Brussels Policy Briefing n. 45

Smart and affordable farming solutions for Africa: the next driver for agricultural transformation

Organised by CTA, the ACP Secretariat, the European Commission (DG DEVCO), Concord, CEMA, PAFO and Agricord

Albert Borschette Congress Center, Rue Froissart 36, 1040 Brussels (Room 1.A)
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http://brusselsbriefings.net

1. Background

The world faces a huge challenge of achieving sustainable food and nutrition security for a growing population with more diverse consumption patterns in the face of increasingly scarce natural resources and climate change. This challenge is most severe in developing countries where rates of poverty remain high. Despite recent progress, FAO estimates that more than 800 million people worldwide are hungry –consuming less than the minimum number of calories needed to sustain an active and healthy life and an estimated 160 million children are stunted, seriously impairing their future quality of life and contribution to society.

The global population is on track to surpass 9 billion by 2050 and exceed 11 billion by the end of the century. The world's 500 million smallholder farms produce around 80% of our food and it is they who will have to carry the burden of increasing food production by over 70%. Many of these smallholder farms have limited access to inputs, including mechanization, and therefore suffer from low levels of productivity and drudgery. They also have limited access to markets to take advantage of the numerous value adding opportunities. At the same time the rural population is expected to decline as, young people migrate to urban centres in search of a better life. We are also witnessing increasing feminization of smallholder agriculture, especially in Africa as more women are left in charge of the farm.

There is mounting pressure to produce more from less, as land is degraded or taken out of agricultural production, and to do so without damaging the environment on which the future of agriculture depends. In addition, increasing urbanisation imposes changes on consumption patterns, while new markets emerge, and new food safety regulations and consumers' concerns require increased quality. At the same time, the evolution of the processing industry requires the development of new products which requires new technologies and innovations.

The number of tractors and draught animals has been stagnating or even declining in Sub-Saharan Africa, meaning that small-farmers are relying on manual labour. Today more than 50 per cent of the cropland in Eastern and Southern Africa is cultivated by hand. Mechanisation is only applied to 20 to 25 per cent of the cropland and less than 10 per cent in West and Central Africa.

Levels of mechanization and intensification, fertilizer application and use of other modern technologies have remained low across the continent.

The agriculture sector employs 65 % of Sub Saharan Africa's labour force and accounts for 32 % of gross domestic product. The sector has gained pace over the last few years but African farm yields are amongst the lowest in the world.

In SSA, women contribute between 60 and 80% of the labour for food production and constitute the majority of smallholder farmers, provide most of the labour and manage a large part of the farming activities on a daily basis. Thererfore, interventions specifically designed for women should be developed.

2. The potential of mechanization: new opportunities for small-scale farmers

Level of mechanization remains low in Africa where it could improve the productivity and efficiency of farms and therefore improve the lives of millions of small and medium-scale farmers.

FAO (2014) summarizes the main reasons for replacing the power source for crop production from muscles (human or animal) to tractors: i) the potential to expand the area under cultivation; ii) the ability to perform operations at the right time to maximize production potential; iii) the multi-functional characteristics of mechanization as tractors can be used not only for crop production but also for transport and stationary power applications as well as ininfrastructure improvement (drainage and irrigation canals and road works); iv) mechanization can compensate for seasonal labour shortages (or, indeed, release labour for more productive work; v) mechanization reduces the drudgery associated with the use of human muscle power for arduous tasks such as hand hoeing for primary tillage. This aspect is especially important in tropical areas where heat and humidity (often associated with inadequate nutrition) make manual work extremely arduous.[1]

The challenges to expand mechanization are many but the main ones in the African farming context are affordability by smallholders due to low purchasing power and remoteness to urban centres, insufficient access to credit, lack of skills needed to use agricultural machinery. Lack of suitably adapted products is often due to inadeqaute local manufacturing and high cost of tools, equipment, and power sources most of which is imported. Often the repair and replacement of parts are expensive or subject to a lengthy process.

a. More conducive policy environment

The Sustainable development Goals have put ending poverty and hunger at the top of the global agenda. 80% of the world's extreme poor live in rural areas where most are dependent on agriculture. Therefore raising the productivity of smallholder farmers in a sustainable way is key to achieving SDGs.

Over the last decade, Africa had some of the fastest growing economies in the world, many of them recording growing investments in agriculture and agribusiness. The Malabo Declaration[2] commits to enhancing investment finance**,** both public and private, for agriculture, and promises to create appropriate policy and institutional conditions and support systems to facilitate private investment in agriculture, agri-business and agro-industries, by giving priority to local investors.

Research and innovation have led to more affordable and high-performance technologies, including precision agriculture, better-suited to the needs of small-scale farmers. The impact of climate change on the agricultural sector has led to incerase awareness and urgency for action and development of climate-smart practices. Smart technologies can promote efficiencies in energy and inputs as well as reduce post-harverst losses and contribte to sound resource management of.

By investing in sustainable innovation and business models, the private sector can help transform agriculture by generating better jobs, contributing to public revenue and providing affordable goods and services.

In May 2014 the European Commission adopted its Communication on "A Stronger Role of the Private Sector in Achieving Inclusive and Sustainable Growth in Developing Countries". The EU is seeking ways to act as a catalyst for private financing through greater use of financial instruments such as guarantees, equity and other risk-sharing instruments for investments. "Blending" – the combination of EU grants with loans or equity from other public and private financiers, is recognised as an important means of leveraging additional resources for development and increasing the impact of EU aid. Blending will be used as a crosscutting instrument, including funds from sector allocations in fields such as energy, agriculture, water, transport and private sector development all relevant to the smart farming agenda.
The EU is allocating over € 2 billion to private sector development for the period 2014 – 2020 through dedicated thematic and national EU programmes. This, together with increased allocations to regional programmes, will enhance private sector development in partner countries. An improved business climate will lay the foundation for investment and business opportunities, allowing SMEs and large enterprises to flourish in inclusive business ecosystems. Moreover, catalysing private sector investment

[11] Adekunle Ahmed. Agricultural mechanisation. AFDB. 2015
ttp://www.afdb.org/fileadmin/uploads/afdb/Documents/Events/DakAgri2015/Agricultural_Mechanization.pdf

[2] Actions include: the AU Commission and NEPAD Planning and Coordinating Agency (NPCA) to develop an implementation strategy and roadmap that facilitates translation of the 2025 vision and goals of Africa Accelerated Agricultural Growth and Transformation into concrete results and impacts, and report to the January 2015 Ordinary Session of the Executive Council for its consideration; the AU Commission and RECs to facilitate the acceleration of economic integration to boost intra-Africa trade in food and agriculture.

will alleviate the huge funding gaps that exist in infrastructure sectors such as energy, water and transport.

b. More affordable technology

The **spread of mobile phone technology** to billions of individuals may be the single most significant innovation that has impacted developing countries in the past decade. Across the developing world, mobile phones are used daily to transfer money, buy and sell goods, and communicate information including test results, stock levels and prices of commodities. Mobile technology is used as a substitute for poor transport infrastructures as well as underdeveloped financial and banking systems. The number of real-time information streams and people using social media is growing rapidly globally.

The new generation of agricultural machines and tools are more climate-smart sensitive and contribute to environmentally sustainable production as it is the case with conservation agriculture. Furthermore, more advanced energy-saving technology, including solar energy, contributes to more sustainable farming.

Increased competion, including through cheaper products from emerging economies such as India, China and Brazil, has lowered prices and benefited small-scale farmers.

Precision agriculture for all?

Devised for industrialised farms, precision agriculture now has the potential to increase productivity of smallholder farmers while improving input use efficiency.
Its application has been mostly limited to large-scale farms in developed countries. GPS-equipped sensors on tractors, for example, enable farmers to measure and respond to soil variability across vast tracts of land, and dispense the right amounts of fertiliser and water exactly where it's needed.
For many years, this was widely seen as irrelevant to small-scale farmers in developing countries. How much variability can there be on a two hectare plot? And how could poor farmers afford the technology? But there's a growing body of research now to support the idea that small-scale farmers can benefit from precision agriculture. One of the reasons for this is greater awareness of how much variability can exist in even the tiniest plot of land.
The technology which has driven precision agriculture in the global north is becoming more widely accessible. For example, a new handheld device known as the GreenSeeker is used to measure the health and nitrogen status of plants, enabling farmers to make more precise assessments of fertiliser requirements.

3. Africa's agricultural transformation through innovative business models and PPPs

Agribusiness is strategically placed to drive Africa's future economic development and feedRapidily growing urban centres.

The need to **transform the African agri-business sector** is a development challenge as it involves small-scale and family farmers which are the largest private investors in African agriculture.

Increased private-public parterships

It is critical to promote a conducive and enabling environment which facilitates the adoption, use and development of mechanisation in Africa. Building competitive local private sectors, including through strengthening local institutional and business capacity, promoting SMEs and cooperatives, supporting reforms to and enforcement of legislative and regulatory frameworks are required.
To achieve this, smart **public-private partnerships** (PPPs) with sector-wide and strategic approaches are required. Moreover, lessons learned from best practices should be discussed and shared.

In this context, the role of the Comprehensive Africa Agriculture Development Programme (CAADP) national and regional implementation plans should be examined.

Special efforts should be made to link the private and the development sector to leverage technology and know-how transfers at regional and inetrantaional levels.

The private sector through the **European Agricultural Machinery (CEMA)—representing innovators and developers--**has already taken the lead and called for: (i) Re-integrating sustainable agricultural mechanization strategies (AMS) more firmly again into agriculture-for-development agendas and development policy for Africa; (ii) Devising AMS that follow a tailored, inclusive and integrated approach; iii) Working jointly with partners to remove key barriers that have been found to hold back the uptake and use of agricultural machines in developing countries.[3]

Improved adoption of smart-technology can raise farm family incomes leading to a more efficient and higher farm productivity, an increase in market access for raw and processed goods as well as cutting production and operating costs.

4. The way forward: fast-tracking farm mechanisation and promoting sustainable precision farming

There is a need to invest in training and capacity building of farmers organisations and a better organisation of actors of the chain (manufacturers, importers, distributors, retailers and hire services business enterprises). It is critical for farmers to access technology, spare parts and repair services. Organised groups (such as cooperatives) can facilitate group purchases or hiring services for crop operations (soil tillage, planting and spraying), processing equipment and material (tractors, harversters) and improved know-how in operating and maintaining them. **Collective action** not only facilitates accessibility and affordability but allows to access some types of machinery all the year around.

Training and capacity-building programmes should target young farmers and entrepreneurs. For this purpose, the resources of the regional centres of agricultural mechanization should be optimised and upscaled. The strategic partnerships between the Panafricam Farmers Organisation (PAFO), CTA, Agricord and CEMA will promote sharing of experiences and best practices at the continental level as well as amongst African and EU industries.

While efforts have been made on the enabling environment, more needs to be done on the trade, legal and fiscal domains (i.e. laws for facilitating business start-ups, import regulations, easing trade, etc.).

Increased investments in agricultural mechanization should be promoted through enhanced participation of banks and other lending institutions, including credit lines to farmers. Equally, farmers need to be involved in R&D.

The technology that farmers require needs to be locally sourced and adapted to local conditions in a continuous process of research, adaptation, extension, monitoring and evaluation. “Certification” of machinery is also needed in order to give relevant information to farmers and extension services on the actual performance of machinery in local conditions of use.[4] Farmers must have local access to the inputs they need, including seeds and fertilizers, electricity and water as well as machinery and the supporting infrastructure that mechanization requires (e.g. repair services, parts supply, fuel and lubricants). The private sector has a vital role to play in this respect in partnership with farmer organizations.

5. Objective of the Briefing

To improve information sharing and promote networking, CTA, the DG DEVCO from the European Commission, the ACP Secretariat, Concord organise bimonthly briefings on key issues and challenges for rural development in the context of EU/ACP cooperation. The Briefing on 13th July 2016 will focus on the potential of smart farming in the advancement of the agrifood sector in African countries.

The objective of this meeting is to discuss strategies and approaches for harnessing the potential of smart farming in Africa and the development of partnerships with the private sector to catalyse market development and productivity in selected countries.

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[3] http://cema-agri.org/publication/advancing-agricultural-mechanization-africa

[4] FAO & UNIDO, 2008. Agricultural mechanization in Africa: time for action. Food and Agriculture Organization of the United Nations. Rome, Italy & UN Industrial Development Organization, Vienna, Austria. 26 pp. https://www.unido.org/fileadmin/user_media/Publications/Pub_free/agricultural_mechanization_in_Africa.pdf

6. Outcomes of the Meeting

- A **better understanding of the needs and opportunities of smart farming and precision agriculture in Africa**
- **A better knowledge of** European and African private sectors to strengthen agribusinesses in African regions with a view to upscaling or replicating successes in different parts of the continent.
- The meeting should also inform major stakeholders about existing PPPs and **strengthen linkages between private sector and development cooperation**

7. Target group

Around 150 ACP-EU policy-makers, civil society groups, research networks, development practitioners and international organisations based in Brussels.

8. Partners

A unique multi-stakeholder partnership comprising donors, technical organisation (CTA), farmers (PAFO), private sector (CEMA) and farmers' support organisation (Agricord).

Through its national associations, CEMA represents more than 4,500 manufacturers, with an annual production volume of 28 billion €, producing more than 450 types of machines. European agricultural machinery manufacturers employ 135,000 persons directly and an additional 125,000 persons indirectly in the distribution and maintenance network.

AgriCord is an initiative of professional farmers' organizations and their cooperative businesses from countries in Europe, Canada, Africa and Asia, bundling their efforts for strengthening their colleagues in developing countries. The AgriCord network currently consists of 12 development agencies (agri-agencies) implementing one common development program "Farmers Fighting Poverty". Together they support more than 200 family farmers' organizations in 60 developing countries.
The Pan-African Farmers' Organization (PAFO) comprises five regional networks, the regional networks of farmers' organizations and agricultural producers of the Maghreb (UMAGRI), of the Southern Africa (SACAU), of Central Africa (PROPAC), of the Eastern Africa (EAFF) and of West Africa (ROPPA), working together since 2003 on continental issues of interest having a significant impact on African agriculture.

9. Outputs

- A short report and a Reader in printed and electronic format will be produced shortly after the meeting.
- Input and comments before, during and after the meetings will be included in the Briefings Website: http://brusselsbriefings.net.

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Programme

8h00-8h45 Registration
9h00-9h15 Introduction and Opening of the Briefing: *Isolina Boto, Manager, CTA Brussels Office*

Introductory remarks: *Patrick Gomes, Secretary-General, ACP Group; Jean-Pierre Halkin, Head of Unit, Rural Development, Food & Nutrition Security, Europeaid, European Commission; Ulrich Adam, Secretary General, CEMA; Juha Ruippo, Director of the Finnish Central Union of Agricultural Producers and Forest Owners (MTK) Brussels; PAFO President; Michael Hailu Director of CTA*

9h15-11h00 Panel 1: Setting the scene: Drivers of smart-farming in Africa
This panel will discuss the available tools and approaches in support of smart-farming which can benefit the smallholders. It will also discuss public-private partnerships (PPPs) and multi-stakeholder alliances that aim at accelerating investments and transformative change in African agriculture.
Panelists:

- Smart-farming: trends and new opportunities benefiting small-holders
  *Josef Kienzle, E*xpert, *Equipment and Institutions/Agro-Industries, Rural Infrastructure and Agro-Industries. Division (AGST), FAO*
- Connecting your farm: the future of precision farming for farmers
  Louisa Parker, Manager Institutional Funding and Stakeholder Relations Africa and Middle East Advanced Technology Solutions AGCO Corporation (AGCO)
- Contribution of unmanned aerial systems to precision farming
  Giacomo Rambaldi, Senior Coordinator ICT, CTA; Damien van Eeckhout, Head of International Business Development, Airinov
- Smart farming: a priority for farmers in Africa
  Theo de Jager, President, Panafrican Farmers Organisation (PAFO)

11h00-11h15 Coffee break

11h15-13h00 Panel 2: Scaling up successes in smart farming
This panel will look at specific examples of successful smart-farming applications at various levels. It will also show smart inclusive and sustainable PPPs.
Panelists:

- PPPs: Upscaling agribusiness successes in Africa
  Chris Addison, Senior Coordinator, CTA; Stephen Muchiri, CEO, Eastern African Farmers Federation, Kenya
- Proven successful smart-farming technologies: the case of Potato initiative Africa
  Frank Nordmann, Grimme, Germany
- Empowering women and youth through capacity building
  Eric Kaduru, KadAfrica, Uganda
- Pooling forces: Machinery rings and cooperatives
  Andreas Hastedt, Board member, German Association of Machinery Rings

Conclusion

Networking Lunch