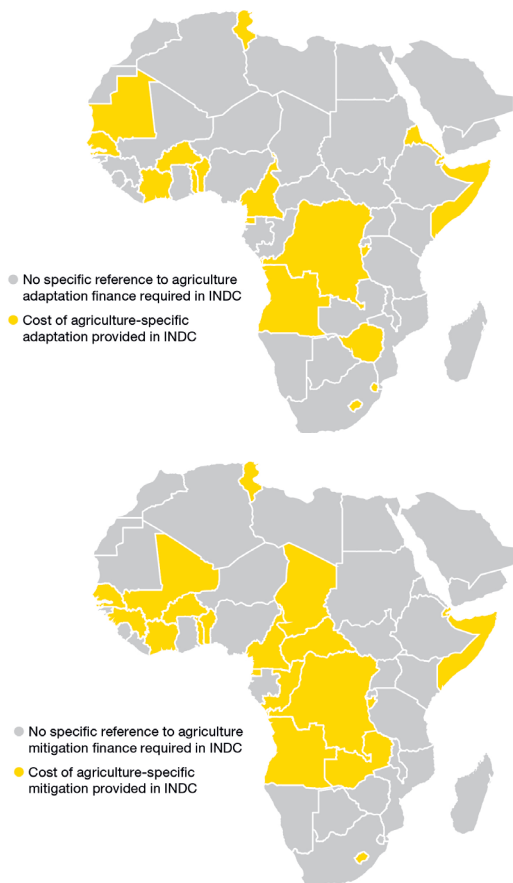


Figure 5. Specific cost for adaptation (top) or mitigation (bottom) of agriculture provided in INDC.

INDCs and agriculture initiatives

The African INDCs have very different structures in terms of how they present their agricultural adaptation and mitigation initiatives. Nevertheless, most African INDCs present their existing agricultural mitigation or adaptation policies and initiatives and some specify new initiatives intended to allow them to fulfill the targets of their INDCs, although the detail in which they do so is varying. Some INDCs point out their existing policy framework and the links between their existing policies and the initiatives designed to fulfil their targets, as in the case of Ghana, which lists specific mitigation and adaptation actions next to supporting national policies and measures.

26 of the 53 African INDCs reference existing agricultural initiatives on a national scale. Many African INDCs refer to national agricultural policies, however, some have more specific policies tailored to deal with the intersection of climate change and agriculture. Examples of this include Uganda's 10-year Climate Smart Agriculture Program and Togo's national programme Adapting Agriculture in Togo to Climate change (ADAPT). There are a great variety in the agricultural adaptation initiatives developed to fulfil the African INDCs.

Apart from the priority sectors already mentioned, other adaptation measures found in the African INDCs fall within the categories of financial mechanisms, early warning systems, water management, irrigation, diversification, soil, agroforestry, agroecology, knowledge transfers and indigenous knowledge. Examples within the category of financial mechanisms include Zambia, who mentions development of an insurance market against climate change induced risks related to agriculture and infrastructure as an adaptation measure, and Mauritania, who plans to improve the resilience of farmers through weather insurance. Examples within soil management include Botswana's intentions to implement CSA to reduce soil erosion and Guinea's intention to improve the management of pastoralism to limit degradation of soil.

Several INDCs also refer to existing regional agricultural initiatives. Chad, Eritrea and Mali mention the Great Green Wall initiative. The Great Green Wall is a regional initiative, which aims to address food security, deforestation and land degradation in the Sahel and Sahara, which has more than 20 African countries as partners (GGWSSI 2014). Fertile drylands in the Sahel and Sahara region are important for food security and agricultural production and

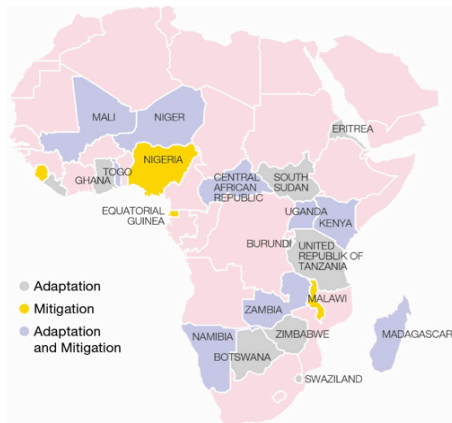


Figure 7. Reference to CSA pillars in INDCs.
Source: After FAO (2016), p. 40.

Most initiatives analysed undertake information-related activities, such as providing collaborative platforms that collect and share information, while those initiatives that finance research, provide insurance, or finance projects on the ground with farmers are less prevalent

thus the Great Green Wall aims to implement sustainable land management practices to combat land degradation (GGWSSI 2014). Another regional initiative highlighted by both Chad and the Central African Republic is the Lake Chad Sustainable Development Support Program (PRODEBALT), which aims at promoting sustainable management of the Lake Chad Basin's natural resources and rehabilitate and keep productive capacities of the present ecosystems (LCBC 2016). Among other things PRODEBALT aims to protect Lake Chad and its Basin through the regeneration of the pastoral ecosystem and the sustainable management of pastoral resources and agro-forestry (LCBC 2016). Apart from Chad and Central African Republic also Niger, Nigeria and Cameroon are member countries (LCBC 2016).

Agricultural initiatives

All in all, 69 global and regional agricultural initiatives have been assessed. 20 of these have been excluded due to their scope (e.g. focus on food security rather than climate change), limited information available, or the objectives of the initiative. The remaining initiatives, 16 global and 33 regional, have been taken forward for further analysis. In the following section, best practice elements from a number of these initiatives are presented.

The agriculture initiatives cover a vast range of topics, from breeding of drought tolerant crop varieties to crop insurance to climate-smart agriculture to financing of sustainable management practices. Most of the projects analysed here focus on adaptation and mitigation (30 initiatives), while significantly fewer focus on only adaptation (15 initiatives) or mitigation (4 initiatives). The initiatives also undertake different types of activities, most commonly information-related activities such as providing collaborative platforms that collect and share information on projects or other initiatives, conducting research and development on agriculture in relation to climate change, or establishing knowledge repositories that collects and distributes research on agriculture and climate change. Some also provide concrete recommendations and advise to farmers, e.g. on practices and tools, establishes pilot projects on the ground, or distributes materials, seeds, or other goods to farmers. Less prevalent are those initiatives that finance research, provide insurance, or finance projects on the ground with farmers. Finally, agroforestry, climate-smart agriculture (CSA) or land-sector and forest related activities are also undertaken by some initiatives.



Working with multiple stakeholders and focusing on bottom-up approaches help foster support for initiatives

Strengths, Weaknesses, Opportunities and Threats of initiatives

The initiatives have been analysed using a SWOT-framework (Strengths, Weaknesses, Opportunities, Threats). This allows us to identify success factors (strengths), potential pitfall areas (weaknesses), areas for increased project impact and success (opportunities) and external factors that should be mitigated (threats) for devising agriculture initiatives. Each of the elements listed below have been extracted from across the initiatives, and no one initiative contains all of the elements below. The elements are not listed in any specific order, meaning that those written at the top of the list (e.g. solid financial backing) are not necessarily found more often than those below (e.g. measures progress and publishes reports).

When initiatives focus on mitigation and adaptation together, opportunities for synergies are provided

<ul style="list-style-type: none"> • Success factors (S) • Solid financial backing • Well-defined objectives for programme/initiative • Clear (political and financial) mandate • Support from national government and relevant regional and international organizations • Clear, ambitious and quantitative goals • Involvement of international research organizations • Focuses on existing, workable solutions • Measures progress and publishes progress reports • Facilitates communication workshops with information, training and guidance • Scale up and replicate workable solutions • Develops good practice guidelines and training materials 	<ul style="list-style-type: none"> • Potential pitfall areas (W) • Multiple projects undertaken without focus on synergies and co-benefits • Cannot set the policy or research agenda in country/region; subject to political winds of change • Less beneficiaries/adopters reached than planned • Lack of contingency plan when goals are not met • Has managed to mobilize the one stakeholder (e.g. scientific community), but needs to establish ties to the rest (e.g. governments, international institutions, the private sector, and NGOs.) • Mainly external driven and funded and not in touch with local stakeholder needs and expectations
<ul style="list-style-type: none"> • Increased project impact and success (O) • Focus on both adaptation and mitigation, provides opportunities for synergies • Work across agriculture and forestry for landscape-wide/ecosystem benefits • Involve local stakeholders • Capacity building, e.g. through training of local professionals • To conduct projects on-the-ground • To develop tools and knowledge in a participatory manner with regional and national stakeholders • To adopt a bottom-up approach • Collaboration between multiple partners/stakeholders (e.g. technical experts, representatives of farmers community, the civil society, woman and youth organisations, government, the private sector). 	<ul style="list-style-type: none"> • External factors that should be mitigated (T) • Limited and unpredictable funding • Shortage of technical capacity • Shortage of financial and professional capacity • Excessive bureaucracy • Focus on too many areas (e.g. food security, resilience, job creation, gender, climate change) dilutes potential for impact



All in all, initiatives prove fairly successful, and more strengths and opportunities were identified than weaknesses and threats. The analysis reveals that focusing on setting clear objectives with quantifiable goals, which can be traced, followed-up and reported on, while keeping contingency plans, are key to successful initiatives. Further, as already done by the majority of initiatives, focusing on mitigation and adaptation together provide opportunities for synergies. However, this is a balance act, as too many activities can lead to the initiative losing focus, potentially affecting results; this is also the case for initiatives focusing on too many areas. Working with multiple stakeholders, including local stakeholders and farmers, and focusing on bottom-up approaches help foster support for the initiative, while a clear political and/or financial mandate builds the foundation. Excessive bureaucracy and problems securing funding are barriers, as is the lack of professional capacity. Some successful initiatives rely on research to discover new solutions, while others focus on existing workable solutions.

Moving forward: INDCs to NDCs

As of 3 November 2016, 94 countries representing over 65% of global emissions had ratified the PA. The Agreement entered into force on 4 November 2016, a month after 55 countries representing 55% of global emissions had ratified it. Ratification of the PA means that countries will now move forward with implementation of climate actions identified in their NDCs submitted to the UNFCCC.

22 African countries have ratified the PA, and while in most cases the NDCs submitted at the time of ratification were the same as the INDCs, differences were observed in the case of NDCs from Morocco and Mali. For Mali, these differences were not relevant for agriculture. Morocco however, does not include agricultural mitigation measures related to manure in its NDC as it did in its INDC. Furthermore, a detailed list of adaptation and mitigation initiatives and costs have been added to the country's NDC and financial mechanisms, such as agricultural insurance for cereals and legumes have been added as a main objective of adaptation in the agricultural sector within the NDC.

Lessons learned

The INDCs can help identify adaptation and mitigation challenges and opportunities for action in the respective countries, while analyses such as this can help identify initiatives (in the same or other regions) that have previously worked on this challenge. For example, Togo's INDC seek to achieve mitigation through land use planning and agroforestry, and could look to the NMSA (2016) initiative, which have sub-project focusing solely on agroforestry, and the Malawi INDC point to insurance of smallholder farmers and tolerant crop varieties



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as challenges. Two successful initiatives on this are the R4 (WFP, 2016) and DTMA (CIMMYT, 2015) initiatives, respectively. As such, looking at successful initiatives and focusing on key factors for success; countries could develop national or regional initiatives, which can respond to the challenges identified in their INDCs. Further, many countries across the region face similar challenges for agricultural adaptation and mitigation, and sharing best practices, on policies as well as on projects on the ground, can help increase success rates and cut costs; an initiative already focusing on this is the AIC initiative in West Africa.

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