



## Brussels Policy Briefing n. 60

### The future of food and agricultural transformation

Organisers: CTA, ACP Secretariat, European Commission/DG Devco, Concord

**Wednesday 26<sup>th</sup> February 2020, 9h00-13h00**

ACP Secretariat, Avenue Georges Henri 451, 1200 Brussels, Room C

<http://brusselsbriefings.net>

#### BACKGROUND NOTE

##### 1. Context: towards sustainable food systems

The entire food system is influenced by a set of external drivers and trends related to population, wealth, consumption preferences, technological developments, markets, environmental factors and politics. There are 736 million people, or 10% of the global population living in extreme poverty (FAO). Eighty percent of the extremely poor and 76% of the moderately poor live in rural areas. There is a high correlation between extreme poverty and the 821 million people who in 2018 were still suffering from hunger. Agriculture is the main employment sector for the poor, employing 76.3% of the extreme and 60.7% of the moderate poor.<sup>1</sup> Most of this group tend to be subsistence or semi-subsistence oriented and face significant barriers to entering higher value agricultural activities.<sup>2</sup>

Sustainable agricultural development is one of the most powerful tools to end extreme poverty and boost shared prosperity. Sustainable, inclusive growth in the agriculture and food sectors creates jobs on farms and throughout the farm-to-table food production and consumption chain. World population is expected to reach nine billion by 2050, rising food demand to increase by at least 20% globally over the next 15 years with the largest increases projected in sub-Saharan Africa, South Asia and East Asia.<sup>3</sup> Measures to raise agricultural productivity at the farm level—especially in staple crops—can yield significant development gains. These include ensuring secure land tenures, better access to markets and finance, better crop choices, more effective and increased use of fertilizers, improved irrigation, diffusion and adoption of new technologies, as well as targeted trainings to help small farmers reap the benefits of cutting-edge knowledge and practices specific to the area and product.<sup>4</sup>

To meet the aspiration of establishing inclusive, efficient, sustainable, nutritious and healthy food systems capable of achieving the SDGs, a comprehensive transformation is required. We need to fundamentally change the way food is produced, including the practices of agri-industrial operations and over 500 million smallholder farmers, as well as the way 7.7 billion individuals consume food. Many hurdles, including financial, cultural, and mindset challenges, are preventing stakeholders from making these required changes. Therefore, to spur these shifts on a large scale requires realigning and creating the right incentives for stakeholders in the food system.<sup>5</sup>

Food has a heavy ecological footprint—from carbon emissions to freshwater consumption—that needs to be addressed to achieve a sustainable global food system (i.e. agriculture, including irrigation, watering and producing feeds for livestock, and aquaculture, is the world's largest water user). Climate change will affect trade by distorting prices and disrupting supply

<sup>1</sup> Castañeda *et al* 2016. [Who Are the Poor in the Developing World?](#) 2016.

<sup>2</sup> Woodhill, J., Hasnain, S. And Griffith, A. 2020. [Farmers and food systems: What future for small-scale agriculture?](#) Environmental Change Institute, University of Oxford, Oxford.

<sup>3</sup> [Enabling the business of agriculture](#). World Bank. 2017.

<sup>4</sup> World Bank. Global economic prospects. Slow Growth, Policy challenges. January 2020.

<sup>5</sup> World Economic Forum in collaboration with McKinsey & Company. [Incentivizing Food Systems Transformation](#). January 2020.

chains. Water scarcity will increase as well—it already affects a quarter of the world's population.<sup>6</sup>

Rural areas in many African countries are undergoing manifest transformation processes fuelled by dynamics such as population growth, urbanisation and increasing mobility. The relationship between rural and urban areas is changing and rural towns and smaller cities have the potential to invigorate rural areas in their function as market hubs and basic service provision. Strengthening rural-urban linkages in terms of infrastructure, transport, market access and exchange of information, ideas and innovation can catalyse economic development in rural areas and provide future perspectives for rural population and especially youth.<sup>7</sup>

Ensuring gender equality in access to resources could further boost agricultural productivity. Women make up an average of 43 percent of the agricultural workforce in developing countries (FAO) but they experience inequitable access to land and agricultural inputs, which can affect their productivity, access to credit, ownership of land, use of fertilizers and seeds, and availability of labour.

Undoubtedly, one of the key challenges to achieving the Sustainable Development Goals (SDGs) and agricultural growth will be financing, especially from the private sector as the official development assistance (ODA), is decreasing. The mobilisation of domestic resources will be key.<sup>8</sup>

## 2. Achieving Food and Nutrition Security

To meet SDG 2 (zero hunger) and guarantee the nutritional needs of the more than 9 billion people on the planet by 2050, the FAO has estimated that, under a business-as-usual scenario, food production will need to increase by 70%.<sup>9</sup> However, there is growing consensus that rather than increasing production, feeding the world sustainably means meeting rising demand without putting additional pressure on the planet's natural resources.

Best practices will require new approaches to sustainable farming that focus not only on increasing agricultural yields, but also on increasing access to food while conserving resources and reducing the environmental impact of farming, particularly the generation of GHGs. Best practices in food sustainability encompasses many activities, from water conservation to maintaining soil health, the promotion of biodiversity and better yields and incomes for smallholder farmers and improving nutrition. Climate change adaptation and mitigation strategies will be essential.

When it comes to nutritional challenges, a complex range of challenges related to a lack of access to sufficient vitamins and minerals and to poor diets which have led to a global obesity epidemic need to be addressed.<sup>10</sup> As emerging markets become more affluent, demand for higher-quality, resource-intensive foods is increasing too. As a consequence, nutritional challenges range from tackling obesity to reducing malnutrition and poor access to vitamins and minerals. The food choices of consumers have an impact on the environmental sustainability of our food and actions are required to discourage unhealthy consumption patterns and to promote new educational programmes. Policymakers have to introduce regulatory measures (new food labels and requirements for companies to remove certain ingredients from foods, such as excessive amounts of salt and sugar, or to tax their use ; taxes on processed foods) and facilitate information (awareness-raising, labelling and public- health campaigns).

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<sup>6</sup> World Economic report. [The global risk report 2020](#). Insight Report 15th Edition In partnership with Marsh & McLennan and Zurich Insurance Group. IPCC (Intergovernmental Panel on Climate Change). [Special Report on Climate Change and Land](#). 2019. World Resources Institute. 2019.

<sup>7</sup> Brussels Development Briefing no. 48 on "[Strengthening rural livelihoods in the face of rapid urbanisation in Africa](#)" and Briefing n. 50 on "[Growing food in the cities: Successes and new opportunities](#)".

<sup>8</sup> Foresight Africa. Top priorities for the continent 2020-2030. Africa Growth Initiative. Brookings.

<sup>9</sup> FAO. [The future of food and agriculture. Trends and challenges](#). 2017.

<sup>10</sup> The WHO estimates that non- communicable diseases, such as diabetes and heart diseases, account for annual economic losses per person of US\$25 in low-income countries, US\$50 in lower-middle-income countries and US\$139 in upper-middle-income countries. In addition, the healthcare costs associated with these diseases put growing pressure on the public finances, with poor diets among the risk factors for these diseases.

Meeting growing food demand for urban populations is a significant opportunity for commercial small-scale farmers. Tackling rural and small-scale farmer poverty will require the development of livelihood options not based solely on farming.

Commercial small-scale agriculture and food systems-led rural economic development is critical to creating vibrant off-farm rural economies. These can create alternative employment and livelihood options and stem rapid migration to large cities.

More effective and differentiated policy mechanisms are needed to tackle the dualism of small-scale agriculture. On one hand, investments are needed to help optimise the efficiency, competitiveness and sustainability of commercial small-scale agriculture. On the other, there must be targeted strategies to support those trapped in rural poverty or who are transitioning to alternative employment.<sup>11</sup>

### 3. Promoting trade and inclusive value chains development

The nexus between trade, integration and development is recognised to hold immense potential for sustainable growth and poverty reduction and provides opportunities for enhancing the welfare of producers and consumers, provided that governments are able to develop and enforce policies to this effect. Trade is an important avenue through which countries transform their economies and raise standards of living. For African countries, trade in agricultural products offers great potential to boost incomes for farmers, processors and other agricultural value chain actors. Increasing the ability of countries to participate in regional and global trade helps to improve well-being of consumers, raise incomes of farmers, build resilience of food markets, and ultimately also helps to boost economic growth and reduce poverty.

Although Africa's intraregional trade is still low compared to other regions of the world, it has great potential to expand with greater private sector participation in regional markets, especially in the context of the African Continental Free Trade Area (AfCFTA).<sup>12</sup> To maximize the potential productivity gains from the free trade area, infrastructure needs to be expanded, human capital developed, governance and business climate improved, finance and trade facilitation measures implemented.<sup>13</sup> Given the amounts spent on imported food<sup>14</sup>, the demographic changes taking place, the huge opportunities offered by urban markets across the continent not to mention the immense productive potential for agriculture in Africa, it is evident that there are both significant opportunities and a pressing need for greater intra-African and intra-regional agricultural trade.

Addressing informality in markets, which is higher in Sub-Saharan Africa, requires policies to unlock informal firms' potential which include upgrading skills of workers, ensuring better access to inputs and resources like financial services, transport and communications connectivity, health services, land and property rights, and product markets.<sup>15</sup> Regulatory and institutional reforms to build public trust can strengthen incentives for firms to operate formally. Policies aimed directly at the youth can bolster the prospects of the future workforce and help alleviate youth unemployment.<sup>16</sup>

Consumers want more information and traceability, they want to know where their food comes from, how it was grown and how safe and sustainable it is. They want to better understand the

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<sup>11</sup> Woodhill, J., Hasnain, S. And Griffith, A. 2020. [Farmers and food systems: What future for smallscale agriculture?](#) Environmental Change Institute, University of Oxford, Oxford.

<sup>12</sup> Badiane, Ousmane, ed.; Odjo, Sunday P., ed.; and Collins, Julia, ed. 2018. [Africa Agriculture Trade Monitor Report 2018](#). Washington, DC: IFPRI and Bouët, Antoine and Odjo, Sunday P. (Eds.). 2019. [Africa agriculture trade monitor 2019](#). Washington, DC: IFPRI.

<sup>13</sup> Augustin Kwasi Fosu & Abdul Fatawu Abass, 2019. "Domestic Credit and Export Diversification: Africa from a Global Perspective," Working Papers 201924, University of Pretoria, Department of Economics.

<sup>14</sup> Between 2001 and 2014, the sub-continent's food import bill rose from US\$ 6 billion to US\$ 45 billion. Thomas S. Jayne, Felix Kwame Yeboah and Carla Henry. [The future of work in African agriculture: Trends and drivers of change](#). ILO. Research Department. Working Paper n. 25. December 2017.

According to the [African Development Bank](#), the continent spends up to 35 billion USD annually on imported food and rise to 110 billion USD by 2025.

<sup>15</sup> Cassim, A., Lilenstein, K., Oosthuizen, M. and Steenkamp, F. (2016). [Informality and inclusive growth in Sub-Saharan Africa](#). Development Policy Research Unit Working Paper 201602. DPRU, University of Cape Town.

<sup>16</sup> Choi, Jieun; Dutz, Mark; Usman, Zainab. 2019. *The Future of Work in Africa : Harnessing the Potential of Digital Technologies for All*. Washington, DC: World Bank.

environmental, economic, health, and social externalities of agricultural production. There is also a concern on safety issues (contaminated food) and food fraud.<sup>17</sup> Increased standards affect small-scale farmers who often cannot meet them or are not able to access technological innovation (distributed ledger technology such as blockchain and sensing technologies, could help address consumer demand for transparency and support government aims to protect citizens from fraud.<sup>18</sup>)

#### 4. Promoting new skills for a new generation in farming

Addressing the needs for a generational renewal in agriculture should become a priority in rural policies. Urbanisation and urban lifestyles are also accompanied by shifts in dietary patterns, which are spreading beyond the frontiers of towns and cities. More fruits and vegetables and more processed foods are being consumed, while consumption of cereals and pulses is declining. Demand for convenience is another overarching trend across income groups and are reflected in the strong demand for processed and prepared foods and in the expansion of street food. A major evolution of the food economy is the rapid development of processing, packaging, distribution and retail. These transformations open up new opportunities for value addition and employment creation, and increasingly in the off-farm segments of the value chain.<sup>19</sup>

Sub-Saharan Africa has the world's youngest and fastest growing population and will require a new set of capabilities. It is projected that the continent's youth population will double to over 830 million by 2050. 10 to 12 million youth enter the workforce each year but only 3.1 million jobs are created.<sup>20</sup> Agriculture and the informal economy will need to absorb a large share of these new workers.<sup>21</sup>

There is growing consensus that the productive agriculture of the future will be knowledge and technology intensive, and will require a greater range of technical, business and management skills than African education and training systems are currently producing. African governments will therefore need to invest in education and skills development, including digital skills, to enhance productivity and seize trade opportunities in more sophisticated products and markets. Technology can provide tools to save time and improve efficiency. New digital technologies and services are already having a considerable impact on how food is being produced, processed, marketed, traded and consumed across the continent. How African countries position themselves to harness and deploy digital technologies will also determine the future competitiveness of African agriculture and its contribution to African economies.<sup>22</sup> Rural market penetration and the digitisation of agricultural value chains is a priority for a growing number of mobile money providers.<sup>23</sup>

Technology innovations have the potential to support food system transformation, improve safety, efficiency and sustainability of food and food supplies. However, simply applying new technologies for traceability within food systems can also exclude small-scale value chain actors and increase the digital divide and the gaps between rural and urban areas. Collaboration focused on an inclusive economic model, enabling technology infrastructure, harmonised standards, and proper training and support across the value chain will broadly accelerate and amplify potential impact.<sup>24</sup>

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<sup>17</sup> The World Health Organization estimates that 600 million people – nearly 1 in 10 – fall ill and 420,000 die each year due to contaminated food. The annual estimated cost of food fraud is \$30 billion to \$40 billion PWC. [Food Fraud Vulnerability Assessment and Mitigation](#). 2016.

<sup>18</sup> CTA. [Opportunities of Blockchain for Agriculture](#). Chris Addison, Senior Expert Data4Ag; Isolina Boto, Manager, CTA; Thomas Heinen, Advisor Communication and Digitalisation, GIZ; Ken Lohento, CTA Innovation with a Purpose: Improving Traceability in Food Value Chains through Technology Innovations, World Economic Forum, 2019.

<sup>19</sup> Allen, T., P. Heinrigs and I. Heo (2018), "[Agriculture, Food and Jobs in West Africa](#)", *West African Papers*, No. 14, OECD Publishing, Paris.

<sup>20</sup> African Development Bank. Jobs for Youth in Africa. 2016

<sup>21</sup> Thomas S. Jayne, Felix Kwame Yeboah and Carla Henry. [The future of work in African agriculture: Trends and drivers of change](#). ILO. Research Department. Working Paper n. 25. December 2017.

<sup>22</sup> Mamo Panel. [Byte by Byte: Policy Innovation for Transforming Africa's Food System with Digital Technologies](#). 2019.

<sup>23</sup> GSMA. [2018 State of the Industry Report on Mobile Money](#).

<sup>24</sup> Innovation with a Purpose: Improving Traceability in Food Value Chains through Technology Innovations. World Economic Forum in collaboration with McKinsey & Company January 2019. [http://www3.weforum.org/docs/WEF\\_Traceability\\_in\\_food\\_value\\_chains\\_Digital.pdf](http://www3.weforum.org/docs/WEF_Traceability_in_food_value_chains_Digital.pdf)

## 5. Addressing climate change effects

Climate change will hurt human development in many ways beyond crop failures and natural disasters. Hundreds of millions more people could be exposed to deadly heat by 2050, and the geographic range for disease vectors will likely shift and expand. Climate change will hit the tropics harder first, and many developing countries are tropical. Yet developing countries and poor communities have less capacity than their richer counterparts to adapt to climate change and severe weather events.<sup>25</sup> Droughts also significantly increase the likelihood of sustained violent conflict in low income settings where ethnically or politically excluded groups depend on agriculture. Flood frequencies are expected to double for 450 million more people in flood-prone areas. Climate change will also place additional drought-related stress on those in arid and semi-arid areas, where large concentrations of poor and marginalized people live. Poor people are expected to be more exposed to droughts for warming scenarios above 1.5°C in several countries in Asia and in Southern and West Africa. The rural poor in poor countries will suffer a double whammy from climate change: a negative shock to their livelihoods and spikes in food prices resulting from drops in global yields.

In October 2018 a new report from the UN's Intergovernmental Panel on Climate Change issued alarming news: the world will feel the effects of climate change far sooner than was once thought, and in order to limit global warming and avoid its negative effects, there is a need for "rapid far-reaching and unprecedented changes in all aspects of society". With estimates that agricultural activities account for up to 30% of global greenhouse gas (GHG) emissions, the actions needed include addressing the sustainability of the global food system.

Population, urbanization and rising per capita incomes tend to increase demand for animal foods. Between 2000 and 2014 the global production of meat rose 39 percent and milk percent. FAO estimates that by 2030 meat production will increase another 19 percent from that in 2015–2017, with developing countries accounting for almost all the increase. Milk production is projected to grow 33 percent in the same period.<sup>26</sup> Estimates are that dietary changes could reduce growth in food-related greenhouse gas emissions by 29–70 percent by 2050.<sup>27</sup> On a per capita basis, food-related emissions could fall twice as much in richer countries as in poorer ones, narrowing the inequality in carbon dioxide equivalent emissions between them.<sup>28</sup> This would be driven primarily by reductions in red meat consumption. Technological breakthroughs could reduce environmental damages (i.e. synthetic animal protein, novel vegan meat replacements...).

To reduce losses and minimise the environmental footprint of food production, while producing nutritious and sustainable food for all can be achieved through sustainable intensification, which entails finding ways of increasing agricultural yields while conserving natural resources and reducing pollution and the emission of GHGs. New technologies such as soil sensors and satellite monitoring can help, enabling resources to be used more efficiently through precision farming. There is a growing recognition that traditional farming and the practices found in agroecology also have great potential. Traditional practices such as no-till or low-till farming, in which the soil is not disturbed— increasing retention of water, organic matter and nutrients—is also recognised as a sustainable method of farming.<sup>29</sup>

### Addressing Food loss and waste and promoting circular economy

Given the fact that about a third of the food the world produces are lost or thrown away, tackling consumer food waste and post-harvest waste is a necessity. The change in consumption patterns and the use of digital technologies can reduce the waste and the end of the chain and increased awareness and information at the consumer level. Investment in infrastructures (roads, energy, storage facilities, lack of cold chain) will reduce food losses at farm level,

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<sup>25</sup> UNDP - Human Development Report 2019. [Beyond income, beyond averages, beyond today: Inequalities in human development in the 21st century.](#)

<sup>26</sup> *ibid*

<sup>27</sup> Springmann and others. [Global and regional health effects of future food production under climate change: a modelling study.](#) The Lancet. 2016.

<sup>28</sup> *ibid*

<sup>29</sup> Brussels Briefing n. 59. [Agroecology for Sustainable Food Systems.](#) January 2020.

especially important in sub-Saharan Africa, where products do not reach markets. Training for farmers in best practices in harvesting and storing crops is still a necessity. And in consumer markets, everything from more effective food labelling to awareness-raising education programmes and food donations is being used to prevent edible food from going to waste.<sup>30</sup> Through “smart packaging” (RFID tags with sensors), food waste can be turned into energy (i.e. adoption of biogas digesters has been widespread), providing new business for companies.

## 6. The way forward

If we are to achieve the UN’s SDGs by 2030, urgent action is required to transform our food systems in a way that they feed a growing population, prevent the depletion of natural resources and reduce GHG emissions. An immediate and urgent action is required to transform how food is produced, accessed, valued and consumed.

A more holistic and multisectoral approach to sustainability in the global food system must be adopted and support to innovative approaches and practices involving all players in the supply chain.

To spur large-scale behavioral shifts requires understanding and identifying the right incentives, which could fund behavior change costs, while mitigating transition/switching costs and, potentially, ongoing economic costs. We also need to remove incentives that have the perverse effect of preventing those in the food system from changing their behavior.<sup>31</sup>

The current wave of technological progress will require other changes, including stronger antitrust policies and laws to govern the ethical use of data and artificial intelligence. The wide-scale affordability of new technologies will be one important factor for minimizing the digital divide.<sup>32</sup> Many of these will require international cooperation to succeed.<sup>33</sup>

We need to transform food systems to be inclusive, sustainable, efficient, healthy and in line with the 2030 Sustainable Development Goals.<sup>34</sup> [The recently announced UN Food Systems Summit in 2021](#) will raise food system transformation to the highest level, affirming its centrality to the achievement of the majority of the SDGs.

### Objectives of the Briefing

To improve information sharing and promote networking, CTA, the European Commission (DG Devco), the ACP Secretariat and Concord organise since 2007 bimonthly briefings on key issues and challenges for agriculture and rural development in the context of EU/ACP cooperation.

### Target group

More than 150 ACP-EU policymakers and representatives of EU Member States, embassies of ACP countries, civil society groups, research networks and development practitioners, and international organisations based in Brussels.

### Available material

Input and comments before, during and after the meetings will be included in the Briefings blog: <http://brusselsbriefings.net/>. A short report and a Reader in printed and electronic format will be available after the meeting.

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<sup>30</sup> The EU recognised the need to bring different sectors together when it launched the EU Platform on Food Losses and Food Waste in 2016. The platform is intended to support a range of EU institutions, experts and other stakeholders in identifying measures that could prevent food waste, sharing best practice and evaluating progress.

<sup>31</sup> World Economic Forum in collaboration with McKinsey & Company. [Incentivizing Food Systems Transformation](#). January 2020.

<sup>32</sup> Accenture. 2017. Digital Fragmentation: Adapt to Succeed in a Fragmented World. Accenture.

<sup>33</sup> UNDP - Human Development Report 2019. [Beyond income, beyond averages, beyond today: Inequalities in human development in the 21st century](#).

<sup>34</sup> WEF. [We can completely transform our food systems to ensure everyone has a seat at the table - here's how](#). November 2019.



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#### PROGRAMME

**9h00-9h15 Introduction to the Briefing:** *Isolina Boto, Manager, CTA Brussels Office and Coordinator of the Briefings*

**Introductory remarks:** *Patrick Gomes, Secretary General, ACP Group ; Leonard Mizzi, Head of Unit Rural Development, Food Security, Nutrition, Europeaid, European Commission; Michael Hailu, Director, CTA.*

**09h15-11h15 Panel on the future of food and agriculture**

#### Panellists

- Trends and critical issues to look forward : food systems in motion  
*Patrick Caron, Co-President Foresight4Food, Vice-President University of Montpellier, Cirad*
- Incentivizing food systems transformation through innovations  
*Sean de Cleene Head of Food Systems Initiative and Member of the Executive Committee, World Economic Forum*
- Partnerships for transforming the world's food system  
*Fabrice DeClerck, EAT Science Director & Scientist of the Alliance of Bioversity & CIAT*
- Farmers and food systems: What future for small-scale agriculture?  
*Elizabeth Nsimadala, President, Panafrican Farmers Organisation*
- What agrifood challenges and opportunities ahead for Small-Island Developing States?  
*Len Ishmael, Advisor, Global Affairs Brussels Diplomatic Academy; Vrije Universiteit Brussel ; Visiting Professor at the Mohammed V1 University, Morocco*
- Farmer-led food systems at the core of agricultural transformation  
*Marissa Ryan, Global Deputy Director of Advocacy, Head of Oxfam's EU*

**11h15-11h30 Coffee Break**

**11h30-12h45 Debate with the experts and contributions from the audience**

**12h45-13h00 Concluding remarks**

**13h00-14h30 Lunch**