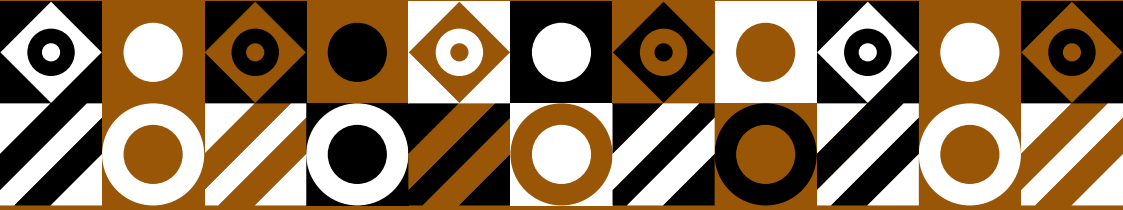


SUSTAINABLE AGRICULTURE SCOPING REPORT



REAPING THE REWARDS OF SUSTAINABLE AGRICULTURE

Enhancing Africa-Europe cooperation
in agri-food systems



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INTRODUCTION

In the face of a climate emergency and as both continents come to terms with the realities of the COVID-19 pandemic, there is a new sense of urgency for Africa and Europe to come together to modernise and revitalise not only their formal relations, but also the underlying narrative.

Both have a shared interest in implementing Agenda 2030, tackling global health crises, combatting the climate emergency, ensuring food security and forging better connectivity.

While 2020 has opened up new space for Africa and Europe to reimagine their relationship and agree on areas for deeper cooperation, 2021 will see ideas turned to action, as the two forge ahead in revitalising their relationship.

This landmark year includes plans to hold the 6th African Union-European Union Summit, as well as to deepen the Africa-EU partnership across multilateral fora including COP-26, the UN Summit on Food Systems, the UN high-level dialogue on Sustainable Energy and the Global Health Summit.

As Africa and Europe embark on this renewed partnership, Friends of Europe and the Mo Ibrahim Foundation are delighted to play a role in driving an ongoing and strategic conversation through the Africa Europe Foundation Strategy Groups. These independent fora will aim to influence decision-making, offer innovative proposals for impactful initiatives, and build inclusive networks with the will to create positive change.

Meant to advise and provoke the Strategy Group, this scoping report represents a starting point. It provides a state of play on the issue at hand, an overview of challenges and opportunities, and a selection of case studies from across both continents. It also includes initial recommendations of points for discussion and a list of guiding questions to drive debate.

The report also encourages the reader to keep in mind the cross-cutting themes which should underpin all Strategy Groups: climate, youth, gender, SMEs, governance and mobility.

We hope that you find the contents of this report informative, and that they help you to start thinking differently about the issues.

While extensive, the contents of this report are by no means exhaustive. We look forward to digging deeper into the issues with you in the months and years ahead.

EXECUTIVE SUMMARY

Africa and Europe are closely interconnected. Our common histories, strategies, and institutions offer an opportunity to re-design how we work together for the common good.

The scale of the global climate emergency and the depth of economic and social damage from the COVID-19 pandemic demonstrate the importance of transforming our economies, to make them more resilient and better aligned with the objectives of the Paris Agreement. People and governments around the world are searching for ways to re-build economies and lay stronger foundations for climate-safe growth.

COVID-19 has shown how unprepared the global community is to deal with disasters on this scale and revealed tendencies to retreat into nationalistic approaches. This raises serious concerns over our readiness to deal collectively with the impact of climate change. However, it also provides us with insight into what is required to improve resilience. Perhaps, the greatest lesson we can learn from the pandemic is the critical importance of collaboration, at all levels, among citizens and between regions, countries and continents.

For Africa and Europe, this is the moment to steer recovery towards investment in a green transformation that builds resilience against climate change and leverages opportunities at the nexus between climate action and development. Sustainable agriculture provides a chance to steer both continents towards a green recovery that deliver economic growth and jobs. In Africa, agriculture will continue to be the main provider of jobs for rural youth, but the profitability and income from farming is low. That should change.

The COVID-19 pandemic creates space for new ideas and strategies that can deliver the transformation all continents need. This means overcoming challenges related to lack of access to land, finance, markets, technologies, practical skills and barriers to youth participation. All countries are aiming to spur an economic recovery that revitalises hardest-hit sectors. The 'Build Back Better and Greener' message encourages governments to use post-COVID-19 recovery packages to strengthen inclusive and sustainable development which can deliver a just transition to a climate neutral economy by 2050. This new pathway offers great potential for joint action and investment by Africa and Europe working together on a vision for growth that aligns the Africa 2063 Agenda and European Union's Green Deal.

Africa and Europe should cooperate to develop joint responses to the climate crisis as well as invest in innovation for economic and social progress.

OPPORTUNITIES

- **Economic growth and trade.** Africa will see rapid economic expansion over the coming decades due to urbanisation, rising incomes and population growth. This offers a great opportunity for African producers to capture a larger share of markets for essential goods, such as food and energy. The African Continental Free Trade Area (AfCFTA) provides an essential framework to restructure trade relations. It will encourage intra-African goods and services flows and strengthen Africa's bargaining power in multilateral negotiations. Implementation of the agreement will create a stronger domestic and regional focus to develop food supply chains. That should reduce trade deficits and buffer agricultural price spikes in international markets. Integration will expand existing regional markets and create growth opportunities in agri-processing. Across Africa and Europe, farmers and the food industry should work hand-in-hand to embrace the opportunities offered by the AfCFTA.
- **Learning together to build resilient food and farming systems.** African agriculture uses far fewer pesticides, fertilisers and other inputs than other continents. That puts African farmers in a strong position to avoid the pitfalls of industrialised agriculture and build regenerative land-use systems. Agroecology and regenerative agriculture can mitigate the effects of climate change and improve landscape and agricultural ecosystems. Unlike conventional agriculture, agroecology builds on natural diversity and integrates ecological principles into the management of agro-ecosystems, ensuring long-term sustainability. Agri-knowledge hubs, based

around the co-creation of knowledge for more sustainable agricultural development, could bring together farmers, herders, government, researchers, NGOs, etc. to find ways of generating higher returns from farming and food production.

- **Investment in synergies between digital, renewable energy, health and agri-food systems.** Unleashing the power of digitalisation, clean energy, sustainable transport and more nutritious food could be a game changer that transforms smallholder agriculture in Africa. They could boost productivity, infrastructure, incomes and climate resilience, as well as open opportunities for youth and women to engage more profitably in agriculture and agribusiness.

Progress demands a joint effort by all stakeholders. Governments, corporations, SMEs, farmers, city dwellers, NGOs, local communities, researchers and others need to collaborate and form alliances at local, national and regional levels to explore solutions.

MAIN CHALLENGES

- **Immediate measures are needed** to address the needs of vulnerable African populations impacted by COVID-19 and, in certain countries, locust plagues. Assessing the gap in food provision in affected areas is key, together with finding the best means to bridge that gap, such as local food purchase and distribution, cash transfers and food for work. A systematic campaign should be launched to prevent further spread of locusts. Work is needed to prepare farmers for the 2021 season, overcome bottlenecks experienced in 2020 and ensure supplies of inputs, credit, etc.

- **Building climate change resilience.**

Changes to African weather patterns have created vulnerability for agricultural production systems and increased uncertainty over food security. Increased water shortages, shorter growing seasons, more severe and frequent floods and droughts, changes in crop and animal diseases and pest distribution patterns are all disrupting agriculture, leading to lower harvests and productivity. In Europe, climate change impacts are also forcing changes to crop choice and land-use management. Drought and flooding are damaging crop yields and livestock productivity. Both continents experience rising levels of water stress, drought, wildfires, heatwaves and frequent heavy rains leading to soil erosion, flooding and runoff. Soils are under growing pressure everywhere. A transformation is needed in soil management to restore organic matter, maintain fertility and protect micro-organisms vital for agricultural production.

- **The sustainable transformation of agricultural systems** is urgent but faces multiple difficulties. A strong narrative promoting ‘agricultural modernisation’ is pushing many governments towards high-input forms of intensification, based on industrialised farming. Large amounts of money and research have been invested in promoting such approaches. However, reliance on chemicals to kill pests and maintain yields generates long-term problems. An agroecological approach recognises the spatial and governance dynamics of each region or territory. It builds on local market connections and supply chains, anchoring the transition to sustainability in local identity and culture. It increases participation of local people in management of the land

and its natural resources. This dynamic recognises the powerful role of small towns and cities in the wider landscape and the networks which support flows of people, goods and information around these spaces. Investment is needed to encourage economic activity and bring life back to rural areas. Food processing offers women, young people and marginalised groups avenues for economic advancement that can underpin the transition to sustainability.

SUSTAINABLE AGRICULTURE

Agriculture plays a fundamental role in economic and social development, especially in developing countries. In Africa, it accounts for 15% of GDP and more than 50% of employment. This figure has dropped over the last 25 years by 10 percentage points, with strong differences among countries.

Agriculture remains critical for livelihoods. However, most African farmers are poor. They face underemployment, low productivity and returns, and risks from market inefficiencies. On globalised markets, they compete with farmers from other continents enjoying higher productivity and state support.

Over the past two decades, many African countries have achieved significant agricultural growth. The challenge is for others to transform the sector through sustainable development. With increased productivity and yields, the sector could become a growth engine and a lever for development. It could help Africa reach UN Sustainable Development Goals (SDGs) for reducing poverty (SDG1) and addressing hunger (SDG2). However, much of Africa's rural sector still experiences extreme poverty due to low levels of investment, lack of government support, poor yields and low returns from crop marketing. African farmers need opportunities to capture a larger share of the continent's rising food demand and to boost value added by processing crops for export. Transforming agricultural production and food systems will improve rural and urban revenues (SDG8) and reduce social and spatial disparities (SDG10).

In the EU, by contrast, the proportion of GDP from the agriculture and food sectors is less than 2%. The sectors' share of employment is below 5%. Productivity per worker and yields per hectare are far higher than in Africa due to a combination of investment in R&D, equipment, inputs and government support. In 2018, EU agri-food trade reached €254bn - €138bn in exports and €116bn in imports. The EU is the largest global exporter and second largest importer of agri-food products. Agricultural products accounted for 7% of the value of total EU goods exported in 2018, contributing to job creation and growth in the sector.

Africa's rising production over the last 20 years has not kept pace with population growth. Food imports cost more than \$40bn a year and are estimated to rise to \$110bn by 2025 according to the African Development Bank (AfDB). That suppresses agriculture and export employment on the continent. The AfDB believes Africa must break its dependency on food imports and aim for self-sufficiency as soon as possible.

COVID-19 has underlined the importance of robust and resilient supply systems that can withstand shocks and ensure all citizens gain access to affordable, nutritious food. The increasing recurrence of droughts, floods, forest fires and pest infestations are a reminder that food systems are under threat and must become more sustainable and resilient.

The EU has a large global footprint and the production of commodities can have negative environmental and social impacts in the countries where they are produced. Efforts to tighten sustainability requirements in the EU food system should be accompanied by policies to raise standards globally to avoid exporting unsustainable practices.

Agriculture and food systems are both sources and sinks for carbon and other greenhouse gases, as well as drivers of biodiversity loss, soil degradation, water pollution and deforestation. The transition to regenerative agriculture and sustainable food systems represents an opportunity to rebuild our natural resource systems. Farmers, herders, fishers and aquaculture producers currently receive little or no financial reward for taking a long-term approach which maintains and improves their assets. Cheap food floods out produce grown to higher standards. Economic incentives need to align with ecological imperatives if natural systems are to flourish.

Agricultural producers and food chain operators in Africa and Europe should be rewarded for transitioning to more sustainable practices, less dependent on chemical inputs – such as pesticides, anti-microbials and inorganic fertilisers. Improving the rural environment and addressing climate change demand that we increase organic and regenerative farming, improve animal welfare and reverse biodiversity loss. A combination of public funds and market prices is needed to reward producers. R&D and peer-to-peer learning platforms can help farmers adapt production systems.

Although they come from very different starting points, Europe and Africa share the challenge of transitioning to sustainable agricultural and food systems. The continents have a mutual interest in building stronger, more prosperous food and agricultural economies able to withstand the effects of climate change while delivering nutritious food, a healthy landscape and decent jobs.

Sustainable agriculture and food supply are essential for achieving the objectives of the EU's Green Deal and the AU's Agenda 2063, while improving the incomes of primary producers and reinforcing their global competitiveness.

STATE OF PLAY

DEMOGRAPHICS AND AGRI-PROFILES

Africa is made up of 55 countries with diverse levels of economic and social development, economic structures, demographics and institutional frameworks. Nevertheless, a general economic trend can be observed in almost all African countries: the predominance of the primary sector, whether it is agriculture or extractive industries. The failure of these sectors to reach their potential makes the continent an under-performer, vulnerable to external and internal shocks. Africa has 422mn people living in extreme poverty, on less than \$1.90 per day. They represent 70% of the world's poorest. Among them, 82% live in rural areas and depend on agriculture to meet their daily needs. Improving the living conditions of this vulnerable population involves transforming the agricultural sector.

Africa has the world's fastest growing population. It has doubled since the 1990s, rising from 630mn in 1990 to 1.2bn in 2018. According to UN projections, the number of Africans will reach 2.5bn by 2050. Meeting their food requirements from domestic production or imports is a huge challenge, made harder by shocks such as climate change, food-price spikes and health crises like COVID-19. Population growth inevitably means a growing labour force. Africa has the second largest in the world after Asia and it is growing fast. Over the next 30 years, Africa's working age population (defined as 15-64 years old) will increase by 805mn, 76% of total global increase.

Over the past two decades, Africa has averaged 5% agricultural growth per year, surpassing other regions' performances. The African growth pattern is significantly different from regions such as Asia or South America. Agricultural growth in Asia is mainly explained by the increase in land productivity through improved seeds, intensified input use and irrigation. In South America, it is based on improved labour productivity arising from mechanisation. By contrast, increased production in Africa is mainly down to the use of more land rather than improving productivity. Regional dynamics vary significantly. North Africa, for example, has a pattern similar to Asia: very little new land is available, but sustained growth is promoted by intensive agriculture. West Africa, on the other hand, has experienced a period of sustained growth thanks to the expansion of its cultivated area. For East and Central Africa agricultural growth is more disappointing, hampered by conflict, political instability and recurrent adverse weather.

Africa's diverse agroecological zones are suitable for a diverse range of crops and livestock but, although Africa's agricultural production is diversified, it lags behind other regions in terms of agricultural productivity. The yield of major cereals in Africa is less than one-third of those in Europe or Asia.

Europe's farmers produce a wide range of food products due to the region's varied climatic and geographic conditions. European agriculture contributes to rural development and landscape management, but the provision of food remains its primary function. European agricultural production has increased significantly since the 1950s due to

EU and national policy measures, production-related subsidies, technological innovations and market incentives. The most productive and specialised farming systems tend to be found in lowland western Europe, with some more extensive practices found in southern, eastern and mountainous regions.

Eurostat data from 2016 reports that agriculture accounts for roughly 40 % of EU land. The EU is the world's largest producer of wine, olive oil and tomatoes. It is also a large producer of dairy products (more than 20% of global production) and cereals (13% of global production). The EU is an important producer of livestock. Since the 1980s, it has shifted towards larger-scale, specialised holdings, with an increase in poultry, veal and pig production and a decrease in the raising of beef, sheep and goats.

The general pattern of development in the European agricultural sector has been towards greater concentration in the hands of a relatively few, large and often corporately owned farms. While production has increased, the number of farms and farmers has fallen, and average farm sizes expanded. In 2013, farms over 100 hectares comprised 3% of holdings but farmed half of the utilised agricultural area (UAA) in the EU. Just over 2% of farms had a standard output greater than €250,000 yet they accounted for 52% of agricultural economic output. At the same time, small farms with a standard output up to €8,000 account for 69% of all farms in the EU. That reflects the large number of small farming households where over 50% of output is self-consumed.

The growth of large specialised production units has led to monoculture production with considerable environmental impacts, reducing diversity and triggering consumer concerns over food safety and quality. Intensive and uniform production makes food systems reliant on chemical fertilisers, pesticides and the preventative use of antibiotics. That leads systematically to negative impacts

and vulnerabilities. However, an increasing number of farmers are adopting alternative systems such as organic farming and agroecological practices. The total area under organic production grew by 21% between 2010 and 2015 to 6.2% of total UAA (11.1mn hectares). Growth is expected to continue in coming years.

Despite the trend towards intensification, Europe still has substantial areas of high-nature-value farmland, characterised by a semi-natural vegetation and low-intensity agriculture. These areas generate important ecosystem services and public goods but face socio-economic pressures to intensify or abandon production. That has resulted in a significant decline in biodiversity across European farmland, including in the genetic diversity of crops and livestock.

Nutrients, like nitrogen, phosphorus and potassium, are essential for crop production and animal and human nutrition. However, overuse of chemical fertilisers can lead to nutrient excesses that affect soil, air and water quality, and harm biodiversity and ecosystems. In 2013, the average nitrogen surplus on EU agricultural land was 51 kg/ha. While still too high, that represents a fall of 12 kg/ha since 2000, achieved through implementation of the Nitrates Directive. The phosphorus surplus of 2 kg/ha has halved since 2004. While this fall in the average nutrient surplus provides a picture of overall trends in the EU, many regional and local hotspots exist, often in areas of intensive agriculture and livestock production. The agricultural sector is a major user of natural resources and has a complex relationship with the environment. Two of the main challenges confronting agriculture in Europe are climate change and land take – the conversion of farm land into other uses, such as housing, industry or infrastructure. Climate change causes extreme weather events and requires the adaptation of cropping patterns and systems of soil and water management.

POLICY AND TRADE

Agricultural policy in Africa has developed very differently from Europe. Africa has never had a 'common agricultural policy' to organise markets and trade rules. Instead, African countries developed their own national agricultural policies. In the 1980s, many African countries taxed their agricultural sectors rather than subsidising them. They applied overvalued exchange rates to agricultural exports, which depressed prices and returns for their farmers, while effectively subsidising food imports. These policies stifled growth in the agricultural sector and the wider economy. The situation changed during the 1990s, with increased global commodity prices; macro-economic reforms that reduced overvalued exchange rates; and agricultural sector reform. As a result, farmers' incomes and domestic prices for farm products have risen.

In 2003, the AU adopted the Comprehensive African Agricultural Development Policy (CAADP) as a policy framework with a set of principles and broadly defined strategies. Although continental in scope, CAADP operates through integrated national and regional strategies. States commit to allocating at least 10% of public expenditure to the agricultural sector and seek to achieve 6% annual growth in agricultural output. In Europe, the development of the agricultural sector is strongly influenced by the EU's Common Agricultural Policy (CAP). Since its creation in the mid-20th century, CAP has always had a strong economic dimension. However, it has shifted away from a primarily sector-oriented subsidy policy to a more integrated rural development approach with structural and agri-environmental measures.

For African farmers, the EU is the most important export market, accounting for 31% of overseas sales in 2017. However, Asia is close behind, taking 30%. Sub-Saharan African exports to the EU are led by cocoa products, which constitute 39% of agricultural export

value, showing that diversification remains limited. Fruit and vegetables make up 67% of North Africa's agricultural exports to the EU.

Besides being its main trading partner, the EU is Africa's largest source of Foreign Direct Investment (FDI) and its biggest donor of development assistance. EU Member States hold approximately 40% of Africa's FDI stock worth €291bn in 2016. The EU and its member states accounted for 55% of Official Development Assistance to Africa in 2016, providing €23bn. The Africa-EU political relationship has substantially evolved since the turn of the millennium but more remains to be achieved to put both continents on an equal footing and allow each to steer development for the good of its people.

A number of factors related to the UN's 2030 Agenda for Sustainable Development and the implementation of the SDGs, will influence African and EU policy. There is growing political recognition that agriculture and food policies should be aligned to the Agenda 2030. This involves a transformation with four key elements: food systems should enable all people to benefit from nutritious and healthy food; they should reflect sustainable agricultural production and food value chains; they should mitigate climate change and build resilience; and they should encourage a renaissance of rural territories.

OPPORTUNITIES

We need a joint approach to make it easier to choose healthy and sustainable food which benefits the environment, health and life quality, reduces societal costs and reconnects consumers with landscapes and food producers.

NATURAL ENDOWMENTS

Africa has enormous potential for agriculture. It is endowed with extensive agricultural land, underground water and river-basins, human resources, extensive inland and coastal fishing, crop and livestock diversity. This wealth stems from the wide range of agro-climatic zones, from date palms and camels in the desert, to herds of cattle, sheep and goats alongside cotton, sorghum, maize and millet in the savannas, and beans, yams, bananas, cocoa, coffee and oil palm in the high-rainfall tropics.

Studies suggest there is enough water to irrigate substantially more farmland in sub-Saharan Africa than is currently under cultivation. Technological advances and declining costs of equipment and energy can make such expansion feasible and profitable. Large-scale irrigation schemes have run into problems and many now require costly rehabilitation. However, expanding farmland under irrigation has great potential, if done correctly with treadle and motor pumps, supplementary irrigation and small-scale schemes for river diversion and small reservoirs.

Africa has almost a third of the world's livestock. They constitute a valuable agricultural asset and source of income, food, traction and natural fertiliser. Generating 30% to 80% of agricultural GDP, livestock provide a buffer against shocks, generate employment, contribute substantially to food security and make productive use of low-rainfall pasture land.

Africa's diversity of people, crops and landscapes can bring great complementary benefits. It also shows the need for tailored policy interventions based on each region's specific requirements. Diversity offers opportunities for production and exchange of products and expertise. It can be the basis for developing local, sub-regional and regional value chains.

AGRICULTURE AS AN ENGINE OF SUSTAINABLE ECONOMIC GROWTH

Africa's agricultural commodities are often exported unprocessed, generating little added value. Trade disruption caused by the COVID-19 pandemic has demonstrated the critical role of local agri-food chains in ensuring people are fed. Rising productivity within the agri-food sector would support the transformation of African economies and help the continent achieve the Sustainable Development Goals.

A FORWARD-LOOKING POLICY FRAMEWORK

Agriculture and food systems are an important feature of AU policy frameworks. The CAADP goals and commitments in the 2063 Agenda point to the importance of nutrition in Africa's economic and social development. "A prosperous Africa based on inclusive growth and sustainable development," is the first aspiration of the 2063 Agenda.

Climate change's multiple impacts require adaptation and mitigation strategies embedded into national and regional policy. Climate smart agriculture was recognised within the AU's New Partnership for Africa's Development (NEPAD) programme. Government commitment by the SDGs must be embedded in policy with means to ensure effective implementation.

THE INVESTMENT LANDSCAPE

The 2014 Malabo Declaration on CAADP reaffirmed the commitment of African governments to allocate at least 10% of public budgets to agriculture and to achieve a sustained annual agricultural growth rate of at least 6%.

Investment is key for generating sustainable agricultural growth, but investors need prospects for a decent return. A combination of public and private funding is needed to mobilise funding streams for investments in

land, soil regeneration, market infrastructure and local innovation hubs. Government spending on agriculture is critical to leverage private sector engagement.

Increased funding for agriculture and food system development could come from a variety of domestic sources, such as African pension funds, farmers' savings, micro-finance and commercial bank credit. In addition, a range of international sources are available, including innovations such as carbon offset revenues and climate finance.

IMPROVING THE TRADE DIMENSION

The AfCFTA commits countries to remove tariffs on 90% of goods, progressively liberalise trade in services and address a host of other non-tariff barriers. Due to enter into force in January 2021, the agreement – when successfully implemented – will create a single African market of over a billion consumers with a total GDP of more than \$3tn. It will make Africa the largest free trade area in the world.

Implementation of the AfCFTA will provide a domestic and regional focus for food supply chain development. Stronger intra-African trade should reduce trade deficits and buffer agricultural price spikes on international markets. Integration should expand regional markets and create opportunities for growth and jobs.

KEY CHALLENGES

Agricultural performance varies between regions and countries, depending on factors such as climate, market connectivity and production intensity, together with the economic, political and social contexts.

Despite Africa's natural advantages, agriculture is hampered by low-productivity. Reasons include lack of government support, low investment and insufficient smallholder-focused R&D.

The pandemic has generated uncertainties about Africa's capacity to feed its people. Post-COVID-19 recovery plans must address long-standing problems in the agricultural and food sectors.

SHORT-TERM

Adapting to the COVID-19 situation

The pandemic has exacerbated the challenge of feeding Africa's fast-growing population. Although Africa has, so far, escaped the worst medical impact of COVID-19, it has been hard hit by the economic repercussions.

Lives and livelihoods are at risk as the pandemic threatens to disrupt labour markets and food supply chains. Without adequate action, 28mn to 49mn people could be pushed into extreme poverty. Food system disruption increase the risks of rising levels of hunger.

Africa already has large numbers of malnourished people. Many rely on daily wages to survive. Lockdowns, border closures and supply chain disruption have restricted access to sufficient, varied and nutritious food. The most vulnerable are hardest hit.

Locust invasions in East Africa pose an additional threat. Early action is needed to prevent the spread of swarms affecting harvests across a wider region.

The 2020 farming season was hit by extreme climate events: flooding in the Sahel, for example, destroyed fields and washed away homes. Farming needs greater built-in resilience and improved weather forecasting.

MEDIUM-TERM

Food insecurity and health risks

Food insecurity is not new. Despite significant progress, estimates indicate one in five Africans are undernourished, more than 250mn people. The health effects of malnutrition include stunted growth and anaemia. At the same time, Africa has a rising

obesity problem, notably in urban areas. Food insecurity is especially prevalent in conflict regions such as the Sahel, Somalia and South Sudan. Food wastage is estimated at 30% to 40% mainly due to poor storage systems.

In the EU, it is estimated 33mn people cannot afford a quality meal every second day. Many rely on welfare payments and food aid. Food insecurity grows during economic downturns. Estimates suggest 20% of food is wasted, mainly in households and within the retail chain. Obesity is rising. More than half of adults are overweight. Their vulnerability to COVID-19 and more familiar ailments such as heart disease, diabetes and cancer adds to mounting healthcare costs.

Restoring soils

Africa's soils are under threat. Some 40% face degradation due to erosion, nutrient depletion, organic matter decline and biodiversity loss. Agricultural sustainability is threatened by land degradation caused by erosion and the loss of soil fertility, due to long-term cultivation, without re-investment in soil structure and nutrients.

About 65% of land in sub-Saharan countries is degraded, resulting in annual economic losses of \$68bn, representing 3% of agricultural GDP.

Fertilizer use in Africa remains the world's lowest, averaging 10kg to 15kg per hectare compared to a global average of 112kg/ha. Levels are far below targets set by African governments. Heads of State agreed to increase fertilizer consumption to 50kg/ha by 2015 – a target only nine countries achieved.

Fertilisers alone cannot sufficiently boost Africa's soils and agricultural yields. There is growing consensus that Africa should adopt an Integrated Soil Fertility Management (ISFM) approach where sustainable management of healthy soils is treated as crucial for food security and agricultural sustainability. A high-level policy commitment is needed to ensure the successful implementation

of that approach, including through raising awareness among farmers, the private sector and policy makers.

Alongside the low use of fertilisers, only 6% of arable land in Africa is irrigated, compared to 14% in Latin America and 37% in Asia. That leaves crops vulnerable to high levels of rainfall variability.

Africa is rich in natural resources, but the model of agricultural extensification is running up against limits. Spare agricultural land is concentrated in just seven countries, and much potential farmland lies under forest cover. Clearance would have significant environmental impact. Elsewhere in Africa, farmland is growing increasingly scarce.

Improving mechanisation

African farmers use 10 times less agricultural machinery and tools than their counterparts in other parts of the world. This under-mechanisation causes huge losses. Lack of storage is also a major cause of post-harvest losses. Cold storage facilities are either non-existent or inaccessible to the majority of smallholders.

On average there are fewer than two tractors per 1,000ha of arable land, compared to 9 to 10 in South Asia and Latin America. The extension of cultivated land and continued absence of mechanisation mean Africa's tractor use is actually falling, from 1.9 per 1,000ha in 1986 to 1.3 in 2012.

In many regions of Africa, farmers continue to rely on animal traction for ploughing, weeding and transport. While animal traction represents a good intermediate technology, shortage of pasture and fodder for draft animals is becoming a serious problem in areas of land pressure. Farmers should be given greater access to small-scale cultivators, loan schemes and tractor hire. Stronger institutions are needed to provide training of specialised technicians to design and repair agricultural machinery.

Land governance and rights

Africa's growing population puts greater pressure on land, especially in areas of high potential and peri-urban zones. Young people and women, in particular, find it increasingly difficult to gain land access.

The co-existence of customary rights and modern legal systems hampers land regulation. Land rights conferred by customary systems remain uncertain, leaving farmers with insecure tenure which discourages investment. The absence of written records accentuates disputes and hinders access to formal loans.

Land administration systems are weak and poorly funded. Land reform requires governments to make a long-term commitment of time and resources, together with good governance and transparency.

The investment landscape

The agricultural sector needs both public and private investment. In 2018, only nine countries met the CAADP target of allocating 10% of public spending to agriculture. The average was just 3.2%.

Africa's total agricultural investment is also low. Gross fixed capital formation in the sector was estimated at \$509bn in 2018, nine times lower than Europe's \$4,538bn and 20 times lower than the \$10,354bn in Asia.

Low investment is partly due to weak markets for agricultural credit, given the low profitability and high risk associated with farming. Uncertainty stemming from unpredictable rainfall, insect pests, fungal diseases and fluctuations in commodity prices, mean farmers face problems accessing loans as well as high interest rates. The share of agricultural credits in total commercial bank lending is estimated at less than 5%.

African agriculture receives little foreign investment, below the levels of Asia and the Americas. FDI inflows into agriculture are highly variable. They reached a high of \$653.1mn in 2011 before falling to \$53mn in 2016. FDI can also cause social injustice as governments have transferred land from smallholders to large commercial operators.

Irrigation is in clear need of investment. Almost one-in-seven of the 7mn hectares under irrigation in Sub-Saharan Africa, require rehabilitation, either to improve maintenance or build new systems.

The trade dimension

Africa's exports are dominated by raw materials, such as petroleum, minerals and unprocessed agricultural commodities, such as raw cotton. For decades, food exports have been far lower than imports. The latter are predominantly wheat and rice, dairy goods, processed foods, oils and fats.

Intra-African trade in agricultural and food products is low compared to the total volume. Only 20% of food exports remain in Africa and 88% of Africa nations' agricultural imports come from other continents. Yet many commodities imported into Africa could be produced on the continent.

LONG-TERM

Climate change

In Africa, changes to weather patterns have created greater vulnerability for agricultural production and increased food insecurity. Water shortages, shorter growing seasons, more severe and frequent floods, changes in crop and animal diseases and pest distribution patterns are leading to lower harvests and productivity. Alongside the COVID-19 pandemic, the 2020 farming season was marked by drought in North Africa, floods in the Sahel and locust invasions in East Africa.

Shifts in average temperatures, rainfall and their increased variability make Africa the continent most affected by climate change. Over the last century, annual temperatures in Africa have increased by more than 0.5 Celsius and are projected to continue to rise by a further 3C to 4C by 2080. This will have a negative impact on agricultural performance and food security. “By the middle of this century, major cereal crops grown across Africa will be adversely impacted,” the World Meteorological Organization (WMO) said in a report. It projected a reduction in yields of 13% in West and Central Africa, 11% in North Africa and 8% in East and Southern Africa.

The next decades

Africa and Europe are twin continents full of promise and innovative potential. Their futures are closely intertwined. For Africa, the next decades will bring rapid economic growth and structural change, driven by population growth, digitalisation and urbanisation. Europe should see a radical transition to a net-zero economy, bringing people and nature into a closer symbiosis, as envisaged in the Green Deal. The challenges and opportunities of the decades to come can better be met by working together.

Investments in the energy and agri-food sectors have the potential to launch the two continents into a more competitive, greener, healthier and smarter future, providing employment for their people. It is estimated that 10mn to 12mn young Africans enter the job market each year, but only 3mn find jobs. In Europe, COVID-19 has blighted young peoples' job prospects. Both continents face an urgent need to generate decent jobs and strengthen access to food and energy. Investment in sustainable energy, agriculture and food systems offer multiple pathways to the shared prosperity sought by citizens on both sides of the Mediterranean.

CASE STUDIES

1. RESILIENCE OF CROP-LIVESTOCK PRODUCTION SYSTEMS, TUNISIA

- **What:** Developing a new 'Pastoral Code' to reverse rangeland degradation
- **Where and when:** Tunisia / 2017
- **Partners:** International Center for Agricultural Research in the Dry Areas (ICARDA)

THE NEED

Dry areas of the developing world face extreme levels of land degradation and water scarcity. Climate change is making an already desperate situation worse. Farmers must increasingly contend with less and more erratic rainfall, depleted groundwater, salinisation and erosion. Tunisia lost an estimated 600,000 hectares of productive rangeland between 2005 and 2012.

Building climate-resilient, integrated crop-livestock farming systems with a strong market orientation can be a driver of productivity, food security and sustainable use of natural resources under changing climatic conditions.

THE OUTCOME

ICARDA uses plant biomass to restore soil health and feed livestock. By focusing on the agronomic elements of production systems, it addresses yield gaps caused by water scarcity in many dryland regions.

ICARDA's efforts to reverse degradation on over-exploited rangelands combine water harvesting, controlled grazing, effective soil preparation and the planting of well-adapted native shrubs. Additional measures include community-based breeding programmes to increase sheep and goat productivity; sustainable use of indigenous resources; climate-smart feed production and precision feeding systems; and the safe use of marginal-quality water in feed and forage production.

Land degradation was complicated by a lack of protective regulations due to rangelands being inadequately covered by the country's Forest Code. A new Pastoral Code deals with a range of challenges that directly impact the integrity of rangeland areas, including the creation of a central coordinating body to oversee governance, sustainable management and land-tenure reforms that involve pastoralists and rural communities - such as designated resting areas and a ban on land privatisation. There are measures to manage herd mobility; payments for environmental services; and climate change adaptation and mitigation measures.

ICARDA is also promoting cactus as a novel fodder crop. Given its ability to adapt to harsh conditions and thrive where other crops cannot grow, cactus can help address the widespread shortage of green fodder, particularly during the summer months when high temperatures and water scarcity threaten food security.

WHY IT MATTERS

A major focus is the provision of sustainable feed solutions to help rural communities adapt to drought and eliminate feed gaps. A project to strengthen Tunisia's red meat value chain is promoting practical and cost-effective technologies to enhance the sustainable supply of nutritious feed and forage, including feed block manufacturing units, processed cactus, fast-track seed multiplication and dissemination strategies, and improved quality forage through the production of silage.

Conservation agriculture (CA), the practice of not ploughing and leaving crop residue in fields for enhanced soil fertility and moisture

conservation, brings optimal production at the least cost. ICARDA is also working with other dryland countries, notably Algeria and Tajikistan, to offer smallholders flexible technology packages to support the implementation of CA. Options include grazing management tools, improved crop varieties, water-saving techniques, weed control and crop rotation.

Impacts have included a 30% to 40% reduction in water-use, a two-to-three-fold increase in barley and wheat production, as well as a reduction in the spread of fungal diseases in fields sown with durum wheat.

2. LAND TENURE REFORM, RWANDA

- **What:** Rwanda's land-reform programme offers a model to many African countries
- **Where and when:** Rwanda / 1999
- present
- **Partners:** The Rwanda Natural Resources Authority (RNRA)

THE NEED

Challenges related to land in Rwanda are rooted in morphology and the availability of land: Rwanda is one of the world's most densely populated countries with 498 inhabitants per km². Political and economic issues; environmental concerns; weak policies, legislation and institutional frameworks also play a role. Rwanda's history has been marked by events, including the 1994 genocide, linked to land ownership. Dependence on agriculture and the lack of off-farm economic activities have increased pressure on land resources.

The country faces environmental problems due to the increasing use of marginal and fragile land, high rates of land degradation

and deforestation. Poor land management and administration systems; tensions between customary and modern land-tenure regimes; the gender imbalance in land tenure; and the lack of human and financial resources have all made the situation worse.

THE OUTCOME

Identified as major causes of the 1994 genocide, land scarcity and tenure insecurity occupy an important place in government development plans. Rwanda has instituted comprehensive land tenure reform together with systematic land registration and crop intensification programmes.

Rwanda embarked on an agrarian reform that aims to remedy anomalies in the legislative system. It addressed gender inequality in a 1999 inheritance law giving women the legal right to own land. The 2005 Organic Land Law set up an administrative structure for land administration. District land offices, took over land administration and planning. A pilot project was launched to register 15,000 plots around the country using advanced

technology, including aerial photography and high-resolution satellite imagery. Local 'para-surveyors' were trained for field missions and to demarcate identified plots.

Boundaries were recorded in public and in the presence of stakeholders. Delimitation slips were issued generating a unique identifier for each parcel. Consolidated and computerized, the data and results were then displayed publicly for one month, giving those concerned time to raise objections. Titles and lease certificates were issued centrally and distributed to landowners.

Results from pilot project concluded:

- Married women improved access to land, but women without a marriage certificate saw their property rights diminished. This was corrected during a later national deployment.
- There were positive investment impacts, including significantly increased investment in soil conservation.

- A marginal reduction in land market activity rather than a wave of distress sales.

The national deployment was rapid and efficient thanks to a thorough review of the pilot experience. The Rwanda Natural Resources Authority (RNRA) was able to demarcate more than 10.3mn plots in less than three years. Significant grants were made available, including free registration during the pilot project and exemptions for the poor during the national roll-out. The cost of registration was low, at less than \$6 per plot.

WHY IT MATTERS

The programme's success has made Rwanda a model many African countries strive to follow. Land security has improved significantly for men and women regardless of their civil status. The programme has also improved the land rental market. In a survey, 67% said transactions have been made easier and 87% were satisfied with the land administration system.

3. THE ECO-ACT PROJECT, TANZANIA

- **What:** A model of good practice that empowers a village community to test, evaluate and take up climate change adaptation
- **Where and when:** Chololo, Tanzania / 2011 – present
- **Partners:** EU Global Climate Change Alliance (GCCA), via the Ministry of Finance EDF Office

THE NEED

Chololo is a village of 5,500 inhabitants located in a semi-arid area of central Tanzania. It faces recurrent droughts, floods and strong winds which lead to human, animal and crops diseases. Villagers struggled to grow enough

food for the year using traditional rain-fed cultivation.

THE OUTCOME

The project focused on agricultural innovation suited to the arid conditions. More than 400 farmers were trained to use early-maturing, drought-resistant and high-yielding seed varieties. The programme also introduced improved soil preparation practices, including animal tillage, soil-water conservation and better use of manure. To restore soil fertility, a new crop rotation system was introduced encouraging the planting of different crops each year to avoid monoculture. This intercropping has also mitigated effects of climate change, as it allows risks to be shared

between crops; and it contributes to improved nutrient intake.

The project paid particular attention to improved livestock production, including training in livestock management and disease control. Better animals were introduced, including 30 Mpwapwa bulls, 60 mixed-meat goats and 183 roosters. Aquaculture development was supported with the building of 11 fish ponds, and 60 beekeepers were trained to run modern hives.

Community members and village chiefs were trained in afforestation techniques, nursery management and tree planting. A total of 22,300 trees have been planted with a 70% survival rate.

WHY IT MATTERS

The project has enabled the local community to innovate and adopt best practices that address climate change impacts in agriculture, livestock, water, energy and forestry. The holistic approach improves productivity and

efficiency in specific sectors and creates synergies between them, promoting an environmentally friendly production system.

Results show a significant improvement in yields of sorghum (+137% on average), millet (+105%), sunflower (+252%) and sunflower oil (+383%). Improved yields have led to an increase in farmers' incomes and a considerable improvement in food security.

Following the success of Chololo Ecovillage, the project partners were awarded a second EU grant to develop a project to roll out best practice, build local government capacity and set up a knowledge management system.

Agroecology has a positive impact not only on yields but also on income, food security and gender equity. Based on 50 case studies in 22 countries, the Alliance for Food Sovereignty in Africa (AFSA) concluded agroecology is one of the best ways to achieve sustainable development goals in Africa.

4. CROP DIVERSIFICATION AND IMPROVED SOIL MANAGEMENT, SPAIN

- **What:** In the framework of the LIFE AgriAdapt project, more than 120 pilot farms are testing sustainable adaptation measures to enhance resilience to climate change, reduce greenhouse gas (GHG) emissions and improve farm competitiveness
- **Where and when:** Spain / 2017 - present
- **Partners:** European Commission and the European Environmental Agency (EEA)

THE NEED

The objective is to improve the resilience and adaptation of rainfed arable crops to

climate change, while ensuring cross-cutting environmental benefits.

This area of Spain has annual average rainfall of 384 mm and an average temperature of 12C. It averages 41 days a year with temperatures above 30C. The main crops are winter barley, fodder vetch, rye, sunflower and soft winter wheat. Every year, 5% of the utilised agricultural area is left fallow. The farm has light sandy-loamy soil, no flooded areas and little erosion. It practices organic farming in accordance with EU regulations and includes small cultivated plots.

Climate-change related challenges affecting the farm include extreme temperatures,

droughts, desertification, soil degradation, more frequent pests and diseases, and biodiversity loss.

THE OUTCOME

A number of sustainable climate change adaptation measures have been implemented on the pilot farms, including: cultivation of local crop varieties showing higher resistance to climatic stress; improved crop rotation; cultivation of legumes and cereals as forage crops; and adjustment of sowing dates to avoid high climatic risk periods.

Farmers leave stubble in the ground to avoid bare soil and apply manure more often to

increase organic matter. Multifunctional field margins have been created to reduce soil erosion and increase biodiversity, with benefits for pollinators and other beneficial insects.

WHY IT MATTERS

Because agriculture is impacted by and contributes to climate change, it can play a key role in defining successful adaptation and mitigation measures.

Within the project, a climate risk assessment will monitor the performance of adaptation measures. Yields and feedback from farmers are regularly checked to verify results.

5. MOVING SOILS FROM SOURCE TO SINK IN ARABLE FARMING, EUROPE

- **What:** Learning about sequestering carbon in soils from research and practice
- **Where and when:** Across the EU / 2017-2019
- **Partners:** EIP-AGRI Focus group, drawing from 20+ experts

THE NEED

The global climate emergency demands that all sectors identify how they can shift to zero carbon emissions, as rapidly and cost-effectively as possible. Agriculture is a major source of greenhouse gases, for example from emissions of carbon from tilling of soils, methane from livestock production, and nitrous oxide from inorganic fertilisers. At the same time, soils can sequester large amounts of carbon in the form of organic matter, which improves their fertility, structure, and resilience. Across the EU, 50% of arable soils are regarded as low in soil carbon, and are estimated to lose between 0.2 and 1% of their carbon each year. Appropriate management

techniques can greatly increase the capacity of soils to store carbon.

THE OUTCOME

The Focus Group experts, drawn from farmers, researchers and advisors, sought to answer the question: *Which cost-effective farm management practices and tools could foster and ensure long-lasting carbon storage in arable farming and contribute to climate change mitigation?* The primary tasks undertaken included to:

- Take stock of current practices and tools to foster long-lasting carbon storage in soils in the different geographical and climatic conditions of the EU;
- Collect good practices and success stories, especially focusing on farmers' and advisors' experiences;
- Identify factors which lead to success or failure;
- Discuss how practices can be transferred

to other contexts and suggest innovative solutions; and

- Take stock of research in this field and, based on practical experience, identify gaps in knowledge which need to be filled.

At the start, two important cross-cutting issues were identified: awareness of the importance of soil carbon in farm management and the availability of tools to assess organic carbon content in soils and its change over time.

The experts identified the importance of raising awareness amongst farmers of the benefits of soil carbon, and ways to create stronger incentives to increase storage levels in soil. Recommendations include working with farmers, advisors, agricultural education and communication professionals to create material for farmers on the benefits of increasing carbon in soils, not only for climate change mitigation, but also to reduce risks of crop failure due to greater resilience. Proposals include creating web portals with information on diverse techniques, showcasing pioneering farmers, and initiating local farmer networks for knowledge sharing and learning.

A series of improved agricultural methods were identified for achieving greater carbon storage, which include: reduced tillage to disturb the soil as little as possible, organic amendments (by applications of manure, compost and sludge), intercropping with leguminous crops or agro-forestry, increasing the capture and storage of soil carbon, reducing water run-off and erosion, and ensuring soil cover for much of the year.

A series of operational groups has been proposed to take forward work on different methods, and ensure local tailoring of techniques to suit specific landscapes. For example, a group could synthesize data and experience with existing agro-forestry management practices to explore which ones bring greatest benefit, especially for

retaining water and carbon in dry climates. A set of priority research themes have come forward from the Expert Group to deepen knowledge on specific themes, such as the availability of local biomass for increasing soil carbon content, trade-offs with other uses, and exploring issues of quality for different organic amendments.

The challenge is now to ensure that the measures identified can be taken forward, identify how to estimate and increase the value of soil carbon to farmers, and test different policy and incentive measures to increase significantly the ability of farming systems to sequester carbon in plants and soils.

WHY IT MATTERS

This example provides a model methodology for addressing challenges in a variety of fields, not only the agri-food sector. Starting from the recognition of an important, complex problem that manifests in different ways across the EU, it combines an Expert Group connected to both local practice and the wider scientific community to explore the range of options for improving the situation. By adopting a learning approach, the Expert Group was able to identify good practices from diverse geographies, and identify practical tools for measuring soil carbon. The experts made a series of recommendations to promote and develop incentives for the spread of soil organic carbon in agriculture, such as certification and subsidy schemes, and by setting up operational groups to take forward the spread of particular soil carbon management practices, made up of farmers, agricultural companies, NGOs, advisors, and researchers. A set of priority research topics was identified for in-depth work, to support farmer outreach activity, such as understanding the trade-offs involved in use of intercropping and cover crops, modelling carbon flows within the soil under different crop regimes, and examining the impact of

soil biology and soil carbon on plant health. The Expert Group method involves people from across the EU and from a range of backgrounds, recognising the importance of including farmers amongst “the Experts”, and bringing diverse perspectives and knowledge of local context. Being funded by

EC-AGRI, it is expected that the findings from this work will feed directly into formulation of new support systems under the Common Agricultural Policy and help strengthen policies at EU and national levels to build soil carbon in arable soils.

6. LE PACTE PASTORAL, FRANCE

- **What:** The establishment and federation of pastoral cooperatives in upland regions of France to promote transhumant livestock production and share management of collective grazing resources
- **Where and when:** France / 2015 - present
- **Partners:** Communauté de Communes Causses Aigoual Cévennes – Terres Solidaires; European Agricultural Fund for Rural Development (EAFRD); Région Occitanie; Département du Gard; Fondation de France; Parc National des Cévennes; Institut De Recherche Pour Le Développement; Chambre d’agriculture Occitanie; Chambre d’agriculture Gard; Société d’aménagement foncier et d’établissement rural (SAFER); ADDEARG Réseau de l’agriculture paysanne; Conservatoires d’espaces naturels; Centres d’initiatives pour valoriser l’agriculture et le milieu rural (CIVAM); Terre de Liens; Causses and the Cévennes UNESCO.

THE NEED

Like many French upland regions, the Causses-Cevennes suffered from agricultural abandonment for decades. That changed in the 1970s, when younger people began settling there to adopt a rural lifestyle as an alternative to ‘modern’ trends.

This ‘reverse flow’ brought innovative farming practices. Up to the mid-1980s, agricultural policy had focused on productivity through industrial farming, increased herd size, fattening operations, etc. Since the 1990s, however, there has been a more territorial approach with local knowledge and practice seen as central to maintaining the landscape and protecting against wildfires.

The 1993 CAP reform introduced agro-environmental measures and a greater interest in landscape and biodiversity. Problems faced by local farmers, such as lack of a slaughterhouse in the area and insecure access to pastoral land were not taken into account by the productivist model. Nor was there sufficient support for the specific attributes of the local production system, for example recognition of local sheep breeds and in particular protection for the Pélardon goat’s cheese. In response, farmers collectively established their own production and marketing systems with direct sales, farmers’ markets, gatherings in the summer pastures, etc. to secure their livelihoods while protecting the pastoral landscape and way of life.

The agro-pastoral landscapes of Causes-Cevennes are recognised by UNESCO as a World Heritage Site due to the cultural connections between people, livestock and landscape. Maintenance of this 'label' requires protection of pastoral systems. Imported agricultural models are inappropriate for the region. Instead of promoting large-scale production, the Cevennes require small flocks. Investment is needed to build shelters for shepherds and flocks, train young shepherds and strengthen social ties between the different users of the uplands.

THE OUTCOME

The Pastoral Pact complements existing policy tools by ensuring the effective involvement of farmers and other stakeholders in management of the territory on which they rely. The Pact provides for participative democracy and promotes a bottom-up approach amongst the herd-owners. It recognises that mountain pastures need to be managed as a collective asset for which private ownership is inappropriate.

Authorities acknowledge pastoral values as a common heritage for the region, defined by landscapes and by practices and knowledge which have grown up over generations. Local pastoral practices are recorded and preserved; transhumance routes protected; and abandoned or ownerless land reclaimed for the community.

WHY IT MATTERS

Many marginal upland areas of Europe were abandoned during the 20th century. Yet grazing by flocks of sheep and goats in a seasonal pattern of pastoral transhumance is often central to maintaining the ecological and socio-cultural character of these areas. Over recent years, some regions are seeing a reverse population flow as young people take up the pastoral way of life. Legal, institutional and market interventions can encourage this and promote regional development by

ensuring a collective approach to grazing management; 'label' recognition of cheese and meat; and infrastructure to support people and flocks.

Climate change is impacting upland pastures. It causes intense rainfall, generating land slips and unstable pasture conditions. To counter this, inter-communal grazing agreements are being set up to permit movement by herd-owners across neighbouring territories in recognition of the need for more extensive grazing areas. The spread of predators is also endangering pastoral shepherding. Wolves have been expanding into the French Alps and Massif Central and biodiversity programmes over the past 25 years have re-established bears in the Pyrenees. The predators cause significant loss amongst flocks, yet are protected by law. While compensation is paid for certified loss of animals, the predators are putting pastoral use of the uplands at risk by forcing herders to adopt expensive measures to protect flocks.

The marginal uplands and mountain pastures have gained from the spread of digital technology which has eased communication between upland and lowland areas. Mobile phones allow alerts to be sent and help sought quickly. Solar PV has become popular for providing power to shepherds' cabins high in the mountains.

FOR THE STRATEGY GROUP'S CONSIDERATIONS

POTENTIAL ACTION AREAS

- Co-creating sustainable agriculture and food systems: establishing joint action and investment to build on the complementary attributes of Europe and Africa; supporting joint scientific, commercial and grassroots initiatives that help both continents achieve their goals; sharing knowledge to address interconnected challenges facing both continents; bringing people together to explore paths to prosperity and peace; helping each other accelerate transition using a landscape approach; making the most of local know-how and adapting to local needs and preferences; and understanding local production and consumption behaviours, constraints, and preferences to help farmers develop and target high-potential products.
- Testing innovative business models: boosting R&D; sharing knowledge through scientific and technological collaboration and networks; establishing African and European centres of excellence working together to strengthen the science-policy interface; setting up monitoring processes and observatories; investing in education and training; testing out digital business models; modernising and streamlining Africa's agricultural supply chains to reduce farmers' transaction costs; strengthening demand for African farm products and improving farm productivity; and capitalizing on farmers' technical know-how to transform and modernise the sector.
- Transforming the investment landscape: implementing the right regulatory environment to protect the land rights of smallholder farmers, and encourage investors to commit funds; de-risking investments to make projects bankable; providing technical assistance and support; offering risk-management services to build resilient supply chains from the smallholder to the global retailer; developing payment schedules that encourage farmers to borrow for investment given that African interest rates are among the world's highest; and establishing longer payment terms based on farmers' payment history to improve access to capital markets and mitigate default risks.

GUIDING QUESTIONS

1. How to combine an approach which increases agricultural yields and addresses rural poverty?
2. What is the best means to strengthen links between small farmers and large-scale commercial agricultural systems?
3. How can African countries capture a larger share of growing domestic food markets?
4. What are the key elements needed for building more climate resilient systems, including design of the financial architecture?
5. How can tenure insecurity for smallholders be overcome rapidly and cost-effectively?
6. Will digitalisation of agriculture and food systems provide opportunities for radical transformation? How can this be made an inclusive process?
7. What approaches and investments are needed to accelerate R&D in response to the urgent need to shift to zero-carbon agri-food systems?
8. How can we build synergies between distributed renewable energy and local food and farming systems?

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