

UNTAPPED OPPORTUNITIES FOR CLIMATE ACTION

An assessment of food systems in
Nationally Determined Contributions



COUNTRY ASSESSMENT

EGYPT



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CONTENTS

| | |
|--|----|
| PREFACE | 1 |
| OVERVIEW OF EGYPT'S FOOD SYSTEMS | 2 |
| NDC STATUS | 4 |
| KEY FINDINGS | 5 |
| NDC development process | 5 |
| <i>Table 1: NDC Development: Key Findings at a Glance</i> | |
| Key findings | 5 |
| Areas for improvement | 6 |
| Content of the NDC | 8 |
| <i>Table 2: NDC Content: Key Findings at a Glance</i> | |
| Key findings | 8 |
| Areas for improvement | 10 |
| Implementation of the NDC | 13 |
| <i>Table 3: NDC Implementation: Key Findings at a Glance</i> | |
| Key findings | 13 |
| Areas for improvement | 14 |
| CASE STUDY SUMMARY | 16 |
| ENDNOTES | 17 |
| ACKNOWLEDGEMENTS | 20 |
| ABOUT THE GLOBAL ALLIANCE FOR THE FUTURE OF FOOD | 21 |

PREFACE

Integrating food systems transformation into the Nationally Determined Contributions (NDCs) – the national climate actions at the heart of the Paris Agreement, is critical to delivering on interconnected ecological, biodiversity, health, economic, social, and cultural goals. Taking a food systems approach builds climate resilience and results in a diversity of context-specific solutions for food production, distribution, consumption, and waste. Yet, food systems are rarely prioritized in climate policy.

This country assessment is part of a suite of publications that are designed to centre food systems transformation in future climate policy:

- 1. Untapped Opportunities for Climate Action: An Assessment of Food Systems in Nationally Determined Contributions:** A summary report providing a synthesis of the 14 country assessments with recommendations and priority actions for policymakers and climate policy advisors
- 2. A Practical Guide to Assessing Food Systems in Nationally Determined Contributions (NDCs):** A guide with a framework designed to enable users to take a food systems approach to developing future NDCs and implementing climate policies.
- 3. A set of 14 country assessments** examining the latest NDCs of 14 countries from around the world, outlining areas of improvement and opportunity.

Users are also encouraged to read **Confronting the Climate Crisis with Food Systems Transformation: Stories of Action from 14 Countries**, which provides a catalogue of global case studies that complement the suite of materials for policymakers, advisors, and advocates of climate action.

OVERVIEW OF EGYPT'S FOOD SYSTEMS

Agriculture is a major component of Egypt's economy. The agriculture sector is the third-largest economic sector, accounting for 11.5% of the country's gross domestic product (GDP)¹ and 28% of employment.² However, as of 2018, agriculture covers only 3.9% of Egypt's total land area, with approximately two-thirds being located in the Nile Delta.³ Agricultural production is dominated by smallholder farmers who primarily use traditional agricultural practices.⁴

Annual production of fruits, vegetables, as well as roots and tubers, is growing. Between 1990 and 2020, agricultural exports rose at rates of 3.5%, 2.1%, and 4.3%, respectively.⁵ In 2020, Egypt exported over 4 million tons of agricultural products, with citrus, potatoes, and onions being the primary exported commodities.⁶ Fishing is also an important source of income and food protein in the country.⁷ Fish production amounted to 2 million tons in 2019, with around 80% of fish produced in fish farms.⁸ It was estimated, as per 2019, that Egypt exports between 30 to 50 thousand tons of fish annually, while presenting a self-sufficiency rate of 97%.⁹ Also in the case of dairy and poultry, Egypt is near self-sufficiency rates.¹⁰

Egypt is highly dependent on the import of staple food crops and is the world's largest wheat importer. As of 2010, about 40% of the country's food requirements are met by imports.¹¹ This dependency on imports makes the country highly vulnerable to market fluctuations. Egypt primarily imports rice, wheat and wheat flour, maize, frozen meat, dairy products, refined sugar, and vegetable oils.¹² Wheat is a particularly important imported commodity, given the wide difference between national demand and yield levels, which makes Egypt the world's largest wheat importer. Similarly, rice is imported from China, India, Thailand, and Russia, due to low production levels that do not meet domestic demand.¹³

Egypt's food systems are characterized by gender disparities. Out of the total female workforce in the country, approximately 46% is employed in the agricultural sector.¹⁴ Women employed in the agricultural sector are often seasonal workers subject to low and unstable income¹⁵ who face significant disparities in terms of unequal access to infrastructure, education, and resources.¹⁶ Most family-led agricultural activities are carried out by women even though they rarely have tenure rights or control over land resources, while men are usually working in other sectors.¹⁷ Insecure tenure rights, together with the lack of economic mobility that many Egyptian women working in the agricultural sector face, exacerbate their food insecurity.¹⁸ Given the central role of women in the Egyptian agricultural sector, promoting gender equality and the empowerment of women in agriculture is crucial for reducing poverty and enhancing food security.¹⁹

The country faces the double burden of malnutrition. Despite a significant increase in domestic food supply, malnutrition remains a challenge in Egypt. In 2020, 5.4% of the population was considered undernourished, a slight improvement from 2006, when the rate was 6.4%.²⁰ Moreover, Egypt ranks the 18th country in the world in obesity prevalence, and a growing percentage of adults face this issue. Between 2017 and 2019, obesity prevalence in adults increased from 36% to 39.8%.²¹ Egyptian school children also show alarming levels of malnutrition. A survey carried out between 2012 and 2017 estimated an underweight rate of 8.5% and overweight rate of 24.1%.²² In part, the malnutrition experienced in Egypt has to do with the fact that despite the country growing a variety of crops — including grains, vegetables, and fruits — household diets are

predominantly imbalanced and largely rely on staple crops, such as cereals and barley. Together with cereal products, roots and tubers constitute the primary nutritional sources of food in the country, amounting to about 65% of daily diets. This is relatively high compared to the world average of around 54%.²³ The COVID-19 pandemic has further exacerbated malnutrition and food insecurity in Egypt, and climate change is expected to further aggravate the situation.²⁴

Agriculture is the second-largest emitting sector in the country. In 2017, agriculture was responsible for 13.4% of Egypt's total emissions, only surpassed by the energy sector.²⁵ Greenhouse gas (GHG) emissions from agriculture are mainly non-CO₂ emissions — methane and nitrous oxide emissions — from livestock farming and crop production.²⁶ Emissions in the sector have increased by 2% between 1990 and 2016, while the sector's contribution to the GDP has decreased.²⁷

The consequences of climate change, together with agricultural land loss due to urbanization, could worsen food insecurity in Egypt. Food crop yields in Egypt are projected to decline by 10% by 2050 due to the degradation of natural resources. This degradation is expected to be associated with the increase in intensity and frequency of extreme weather events, heat, and water stress, as well as increased salinity.²⁸ Climate scenarios suggest that if the annual mean temperature increases by 1.2 to 2.0°C above pre-Industrial levels by 2030, wheat yields are projected to decrease by 12% by 2040, while vegetables are expected to decrease by 28%, corn by 47%, and rice by 26%.²⁹ This will contribute to food insecurity, lead to a decrease in farm incomes, as well as a decline in the percentage of the agricultural sector's contribution to GDP.³⁰ The Nile Delta is especially vulnerable due to its exposure to erosion, saltwater intrusion, and flooding. This is particularly concerning as it has the most fertile soil in the country and represents the basket of food production in Egypt. Additionally, around 75,000 hectares of fertile land are estimated to have been lost to urban expansion in the last 20 years.³¹

Additionally, water scarcity is rapidly worsening, further threatening food security. Egypt's agriculture is predominantly practised under full irrigation, utilizing over 80% of Egypt's water resources. Due to the impacts of climate change and current unsustainable irrigation practices, it is estimated that Egypt will suffer from water scarcity and a fall in grain productivity of 11% by 2025. In 2019, the annual water quota dropped below 550 cubic metres per person, meaning that the country is now considered to suffer from water poverty.³²

The government of Egypt is taking steps to ensure food security by enhancing agricultural productivity and ensuring the supply of strategic crops. In the face of the negative effects of climate change on agriculture and, consequently, on the four dimensions of food security (food availability, food access, food utilization, and food stability), the Ministry of Agriculture and Land Reclamation is taking action to improve productivity in the sector as well as to enhance the production and reserves of strategic crops. For this purpose, the Ministry has set production targets — that increase annually — for key strategic crops. For example, wheat production is planned to rise by around 0.1 million hectares between 2018/2019 and 2020/2021, and maize production by 0.4 million hectares in the same time span.

NDC STATUS

The Government of Egypt prepared its Intended Nationally Determined Contribution (INDC) with support of the INDC Project and submitted it in November 2015. The INDC was converted into the country's first Nationally Determined Contribution (NDC) and submitted in June 2017. Since its submission, no change has been made to Egypt's NDC. However, Egypt's NDC does not contain clear quantifiable GHG mitigation targets. But an independent study has quantified Egypt's carbon dioxide emissions reductions under the NDC based on current policy goals to be 20% from the baseline emissions level of 250MtCO₂ by 2030.³³

Egypt is currently in the process of updating its NDC and Low-Emission Development Strategy (LEDS), and is developing a National Climate Change Strategy. There is a process underway by the Ministry of Environment, the Egyptian Environmental Affairs Agency (EEAA) supported by the United Nation Development Programme (UNDP) under its Fourth National Communication Project (NC4-Egypt). A national consultant has been appointed to develop a technical report that includes an update of Egypt's NDC. This will include updated targets for the mitigation component of the NDC and the main emitting sectors, such as agriculture and waste. In terms of adaptation, the updated NDC will address issues related to water resources and irrigation, coastal zones, agriculture, health, and ecosystems. Egypt also developed its Low-Emission Development Strategies (LEDS) in 2018 — which is currently being updated — and is preparing a National Climate Change Strategy (NCCS). All mentioned strategic studies and documents are supporting the facilitation of the preparation of the subsequent National Communication Reports, including an enhanced NDC.³⁴

The following assessment is largely based on Egypt's current NDC (submitted in 2017) and LEDS, as well as interviews with two key stakeholders.

KEY FINDINGS

NDC DEVELOPMENT PROCESS

TABLE 1: NDC DEVELOPMENT: KEY FINDINGS AT A GLANCE

Key findings

- The development of the NDC is coordinated across different ministries through governmental agencies and steering groups to ensure political support across government.
- The NDC process included the participation of some external stakeholders, although it was mainly a high-level process that primarily involved government officials.
- The development of the NDC was informed by multiple policy studies and preparatory documents, yet no holistic food system assessment seems to have been considered as part of the process.

Areas for improvement

- Ensure meaningful engagement with all relevant stakeholders throughout the entire development process of the NDC.
- Incorporate a holistic food systems assessment in the NDC development process.
- Foster policy coherence during the development of the NDC in relation to food systems policies.

The development of the NDC is coordinated across different ministries through governmental agencies and steering groups to ensure political support across government. The technical background for Egypt's NDC was developed by the Egyptian Environmental Affairs Agency (EEAA) under the strategic direction of the Ministry of Environment and the Climate Change Central Department (CCCD). More broadly, the EEAA and the CCCD are the leading government bodies responsible for national climate change mitigation and adaptation strategies. To further incentivize cross-ministerial engagement and political buy-in from different ministries, the Egyptian government established the National Council for Climate Change (NCCC), which is composed of both government officials and non-governmental stakeholders, including scientific experts, and members of the public.³⁵ It is unclear, however, whether food systems experts and underrepresented groups, such as women and farmer associations, are also part of the national council. The NCCC is involved in the development of several climate policies, including the NDC. Although it is unclear how precisely the NCCC contributed to the NDC process, in other policy-making it has proven an important body to foster cross-ministerial engagement and policy coherence. For instance, while developing the National Strategy for Adaptation to Climate Change, the NCCC incorporated the sectoral plans of the Ministry of Health and the Ministry of Agriculture and Fisheries into the strategy.

The NDC process included the participation of some external stakeholders, although it was mainly a high-level process that primarily involved governmental officials. Interviews and available

documentation indicate that the NDC was developed in a process that included a technical consultation and 16 high-level meetings, each with a different ministry. It also involved team members of the Low-Emissions Capacity Building (LECB) project, as discussed below.³⁶ Additionally, in reviewing the measures under the NDC, the Egyptian government received support from the UNDP and other international agencies.³⁷ While the initial development process appears to not have engaged with a range of stakeholders, including farmers, Indigenous Peoples, and other marginalized groups, interviewees indicate that the additional consultations conducted from 2017 onward were more participatory, counting with the engagement of a diverse set of stakeholders. This includes formalized consultations and coordinated cross-governmental engagement with farmer associations, the private sector, women's organizations, youth, and pastoralists.³⁸ It is still unclear, however, if these recent and more inclusive consultations also engaged with food systems experts and stakeholders, or how inputs from stakeholders informed the update of the NDC.

The development of the NDC was informed by multiple policy studies and preparatory documents, yet no holistic food systems assessment seems to have been considered as part of the process.

The development process was supported by findings from Egypt's LECB project, an internationally financed support program that supports building the capacity of participating countries to develop climate mitigation and adaptation strategies.³⁹ Outputs of the LECB include the Low-Emission Development Strategies (LEDS) and the National Appropriate Mitigation Actions (NAMA),⁴⁰ both of which informed the development of the NDC. The Information Notes of the NAMA (NINOs) and the Mitigation Action Plans and Scenarios (MAPS) were also considered.⁴¹ However, none of these policies contain any concrete plans or measures to transform Egypt's food systems. In addition, it is also not apparent from the NDC whether a food systems assessment was part of any preparatory process for developing the targets and measures of the NDC.

AREAS FOR IMPROVEMENT

Ensure meaningful engagement with all relevant stakeholders throughout the entire development process of the NDC.

While the interviews and available information suggest that external stakeholders, including civil society and representatives from marginalized groups, participated in consultations at later stages of the NDC development process, the overall process appears to have mainly involved technical experts and governmental officials. Future submissions should engage non-governmental stakeholders of the Egyptian food system from the onset of the NDC development process to make the development of policies and measures a truly democratic and transparent process. Moreover, such an inclusive process could ensure that food systems are considered in a more integrated manner throughout the drafting of the NDC. In the case of the Egyptian NDC, it is particularly important to improve the participation of specific groups that are often underrepresented, including women, ethnic minorities, smallholder farmers, and pastoralists. Moreover, food systems experts should also be engaged in order to better identify mitigation and adaptation opportunities related to Egypt's food systems, as well as potential co-benefits and trade-offs that such measures could bring.

Incorporate a holistic food systems assessment in the NDC development process. The NDC indicates the need for developing knowledge, conducting studies on the impacts of climate change on the agricultural sector as well as its adaptation needs. However, the NDC does not provide more detailed information on how these studies will be conducted. An opportunity exists to conduct a holistic food systems assessment to better

understand how transforming Egypt's food systems can contribute to climate mitigation and adaptation, not only in the agricultural sector but throughout the food systems. Such an assessment could help overcome the current gap in knowledge on the national food system, help identify health and socio-economic co-benefits, contribute to an adaptation strategy for agriculture, as well as inform the development of concrete measures to achieve Egypt's NDC targets. Moreover, a food systems assessment can help highlight the cross-sectoral nature of food systems and, therefore, incentivize cross-ministerial and cross-sectoral collaboration.

Foster policy coherence during the development of the NDC in relation to food systems policies.

While the NDC refers to multiple climate policies and targets outside of its own scope, it does not specify to what extent these are aligned with the NDC, or their role in the development and implementation of the NDC, or a food systems transformation. Therefore, the NDC should refer to policies and strategies that support its adaptation and mitigation measures to build synergies across different policy streams. For instance, the NDC should align to relevant policies such as Egypt's Vision 2030 and the National Climate Change Adaptation Strategy 2050. Released in 2021, the latter aims to address biodiversity loss, land degradation, deforestation, and maintaining and developing water resources. Furthermore, the National Climate Change Strategy 2050 aims to maintain agricultural lands and improve crop management systems as well as conserving aquatic resources.⁴² As this policy document touches upon multiple elements of the food systems, exploring opportunities to build synergies with the NDC appears critical. The NCCC could well be appointed to identify complementary roles for different policies on climate change across different ministries and governmental bodies, as it currently works across different ministries to coordinate development and implementation of the NDC.

CONTENT OF THE NDC

TABLE 2: NDC CONTENT: KEY FINDINGS AT A GLANCE

Key findings

- Egypt's NDC includes several mitigation measures to reduce agricultural emissions, including by improving the energy efficiency in the sector.
- The NDC includes several adaptation measures that aim to strengthen capacities and build resilience of agriculture and food systems to climate change, including several measures that aim to safeguard water resources and irrigation.
- The NDC includes a commitment to social justice, which will likely foster a more enabling environment for farmers, contribute to a reduction in food waste, and promote a diversification of diets.
- The NDC refers to several National Mega Projects to be implemented in the near future, one of which is relevant to Egypt's food systems.
- Egypt's NDC is aligned with some climate strategies and policy frameworks related to food systems.

Areas for improvement

- Include health co-benefits for the food systems adaptation measures included in Egypt's NDC.
- Introduce specific mitigation measures that seek to manage emissions from food loss and waste and changing diets, while maximizing health, economic, and social benefits.
- Include measures to improve climate services and build resilience.
- Scale current initiatives that promote agroecology and regenerative approaches to agriculture, and integrate these in the NDC.
- Integrate a gender perspective in the NDC.
- Clarify how overarching commitments mentioned in the NDC relate to food systems.

Egypt's NDC includes several mitigation measures to reduce agricultural emissions, including by improving the energy efficiency in the sector. The NDC aims to mitigate climate change by reducing the energy efficiency of agriculture through behavioural changes as well as the introduction of regulation to enhance efficiency, introduce technology standards, and enforce environmental externality pricing that mitigates potential rebound effects. Further agricultural mitigation measures target enteric fermentation, manure management, rice cultivation, agricultural soil management, and field burning of agricultural residues. In addition, the NDC proposes the planting of trees alongside roads and irrigation canals as mitigation measures. However, these mitigation measures are only supported by broad strategies and are not further specified through plans, goals, or timelines. Indeed, interviewees indicate that the NDC is very ambiguous in terms of direction, is general, and lacks detail and quantification.⁴³

The NDC includes several adaptation measures that aim to strengthen capacities and build resilience of agriculture and food systems to climate change. The NDC recognizes the susceptibility of agriculture to climate change impacts, and in response is seeking to promote resilience and increase agricultural security. To this end, the NDC proposes various adaptation strategies, such as the sustainable use of agricultural land; the development and promotion of cultivars that are more tolerant to heat, salt, and pests; changing planting dates; improving cultivation techniques; improving irrigation and crop water use efficiency; enhancing livestock feeding practices; and land reclamation efforts.

The NDC also includes several adaptation measures that aim to safeguard water resources and irrigation and thereby also contribute to the resilience of Egypt's food systems. The NDC proposes a number of actions to promote water resilience, including by adapting to increasing Nile flows and decreasing water resources. Water adaptation actions that are particularly relevant to the Egypt's food systems include strengthening irrigation and drainage infrastructure, altering cropping patterns, and optimizing irrigation systems.

The NDC includes a commitment to social justice, which will likely foster a more enabling environment for farmers, contribute to a reduction in food waste, and promote a diversification of diets. Under Political and Social Context, the NDC puts forward a broad commitment to social justice as well as four specific goals through which this will be achieved — three of which are relevant to the country's food system. The first goal involves expanding social security to self-employed farmers who have increased their medical insurance coverage.⁴⁴ In addition, logistic centres for grain trade and storage will be established to safeguard food security, which will likely contribute to the reduction of food waste and loss.⁴⁵ Finally, the way in which bread is subsidized is being modernized, with the traditional ration system replaced with smartcards and a new bread supply system. Approximately 90% of the Egyptian population is eligible for the new smartcard system, which permits five loaves of bread per family member per day. If cardholders opt not to claim their entire daily allowance, they gain tradable points that could be spent in government-registered stores. In this way, there is an incentive to not claim any more bread than can actually be eaten, as leftovers would otherwise be thrown away.⁴⁶ In addition, the food options included in the standard food basket have been broadened to optimize nutritional value and promote dietary diversity.⁴⁷

The NDC refers to several National Mega Projects to be implemented in the near future, one of which is relevant to Egypt's food system. Egypt's Reclamation of One and a Half Million Feddan Project is part of a long-term plan to reclaim roughly 1.7 million hectares of desert land. The Project has the objective of increasing Egypt's available agricultural land by 20% and creating investment opportunities for agriculture and food industries. In addition, the Project aims to develop the urban regions of Farafra, El Magraa, and West of Minya to promote integrated and sustainable development according to Egypt's 2030 Agricultural Strategy.⁴⁸ It is noted, however, that such mega projects may actually exacerbate Egypt's issue with water scarcity and groundwater depletion, making their contribution for the improvement of Egypt's food system uncertain.⁴⁹

Egypt's NDC is aligned with some climate strategies and policy frameworks related to food systems. More specifically, the NDC refers to the Sustainable Development Strategy — Egypt's Vision 2030, which serves as a roadmap for the country to achieve its sustainable development goals (SDGs). The strategy

is aimed at increasing the resilience of Egypt to climate change in various sectors, including agriculture, water resources, and coastal zones.

While Egypt's NDC puts forward several adaptation measures for the health sector, no links are made with the country's food systems either in terms of co-benefits or trade-offs. Egypt has committed to raising national awareness about climate change–induced health risks and adaptation options, as well as increasing the capacities of the healthcare sector to deal with climate-related health concerns. In addition, Egypt's health sector is currently investing in risk mapping, monitoring systems to address potential adverse health outcomes, and in strengthening the country's knowledge management and communication networks. Furthermore, research is being conducted to identify key climate change–related health vulnerabilities, such as urban heat islands and vector-borne and communicable diseases. Given this extensive attention to health, it is notable that Egypt's NDC does not link food systems measures to health in terms of potential co-benefits or trade-offs — or mention food systems benefits related to health sector measures. Interviewees indicated that, while there is indeed scope to include nutrition under Egypt's NDC, dietary measures are quite new as a climate change policy lever and, therefore, not frequently considered in the context of climate change mitigation and adaptation.⁵⁰

AREAS FOR IMPROVEMENT

Identify health co-benefits for the food systems adaptation measures included in Egypt's NDC.

While the adaptation dimension of Egypt's NDC focuses extensively on the country's health sector, no health benefits have been identified for food systems adaptation measures. Furthermore, although the NDC aims to support the Ministry of Health in improving the social and economic status of Egyptians, no concrete measures have been identified for doing so. Identifying and maximizing co-benefits and engaging relevant ministries provides for a more holistic NDC and will likely increase public support. Co-benefits can be maximized by linking food security (which is mentioned as an overarching objective of the NDC as well as an agricultural adaptation target) more explicitly to sustainable nutrition security.⁵¹ Sustainable nutrition security builds on ideas about the availability of and access to food (that is, food security), but also considers the impact of food on human health and well-being (nutrition security) and aims to minimize the negative environmental externalities of food consumption (sustainability).⁵² Women should play a central role in such an approach.⁵³ At a governmental level, this would require, at least, collaboration between the Ministry of Agriculture and Land Reclamation, the Ministry of Health and Population, and the Ministry of Environment.

Introduce mitigation measures that seek to manage emissions from changing diets, while maximizing health, economic, and social benefits. In parallel to efforts to maximize the health co-benefits of food systems adaptation measures, it is crucial to recognize the mitigation potential and health co-benefits of dietary measures. In fact, Egypt's NDC does not include any mitigation measures that seek to influence diets. While a traditional Egyptian diet may not be carbon-intensive, recent decades have seen a Westernization of diets in Egypt and associated increases in carbon intensity.⁵⁴ Indeed, due to expected population growth, urbanization, and growing affluence, demand for animal products is expected to increase rapidly in Egypt.⁵⁵ Estimated changes in demand between 2015 and 2050 range from 1100% for poultry, 480% for eggs, 400% for beef, to 300% for milk.⁵⁶ It is therefore crucial that future iterations of Egypt's NDC account for dietary trends by seeking to mitigate associated emissions while maximizing health, social, and

economic benefits. Interviews revealed that there is indeed scope for nutrition aspects to be better reflected in future NDCs.⁵⁷ Dietary guidance could seek to maximize health benefits by aligning with Egypt's National Multi-Sectoral Action Plan for Prevention and Control of Non-communicable Diseases 2017–2021 (Egypt MAP-NCD). The MAP-NCD promotes healthy diets as part of public health education and aims to reduce sugar consumption by taxing sugar-sweetened beverages. It also includes dietary guidelines to promote nutritious, whole-food diets, nutrition labelling to improve macronutrient intake, and replacing trans fats and saturated fats with unsaturated fats through reformulation, labelling, and fiscal and agricultural policies.

Include measures to improve climate services and build resilience. Building resilience lies at the heart of Egypt's NDC. The NDC highlights that by 2050, the productivity of two of Egypt's major crops — namely, maize and wheat — will likely have reduced by 19% and 15%, respectively. This will largely be driven by rising temperatures, scarcity of irrigation water, and the increase of pests and plant disease. At the same time, 12% to 15% of arable land in Egypt will likely be negatively impacted by sea-level rise and saltwater intrusion, which is already posing a threat to the country's marine ecosystems and aquaculture sector. In this context, it is imperative that the NDC consider additional measures to ensure climate resilience, such as the development of early warning systems and seasonal weather forecasts, as highlighted in the country's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction).⁵⁸

Scale current initiatives that promote agroecology and regenerative approaches to agriculture, and integrate these in the NDC. Although the NDC already refers to different mega projects that support the achievement of mitigation and adaptation goals, highlighting, scaling, and supporting medium and small projects that aim to build sustainable and resilient food systems could also be valuable as a means to foster food systems transformation. For example, the SEKEM Initiative has already worked for a considerable time to combat desertification and land degradation through practices guided by agroecology principles to holistically address social, economic, cultural, and ecological dimensions of food systems. Supporting such initiatives and offering them opportunities to grow and scale could be considered a low-hanging fruit to realize climate-resilient food production under the NDC.⁵⁹

Several other existing projects with clear adaptation and mitigation benefits could also be included in future iterations of the NDC. For example, in 2018, the World Food Programme (WFP) signed a 5-year agreement with the Egyptian Ministry of Supply and Internal Trade, Ministry of Social Solidarity, and Ministry of Health that aims to, among other objectives, reduce food waste and loss by improving the storage and transportation options available to smallholder farmers — with clear mitigation benefits — as well as improving the nutritional value of key foods included in the NSP.⁶⁰ WFP will also work with the government on improving people's diets with a view to preventing chronic malnutrition among children in the first 1,000 days of their lives as well as among pregnant and nursing women.⁶¹ Another example of a promising project funded through the support of the WFP is Phase 2 of the Building Resilient Food Security Systems to Benefit the Southern Egypt Region, currently being implemented by the WFP and Ministries of Agriculture and Land Reclamation and Environment.⁶² The aim of this project is to increase resilience in Southern Egypt farming communities in the wake of a changing climate and increasing food security threats. Additional objectives are: 1) to increase the productivity of staples like wheat and maize; 2) to promote the diversification of agriculture through intercropping, livestock and fish production, and agro-processing; 3) to protect agriculture;

4) to improve water management through low-cost water-saving techniques; and 5) to implement early warning systems to reduce losses in extreme weather events.⁶³ These projects are prime examples of the kind of measures that could be included in Egypt's NDC and financed with the support of international organizations.

Integrate a gender perspective in the NDC. The NDC mentions a focus on marginalized social groups but does not operationalize this through concrete measures or plans. In fact, no explicit reference to women or gender are made in the entire NDC, while women play a crucial role in Egypt's society and food systems. Women are primarily responsible for ensuring the nutritional status of their families, women can be fundamental in ensuring food security and increasing agricultural yields, and women are custodians of traditional knowledge and Indigenous coping strategies that can be essential in reducing the impacts of climate change.⁶⁴ In addition, Egypt faces spatial, economic, and gender-based inequality, which is exacerbated by climate shocks. Future iterations of Egypt's NDC would therefore do well to integrate the National Strategy for Mainstreaming Gender⁶⁵ — which promotes mainstreaming gender considerations into national climate change initiatives and policies — so that both men and women have equal opportunity to benefit from mitigation and adaptation measures.

Clarify how overarching commitments relate to food systems. The NDC refers to several *National Objectives and Priorities*, including the creation of jobs and the development of skills for youth empowerment. The NDC also highlights a focus on marginalized groups and those negatively affected by economic reforms. While these overarching commitments are particularly relevant to Egypt's food systems, no clear link to food systems mitigation and adaptation measures are made. For example, it is unclear whether new job opportunities will be created in Egypt's food systems and whether beneficiaries will include marginalized groups such as women and youth. To ensure a just transition, the enhanced NDC should take explicit efforts to ensure that new green job opportunities are also available to smallholder farmers, women, youth, and Indigenous Peoples — and that the interests of these groups are adequately safeguarded as part of Egypt's transition to a healthy, sustainable, and equitable food system.

IMPLEMENTATION OF THE NDC

TABLE 3: NDC IMPLEMENTATION: KEY FINDINGS AT A GLANCE

Key findings

- While the NDC puts forward a general objective to create an enabling environment for private investment, it is unclear how this will be pursued and whether investments will support the implementation of the NDC.
- The implementation and monitoring of Egypt's NDC are governed by a coordinating body.

Areas for improvement

- Give a bigger role to food systems stakeholders — such as local institutions, communities, smallholder farmers, Indigenous Peoples, and women — in the implementation and monitoring of Egypt's NDC.
- Strengthen efforts to ensure coherence during NDC implementation and monitoring.
- Direct finance toward transforming Egypt's food systems.

While the NDC puts forward a general objective to create an enabling environment for private investment, it is unclear how this will be pursued and whether investments will support the implementation of the NDC. The NDC specifies that its implementation is estimated to cost 1,147.45 billion Egyptian pounds (EGP) (73.04 billion USD)* over the period between 2020 and 2030. It is unclear, however, how this figure is divided between mitigation and adaptation, and how it will be allocated to specific measures. It is further unclear how much of this funding is expected to come from external sources, and how much of Egypt's NDC will be funded domestically. In turn, under National Objectives and Priorities, Egypt's NDC mentions the ambition of creating an enabling environment for local and foreign private investment, which are to be redistributed in a geographically balanced manner. It is unclear, however, how such an enabling environment will be created and whether this enabling environment is expected to contribute to funding the implementation of the NDC. Instead, the NDC makes other more ad hoc references to investments. For example, increasing investments in modern irrigation systems is included as an adaptation measure, although it is not specified whether these investments should be public or private. Furthermore, one interviewee notes that state-owned agricultural enterprises problematize investment in agricultural development, as these enterprises may capture the market and government support, preventing sufficient financial flow to smallholder farmers and small and medium enterprises.⁶⁶ This issue is currently not clearly considered within the objectives of the NDC. In addition, the NDC mentions that a regional carbon market may be developed to attract foreign direct investment, although it is unclear whether such a market would cover food systems emissions, from agriculture for example.

The implementation and monitoring of Egypt's NDC are governed by a coordinating body.

The above-mentioned NCCC oversees the implementation of Egypt's NDC, with support from inter-ministerial

* Conversions based on February 8, 2022, exchange rates.

working groups and various other stakeholders. The Central Agency for Public Mobilization and Statistics (CAPMAS), with support from national experts, collects technical data about the implementation of sectoral programs and projects that are part of the NDC process. The NCCC then reviews and endorses this data. To promote further climate change resilience, Egyptian authorities are taking efforts to build institutional monitoring capacities. For example, Egypt intends to strengthen the role of CAPMAS by legally formalizing its tasks and responsibilities. In addition, CAPMAS staff are receiving training on NDC-related data-gathering, with funding provided by international donors.⁶⁷

AREAS FOR IMPROVEMENT

Give a bigger role to food systems stakeholders — such as local institutions, communities, smallholder farmers, Indigenous Peoples, and women — in the implementation and monitoring of Egypt's NDC. The NDC refers to agriculture as a major sector for both adaptation and mitigation.

Despite this, no mention is made of engagement with key agricultural and other food systems stakeholders for the implementation of relevant measures. Key stakeholders could include women, Indigenous Peoples, smallholder farmers, private sector, civil society organizations, youth, and other vulnerable groups.⁶⁸

According to the NDC, Egyptian authorities are in the process of developing indicators and conducting a thorough assessment of vulnerable sectors and stakeholders. It is imperative that these vulnerable stakeholders be engaged throughout NDC implementation and monitoring to ensure that local knowledge is considered and that the impacts on marginalized groups are minimized.

Strengthen efforts to ensure coherence during NDC implementation and monitoring. While the implementation and monitoring of Egypt's NDC is supported by an institutional coordination body — which has been integrated into the country's pre-existing climate governance structure — these are not yet fully effective. The lack of specific intra-institutional reporting obligations, combined with insufficient staff capacity and a lack of financial resources to support these processes, makes collecting and sharing technical NDC implementation data among key stakeholders a challenging process.⁶⁹ Additionally, an interview revealed limited availability of data as a barrier to monitoring efforts.⁷⁰ It is, therefore, important that further efforts are taken to build implementation and monitoring capacities and increase data availability. Building on the recommendation above, these efforts should seek to strengthen institutional capacities related to stakeholder engagement and strengthen stakeholder capacities to participate in the implementation and monitoring of the NDC.

Direct finance toward transforming Egypt's food systems. The estimated cost of achieving the NDC's adaptation and mitigation commitments is 1,147.45 billion (EGP) (73.04 billion USD). It is unclear how much of this funding is expected to come from external versus government financing. It is also unclear whether Egypt's ambition to create an enabling environment for local and foreign private investment is related to the implementation of the country's NDC. Egypt should develop concrete measures to direct public sector finance, fiscal policy, and private investments toward ecologically beneficial forms of farming and resilient livelihoods. In this context, it is also important to ensure investments reach smallholder farmers and Small and Medium Enterprises (SMEs), and are not only for state-owned enterprises. For ensuring effective finance, for example, Egypt can choose to pursue the carbon market that it considers in its NDC. A regional carbon market that also covers food systems emissions — such as agricultural soil carbon emissions — could offer a valuable avenue

for leveraging foreign investments to transform Egypt's economy and food system.⁷¹ In addition, agreements can be made with development partners to channel investments in modern irrigation systems — one of the adaptation measures included in the NDC.

CASE STUDY SUMMARY

SEKEM, Egypt

"In the midst of sand and desert I see myself standing before a well drawing water. Carefully I plant trees, herbs and flowers and wet their roots with the precious drops. The cool well water attracts human beings and animals to refresh and quicken themselves. [...] For me this idea of an oasis in the middle of a hostile environment is like an image of the resurrection at dawn, after a long journey through the nightly desert. I saw it in front of me like a model before the actual work in the desert started. And yet in reality I desired even more: I wanted the whole world to develop." —Dr. Ibrahim Abouleish, Founder of SEKEM

In 1977, Dr. Ibrahim Abouleish started the SEKEM Initiative on 70 hectares (ha) of an untouched part of the Egyptian desert, 60 kilometres (37.3 miles) northeast of Cairo. Using biodynamic and organic agricultural methods, desert land was revitalized, and a vibrant and successful agricultural business emerged from the desert sands. Named after the Egyptian hieroglyph for "vitality of the sun," SEKEM, a social enterprise, focuses on building healthy communities through sustainable, biodynamic, and organic agriculture with an emphasis on social and cultural development. By creating an initiative that integrates each facet, SEKEM takes a holistic, people-centred approach to community development.

The SEKEM Wahat farm is turning 1,140 ha of desert into a self-sufficient sustainable community. With a focus on the conservation of precious resources (water, soil, and energy), they use solar pivots (a method of crop irrigation in which equipment rotates around a pivot and crops are watered with sprinklers) to transform the once-lifeless desert soils into healthy living soils, capturing soil carbon (and thereby reducing GHG emissions). Compost production is at the heart of the approach, creating what SEKEM calls the "Brown Gold," which adds key nutrients, organic matter, and carbon to the sandy soils. Crop rotations are also practised using nitrogen-enriching crops such as legumes to replenish the soils (they cover at least 20% of the cultivated area of a farm with legumes at least every fifth season). SEKEM strives to become a role model as a climate-positive business and community in Egypt. Through a combination of tree planting and organic agriculture, SEKEM was able to sequester more GHG emissions than it emitted, and thus was climate-positive in 2020.

Sustainable community development is at the heart of the holistic approach to the Greening the Desert project at SEKEM Wahat. At this farm, SEKEM has established housing, a new school, and a cultural/arts centre and provides medical care for its employees and the surrounding communities.

"We want to showcase and build sustainable communities, and this needs to be more than just sustainable agriculture ... It's about providing people meaningful jobs and giving them access to decent housing and educational and health facilities." —Thomas Fischer, SEKEM

Working with over 2,000 farmers and partner organizations, SEKEM works to tackle Egypt's burning issues, including food security, urbanization, and environmental pollution, climate change, and the need for education and community development. Today it is regarded as one of the leading social enterprise organizations worldwide and builds partnerships based on mutual trust, equity, and transparency.

Further information and access to the detailed case study can be found [here](#).

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