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Financing sustainable agri-food systems

AQUACULTURE

Why state subsidies for broad insurances are unsuitable

BRAZIL

Strategies for low-carbon agriculture

THE HIMALAYAS

Afforestation projects – boon or bane?

Dear Reader,

Just a couple of days ago, the 27th World Climate Conference (COP 27) was concluded in Sharm el-Sheikh in Egypt. It closed with an agreement to establish a fund for “Loss and Damage” experienced by vulnerable countries hit hard by climate disasters. That such an agreement has been reached can indeed be regarded as a breakthrough. The numerous initiatives launched during the two-week event ought to be welcomed, too. All in all, however, the outcome of the negotiations remains disappointing. This above all applies to the targets to check global warming. German climate researcher Mojib Latif succinctly commented: “We’re just not making any progress.” Presently, the world was on a course towards 2.5 degrees Celsius of global warming compared to the pre-industrial era – if not even 3 degrees. “We will definitely breach the 1.5 degree limit,” Latif told the press.

Regarding emissions reductions, all that was achieved in Sharm el-Sheik was a confirmation of the goals agreed at COP 26 in Glasgow/Scotland. For example, by 2030, global emissions are to be reduced by at least 43 per cent compared to 2019. In addition, low-emission – i.e. gas and nuclear power – as well as renewable energy sources are to be expanded. Using coal is to be phased out, while “inefficient” subsidies for fossil fuels are to be done away with. But there was no clear commitment to ending the use of fossil fuels, as had been demanded by an alliance of 80 countries, including India.

What was provided, however, was extrapolations of the investments required. For example, the global transformation to a low-carbon economy would cost at least 4–6 trillion US dollars per year, of which 4 trillion USD per year would have to be invested in renewable energies, if the goal of net zero emissions was to be reached by 2050. Serious concern was expressed that the industrialised countries’ pledge in 2009 to provide an annual 100 USD by 2020 on combating global warming and adapting to climate change still had not been fully met. Development banks and international financial institutions were called upon to mobilise climate finance. In addition, a swift and comprehensive

transformation of the financial system and its structures and processes was necessary.

Our authors also criticise that financial institutions continue to stick to their old patterns of behaviour. This is one of the reasons why the urgently needed investments in the sustainable transformation of our agri-food systems have either failed to materialise or are not on target. Wrong incentives, not considering externalities in setting food prices, lobbying and public budget constraints, in connection with not adequately prioritising the money available, are further ones. This edition shows you the approaches which science and development cooperation, financial institutions and the private sector regard as having proven promising in rebuilding our agri-food systems in line with the Agenda 2030 and making them resilient in the long term.

Against the background of the numerous crises which have so drastically demonstrated how vulnerable we are, the future seems very uncertain. We would all the more like to wish you and your loved ones a peaceful festive season and much confidence for the coming year.

On behalf of the Editorial Team,



Patricia Sauer Silvia Richter

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COP 27 – Delivering for people and the planet

The 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 27), which took place in the Egyptian coastal city of Sharm el-Sheikh in November 2022, brought together more than 45,000 participants to share ideas and solutions and build partnerships and coalitions. A brief glance at the most important resolutions and initiatives.

An Adaptation Agenda to build climate resilience

The Sharm-El-Sheikh Adaptation Agenda was launched by the COP 27 Presidency in partnership with the High-Level Champions on the COP 27. It outlines 30 Adaptation Outcomes to enhance resilience for four billion people living in the most climate-vulnerable communities by 2030. Each outcome presents global solutions that can be adopted at a local level to respond to local climate contexts, needs and risks and deliver the systems transformation required to protect vulnerable communities to rising climate hazards such as extreme heat, drought, flooding or extreme weather.

Collectively, these outcomes represent the first comprehensive global plan to rally both State and non-State actors behind a shared

set of adaptation actions that are required by the end of this decade across five impact systems: food and agriculture, water and nature, coastal and oceans, human settlements and infrastructure, and including enabling solutions for planning and finance.

The 30 Adaptation Outcomes include urgent global 2030 targets related to:

- transitioning to climate-resilient, sustainable agriculture that can increase yields by 17 per cent and reduce farm level greenhouse gas (GHG) emissions by 21 per cent, without expanding agricultural frontiers, and while improving livelihoods including of smallholder farmers;
- protecting and restoring an estimated 400 million hectares in critical areas (land and freshwater ecosystems) supporting indigenous and local communities with the use

of nature-based solutions to improve water security and livelihoods and to transform 2 billion hectares of land into sustainable management;

- protecting 3 billion people by installing smart and early warning systems;
- investing 4 billion USD to secure the future of 15 million hectares of mangroves through collective action to halt loss, restore stocks, double protection and ensure sustainable finance;
- expanding access to clean cooking for 2.4 billion people through at least 10 billion USD/year in innovative finance;
- mobilising 140 to 300 billion USD needed across both public and private sources for adaptation and resilience and spurring 2,000 of the world's largest companies to integrate physical climate risk and develop actionable adaptation plans.

Early Warnings for All Action Plan gets backing

The number of recorded disasters has increased five-fold, but despite this, half of all countries do not have early warning systems in place. This needs to change. The Executive Action Plan for the UN Early Warnings for All initiative has been given a unanimous welcome and initial offers of support during the World Leaders Summit at the UN climate change negotiations, COP 27. The plan was drawn up by the World Meteorological Organization (WMO) and partners, and it was supported by a joint statement signed by 50 countries. The plan calls for initial new

targeted investments of 3.1 billion USD between 2023 and 2027, equivalent to a cost of just 50 cents per person per year to achieve the goal of ensuring that everyone on Earth is protected by life-saving warnings against increasingly extreme weather in the next five years. The plan is based on four main pillars: disaster risk knowledge, observations and forecasting, preparedness and response, and communication of early warnings. The aim is to increase and leverage funding for ongoing activities such as the Climate Risk and Early Warning Systems Initiative, the Systematic Observations Financing Facility and other initiatives, and to strengthen co-ordination.



Photo: UN Convention to Combat Desertification

International Drought Resilience Alliance launched

World leaders recognise the urgent need to shift drought management approaches from the current emergency response to resilience and have launched the International Drought Resilience Alliance at COP 27.

The Alliance is envisioned as a collaborative platform to rally political momentum and trigger actions that support countries, cities and communities to enable this shift and significantly reduce their vulnerability, impact and exposure to extreme drought. Helping countries, cities and communities to build drought resilience presents an op-

portunity to significantly reduce the high social and economic costs. This includes the loss of life, livelihoods and biological diversity, water and food insecurity, and disruption in the energy, transportation and tourism sectors, as well as forced migration, displacement and conflicts over scarce resources.

Breakthrough on loss and damage

On the 20th November, COP 27 concluded with a historic decision to establish and operationalise a loss and damage fund. Creating this special fund for loss and damage marked an important point of progress, with the issue added to the official agenda and adopted for the first time at COP 27. Governments took the decision to establish new funding arrangements, as well as a dedicated fund, to assist developing countries in responding to loss and damage. They also agreed to establish a 'transitional committee' to make recommendations on how to operationalise both the new funding arrangements and the fund at COP 28 next year. The first meeting of the transitional committee is expected to take place before the end of March 2023.

Additionally, the package of decisions delivered by countries at COP 27 reaffirmed their commitment to limit global temperature rise to 1.5 degrees Celsius above pre-industrial levels. It also strengthened action by countries to cut greenhouse gas emissions and adapt to the inevitable impacts of climate change, as well as boosting the support of finance, technology and

capacity building needed by developing countries.

The conference's cover decision, known as the Sharm el-Sheikh Implementation Plan, highlights that a global transformation to a low-carbon economy is expected to require investments of at least 4-6 trillion USD a year. Delivering such funding will require a swift and comprehensive transformation of the financial system and its structures and processes, engaging governments, central banks, commercial banks, institutional investors and other financial actors.

Serious concern was expressed that the goal of developed country Parties to jointly mobilise 100 billion USD per year by 2020 had not yet been met, with developed countries urged to meet the goal, and multilateral development banks and international financial institutions called on to mobilise climate finance.

Simon Stiell, UN Climate Change Executive Secretary, reminded delegates in the closing plenary that the world was in a critical decade for climate action. "We have a series of milestones ahead," Stiell noted. "We must pull together, with resolve, through all processes, may they be national, regional, or others such as the G20.

Every single milestone matters and builds momentum."



A Global Shield against Climate Risks

The Global Shield against Climate Risks, an initiative for pre-arranged financial support designed to be quickly deployed in times of climate disasters, was officially launched by the Vulnerable 20 Group of Finance Ministers (V20) of 58 climate vulnerable economies and the Group of Seven (G7) at COP 27. Initial contributions include around 170 million euros from Germany and more than 40 million euros from other countries. In terms of implementation, the Global Shield will align behind vulnerable country strat-

egies for closing protection gaps using a broad range of appropriate instruments. At the household and business level, these instruments comprise, for example, livelihood protection, social protection systems, livestock and crop insurance, property insurance, business interruption insurance, risk-sharing networks and credit guarantees. At the level of (national and subnational) governments, humanitarian agencies and NGOs, the Global Shield will support the integrated development of instruments used to ensure that money is available when needed (money in) and the processes to ensure that the money is spent on providing

what affected individuals and communities need when they need it most (money out).



Improving climate finance contributions to transform agriculture

For agri-food systems to adapt to climate change and become more sustainable, improving climate finance contributions to the sector is critical, but the funding to transform these systems to make them

more sustainable, resilient and productive is grossly inadequate, according to the United Nations Food and Agriculture Organization (FAO). The Food and Agriculture for Sustainable Transformation Initiative (FAST) launched at COP 27 aims to implement concrete actions to correct this to transform agricul-

ture and food systems by 2030 while supporting food and economic security and the environment. The initiative was developed and initiated by the Egyptian Presidency in close collaboration with the FAO and other stakeholders.



See also: www.rural21.com/english/cop27-dossier.html



Many countries in the Global South have developed long-standing fertiliser distribution programmes, alongside support for seed, pesticides and other inputs.

Photo: Jörg Böhling



Foreign direct investment in agriculture is often aimed at land and resource control, and is concentrated in major export commodity sectors.

Photo: Jörg Böhling

Just rewards, or just rewarding business-as-usual?

The urgent need to realign the financial incentives in our food systems

A recent UN report points to the vast majority of agricultural subsidies being environmentally harmful and mentions fertiliser subsidies putting mounting pressure on public budgets. In contrast, far too little research is supported on sustainable agricultural practices. Incentives in food systems appear to be set for a review. Our author calls for a reality check, arguing that more funding ought to be provided for systems benefiting the many and taking threats to ecosystems into account.

By Nick Jacobs

As 2022 draws to a close, with nearly 50 million people facing acute hunger and 45 countries in need of food assistance, global food systems are clearly at breaking point. Anyone seeking to defend ‘business-as-usual’ must confront a number of increasingly harsh realities – that global food supply chains and food security are fragile; that environmental breakdown is decimating harvests; that sustainable agriculture is key to restoring biodiversity, adapting to climate change, alleviating poverty and rebuilding food security; and that billions of dollars are needed to accelerate the transition to sustainable food and farming systems. The good news is that there are considerable sums of money already flowing into food systems, and multiple levers to pull on. However, it is also clear that many of these incentive systems are still pointing in the wrong direction.

Firstly, agricultural subsidies play a critical role in shaping food systems. Globally, government subsidies to agriculture total roughly 720 billion US dollars (USD) per year. For decades, the subsidies channelled to large-scale farms in

the Global North have been criticised for distorting global markets and undercutting developing world agriculture. Those criticisms are now getting louder and wider. A recent UN report has confirmed that around 90 per cent of the world’s agricultural subsidies are environmentally harmful, with the bulk of payments channelled to high-emitting sectors like meat and dairy. Even the latest statistical update on food security (*The State of Food Security and Nutrition*) issued by the UN Food and Agriculture Organization (FAO) called for subsidies to be ‘repurposed’ as a precondition for ending hunger. In the European Union – where agricultural subsidies still account for nearly 40 per cent of the bloc’s expenditure – there is widespread opposition to the status quo. This includes farmers’ organisations like Via Campesina, who would rather have no subsidies at all than today’s highly distorting payments.

Secondly, fertiliser subsidies provide another powerful set of incentives – and also reinforce today’s most damaging production models. With the ‘Green Revolution’ focus-

ing attention on increasing the productivity of (input-responsive) staple crops, many countries across the Global South have developed long-standing fertiliser distribution programmes, alongside support for seeds, pesticides and other inputs. By 2010, ten of the biggest African countries were channelling 14 to 26 per cent of public agricultural expenditure to these programmes. With food, fertiliser and fuel prices soaring following the Russian invasion of Ukraine, governments are now pouring ever-greater resources into providing farmers with these inputs. A report on the *Fertilizer Trap* by the Institute for Agriculture and Trade Policy (IATP) and the non-profit organisation GRAIN shows that India (with 26 billion USD budgeted this year), Kenya and the Philippines are among a host of governments ramping up fertiliser subsidies in the face of the crisis – and dangerously depleting public budgets in the process. Global North countries are also doubling down on fertiliser production incentives – including 500 million USD of new US grants – as well as continuing to subsidise fossil fuel extraction.



After decades of neglect, overseas development aid for African agriculture has tripled since 1997 and exceeded three billion USD in 2017.

Photo: Flore de Preneuf/ World Bank



Agricultural subsidies play a critical role in shaping our food systems. The lion's share of world-wide agricultural subsidies is channelled to high-emitting sectors like meat and dairy.

Photo: Parilov/ Shutterstock.com

Thirdly, major sums of public funding are injected into food systems through agri-development programmes and partnerships. After decades of neglect, overseas development aid for African agriculture has tripled since 1997, and exceeded three billion USD in 2017 – alongside increasing investment from philanthropic foundations. With growing recognition of agriculture's carbon sequestration and climate adaptation potential, some donors are starting to shift their practices and channel funds into transformative initiatives. Germany, for example, is partnering with the Indian state of Andhra Pradesh to help transition hundreds of thousands of farmers to 'natural farming', while more than 50 per cent of Swiss agricultural research funding in Africa goes to agro-ecological projects. However, these remain the exception: the bulk of agri-development funding continues to accrue to 'public private partnerships' (PPPs) like the Gates-funded AGRA alliance, which enmesh corporate interests (e.g. selling agri-chemicals) with those of small farmers, and continue to focus narrowly on increasing the productivity of (export) crops. Despite the urgent need to develop and spread knowledge on sustainable practices, a declining share of aid is channelled to research, and only a fraction of those funds – as little as three per cent for the Gates Foundation – goes to systemic, agroecological projects.

Fourthly, private capital flows represent another financial lever for food system change – the biggest lever in dollar terms. Foreign direct investment (FDI) in agriculture already amounts to about 1.5 trillion USD per annum. Most of these flows are currently supporting business-as-usual. FDI in agriculture is typi-

cally aimed at land and resource control, and concentrated in major export commodity sectors (rice in Asia, sugarcane and soybeans in South America). With agriculture currently absorbing less than one per cent of total FDI, some see huge potential for channelling increasing investment flows into the sector, and redirecting them towards sustainable practices. The World Bank is optimistic on this front, highlighting the 40 trillion USD of global assets already aligned with ESG (Environmental, Social, Governance) principles, the 750 billion USD sitting in outstanding stocks of green bonds, and the proliferating mechanisms for investing in food system transformation – from 'blended finance' solutions like sustainability-linked debt facilities, to underwriting long-term purchase contracts to help smallholders harness innovations.

”

A declining share of aid is channelled to research

Although they represent a different type of incentive, fiscal policies are another powerful tool governments can use to align food systems with health and sustainability goals. For example, soda taxes in Chile – coupled with child marketing restrictions and labelling requirements – helped to reduce consumption by 23 per cent. Mexico also achieved a 12 per

cent drop in sales after a 10 per cent tax was levied on sugary drinks in 2014. Buoyed by these success stories, there are now growing calls for fiscal tools to be used systematically to align food prices with their true cost to people and the planet.

Surveying this landscape, it is clear that today's food system incentives are poorly aligned with sustainability. But it also feels as if the tide may be about to turn – that the problems are now obvious, that pioneering initiatives are showing the way forward, that a critical mass of awareness is about to drive a realignment of food system incentives and unlock a tide of green investment. However, a reality check is needed. None of these incentive systems offers an easy win, and progress is stalling on all fronts. Recent events in fact suggest that decision-making and resource allocation in food systems is fundamentally unresponsive to biophysical limits and economic realities.

With Covid-19, climate shocks and the invasion of Ukraine disrupting food supply chains, the case has never been clearer for rebuilding more resilient food systems – and redirecting financial flows to that effect. But instead of accelerating reforms, the current crises are being used to justify the status quo and kick the can further down the road. In Europe, farm biodiversity requirements have been relaxed, fertiliser/pesticide reduction targets have come under attack, and subsidy reforms put into the deep freeze, on the grounds that for now the focus should be on helping farmers to 'feed the world'. Many governments, meanwhile, are expanding fertiliser and fossil energy subsidies – rather than taking the opportunity to



A soft drink transporter at a market in the Bellavista neighbourhood of Santiago, Chile. Soda taxes in the country have helped to reduce consumption by 23 per cent.

Photo: Matyas Rehak/ Shutterstock.com

accelerate the shift towards low-input, diversified, agroecological systems. Nor is the crisis sparking a fiscal transformation. In a context of rampant food price inflation, some European Parliament groups are in fact pushing for VAT to be lowered on fruit, vegetables, dairy and all ‘basic foods’ – highlighting how health and sustainability imperatives can be blunted, and fiscal tools instrumentalised, in a context of entrenched power relations and corporate capture of policy processes.

Through new incentives for industrial agriculture, governments are therefore exacerbating the climate and biodiversity crises which are contributing to today’s food crisis – and leaving the world even more vulnerable to the next supply shocks (which can’t be far away). This contradiction is sometimes acknowledged, but the logic appears to be that as long as we have the wrong production model, we need the wrong subsidies and the wrong incentives to keep it afloat.

Investment flows tell a similar story. While the focus (and language) of investments is shifting, the fundamental logic is not. The same old assumptions about return on investment remain in place, and capital continues to flow to growth opportunities. New sectors are attracting rapid investment, from food e-retail platforms to lab meat startups, but only insofar as they promise to deliver sustainability gains within the parameters of the current system – to unearth new consumer markets for multinationals (who often buy up the newcomers), to continue the inexorable growth of total food production/consumption rather than challenging it. And while trillions of dollars are ESG-aligned on paper, money is increasingly being managed by opaque financial players

with no real stake in the sectors and communities affected by their investments. Remarkably, Blackrock and four other asset management firms own 10–30 per cent of the shares of the top agri-food firms, and a rising share of farmland in the Global South. Across the board, there is a worrying lack of accountability. AGRA, for example, continues to absorb millions of dollars of agri-devel-

opment funding, despite failing to deliver on stated hunger and poverty reduction goals, let alone sustainability.

Where funding is not flowing is to the organic and agroecological systems that sustain yields and build resilience through diversity (not chemical inputs). To the short supply chain initiatives – from community supported agriculture to farmers’ markets and cooperatives – that provide farmers with a fair price, and a market for diverse outputs (i.e. real incentives for producing sustainably). To the initiatives working at the relevant scales – communities, landscapes, territories, city-regions – to reconnect producers and consumers, establish circular nutrient and waste flows, and build democratic food system governance. To the social innovations that can drive change faster and more durably than technological innovations. To the community-led research and farmer-to-farmer knowledge sharing that is critical to build resilient food systems.

What these opportunities have in common is their capacity to generate value for the many, not wealth for the few. In other words, they lack ‘investibility’ in conventional terms. This situation is unlikely to change insofar as today’s paradigms, power structures, and overarching incentives remain in place – in food systems and beyond. There is clearly no threshold at which rational resource allocation suddenly kicks in: with the social and environmental costs of today’s food systems likely already exceeding the market value they generate (6–12 trillion USD versus 10 trillion), surely we would have passed that threshold already. In a crucial caveat to the *Food Finance Architecture* it delivered for the 2021 UN Food Systems Summit, the World Bank acknowledges that

“financial institutions are not currently unlocking the potential of (sustainable) financial products, instead remaining in old patterns of behaviour”. This is a telling reality. It reflects the fact that powerful actors are still assuming they will be able to extract wealth and profit as ecosystems collapse. It is this assumption – and not an acceptance of the wholesale transformation required – that has been priced into today’s food systems and the incentives guiding them.

The task of realigning financial incentives with sustainable food systems is therefore even bigger and more complex than it first appears. It becomes doubly important to pursue change in all the incentive systems described above – and to do so in a way that challenges fundamental assumptions and shifts power in the process.

Alongside the abundant greenwashing and false dawns, there are emerging examples of real change from which we can take heart. Around the world, top-line incentives are being shifted by pulling on multiple, mutually-reinforcing levers – financial, fiscal, regulatory, political – and redistributing power. It is worth remembering that Chile’s success in fighting obesity is down to a multi-faceted package of measures – a soda tax and curbs on industry marketing power. Meanwhile, in Andhra Pradesh, hundreds of thousands of farmers are shifting to agroecology thanks to the availability of biological inputs, community support systems, a purpose-built, not-for-profit company – and multi-level political support (including international partnerships). There are also signs that financial actors are growing impatient and pushing for real change. The latest European data suggests that investors are turning away from ‘light green’ ESG-aligned funds, while opting into funds that target specific sustainability outcomes. As these steps converge, as transitions become transformations, change could become truly unstoppable. Instead of just rewarding business-as-usual, tomorrow’s food systems could finally deliver just rewards.

Nick Jacobs is Director of the International Panel of Experts on Sustainable Food Systems (IPES-Food) which is based in Brussels, Belgium. He has led the panel’s work on the global food price crisis, agroecology, and EU policy reform. Nick previously worked in the support team to the UN Special Rapporteur on the right to food, and as an agri-food journalist.

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Sustainable food systems need True Cost Accounting

Outsourced costs, i.e. externalities such as water pollution and biodiversity loss, are not shown on company balance sheets, nor are they reflected in food prices. As a result, they provide the wrong incentives for production and consumption. This has serious consequences for the environment and society. The problem could be solved with True Cost Accounting in combination with regulatory law and funding legislation, as our author shows.

By Markus Wolter

Johan Rockström's well-known diagram on planetary boundaries very clearly shows several areas – climate change, biodiversity loss and the nitrogen/ phosphorus cycle – in which our planetary boundaries have already been exceeded (see page 10) by a substantial margin. One of the primary drivers is the agri-food sector. Agriculture is responsible for 23 per cent of global greenhouse gas (GHG) emissions, making it a major contributor to the climate crisis. However, this is not reflected in our cost of production and food prices; the same applies to social injustices such as the use of child labour or exploitative working conditions.

At present, businesses are able to produce goods more cheaply if they can externalise more of their costs; in practice, these costs are passed on to the public. Firms which endeavour to adopt more equitable and sustainable business practices, such as fair trade companies and organic food producers, still occupy a niche in the market. Although their contribution to human well-being and public goods is demonstrably higher, their products tend to be the most expensive in stores and are therefore purchased less frequently. By contrast, products with the highest environmental costs are often relatively cheap. If nothing is done to address this systemic problem, the current environmental and social crises associated with our food production will worsen further. The market currently provides very few incentives to preserve and nurture. We face a dilemma, much of which has to be blamed on erroneous and inadequate accounting for the costs and benefits of food production. True Cost Accounting (TCA) can help to create more sustainable food systems with less harmful human and environmental impacts.

The positive effects would be felt mainly in the Global South. For example, in 2001, the cocoa industry announced that it aimed to end child labour in its supply chains by 2005. It is now 2022 and there are still more than 1.6 million children working in the cocoa industry in West Africa alone. It has become apparent in other sectors too that voluntary agreements and voluntary commitments are not enough



True Cost Accounting also considers the payment of a living wage.

Photo: Jörg Böthling

to make the world a better place. However, if the costs of child labour were included on company balance sheets, this would provide an incentive to exclude it from the supply chains, spelling the end for child labour in this sector. We need to speak to businesses in a language they understand and here, it is the numbers and the bottom line that matter. A mechanism like True Cost Accounting is therefore essential to ensure that markets once again become functional and future-fit in a way which boosts human well-being.

What is True Cost Accounting?

True Cost Accounting is a new methodology which can be used to determine the real costs of a business, product or service. It not only assesses the direct production costs, such as the costs of raw materials and labour; it also takes into account how the business activities impact on the environment and society. These impacts are monetised – in other words, they are assigned a monetary value which is then shown

on the company's balance sheet. Alongside production capital, natural, social and human capital are thus accounted for. Greenhouse gas emissions and water pollution are examples of impacts on natural capital. Social capital covers aspects such as child labour, while human capital includes the payment of a living wage. In order to introduce a standard for True Cost Accounting along the value chain, various food sector companies in Germany, together with GLS Bank and the catholic development agency Misereor, set up the True Costs Initiative in 2019. In collaboration with the specialised consultancy Soil & More Impacts and TMG Think Tank for Sustainability, they developed the True Cost Accounting AgriFood Handbook as a tool which companies can use to expand the scope of their accounting into these areas.

Among other things, the Handbook supplies the monetisation factors that are required for accounting purposes. Identifying these factors is quite a daunting task – how do we account for something that was never assigned a value

The planetary boundaries concept



before? The True Costs Initiative makes use of the prevention costs approach here. Valid data are already available for natural capital, such as the costs per tonne of CO₂ (116 euros/tonne) or the costs for the emission/build-up of soil organic carbon (100 euros/tonne). With social and human capital, it is a more difficult task. Human and social impacts are measured using DALY, a standardised method employed by the World Health Organization to compare the burden of different diseases. A DALY is equivalent to one lost year of “healthy” life. The sum of DALYs across a population affected by an impact driver (e.g. excessive work or child labour) measures the gap between the health status with and without the presence of the impact driver. For child labour, 80,000 euros per year and child is taken as monetisation factor, irrespective of whether the child lives in the USA or in Ghana.

What would be the effect of True Costing?

The balance sheet is the key document for businesses operating in a market economy. It provides information about the company’s financial status and its expected performance the following year. By expanding the scope of accounting to include True Costs, it would be possible to gain a far more realistic insight into a company’s status – benefiting not only its

own management but also investors, insurers and rating agencies. The effects would be felt in a range of areas:

Lending and insurance. The better a company’s financial position, the more likely it is to be offered favourable lending terms by the banks as the risk of its defaulting on its loans is low. It makes a significant difference to a company if it has to pay an interest rate of three per cent or ten per cent on its borrowing. By referring to the TCA indicators shown on the balance sheet, banks would be in a much better position to make an informed decision about a company’s expected risks, including the likelihood of default. The same applies to insurers. At present, the balance sheet provides them with little more than a vague impression of the risks. But if it is clear that a company is making genuine efforts to establish resilient supply chains that are as sustainable as possible in order to minimise environmental and social risks, the insurance premium can be reduced accordingly.

Taxes. If the balance sheet is restructured and expanded to include True Cost Accounting indicators, a reform of tax law will also be required in order to reflect these changed conditions. Spending on water or soil conservation, for example, should then benefit from tax relief.

own management but also investors, insurers and rating agencies. The effects would be felt in a range of areas:

Price formation and companies’ purchasing decisions. If particularly harmful products are purchased, such as soya sourced from the Amazon, this would have a negative effect on the balance sheet and status report. Purchasing more sustainable alternatives, such as soya from Germany, would then be reflected in lower costs on the balance sheet. This would create an incentive for buyers to procure

The long road to implementation

Some companies are already making efforts to integrate True Costs into their balance sheets and make them visible. One is Eosta, an organic fruit and vegetable importer in the Netherlands. In order to achieve a living wage, for example, the company pays ten cents more for each kilo of mangoes and passes this on to customers. However, to ensure that companies with equitable and eco-friendly business practices do not continue to face systemic disadvantages, a level playing field is required. Policy-makers have a role to play here. The German government’s coalition agreement states: “In dialogue with the business community, we wish to integrate environmental and, if appropriate, social values into existing accounting standards.” It is a good starting point, as it has boosted the topic’s political relevance. However, there does not yet appear to be any political will to implement this commitment on the part of the present government. It is a similar situation at international level. Although the topic of True Costs was discussed at the UN Food Systems Summit last year, we have not seen any meaningful policy action at the global level since then, unfortunately.

The crisis linked to the impacts of the war in Ukraine has again revealed the structural problems in the global agriculture and food system: the global food system is neither resilient nor sustainable. As products with high environmental and social costs are far cheaper than those produced in a sustainable and more equitable manner, demand for less sustainable products is particularly high. What we are dealing with here is market failure. True Cost Accounting can have a corrective effect. A reform of company accounting is therefore required at European level, if possible – and better still, at global level – in order to create a level playing field for everyone and thus build more sustainable agricultural and food systems. True Cost Accounting, with its inclusion of natural, human and social capital, is a key mechanism for achieving this goal.

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Tax or spend? What is at stake for agri-food systems transformation

Global food and agricultural policies are, by and large, not fit to support agri-food systems in sustainably delivering food security and adequate nutrition for all. World-wide economic growth prospects are bleak, and countries are faced with fewer financial resources to support agri-food systems transformation. But repurposing governments' support to food and agriculture towards well-prioritised policies and investments could be a catalyst for true transformation.

By Marco V. Sánchez, Valentina Pernechele and Christian Derlagen

The state of agri-food systems is taking centre stage in the discussions on global development priorities. The world is moving backwards on progress towards SDG2 – ending hunger, food insecurity and malnutrition in all its forms by 2030. Different driving factors have put us in reverse and off track. Conflicts, climate variability and extremes, and economic contractions – exacerbated by the Covid-19 pandemic – are major headwinds. Low productivity and inefficient food supply chains are also pushing up the cost of nutritious foods which, combined with low incomes, are making healthy diets unaffordable for billions of people. The ongoing war in Ukraine has further compounded pressure on food, fertilisers and energy prices, casting a shadow over the global state of food security and nutrition.

Against that backdrop, global economic growth prospects are inevitably being revised downward. This means that in many countries, fewer financial resources are available to support the much-needed transformation of our agri-food systems. Concurrently, existing agricultural policies and investments in the vast majority of countries are often distortive, harmful to the environment and society, and insufficiently prioritised to power agri-food systems as engines for sustainable development.

It is not surprising, therefore, that decision-makers are finding themselves caught in a policy conundrum to transform agri-food systems, particularly in lower-income coun-

tries. With the public purse under pressure and a lack of evidence on which policies and investments should be prioritised, they are at a crossroads as to which direction to take. With lower tax revenue generation commonplace, some decision-makers might well wonder if further taxing agri-food systems is a feasible option, if they are not delivering as they are on food security and nutrition fronts. Taxing agriculture or reducing subsidies is not a smart policy move when economies need stimulus. Rather than merely taxing food and agriculture for revenue generation purposes, governments should look for better ways of providing policy support to transform agri-food systems. More often than not, these avenues are close at hand.

Price support and farm subsidies dominate global agricultural policy

The food and agriculture sector benefits from, and is taxed by, governments around the world. To do that, they use various policy instruments, in particular (i) trade and market interventions (e.g. import tariffs, export restrictions, etc.), which increase or lower prices and thus provide incentives (or disincentives) to farmers and consumers; (ii) direct budget transfers (subsidies) to producers (i.e. input subsidies) and consumers; and, (iii) public investments in general services and public goods such as research or infrastructure that support rural development. According to the latest

estimates, total government support to food and agriculture accounted for almost 630 billion US dollars (USD) per year globally, with roughly two-thirds of these resources benefiting farmers individually through price support (202 billion USD) and subsidies (245 billion USD) largely linked to the production of specific commodities or the use of inputs (e.g. fertiliser and seeds; see Figure on page 12). Less than 18 per cent of total support (111 billion USD) was spent on the provision of public goods for the sector, even though this more collective form of support has stronger productivity effects in the medium to long run.

The amount and breakdown of support differ significantly across high-, middle- and low-income countries. Although agriculture in high-income countries (HICs) represents a smaller share in the overall economy, the better fiscal position of these countries allows their governments to support the sector more strongly than elsewhere (see Table on page 12). Farm subsidies in HICs make up 12.6 per cent of the total value of production, while



in low-income countries (LICs) such support represents less than one per cent of the value of goods produced. Additionally, to lower food prices for consumers, LICs tend to resort to trade and market policies that penalise farmers by generating price disincentives.

Policy support is harming climate and health

Food and agricultural policies and subsidies have extensively supported farm income and pushed agricultural transformation in HICs and middle-income countries (MICs). LICs have used trade measures to protect their weak farming sectors against import competition, but also to ensure adequate supplies of food staples and access to food for consumers. However, most policy support measures around the world are, by and large, not fit to ensure that agri-food systems can sustainably deliver food security and adequate nutrition for all. A recent multi-UN agency report found that up to 87 per cent of support to farmers either distorts prices or harms nature and health. One of the main reasons lies in the fact that support to agricultural production largely concentrates on staple foods, dairy and other protein-rich foods. High greenhouse gas (GHG) emission products such as rice, sugar and meats of various types are among the most-incentivised



In some low-income countries, the production of nutritious foods, such as fruits and vegetables, is less supported or even penalised.

Photo: Luis Tato/ FAO

products world-wide. On the other hand, the production of nutritious foods, such as fruits and vegetables, is less supported or even penalised in some LICs.

As a result, agricultural policies have contributed to unsustainable and harmful production practices, such as monoculture. They have also compromised nutrition and not sufficiently addressed the need to make healthy diets more affordable to all. Farm subsidies have sometimes widened income disparities, as larger ag-

ricultural producers have benefited more from subsidy schemes compared to smallholder farmers. This has led to the transformation of agri-food systems being hampered by the relatively low levels of investment in public goods, which have proven to be the most effective for boosting productivity and facilitating market access in the long term.

The time to rethink, reform and repurpose policy support is now

There is growing evidence that repurposing support to food and agriculture globally can help reshape agri-food systems and significantly improve their outcomes. According to estimates from the report *The State of Food Security and Nutrition in the World 2022*, reallocating existing support in ways that are designed to get consumption patterns closer to healthy dietary guidelines will, without a doubt, lower the cost of healthy diets and thus make healthy food more affordable for consumers. This will also contribute to reducing poverty and undernourishment. That said, depending on how this reallocation is done in practice, there may be trade-offs to consider in terms of farm income and GHG emissions. Others have found that investing more in climate-smart innovations that lower emissions and raise productivity could reduce land use by up to 40 per cent, while delivering gains in poverty reduction, nutrition and growth.

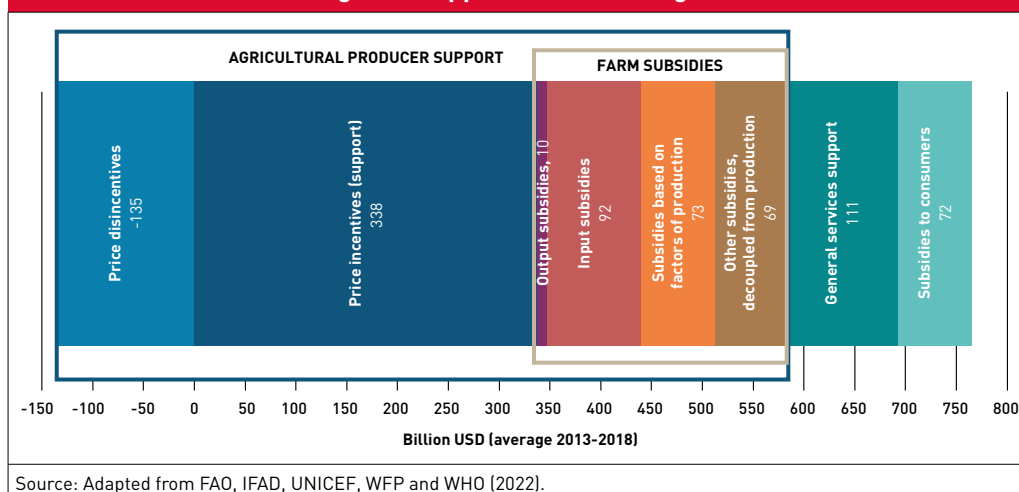
Designing and implementing a strategy to repurpose public support cannot be done through a one-size-fits-all approach. Successful strategies need to be evidence-based, transparent, coherent and country-specific, and require an inclusive process that takes into

Support to the food and agricultural sector as a share of value of production by country income group, average 2013–2018

Country income group	Price incentives (support)	Fiscal support (public expenditure)		
		Farm subsidies	General services	Consumer subsidies
High-income countries	9.5 %	12.6 %	3.9 %	4.6 %
Upper-middle-income countries	10.8 %	4.9 %	3.0 %	0.2 %
Lower-middle-income countries	-7.6 %	4.1 %	2.5 %	2.6 %
Low-income countries	-9.5 %	0.6 %	2.3 %	0.6 %

Source: Adapted from FAO, IFAD, UNICEF, WFP and WHO (2022).

Amount and breakdown of global support to food and agriculture



account the political economy of agricultural policy in each country. In several countries, steps in the right direction have already been taken, especially where price support has declined, or where subsidies have been decoupled from production, or where climate-smart and nutrition-sensitive approaches have been adopted. These are good strides, but action on repurposing needs to be bolder.

Prioritising public investments with highest value for money is key

As low-income countries and some middle-income countries have relatively less fiscal space and lower levels of policy support on food and agriculture, prioritising their public spending and investment becomes essential to ensure the best value for their public money and the highest returns of their investments. Global economic growth prospects are not bright, and the financial resources to transform agri-food systems will be even tighter in these countries.

Repurposing agriculture's public budget to accelerate transformation

Most LICs are undergoing agricultural transformation, but still lag behind in this process. In sub-Saharan Africa, industrialisation, the main driver of past transformations, is not materialising in most countries. Not only will LICs in particular need to accelerate agricultural transformation, but they will also have to expand the supply of the nutritious and safe foods that make up healthy diets, if they are to achieve SDG2. For the governments



Surveys have demonstrated the positive impacts of even modest public investment in productive infrastructure in agriculture.

Photo: Luis Tato/ FAO

of LICs, it will be challenging to step up the public budget to one that can carry agriculture forward and create the kind of environment that enables private investment without international development finance. Yet, closer at hand, governments could achieve better development outcomes if they simply managed and allocated their existing budget optimally.

The UN's Food and Agriculture Organization (FAO) has developed an innovative policy optimisation tool to help policy-makers address their most common problem: dealing with multiple objectives that can be conflicting, all under a budget constraint. The tool has come up with promising results. Applied in the context of Ethiopia, for example, it considers four objectives that are key to agricultural transformation: maximising agri-food Gross Do-

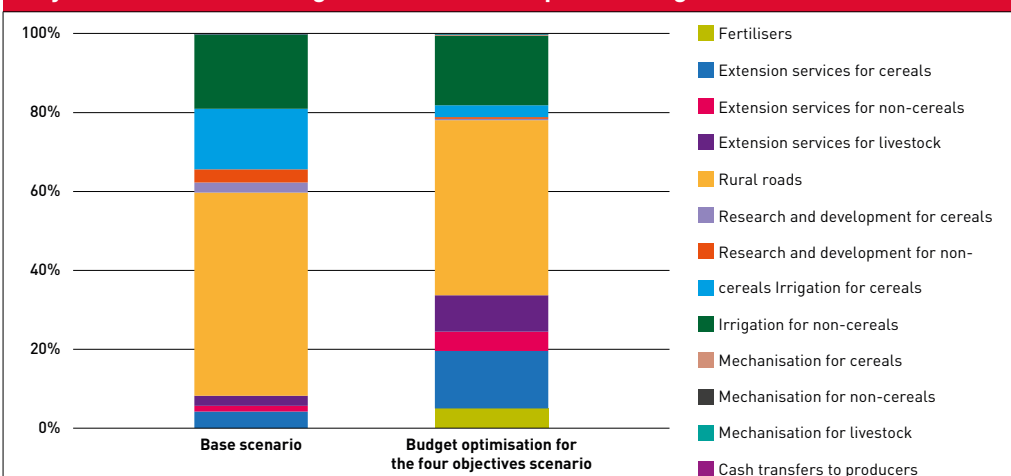
mestic Product (GDP), maximising off-farm rural employment, minimising rural poverty, and minimising the cost of a healthy diet. As shown in the Figure below, pursuing these four objectives will require prioritising the public budget differently than before. For example, it would be more effective to increase investments in irrigation, notably because that will spur the production and consumption of nutritious foods (e.g. fruits and vegetables) that are relatively more water intensive. More budget would also have to be allocated to the production of pulses (not shown in the figure), with less budget being allocated to cereals and sugar cane.

With an optimal reallocation of the public budget, we expect significant improvements on all four objectives in Ethiopia. Not only would there be higher agri-food GDP growth, but also, over 2.3 million more people would be able to afford a healthy diet, almost 500,000 jobs would be created, and 450,000 people would be out of poverty (see top Figure on page 14).

Investing little but smartly in agriculture is good for recovery and people

Agriculture, forestry and fishing remain an important driver of economic growth and employment generation in LICs and some MICs. For example, in Uganda, which is an LIC, the sector represents about 24 per cent of GDP and employs more than 64 per cent of the working population. Agriculture accounts for a much lower percentage of GDP in a country such as Mexico, an MIC, but even here, the sector employs 12 per cent of the workforce (6.5 mil-

Ethiopia's domestic budget allocation to agriculture by type of expenditure in 2025: Projection of current budget vs scenario of optimal budget reallocation

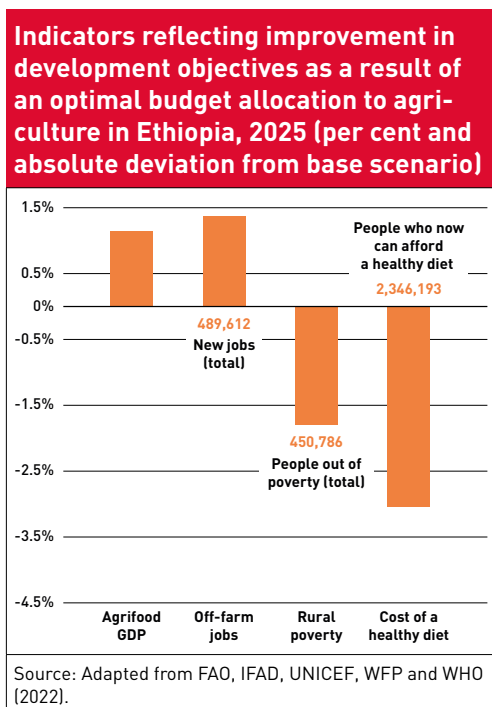


Notes: In the scenario, the domestic public budget for agriculture is reallocated optimally from 2022 to 2025 to pursue the four objectives. Results are expressed as deviations from a base or business-as-usual scenario that only projects the current public budget composition for agriculture without policy changes or external shocks.
Source: Adapted from Sánchez and Cicowiez (2022b).

lion people). Hence, in the face of economic contraction and bleak economic prospects, it makes sense for these countries to put agriculture, forestry and fishing at the centre of their recovery efforts. Repurposing along the lines explained above for Ethiopia should of course be a first or simultaneous step to gradually scaling up public investments where they can be cost-effective economically, socially and environmentally.

In additional scenarios carried out by FAO, a modest public investment in productive infrastructure in agriculture (e.g. rural roads, irrigation systems, storage infrastructure, etc.), representing only 0.25 per cent of GDP during 2022–2024, is found to generate positive impacts – compared to a business-as-usual (or base) scenario. The resulting productivity shock and capital accumulation translate into higher rural household labour incomes, lower food prices and cheaper agricultural inputs for food processing (see Figure below). This would, in turn, result in more affordability of healthy diets. From 2022 to 2030, GDP growth and tax revenues would be a few percentage points higher, and thousands of people would have been lifted out of poverty because of such modest investment.

However, FAO studies also show that such modest investments in agriculture must also be prioritised across sub-sectors, as these have different impacts on household welfare, GDP, agri-food GDP and rural poverty. In the case of Uganda, for example, the sugarcane sector tops the ranking in three out of the four variables (household welfare, GDP and agri-food



GDP). For the remaining variables, the cassava and potato sectors have the highest impacts on rural poverty reduction. Sectors such as cattle, bananas and goats also rank high in terms of their impacts on household welfare and GDP, but only investments in the banana sector have the potential to significantly reduce poverty. Different pictures are seen for each of the other three countries.

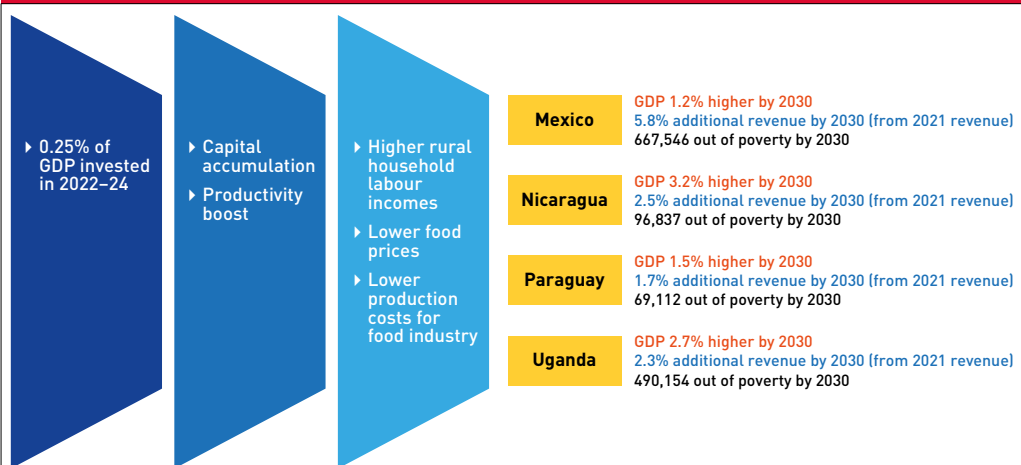
Irrespective of the country, there is a clear finding that is explained by how macroeconomics works. Governments in developing economies should finance new investments in agriculture

with foreign borrowing or aid to speed up recovery and avert the short-term macroeconomic trade-offs of domestic financing. Raising taxes to finance new investments would reduce household consumption, whereas domestic borrowing would crowd out private investment, delaying economic recovery.

The way forward in a nutshell

As a turning point in global agri-food policy, it is clear that repurposing agricultural support towards well-prioritised policies and investments can be the key to transforming agri-food systems and enabling their capacity to deliver more food security and poverty reduction, better nutrition, and to support economic recovery. For governments, who are faced with growing fiscal constraints, better prioritisation of policies and investments is the main lever for systemic change. Individual countries, especially in sub-Saharan Africa, South Asia and Latin America, are increasingly expressing the need for sound technical assistance to help translate global diagnostics and recommendations on repurposing into actionable policy advice at national level. The examples above highlight the support that FAO is providing in this area, including through programmes such as its Monitoring and Analysing Food and Agricultural Policies (MAFAP) programme. We call on fellow development partners to join these efforts, as by working in partnerships together, we can accelerate the adoption of evidence-based policy changes to transform agri-food systems and deliver on the Agenda 2030 for people and the planet.

Modest investments in productive infrastructure for agriculture would support economic recovery, tax revenue generation and poverty reduction vs a business-as-usual scenario for 2022–2030



Source: Authors' elaboration based on economy-wide models presented in Sánchez, Cicowiez and Molinas (2022); Sánchez, Cicowiez and Ortega Díaz (2022); Sánchez, Cicowiez and Pereira Fontes (2022); Sanchez, Cicowiez and Ramirez (2020).

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Supply chain finance – a viable option for smallholder farmers?

Often, the business models of classic financial service providers are not tailored to the special needs of farmers, especially those of small-scale farmers. A number of other models have evolved in which the actors from the upstream and downstream areas see to financing. Our author presents the most important ones together with their pros and cons.

By Michael Brüntrup

Access to finance continues to be a major problem for farmers in developing countries, especially in sub-Saharan Africa. The lacking availability of agricultural credits is seen as a central, if not the most important, obstacle to the expansion, modernisation and diversification of production and the adoption of innovations. A more recent, very detailed analysis of national operating data for four countries in sub-Saharan Africa by Serge Adjogon and colleagues demonstrates that while 70 per cent of all farms in Malawi and Nigeria buy fertiliser, pesticides and seed as external inputs, a mere 16 to 18 per cent do so in Tanzania and Uganda, showing relatively few systematic differences regarding farm size (in all four countries, the smallest farms, with less than 0.5 ha, have the lowest use rate). But an average of just 6 per cent (3–11 per cent, depending on country and farm size) purchase on credit, mainly buying fertiliser, and almost everywhere, except for Nigeria, the medium-sized and large farms acquire significantly more on credit than the small ones. So there is an urgent need for more financing, which also has to be more diversified.

However, farmers tend to be difficult financial clients. Owing to their exposure to collective weather and other natural and economic crises, they are seen as particularly risky borrowers. Low levels of formal education and literacy rates make information and counselling on financial and business management matters a complicated issue, as does the provision of good planning documents for granting credits. Usually, farmers also have few material collateral, and even in the case of mortgages on registered land and other real estate titles, it is often difficult for lenders to liquidate such collateral in rural areas. Given the frequently large distances, the transportation, information procurement and other transaction costs are high anyway.

Supply chain finance – pros and cons

For all these reasons, pure financial organisations of the most various kinds (banks, micro-finance organisations, finance cooperatives,



Input credits are granted for some cash-crops, especially if this can check side-selling via monopoly marketing – for example for cotton-growing in northern Benin.

Photo: Michael Brüntrup

savings banks, etc.) have difficulty or little interest in adapting their business models to the special needs of farmers and their production processes. This is why a number of other financing models have evolved providing products, services or finance which do not reach the farmers via financial service providers but via actors in the upstream and downstream areas of agriculture. They are referred to with the generic term of supply (or value) chain finance.

There are a wide range of models, although they do share some common features. Supply chain financiers dispose of a good knowledge of cultivation, products, markets and services which are important for farmers. They also take an interest in the goods or services purchased being of high quality, and can partly influence or guarantee the latter's quality. In many developing countries, lack of quality constitutes a major problem, and farmers have hardly any options to control quality. One further advantage of major economic actors in particular is that they frequently have access to international financial markets with (at least in the past) favourable interest rates and make these available to farmers. The general disadvantages are that under such systems, indepen-

dent markets for the upstream services do not develop so easily, that farmers become even more dependent than is already the case, and that the real-term credit costs lack transparency owing to their being subsumed under other costs. Such credits are usually not covered by financial market regulations, even though they can be quite relevant to the financial system given their aggregated dimension. Depending on the lenders, interests and relationships with the farmers tend to vary.

The demand side

The purchasers of agricultural products offer pre-financing of inputs, interlinked credits or tied credits, usually in the context of contract farming. Credits for inputs are frequently provided in kind in order to cushion risks on the input markets and safeguard production. One big advantage of obtaining credits via buyers is that the latter are familiar with the requirements of the sales markets, especially if they themselves are active in cultivation (e.g. nucleus-outgrower schemes). Often, the credits are then part of entire packages of financial and non-financial services, including the prices or

price-fixing regulations for the products being sold. Everything is financed through marketing and its margins. One core problem of the model is so-called side-selling, which refers to being in breach of delivery contracts by the farmers, and hence the risk of non-(re-)payment of credits and other services. Non-compliance with price-fixing or other agreements on the part of the buyer can be a reason for side-selling, but so can more attractive prices and purchasing terms of third-party buyers. In all cases, a partner's short-horizon thinking encourages this form of granting credits.

Where monopoly situations or the special structure of a cash crop sector encourage this, marketing boards (still) exist. The monopoly situation hardly allows for side-selling, which makes granting and repaying credits easier. Sometimes, a farmer can also use the cash crop guarantee (e.g. cotton) for another crop (e.g. maize). These boards were widespread in developing countries between the 1960s and 80s, often encompassing all functions of the sub-sectors or even the entire agricultural development in a region. However, for similar reasons to those in the case of specialised agricultural banks (see article on pages 18–19), they were very frequently ineffective and not sustainable financially, at least under the then prevailing conditions of one-party governments taking advantage of these organisations to steer the economy, siphoning off agricultural profits and, often enough, radically exploiting the farmers. Therefore, most of the boards were done away with in the course of structural adaptation measures. If they do happen to have survived (for example for cotton in many West African countries or cocoa in Ghana and Côte d'Ivoire), their roles and their power have usually been reduced. Therefore, longer-term credits and extensive non-financial support is rarely provided nowadays.

Such contract-farming arrangements on a usually smaller scale also exist in private sector value chains. Owing to the problem of side-selling, they either focus on certain cash crops for which there is either a local private monopoly or where the product can be bought at a higher price than the local market price (in niche markets such as fair trade or organic agriculture). Buyers with high investment and fixed costs (processors), of highly perishable products (logistics costs), low availability on the free market (dependence on producers) or sophisticated buyers (penalties for breach of contract, risk that non-fulfilment of contracts will lead to the end of commercial relations) are also more inclined to enter contract farming and grant credits. Or the credits are based



Most supply chain credits consist of labour only paid for after the harvest – here, soil is being tilled to grow yams in northern Benin.

Photo: Michael Brüntrup

largely on trust, experience and safeguarding within social networks. The already referred to multi-country survey mentions such credits on an extensive scale for tobacco and partly also for cotton, but otherwise, cash crops do not benefit more frequently from credits than food products.

The supply side

The providers of upstream products and services can also grant credits for the purchase of their products, and this is then mainly done directly in kind. These credits are usually repaid during or after harvest, sometimes by an already contractually agreed retrieval at source when the farmers are paid for their products.

Specialised suppliers such as the fertiliser industry have a restricted range of products from which individual farmers only need small amounts. However, they require various products and services at very specific times during the planting and growing season. Often, specialised agro-dealers or farmers' organisations compile the products needed and see to the "last mile" of delivery. Whether these middlemen offer credits or allow buying on credit depends on the financial capacities of the traders and trust, transparency, formal legal security and whether debts can be legally recovered. Even in these local business relationships, social pressure plays an important role in fulfilling obligations.

Purchasing cooperative societies reduce some of the transaction costs and provide better negotiating power. They can also compile customised product ranges from individual suppliers. Social pressure to observe payment

discipline is considerable. However, these societies do bear the familiar problems of co-operatives: they are slow in decision-making, have a tendency to exclude the poorest, are sometimes little bankable and are often less innovative and financially strong than purely private enterprises.

Leasing agencies now and then devote their services to agriculture, e.g. for tractors and machines. As yet, they only rarely occur in rural regions, one example being the KfW-financed Equity for Africa Group in Kenya. Leasing agencies are not necessarily cheaper, but they do reduce the considerable procurement costs to regular, smaller payments in instalments, which of course in farming have to be synchronised with the seasonal cash-flows. In order that the leased investment goods can serve as guarantees, training has to be offered and a legal framework has to be in place. Furthermore, a second-hand market must exist for further selling off.

One special form of supplier credits is labour with wage payment postponed until after the harvest. It is much more widespread than credits for input – the study referred to above states at least 20–30 per cent of farms in Nigeria and up to 50–80 per cent of farms in Uganda, across all farm sizes in all countries. This confirms that, at least at certain times, labour is a key factor which is hard to come by for farmers. Moreover, delayed payment backs the hypothesis that massive credit access problems exist for farmers. The workers are probably among the poorest of the poor (landless people, micro-smallholders, households experiencing acute difficulties). One special case is direct government sales of input and investment goods. In many African countries, fol-

Following the example set by Malawi, fertiliser subsidies have been introduced since the mid-2000s. Strictly speaking, these are not usually credits, but strongly reduced prices for certain items, although they often facilitate credit granting by the private supply chain partners of the farmers. However, tractors, machines and even entire processing plants are still directly supplied by governments (or by development organisations) on credit. Many studies report very poor repayment rates for products financed by government credits.

Some final reflections

The requirement for more agricultural financing which is also more diversified is huge in poor developing countries. The demands on agricultural financing are complex, and there is a very wide range of needs. And yet, the financing of other supply chain actors whose profiles of needs are often very different has not even been referred to here. If they are underfunded, entire supply chains and hence also farmers often run into difficulty, or a supply chain might not even evolve.

Each of the different supply chain models has its own advantages and disadvantages, usually depending on the context, the products, supply chains, market power, competitive situation, regulatory framework, etc. But basically, supply chain financiers cannot and do not want to provide general and multi-purpose financial services but necessarily seek to above all promote their own supply interests. As long as finance independent of supply chains is available, supply chain financing is not objectionable, it then constitutes one funding option among several for farmers rather than being the reason dominating all other crucial factors to consider for entering a certain type of production. And then well-adapted supply-chain financing, if possible in a well-adapted package, can make use of its advantages to the full. If this is not the case, efforts ought to be made to develop alternatives which allow credit directly from financial organisations. Development cooperation interventions and political regulation can contribute to this.

Development cooperation can seek to ensure that financing of farmers is at least partly secured via financial organisations (FOs) in promoting supply chains and in private sector and financial sector programmes. This can for example be achieved by supporting triangular cooperation schemes in which payments by and to farmers are performed via their own FO accounts. Once the money is in one's own

Types of agricultural financing via supply chain actors and their suitability for credits for smaller farms

Suitability for	Buyers		Suppliers		Leasing agencies	Government input sales
	Formal	Informal	Formal	Informal		
Small volumes	+ / +++	++	- / ++	+ / +++	+++	- / +
Large volumes	+ / +++	-	+ / +++	- / ++	-	++
Costs (interest)	++ / +++	- / +++	+-++	+++	++ / +++	+ / +++
Short-term credits	++	++	+++	+++	+++	-
Long-term credits	-	-	-	-	- / +	++
Availability in rural area and for all	++	+++	++	+ / ++	+++	-
Combination of finance and non-financial services	+++	++	++	- / +	+	- / +

Source: own assessment and description; the assessment is meant to correspond to the text but is subjective, „/“ indicates “up to” in cases of very strong deviations.

account, saving becomes simpler. Then farmers can develop their own savings and credit record, which is an important criterion for FOs granting their own credits. At least partly cashless transactions are also preferable from a transparency and security angle.

Certain constellations can also be influenced in supply chains via political interventions. They are legitimate and often necessary to make up for the multitude of imperfections and failures in the finance and agriculture sectors of developing countries. Many actors such as farmers or groups of farmers, smaller suppliers and buyers as well as supporting structures like rural communities are often weak and poorly organised (another result of high rural transaction costs) and have little political and economic power to act. In some chains and sub-sectors, they face all-powerful private individual actors in national and international agro-business, and this can perhaps also constitute a case for regulation.

For these and many other reasons, the agricultural sector is often shaped by strong regulations which in turn have to be considered in financing. For example, this sector is more strongly affected than others by considerable government interventions in trade, food security and the environment. Pricing policies for inputs and crops as well as the choice of distribution systems can massively change the preconditions for agricultural financing, for example when pan-territorial prices are set (which reduces the risk of side-selling), when trade policy stabilises prices (reduces credit risks) or destabilises them (raises credit risks), or when subsidies are handed out in the shape of government distribution of goods (weakens the private sector) or as coupons for private distributors (strengthens the private sector).

However, all too strict regulation inhibits entrepreneurial development and institutional

and organisational innovation. Financing the wrong (unsustainably operating, not repaying) actors via government credit steering, the undermining of repayment discipline e.g. through politically motivated debt relief, or the introduction of non-cost-covering interest rates can force production chains into inefficiency for several years or even bring about their collapse. This is not just a theoretical danger but a practice which has been frequently observed for decades.

Special attention ought to be given to the aspect that different types of farmers may require very different packages of financial and non-financial technologies, inputs and services. In addition to technical support, the smallest among them in particular need significantly more organisational as well as psychological support (functional and awareness-creating alphabetisation, group forming, etc.). Here, it has to be borne in mind that support needs to change in the course of time, and with the evolution of the clients, the supply chains and the framework conditions.

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Towards a renaissance of agricultural development banks in sub-Saharan Africa?

While financial products and systems have been improved in many urban areas of the Global South, their provision is lagging behind severely in the rural regions. It has been estimated that an annual capital volume of more than 200 billion euros would be required alone for the modernisation of agriculture in sub-Saharan Africa. Our author argues that despite their chequered history, agricultural development banks have a major role to play in this context.

By Bastian Domke

In sub-Saharan Africa, agricultural development banks and financing facilities (AgFiFs; see Box) were largely introduced in the 1970s as an important way of promoting economic development, wealth creation and employment in rural regions. They were mostly government-owned and financed by governments and international donor organisations. However, apart from some of them being harnessed for political purposes and being caught up in nepotism and corruption, many of these institutions faced considerable problems such as a lack of distribution networks and a focus on the granting of credits without saving options being offered simultaneously. For this reason, most of them were not in an institutional position to generate the effects expected of them and thus achieve their founding purpose. As a result, many of these institutions were closed down and wound up, and from the late 1980s on, German development cooperation with them was largely dialled down or suspended.

Over the past years, interest in international cooperation in this type of financing (smallholder) agriculture in sub-Saharan Africa has been rekindled. There are several reasons for this. For one thing, it has become apparent in this period that most other methods to finance smallholder farmers in rural areas in developing countries have been met with limited success; in addition, there has been hope of replicating the success these vehicles had in the rural development of many Asian and South American countries. Moreover, the notion has gained ground that these institutions were able to finance anti-cyclical investments in times of economic crisis.

Assessing the potential of AgFiFs

With its focus on Africa and the objective of the special initiative One World – No Hunger, launched in 2014, Germany's Federal Ministry for Economic Cooperation and Development (BMZ) has significantly extended its agricultural financing portfolio in the



Access to finance is a precondition for small entrepreneurs to invest in their activities and for securing their livelihoods and self-sufficiency.

Photo: GIZ Uganda

region. In 2020, it commissioned Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to perform an analysis of the potential which promoting AgFiFs holds in several partner countries, namely Benin, Togo, Mali, Burkina Faso, Nigeria, Cameroon and Malawi. The analysis revealed that AgFiFs are widely accepted in their role and for their potential as catalysts promoting transformation,



Access to finance is the precondition for smallholders as well as small enterprises to invest in their activities and, in addition to securing their own livelihoods and their self-sufficiency, for enabling production for the market and hence increasing both income and the scope for decision-making regarding their enterprises and lives.

BMZ, 2021

which they achieve by refinancing financial institutions or direct granting of credit via commercial banks or development banks, by credit guarantee mechanisms, or by hybrid forms such as the “*Mécanisme incitatif de financement Agricole*” (MIFA) in Togo and the “Nigeria Incentive-Based Risk Sharing System for Agricultural Lending”. Furthermore, it has become clear that AgFiFs play an important role in achieving socioeconomic goals by supporting market areas regarded as unattractive by commercial banks such as remote rural areas, food staple crops as opposed to cash crops, etc.

While both the data base and qualitative assessments of these institutions are incomplete, the analysis detected a certain renaissance of AgFiFs. This is reflected in governments as well as some donors, such as the International Fund for Agricultural Development (IFAD) or the African Development Bank (AfDB), again increasingly making use of public banks

in agricultural financing, and sometimes even founding new ones. For example, since 2000, twenty AgFiFs have been newly established world-wide, including some in sub-Saharan Africa, such as Burkina Faso's *Banque Agricole Du Faso* (BADF). In this context, efforts have been made to adapt the intervention mechanisms, and above all observing due diligence, in the internal governance structures of institutions, to experience gathered in the region. Furthermore, good practices from Asian regions (particularly the Indian Subcontinent and South-East Asia (e.g. the Bank for Agriculture and Agricultural Cooperatives – BAAC – in Thailand) were taken into consideration. This applies e.g. to considering adequate governance structures, the key role of regulatory frameworks, decoupling of credit decisions from political influence and integration in overarching agricultural and innovation and transformation development strategies. All in all, the analysis has shown that some of the institutions in sub-Saharan Africa are pursuing a sustainable approach with sound governance structures and comprehensive transparency in rendering development-oriented financial services. While there are also positive examples of efforts to master the challenges of the past, a number of institutions have proven to be problematic as distribution mechanisms owing to warped incentives and a lack of transparency.

Government financing mechanisms offer potential to support the implementation of major international agendas, e.g. through financing climate projects addressing adaptation and mitigation and the corresponding transformation of the agricultural and food sector. In the medium and long term, however, this requires efforts to improve the structure, governance and implementability of the institutions involved. It makes sense to also ensure the participation of representatives from the microfinance and the financial sector in general as well as (in a closely controlled way) engaging the private sector in the supervisory committees or in preparatory steps in reforming or newly establishing AgFiFs.

A role to play in the global financial architecture?

Despite increased interest in debt and equity financing in larger agricultural enterprises from institutional and private investors on the one hand and the onset of Impact Investing Funds on the other, access to finance for smallholder farmers and micro-, small and medium-sized enterprises in most African countries remains a huge challenge. It stands to reason that pure



The investment requirements for the modernisation of agriculture in sub-Saharan Africa have been put at more than 200 billion euros annually.

Photo: GIZ Uganda

market forces have not and will not bridge this gap by themselves in the foreseeable future. Much hope is still being placed into the blending of public and private funds aimed at reaching the United Nations' Sustainable Development Goals, but it seems unlikely that this will be successful if not channelled through financial intermediaries with a strong presence on the ground.

Especially for the successful last-mile delivery of financial services and meeting the needs of small and medium enterprises in the agri-food sector, in training and up-skilling smallholder farmers and their farmer organisations and increasing their business acumen, technical assistance plays a vital role. When donors finance AgFiFs, they are well-advised to accompany their debt or equity positions with tailor-made technical assistance aiming at the internal governance structures. Before supporting AgFiFs with either technical or financial assistance, their governance and functioning need to be thoroughly analysed with adequate due diligence. To this end, GIZ and the German Development Bank KfW have cooperated closely to create a guideline on how to engage with AgFiFs, which satisfies and builds strongly on GIZ and KfW due diligence processes.

The German development portfolio in agriculture, rural development and food security has significantly increased over the last decade, and given geopolitical realities due to Russia's war on Ukraine will continue to do so. After years of focus on technical innovations, new approaches of successful and sustainable transformation of agri-food systems are gaining traction. Here, financing via AgFiFs can make a crucial contribution. Successful cooperation with them requires careful consideration, preparation and a hands-on approach to accompanying long-term technical assistance, but their mandate and role in the financial ecosystem for financing agriculture in sub-Saharan Africa remain strong and relevant.

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AgFiFs

There are a wide variety of state-owned agricultural banks and financing institutions as well as risk sharing facilities (AgFiFs). The banks act as agricultural development banks at retail or wholesale level, as national development banks with a window for agriculture or as state-owned commercial banks financing agriculture. Further vehicles include credit guarantee mechanisms and a variety of funds or schemes for lending, risk sharing or equity finance. In addition, there are mixed facilities.

The CAADP 10 per cent target – still pursued by African leaders?

The 2003 Maputo Declaration aimed at boosting African agriculture requires governments to make difficult decisions on budget priorities. Furthermore, tracking the progress of the initiative presents problems. Our author looks at these and other challenges the Maputo Declaration is facing. And against the background of a continuing decline in government expenditure on agriculture on the continent, he argues that new evidence on expenditure outcomes is required to get governments to reverse the trend.

By Samuel Benin

In 2003 at the African Union (AU) Summit held in Maputo, Mozambique, the heads of state and government pledged to invest ten per cent of the annual national budget in agriculture. This initiative, popularly referred to as the Maputo Declaration, is the main instrument that the leaders put in place when launching the Comprehensive Africa Agriculture Development Programme (CAADP) to achieve an annual agricultural growth rate of six per cent. The ten per cent government expenditure pledge for agricultural development in pursuit of a six per cent annual agricultural growth rate has remained over time and been the foundation of successive AU declarations on agriculture-led development such as the 2014 Malabo Declaration on accelerated agricultural growth and transformation for shared prosperity and improved livelihoods.

A worthy pledge facing challenges

In most parts of Africa, agriculture is the primary economic activity of the major share of the labour force and provides substantial foreign exchange to governments through raw material exports. Also, most of the poor, food insecure and malnourished people live in rural areas and depend on agriculture for their livelihoods. So increasing the share of the national budget allocated to agriculture seems worthy to drive economic growth, generate more income for the government, raise incomes of farmers, and reduce poverty and food insecurity in rural areas. However, since the allocation of the national budget to different sectors of the economy is a zero-sum game, the question arises which sectors' budget to cut to increase the share allocated to agriculture? Cutting the budget of a sector contributing more to the above objectives than agriculture does not make economic sense.

Thus, obtaining evidence on the relative contribution of the government's expenditure on different sectors to the various development objectives that it is seeking to achieve is a major challenge to making such decisions. There are



Raw material exports from agriculture still provide substantial foreign exchange for African governments.

Photo: John Wessels/ FAO

political factors to consider as well. For example, African leaders have also signed on to various AU charters demanding hefty shares of the national budget for other sectors, including the "Abuja Declaration on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases", calling for 15 per cent of the national budget to be spent on the health sector, and the "Nairobi Declaration and Call for Action on Education", seeking at least 15 to 20 per cent of total public expenditure for education. Therefore, convincing policy-makers to increase the share of the national budget allocated to agriculture will also depend on political economy factors such as the incentives and constraints of the actors (politicians, bureaucrats, interest groups, donors, etc.) lobbying for agriculture or the Maputo Declaration versus those lobbying for other sectors or declarations.

Tracking implementation of the pledge is problematic

The types of government expenditure to count as part of the ten per cent have con-

tinuously been debated. In 2005, the AU published a Guidance Note that recommends using an "enhanced COFOG" (Classification of the Functions of Government) definition of the indicator to track implementation of the pledge. This is made up of three components: (1) expenditures associated with the administration, construction, operation or support activities, compensation, grants or subsidies for crops, livestock, forestry, and fishing and hunting; (2) expenditures associated with research and development on crops, livestock, forestry, and fishing and hunting; and (3) expenditures associated with other functions contributing directly to increased agricultural development, such as food and nutrition security, feeder roads, rural land administration, natural resource management, climate change adaptation, multi-purpose development projects with agricultural benefits, mandated public functions of state corporations, agriculture marketing, capacity development, subnational expenditures, information and communications technology, and rural electrification. The third component, in addition to the recommendation to count expenditures of both government units and state-owned enterprises (SOEs), which together constitute the enhanced expenditure idea, has generated controversy because it includes expenditures on non-traditional agricultural functions and expenditures of non-governmental units.

The results of using the enhanced definition tend to mask the often low and declining trend of government expenditures on critical agricultural functions such as research, irrigation, extension and other high productive investments. As it is these negative trends that motivated the Maputo Declaration, the rationale for using the enhanced COFOG definition seems counterintuitive.

In the Government Finance Statistics (GFS) manual presenting the international standards for compiling and presenting fiscal statistics, expenditures in the third component of the "enhanced COFOG" definition are already captured under other functions of the gov-

ernment, such as transport, communication, energy, environmental protection, community development, education and social protection. Since the AU Guidance Note does not provide any measure of apportioning such expenditures for agriculture, different countries have used different methods, which affects cross-country and intertemporal analysis of government agriculture expenditures and tracking implementation of the pledge.

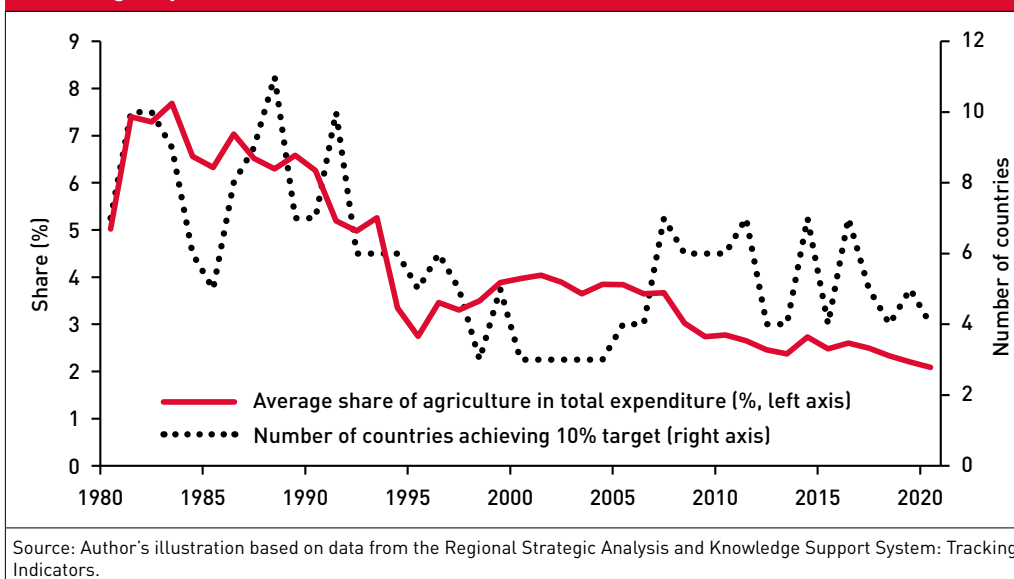
The GFS manual is also clear about the issue of governmental versus non-governmental units or the entities whose expenditures to count. Units must assume responsibility for providing goods and services to the community or individual households primarily on a non-market basis, redistribute income and wealth through transfers, engage primarily in non-market or not-for-profit production and finance their activities primarily out of taxation or other compulsory transfers. Thus, although SOEs may be mandated to perform some public functions, the majority of them do not qualify as governmental units and so their expenditures may not be included as part of government agriculture expenditure. Most SOEs provide market goods and services at economically significant prices to finance their activities. From a practical perspective as well, the financial management and expenditure determination processes of such SOEs differ from those of the government units (e.g. ministries, departments and agencies) that own or control them, and there is no way of reallocating expenditures across SOEs. For SOEs or other public boards and corporations whose expenditures qualify as government expenditure, they are already captured in the consolidated government accounts as grants, subsidies or subventions that the government gives to them.

Therefore, it seems the rationale for recommending use of the “enhanced COFOG” definition is to help show that governments were already spending more on the sector and the ten per cent pledge is, or is close to, being achieved. This is like raising the high-jump crossbar at the Olympics to set a higher record and simultaneously placing a springboard for the athletes to use to jump over it.

The ten per cent pledge seems far from being achieved

After two decades since the Maputo Declaration was made, very few countries have achieved the ten per cent target, with an average of seven countries succeeding in the pre-CAADP periods compared to five afterwards

Average government agriculture expenditure share and number of countries achieving 10 per cent in Africa, 1980-2020



(see Figure). Five countries (Burkina Faso, Ethiopia, Malawi, Mali and Niger) consistently achieved the target from 1980 to 2020 (i.e. before and after the pledge was made), whereas Benin, Mozambique, Senegal and Sierra Leone are the countries having achieved the target in some years only after the pledge was made. The share of agriculture in total government expenditure for the continent has persistently declined over time from about seven per cent per year on average in the 1980s to less than three per cent per year on average in the last decade. Together, these results suggest that although the continent is far from achieving the pledge, making the pledge may have helped reduce the rate of decline in the average share substantially, compared to the rate of decline especially in the 1990s.

New evidence required

Failure to meet the pledge may not be so worrisome, as the numerical goal of ten per cent seems arbitrary. However, since public agriculture expenditure has high returns in terms of economic growth, and agricultural growth has been more effective in reducing poverty than growth originating from other sectors, the continuous decline in the share of agriculture in total government expenditure share in Africa is indeed of concern. In the last decade (2010–2019) for example, agricultural productivity growth in Africa has been slowest among the developing regions of the world, with about half of the countries in the continent achieving a negative annual average agricultural productivity growth rate. Furthermore, the contribution of agriculture to gross do-

mestic product has remained about 15 per cent on average for the continent since the 1980s, whereas in addition to providing food security, the sector is expected to address malnutrition, reduce poverty and build resilience among other outcomes, while dealing with challenges like climate change, degrading natural resources, and widespread pests and diseases (see e.g. the Malabo Declaration).

Making a case to convince policy-makers to increase the share of the national budget allocated to agriculture to reverse the declining trend would require stressing these new demands on the sector as well as new evidence on the productivity and outcomes of recent trends in government expenditure on agriculture relative to the other sectors. This is because the trends and composition of public agriculture expenditure associated with the periods (1980–2000) analysed in the studies that are commonly cited in reference to the evidence on the returns to public agriculture spending in Africa are different from recent trends, especially the periods of the Maputo (2003–2015) and Malabo (2014–2025) Declarations.

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Human capital will play a pivotal role in the transformation of African economies



The potential the African food sector holds is still far too strongly associated with the continent's natural resources, Ben Leyka maintains. He seeks to change this with the African Agri Council.

Mr Leyka, what is the story behind the African Agri Council?

The African Agri Council NPC – AAC for short – was launched in 2015 to promote the development of sustainable food and agriculture in Africa by facilitating private sector investment in bankable opportunities. Our goal was to build a network of senior executives and policy-makers, provide a platform for our network to connect and share insights, as well as create a hunting ground for investment ready projects. The Council was determined to present African agriculture as a business – for far too long the industry was dominated by public sector and donor funding, while its value was often presented in the continent's availability of land and water. So the AAC partnered with financial institutions, private equity firms, asset managers and Development Financial Institutions to present a new narrative of what African agriculture could be, one that combines the availability of land and water with favourable policies and private sector investment. We started working with government officials, project owners and developers to identify bankable agricultural projects and connect them to our financial community.

What does it take to move the sector forward in this sense? And what is the ACC doing here?

First, we must change the perception of African agriculture. The AAC joined the “making agriculture sexy” campaign to attract the youth by shifting the focus away from primary agriculture presented through “pictures of women carrying a child on their back, working on a farm with primitive tools, under a burning sun” to modern and commercial agriculture across the value chain. The integration of the youth in food and agriculture can only happen through commercial activities instead of subsistence farming.

Second, emphasis on entrepreneurship. Sustainable development of the sector must be driven by agri-food entrepreneurs. However, many entrepreneurs face huge challenges – from obtaining initial funding and accessing essential skills, to understanding market access and operating a sustainable business. Africa cannot reach a food-secured status without investing in human capital development for

small and medium scale farmers (midstream), agribusiness start-ups (upstream and downstream) and co-operatives. Our project Athari Africa focuses on improving agri-food entrepreneurs' productivity, business model and access to finance.

Third, for all its potential to transform Africa into an industrialised continent, agriculture can trap people into poverty if it remains solely reliant on public sector and donor funding. Private sector involvement and investment is paramount to achieving food security in Africa – policy-makers must create conducive environments to facilitate the flow of private sector funding and expertise. The AAC has built one of the largest networks of private sector operators in Africa.

Lastly, investment in food and agriculture is particularly treacherous, with low productivity in many African countries, devastating impacts of climate change, and limited access to infrastructure and technology. As a result, institutional investors, donors and funding partners are unlikely to reach those most in need to truly ensure a food secure Africa. Agri-food entrepreneurs who are tapped into regional markets, who already have some investment capacity and are a little bit better equipped can attract the interest of the investment com-

munity. But then the most marginalised who don't have secure land rights, market access or financial access are left behind. The Council's Nexus of Agri, an upcoming digital members' platform, addresses this problem.

What does AAC's approach feature?

We believe that Africa's food and agriculture development must be based on sound economic and business principles to ensure long-term sustainability. As a result, all our programmes and initiatives are built on a solid business foundation, with an understanding that accelerated food and agriculture funding and investment can only take place if realistic fundamentals exist. The events which we run are developed through research with industry experts and organised by event experts, a combination which ensures their quality and relevance. They focus on investment, market accessibility, policy reforms and technological innovation. All our programmes and activities are closely intertwined and provide a continuous support throughout the value chain.

Could you mention some examples?

Our project Athari Africa was launched in 2021 and is working with over 600 beneficiaries in South Africa and Botswana. It houses



Participants at this year's African Agri Investment Indaba in Cape Town, South Africa.

Photo: African Agri Council

the market support programme, the co-op support programme for agricultural cooperatives and AFTI – the agri-food technical innovation programme. These programmes target the youth, with 65 per cent representing women-led and -influenced agribusinesses. Athari Africa's ambitious target is to develop and up-skill ten million agribusiness start-ups by leveraging our network of global agriculture and financial experts as well as policy-makers.

For several years now, we have organised the African Agri Investment Indaba (AII), which has brought together over 4,000 key stakeholders during the past five editions to discuss trends influencing food and agribusiness economics over the next decade in Africa. The Market Access Africa (MAA) first edition brought together 781 participants from across the globe to showcase the latest technologies and trends that will raise the continent's food and agricultural productivity, adapt to climate change, link to trading services and access new markets.

What are you especially proud of?

The AAC has successfully removed barriers that existed within the African food and agriculture value chain by bringing policy-makers, investors, senior executives from established businesses as well as start-ups and emerging ventures representing the entire value chain together, linking projects to financiers, investors and service providers.

Have the challenges which the sector is facing changed over the last few years?

The main challenges faced in African agriculture are well documented: access to finance, access to market, access to technology, restrictive policies, climate change and lack of skilled labour among others. A rising world population, a global pandemic, and a conflict in Ukraine combined with climate change impacts and increased inflation have disrupted food production, distribution, accessibility and affordability across the globe. Vulnerabilities in global food systems have been exposed, fueling further concerns about resilience and sustainability in the food and agriculture industry.

But you are nevertheless optimistic...

Yes. Africa is well positioned to become the global breadbasket; with 60 per cent of the world's unused cropland spread across the continent that can be used for farming, it has the potential to emerge as a major food supplier. African governments are prioritising agriculture on their respective development agendas, and this shift has been supported by increased access to technological innova-

tions and investments from the private sector and development partners. However, despite those positive developments, African food systems have been severely impacted by external shocks over the past three years.

How have you responded to these new challenges?

Through Athari Africa, the AAC has adapted its strategy to promoting the development of sustainable food and agriculture, by prioritising human capital development as central to building sustainable and resilient food systems. The availability of land, water and investment needs to be supported by skilled labour.

Where do you see the public sector's role here?

Whether African economies will be able to prioritise human capital in their development agendas or not will be determined by policy action taken now to address training and learning gaps. African countries unfortunately have traditionally lacked a clear human capital development plan that supports strategically identified sectors like food and agriculture. Africa is the world's most youthful continent, and its young people are its most precious resource. Human capital will play a pivotal role in the transformation of the continent's economies as well as the resilience and sustainability of its food systems. The public sector has an opportunity to establish investment in human capital as a key priority on the continental development agenda, given the current global shocks.

The 5th edition of African Agri Investment Indaba was held just a few days ago. Are you satisfied with it?

This AII edition was truly special, from the amount of networking that was conducted onsite, it was evident, after a three-year hiatus of the show, that our industry welcomed the return of this platform allowing people to connect, share insights and have important discussions around investment opportunities across Africa's agri value chain. Over the three days, we were delighted to host 800 participants from over 30 countries who engaged in more than 3,900 B2B meetings. The event welcomed over 40 representatives from global Development Financial Institutions to discuss their strategic approach to achieving food security in Africa. The "Women in Commercial Agriculture and Agro-processing" workshop welcomed over 300 attendees – once again showcasing the industry's commitment to elevating women-led and -influenced agribusinesses' status. So we look forward to welcoming our members, partners and network to the

next edition of the Agri Indaba from the 20th-22nd November 2023.

And what is happening in the meantime?

The African Agri Council is at a crossroads; it must strengthen its institutional capacity as a pan-African institution to keep up with the growing demand of ensuring a food-secured continent by strategically aligning its activities and programmes to support continental and global agendas.

Athari Africa, which will include beneficiaries from Burkina Faso, DR Congo, Namibia, Nigeria and Zambia in 2023, is well positioned to support the African Continental Free Trade Area. The AfCFTA is a game-changer as it triggers regional integration of agriculture value chains; successful integration requires qualified companies producing enough products for local and regional consumption that are able to compete against foreign products. The AAC will play an essential part in facilitating the transfer of skills and technology and launch a global PR campaign to build trust in the 'Made in Africa' brand now being developed by the African Union and the European Union in consultation with the private sector. Through its various platforms, it will connect buyers, sellers, solution providers and financial institutions.

Interview: Silvia Richter



Ben Leyka is Chief Executive Officer of the African Agri Council NPC. He has worked with global stakeholders, including the Pan-African Parliament, the crowdfunding platform Capital Surge Inc and the investment company Equitics. Ben sits on various Board Committees and is also involved with the Africa 1st Initiative and DRC Invest. Contact: ben.leyka@agricouncil.org

Assessing the effectiveness of multilateral funds in coping with drought

Creating resilient food systems for people vulnerable to droughts calls for solutions triggering transformation. A number of multilateral funds have been established to generate sustainable benefits in this context. Our author looks at what makes interventions supported by such funds effective and to what extent their impact can actually be tracked.

By Caroline King-Okumu and Maher Salman

Where land and water management can prevent the escalation of droughts into crises and sustain food production, societies can benefit by investing proactively in these approaches. The design of multilateral funds is usually intended to achieve a catalytic effect enabling developing countries to innovate and reshape the dynamics of their developing economies to favour such investments, instead of creating a situation where sections of the population or countries would remain continuously reliant on hand-outs from emergency drought relief alone. The aim is always to build the self-resilience of systems to avoid or reduce vulnerable people's need for emergency measures – even if these may still be needed from time to time.

The international community has collectively established a range of multilateral funds that are expected to reduce community and ecosystem vulnerability to droughts and generate sustainable benefits. These funds include the Global Environment Facility (GEF), the Least Developed Countries Fund (LDCF), the Special Climate Change Fund (SCCF), the Adaptation Fund (AF) and the Green Climate Fund (GCF). Others relevant in drought-prone contexts focus on disaster risk reduction and disaster response. Given the enormity of the drought risks and challenges faced in numerous developing countries, and the relatively small size of multilateral funding available, the catalytic transformative approach is necessary. It asserts the power of individuals and societies to work to-

gether to achieve changes in the myriad human decisions making up the global economy.

A recent rapid review of effective financing for policy, implementation and partnerships addressing drought risks commissioned by the UN Food and Agriculture Organization (FAO) and the United Nations Convention to Combat Desertification (UNCCD), with GEF support, presented an overview of knowledge and thinking concerning the effectiveness of a range of multilateral funds and other sources of financing for transforming drought risks. The rapid review focused on three distinct layers of financing to address drought risks: disaster risk finance, climate finance and green or environmental finance. Each of these strikes a different balance between objectives for long-term sustainability versus the achievement of immediate and direct benefits to vulnerable communities.

What are resilient food systems in drought-prone contexts?

Withstanding droughts requires reserves of water, cash or food to be available to vulnerable groups to survive the exceptional anomalous periods when nature cannot provide them. Sustaining access to these services for the rest of the time depends on maintaining well-adapted practices balancing the needs of nature and human populations. Transhumant

systems traditionally enable vulnerable people to access water and food reserves by migrating across wide areas and establishing reciprocal agreements with other groups that help them to avoid placing too much pressure on resources in any one area. Societies also supplement and buffer their food systems to cope with droughts in populated locations by stocking, trading and importing foods and other commodities so that they will be less likely to suffer losses or require emergency assistance.

Becoming more self-resilient to droughts requires societies to continue to integrate and innovate their resource management systems to build water and food reserves in the more vulnerable regions so that none of these should be over-depleted when droughts reoccur. Since water and food prices rocket during droughts, and many sectors grow slowly, sustainably managing the reserves and cycles of all of these resources is critical to avoid negative effects on local, national or global economies. Investing at the systemic level to build sustainability and resilience to future droughts takes time and requires cooperation. The payoffs should benefit more people for a longer period than emergency relief alone will do.

The rapid review identified a series of examples of initiatives supported through the multilateral funds that involve scaling up drought-resilient sustainable agriculture, and understanding how they may work with wider

food systems and processes (also see Box on page 26). This can be combined with the provision of infrastructure, insurance, credit or revolving funds at community level or through knowledge exchange, training and extension systems sharing technical support and other interventions to build human capabilities and institutions' capacities. Where vulnerable people receive sufficient assistance to enable sustainable and drought-resilient production, they will be more able to maintain their own future production and relationships with wider food systems (e.g. through trade, etc.). Such sustainability-oriented approaches help to make more funds more directly available to vulnerable people for a longer period of time.

What results can we observe as long-term effects on food security?

The more recent projects now underway at each of the multilateral funds apply their common results frameworks, and most projects use these to produce progress reports annually that the funds are able to publish on their websites. Terminal evaluations of projects take stock of the results achieved by each project and discuss contextual issues and lessons. These are necessarily not forward-looking, so they cannot track the catalytic effects that the projects would have for sustaining access to food, water and livelihoods following project completion and generate learning at this level.

The Adaptation Fund results framework and its common set of quantitative indicators were put in place in 2019. They are to enable an aggregated presentation of common results across the portfolio using standardised indicators to show reduced losses of assets, including crops and livestock. Pending this, the evaluations from individual projects already completed describe results using different indicators of effects on food security and other parameters (see examples in the Box).

The GCF began approving projects in 2015. Due to its early stage of implementation and project timeframes of five or more years, none of the GCF projects was yet completed at the time of the FAO review, so no terminal evaluations were yet available. However, annual progress reports of the GCF for 2020 already showed that some projects (see Box) were using a standardised indicator introduced through the GCF results framework (supplementary indicator 2.2: beneficiaries [female/male] with improved food security – unit: number of individuals) to capture benefits in terms of effects on the food security of individual beneficiaries (disaggregated by gender). This was in addition to indicators capturing reduced loss of crops and other assets, effects on production, sustainable land management practices and effects on the environment.

The strategic challenges related to effective multilateral financing

For the time being, no common approach to defining, predicting and tracking the scale of future catalytic effects expected beyond the project timeframes is in use at the multilateral funds. These would rather have to be defined within the national planning frameworks and target-setting of the global conventions that they serve.

Advancing food security amongst the most vulnerable is a necessary prerequisite for the multilateral funds to achieve their catalytic objectives, especially in the least developed countries (LDCs.) But measuring their effects on beneficiaries' food security during and immediately after project completion does not capture the extent to which they are able to scale up the intended catalytic effects or sustain them over time, let alone achieve transformative systemic changes affecting economies and ecosystems. Even though early indications



from the rapid review suggest that the multilateral funds and policy processes are squaring up to the challenge, considerable evaluation challenges remain.

International strategic processes guiding and enabling the introduction of results frameworks are needed to identify the extent to which drought effects on the immediate food security of vulnerable people and the ecosystems needed to sustain it are being reduced by multilateral financing. As yet, there is no coherent global system to generate an overview of progress and gaps at global level, nor to orient public policies and learning processes within the countries affected by drought. The FAO rapid review began to bring together insights from the current available systems for targeting and tracking financing to address drought risks through the three layers of actions, target indicators and evidence systems. It is also proposing that more could be done, and providing some starting points for the global policy processes under the Rio Conventions to mandate it.

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The views expressed in this publication are those of the authors and do not necessarily reflect the views of the Food and Agriculture Organization of the United Nations.



A woman working in a vegetable garden near Touba, Senegal.

Photo: Eduardo Soteras/ FAO

Addressing food security in drought-prone contexts – some examples of AF and GEF projects

AF in Argentina

AF project evaluations reported a total 3,591 families of family agriculture producers, as well as 2,488 additional beneficiaries in 19 rural farming schools, one childcare provider, and one community centre benefiting from a project on “Family Agriculture Adaptation and Resilience in Northeast Argentina to Climate Change and Variability” (2013–2018; 5.64 mill. USD). Before adapting agricultural practices to cope with water deficits during droughts, the project had to address challenges faced by many families to secure access to water for their domestic needs. This was done by retrofitting roofs and construction of associated cisterns or water wells as reservoirs for harvesting rain water, as well as the execution of works in public institutions such as rural schools and childcare providers. Both reliance on self-construction of infrastructure by the producers and improving on-farm land and water management practices built in sustainability. The project also pioneered the design of the first ever insurance policy for small-scale horticultural producers in Argentina.

AF in Uzbekistan

The project entitled “Developing climate resilience of farming communities in the drought-prone parts of Uzbekistan” (2014–2020; approx. 5.415 mill. USD) reached 47,979 beneficiaries in Karakalpakstan who received information about the adaptation measures that can be implemented at landscape level, and increased their knowledge of climate-re-

silient farming through 25 trainings, seminars and conferences. Activities involved monitoring climatic conditions and river flows, establishing three extension service centres, establishing two rural-community based associations bringing together 12,240 people in Kanlykul and Kegeyli project pilot districts to restore degraded pastures and forestlands (780 ha), and providing land laser levelling equipment to improve irrigated agricultural land (460 ha). Agro conservation and water-saving technologies were tested on 22 hectares of farmlands, and landscape level adaptation activities were implemented on over 80 hectares.

GCF in Senegal

One GCF project that had begun tracking and reporting food security benefits in its 2020 Annual Progress reports was “Increasing the resilience of vulnerable households in Senegal to climate-related risks through better risk management, water and soil conservation” (2020–2024; 10 mill. USD). It applied the indicator A2.2 as the number of food secure households (in areas/periods at risk of climate change impacts). A baseline survey reported in 2020 showed that on average 45 per cent of all households and 38 per cent of female-headed households had an acceptable food consumption. Targets were revised and increased following the results of the baseline survey. The target for mid-term is 50 per cent households average and 45 per cent female-headed with acceptable food consumption, and the final target is 60 per cent households average and 55 per cent female-headed with acceptable food consumption.

For more information, see report at:

<https://www.fao.org/documents/card/en/c/cb7085en>

“ The bankers are interested in the low-hanging fruits ”

Even after 50 years of permanent shortcomings in rural financing, governments and banks are still bent on old-school thinking, the Secretary General of the Asia-Pacific Rural and Agricultural Credit Association maintains. A discussion on risk aversity, green financing and the need for alternative collaterals.

Mr Das, generally speaking, global crises aside, are farmers in Asia and Africa facing the same challenges?

Theoretically, the overall challenges seem to be same. However, in terms of agricultural production and productivity, farmers in South and Southeast Asia are a little ahead. Asia is the largest producer of rice, feeding rice to the world, and also leads in the production of some vegetables and fruits. Factors this depends on include the comparatively better availability of agricultural inputs and of natural resources like water. The same applies to technical innovations.

Any other specificities?

Eighty per cent of the world's smallholders are within South and Southeast Asia, and the average land holding is lower here than in sub-Saharan Africa. And the latest Long-Term Climate Risk Index – or CRI – developed by the NGO Germanwatch in 2021 demonstrates that the farmers in Asia are more vulnerable to climate change. On the other hand, politically, Asia is more stable. In Africa, there are countries that have to struggle with civil war and other issues that also have impacted agriculture, albeit indirectly.

So what about the commonalities?

In both continents, agricultural policies are driven by political issues. And both suffer from insufficient public investment. The governments do support agriculture, but predominantly in terms of subsidies; long-term investment in infrastructure is lacking. Moreover, in both continents, the value chains at national level are insufficiently developed. While within the ASEAN Community, a well-functioning value chain of agricultural commodities has been developed, similar activities are often absent in Africa where the sub-regional agencies are not so strong. Other commonalities include ecological risks such as the increasing degradation of soils and ecological capital, as well as aspects like ineffective population policies and a disorderly rural exodus.

Is there any commitment in Asian countries similar to the CAADP 10 per cent pledge?

Not exactly. But related to finance, there is a mandatory share of the gross credit going

to agriculture, for example of 12 per cent in India or 4 per cent in Bangladesh. However, instead of financing smallholders, you can also indirectly give the sector money, for example via investments to support agricultural development in general, such as rural electricity or irrigation projects. Regarding smallholders, all the bankers are interested in the low-hanging fruits. That's a very big issue here in Southeast and South Asia. The money goes to short-term agricultural products, commodities, and not so much to the investment side. But finance and investment are two very different things.

What is APRACA's strategy to address these numerous challenges?

There is no one-size-fits-all strategy at operational level. Asia is very big, spanning countries as different as China or Korea, India or Bangladesh, Iran or the Pacific Islands. The issues and challenges of our member institutions are unique to each of these regions, and our engagements vary accordingly. Based on the feedback we get every quarter from members, we organise our specific programmes. Within our local-sub-regional-regional approach, we have five pillars of interventions: a policy and dissemination platform, capacity and institution building activities, project implementation services, advisory services and policy research, and knowledge management services. Gender and sustainability are cross-cutting issues.

And what are the main contents?

In the current biennium, there are four priorities: Green and Climate Finance for Sustainability, Value Chain Strengthening and Finance Agri-SMEs, Risk Proofing in Agriculture and SME Finance, and Digital Financial Service to Agriculture and SMEs.

Let's talk about the first priority. How do you support smallholders regarding "green and climate financing"?

For several years now we have been collaborating with CGIAR to identifying the financial instruments aimed at incentivising smallholder farmers and other direct food system actors to improve their socio-economic sustainability while protecting and restoring nature and promoting resilience to climate change in the Global South. Currently, we are working with



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the SEI, the Stockholm Environment Institute, on developing or upgrading of financial instruments to support inclusive green finance in ten countries in the Asia-Pacific region.

How does "green finance" differ from "climate finance"?

Green finance is considered as a potential vehicle to accomplish the global agenda on sustainable transformation in order to transition to a new economic and financial era. This is one of the greatest opportunities in decades for investors and financial institutions to switch from vanilla ventures to sustainability-focused green asset products.

Can you specify this for the agri-food sector?

There is no universal definition here. We say that green finance to the agriculture and food sector is an approach to effectively use all types of financial services – credit, savings, insurance, guarantees, etc. – directed to the agri-food sector with the overall objective to achieve greater resource efficiency in agriculture and envi-

ronmental sustainability with a climate-smart approach, and to enhance the quality and safety of agri-food produce. In our opinion, resource efficiency plays an important role, for water, soil and the other natural resources are scarce. So finance going into changing the cropping system, for instance, will be considered green finance. Yielding economic, social and environmental benefits to all actors in the agri-food sector, green finance targets a triple bottom-line.

What does that mean in terms of the financial architecture?

In traditional agricultural finance, we basically depend on the government bank and financial system, e.g. the development banks, but green finance centres around unlocking private capital. That will be like a new window for agricultural finance and make a big difference.

And how can you get this green finance going?

To promote the flow of finance to green growth in the agricultural sector in a sustainable manner, public support mechanisms are required, such as macro-level enabling policies and project-level support. And accelerators – or escalators – are needed for generating new ideas and eventual investment demand for green initiatives. We have defined four of these escalators: innovation incubators, networks and associations, research and advisory services, and international cooperation.

What could obstruct implementation?

Traditional agricultural finance is already extremely challenging for our member institutions because of the embedded risks, the non-availability of instruments, lack of policy support etc. But this is only one hurdle. If you are a banker, you think about banking rather than agriculture, cropping systems and how to make things greener, sustainable, resource efficient ... none of this concerns you.

So we would need to have agricultural experts in the banks?

Agricultural experts are important for the financial institutions. However, the bankers do not see the importance of the escalators in improving the delivery of green finance. Our experiences and understanding show that there is a high potential of increased green finance if the banks can work with all four escalators. But there is also a lack of tailored financial products. Let's take India, the biggest market for agricultural finance for the banking sector. The bankers there mostly rely on financing the Kisan (Farmer) Credit Card, given for three or five years, which can also be used for claiming



Conventional financing approaches and instruments are often not suitable for small rural entrepreneurs. Blended finance has proven to be very effective.

Photo: Jörg Böhling

insurance from the government. With that, as a banker, you are trying to keep yourself in a risk-free zone. This low-hanging fruit does not allow bankers to go up and see the better fruits in the treetops which can potentially improve the household assets of smallholder farmers. Over the last 20 years, South Asian farmers have not improved their household assets, and no concrete steps have been taken in that direction. One reason might be that agricultural finance is mostly subsidised and does not follow the market criteria. The bankers embark on agricultural finance because it is a government requirement, but they still don't see this as a business.

Another important issue is what we call "alternative collateral instruments" to mitigate agriculture-related risks. Most of the bankers in Asia, Africa and Latin America are only keen to finance if you have a hard collateral – like some land or fixed deposits. They think that these are marketable collaterals, but they are not. If you have taken land off a farmer who cannot pay, you can't sell the land because of the social issues it raises. Nobody will buy it from you. Therefore, we are trying to teach our bankers to accept alternative collaterals.

What could these be?

These might be good regulation, good infrastructure or cash-based financing. When you know that your farmer is selling his produce to a trader who has a bank account, then the banks are aware of the transactions which will help them consider a cash-based financ-

ing mechanism. Let's take the example of McDonald's. They pay the farmers after 60 days, which clearly helps the banks to calculate the financial requirements for each cycle of activities as the return is guaranteed.

What about barriers on the demand side?

One is the slow pace of adaptation. It took one generation to understand the impacts of climate change. Moreover, although having some strategies, most of the countries lack good agricultural practices as a regulation. Non-diversified household income is a third barrier. If farmers have no alternative income stream, we will not take any collateral from them. The low level of awareness about green finance products and instruments is another aspect, as is the low literacy level in many developing countries.

Looking back at more than 40 years of experience in rural finance now, which changes have brought about the greatest success?

One of the major breakthroughs is group financing. In South Asia for example, 60 per cent of smallholders have less than two acres of land. These farmers are not commercially viable, resulting in most of them leaving agriculture and migrating to a city site for a petty job, while farmland is converted for non-farming purposes. When farmer producer groups come together and pool their land, they make it a viable proposition, even for the bankers. If they do this in the shape of a private limit-

ed company or registered company, however, most of the farmers need help – either from the government or the private sector. What we see is that the private sector is more active here, working with contract farming for example, which is a win-win.

The second breakthrough is related to the instruments. We all know that the common instruments in agriculture have not worked for various reasons. One interesting new instrument is blended finance, which means employing development finance to mobilise additional finance, which, in order to reach the smallholder farmers, needs to be slightly adapted. For example, in Vietnam, the women farmer groups are getting finance from the Agribank Vietnam, who are financing in bulk through a blended instrument with the support of the government. The women group pass it on to their own members. This has been very successful. Of course, such an approach has to be scaled up and contextualised for the respective country context.

The third important area is the evolution of networks. Some 40 years ago, APRACA was the only networking institution in the region regarding finance. But today, there are many of them, for example the microfinance networks all countries now have. These networks play a very important role, and we are currently trying to bring them into a common group which is a “network of the networks”. The fourth success factor is good agricultural finance research, which is now coming up. The Rural Finance & Investment Learning Centre, RFILC for short, is performing great work in disseminating such knowledge as well as in corresponding management.

Despite these breakthroughs, only a small share of climate finance has so far directly reached the smallholder farmers. How can this be changed?

To bring green funding to the local level, social responsibility among all stakeholders is just as important as environmental stewardship. The smallholder producers must enjoy economic gains. But this is also true for both upstream and downstream value chain actors. There is

still a big gap in financing the small- and medium-sized enterprises who process the commodities the banks are financing. Countries of the Global South often lack infrastructure, storage facilities and market infrastructure. But if you want to do green finance from the start to the finish, you need this infrastructure.

Must banks generally rethink their practice?

Yes, but above all, so do the governments. Even after 50 years of continued engagement with the financial sector, the national governments have been unable to mainstream agricultural finance within the commercial banking system. We lack policy commitments to long-term investments needed for greening the agri-food sector – this refers to the infrastructure mentioned before, but also to soil health, smart forestry, ecosystem services, circular agri-based industries, etc. The volume of agricultural finance is increasing annually, which is a good indicator of its growth. But in most countries, this growth is still state-sponsored and not considered commercial growth. Here, there has to be a process of rethinking among politicians – away from subsidies and towards fiscal incentives.

And at instrumental level?

There are numerous promising instruments and good practices, including, for example investment funds and bonds or the already mentioned blended finance and value chain finance. Technology-enabled innovations such as digital finance support, blockchain or app-based lending platforms are already being applied. Innovative risk proofing techniques are also available, such as partial guarantees. It is encouraging that more and more FinTechs are coming up, which aren't banks as such but are getting financial support from the big banks. One example is India's NABARD – the National Bank for Agriculture and Rural Development. NABARD finances the FinTechs, which in turn finance the bulk of farmers. In this manner, NABARD can control the terms and conditions for the FinTechs, and when one takes a loan from a bank at a lower interest rate, it has its cost already embedded and can also provide a loan at a lower interest rate than

the market. This raises market competition, and the more market competition, the more government subsidies will decrease, making it easier for smallholders to take a loan.

So we need fresh thinking?

Absolutely. We still see some old-school thinking about risk-proofing techniques. There are three major instruments here in agriculture: insurance, collateral and guarantee. I don't consider these useful anymore. I propose that risk management be mostly cash-based finance. But for that, you need some support from the government in terms of identifying the value chain actors. China, for example, has started mapping all actors in the top 15 commodities. We propose that the Indian Government do this too. This will help understand what the issues and challenges are, and where finance and commodities go.

What are you currently concentrating on?

Taxonomy is a big issue. We started thinking about using the European Union's green finance taxonomy. But does it make sense to use a system based on the European agricultural finance and crop system, which differs completely from that in Asia? Here, a lot of international banks are getting much money from donors doing greenwashing, which we don't like. So I started talking about how to develop our own nomenclature. But it's difficult to reach an agreement in the region – countries like China, for example, have their own taxonomy. This is one of the items we seek to address in our IKI – The International Climate Initiative – project. So for our next June meeting, we have kept one full day for our Central Bankers to discuss green finance taxonomy or green taxonomy.

Has COP 27 helped bring the topic of green finance forward?

It will be helpful if they talk more about adaptation. Around 70 per cent of green financing across the globe goes to mitigation, which is important, but we also need funds for adaptation with special reference to agricultural activities. Most of the Development Financial Institutions are interested in mitigation finance, because it is a hard, tangible structure, unlike adaptation, which requires social engineering and patience. It will be great if the COP 27 declaration can support the national governments in finding a good mix between adaptation and mitigation – that will be a big help in financing small-scale agriculture.

APRACA

The Asia-Pacific Rural and Agricultural Credit Association (APRACA) was founded in 1974 with the support of the UN Food and Agricultural Organization (FAO). A current 87 institutions in 24 countries in the Asia-Pacific Region are among its member institutions, with the region being divided into five sub-regions: South Asia, Southeast Asia, East Asia, Central Asia and the South Pacific Islands. Currently, the APRACA board is headed by India and co-headed by China.

Food system transformation needs private sector support

A sustainable transformation of our agricultural and food systems cannot succeed without the financial engagement of the private sector. Helvetas' Water Productivity Project is an example of how such engagement can contribute to more sustainable agricultural value chains – with impact at scale.

By Peter Schmidt and Jens Soth

With the Sustainable Development Goals (SDG), the world has laid out an ambitious plan to reduce poverty and enable people to live in dignity and security in a healthy environment. Joint efforts, including contributions from the private sector, are required to reach the estimated annual investments of 5,000 billion US dollars needed to meet the SDGs. Publicly available data reflects a huge investment shortfall to reach the annual goal; private sector contributions are currently in the range of one-digit shares, and only six per cent of official development assistance is targeted to leverage private investments. Today's modest financial flows from private sector undertakings towards reaching the SDGs suggest a substantial growth potential of this form of collaboration in development cooperation for the good of people and environment. The Water Productivity project is an example where private sector companies engage financially in more sustainable agricultural value chains. They are the often "missing middle" in a food system ranging from producers to consumers. Below, we would like to share some insights gained from eight years of collaboration with private partners in the project, directly and in the frame of multi-stakeholder initiatives.

The Water Productivity Project

Aimed at enhancing water productivity in the cultivation of rice and cotton, two of the most water-consuming crops globally, the Water Productivity Project (WAPRO) consists of ten sub-projects active in six countries: India, Kyrgyzstan, Madagascar, Myanmar, Pakistan and Tajikistan. Mandated by the Swiss Agency for Development and Cooperation (SDC), Helvetas has coordinated project implementation through a "push-pull policy" approach. In its "push component", which basically means the building of farmers' capacities, it has worked with 80,000 farmers to help them adopt water-saving technologies. Through its "pull component", which refers to the demand side of sustainably produced goods, global as well as smaller domestic companies are now sourcing rice and cotton more sustainably, encouraging supplying farmers by providing them with a



Farmers in Pakistan. Thanks to WAPRO, depending on the technology, they can save between 5 and 92 per cent of the water needed for rice growing.

Photo: Shaikhupura Punjab/ Helvetas

market. The "policy component" addressed water stewardship at the field level, e.g. by supporting Water User Organisations and interventions towards a conducive policy framework in the regions and countries of intervention. To this end the project has contributed to shaping global production standards, influenced national and sub-national policies to allocate scarce irrigation water fairly, and empowered thousands of farmers to claim their right to access to irrigation water via local water stewardship actions.

Why cooperate with the private sector? Motivations ...

Helvetas has around 40 ongoing projects covering agricultural value chains, private sector development and vocational skills development in which private sector partners engage. In the WAPRO project, the private sector companies contributed to the capacity building of producers and assured the demand for sustainably produced agricultural commodities. In terms of funding the initial investment of the donor, the SDC leveraged contributions

from additional partners, including private ones, by a factor of more than three.

From the point of view of a development organisation such as Helvetas the motivation to enter such partnerships is the increased probability of a) reaching impact and scale, b) achieving sustainability of the results, c) finding innovative solutions, and d) leveraging public funding. From the perspective of participating enterprises, the following factors motivate them to engage: a) accessing new markets, b) complying with preferences of consumers and clients, c) meeting growing expectations from the public (reputation) and from the side of investors, d) establishing lasting relations to producers and collaborators, e) gaining improved access to thematic and technical competence, f) being involved in projects with high credibility and visibility, g) finding innovative solutions.

... and success factors

Practical experience yielded the following lessons for the success of collaborations between NGOs and the private sector (also see Figure):

There must be substantial overlap in the vision of each partner; divergences need to be known and declared. Ultimately, it is the shared vision among the power holders that really counts. Collaborators working in Corporate Responsibility Sections of private partners may be overruled by those who are responsible for economic transactions. Nor can NGO staff always succeed in getting their managers on board. It is just as important that overlaps exist in partner objectives, and that these are clearly defined in order to manage expectations and avoid disappointments, but also to build a relationship based on mutual understanding and trust.

Both sides want to know with whom they engage, and therefore conduct due diligence processes. As these processes take time, it is recommendable to establish standardised processes and conduct them early in the development of a partnership; furthermore, mitigation measures for identified risks (e.g. disregard of human rights, inefficient/fraudulent use of public funds, reputation risks due to sustainability challenges) and a reporting mechanism should be put in place. Perceiving due diligence processes as a reciprocal learning opportunity may nurture mutual understanding and lead to less resistance to them on both sides.

To work with more than one private sector partner in each project is enriching and prevents project success from being associated with only one private partner. Equally, private partners may prefer not to put all their eggs into one basket. Measures such as starting small, avoiding the flow of funds between either party in case of looming reputational risks and defining red lines which, when crossed, result in collaboration being terminated, may help to contain risk.

When it comes to contracts between private sector partners and traditional development actors, different cultures may clash. Partners should be prepared to conduct intense negotiations involving legal counsel. If premium prices (e.g. for organic or Fair Trade products) are intended to count as private partner contributions, this needs to be expressly stated. Contractually fixed volumes of traded goods (e.g. tons of an agricultural good procured) should serve as targets rather than contractually binding terms, as the private partner will only buy what the market demands. In partnerships with large companies, a contribution in cash (not only in kind) should form part of the deal. The contribution must be verifiable through the company's audit report. If there is a flow of money to the private sector partner, there must be a verifiable public benefit.

Steps and insights for the engagement with the private sector

Getting partners on board	1. Develop a shared vision 2. Understand each other's motivations
Due Diligence and partnership appraisal	3. Put proper processes and responsibilities in place 4. Understand due diligence processes as a reciprocal learning opportunity
Risk mitigation measures	5. Foster diverse partnerships 6. Choose appropriate collaboration modalities
Contracting and partner contributions	7. Contract carefully and assess commitments 8. Aim at auditable cash contributions
Implementing the project	9. Monitor results and contributions 10. Manage knowledge to nurture a family feeling

Source: Helvetas, 2021

Content and frequency of monitoring and reporting needs to be contractually agreed. This also applies to agreed financial contributions. In the case of public or philanthropic funding flows to private partners, it is important to agree on milestone payments against well-defined achievements. One of the distinct advantages for private partners entering development-oriented collaboration is the opportunity to learn from other companies and sectors. Therefore, the management and exchange of insights deserve particular attention. International NGOs and multi-stakeholder platforms are well positioned to facilitate such processes.

The strengths of multi-stakeholder initiatives

One of the fundamental hypotheses at the start of the WAPRO project was that its ambitious goals regarding outreach and impact would

only be achieved through collaboration involving multi-stakeholder initiatives (MSIs). MSIs bring together different stakeholders to deal with topics of mutual concern or interest. To foster the shared concern, they often develop a standard, support its application by the stakeholders involved and arrange for verification of compliance.

The three MSIs that engaged in the WAPRO project (see Box) unite businesses, civil society organisations and government representatives on a global level under the shared objective of making the world a more sustainable and fairer place. The Better Cotton Initiative (BCI) and the Sustainable Rice Platform (SRP) are organised along globally relevant commodity value chains, while the Alliance for Water Stewardship addresses core concerns for the joint interests of the involved parties, namely water stewardship. The MSIs foster interaction and learning guided by a transparent gover-

WAPRO and its partners

The SDC-Helvetas WAPRO project collaborates with international private sector partners such as Mars and Coop, numerous local private and civil society partners as well as the following multi-stakeholder initiatives:

The Alliance for Water Stewardship – a global membership collaboration comprising businesses, NGOs and the public sector. Its members contribute to the sustainability of local water resources through the adoption and promotion of a universal framework for the sustainable use and management of water – the International Water Stewardship Standard, or AWS Standard – which drives, recognises and rewards good water stewardship performance.

The Better Cotton Initiative – the world's leading sustainability initiative for cotton. Founded in 2005, its mission is to help cotton communities survive and thrive, while protecting and restoring the environment. Better Cotton partners include farmers, ginners, spinners, suppliers, manufacturers, brand owners, retailers, civil society organisations, donors and governments, adding up to more than 2,300 members to the Better Cotton network. They buy into Better Cotton's approach of training farming communities to produce cotton in ways improving things for everyone and everything connected with this staple fibre.

The Sustainable Rice Platform – established in 2011. Together with its over 100 institutional members from public and private sector stakeholders, research, financial institutions and NGOs, the Platform aims to transform the global rice sector by improving smallholder livelihoods, reducing the social, environmental and climate footprint of rice production and offering the global rice market an assured supply of sustainably produced rice to meet the growing global demand for this staple food.

nance system. All three of them develop standards of their own which they hold the rights to. Their application by value chain actors combined with an independent mechanism for verification of compliance aims at a more sustainable use of resources to the ultimate benefit of producers, consumers and the planet.

Cooperating with the three MSIs rests on the following assumptions. On the “push” side, the introduction of and compliance with the MSI’s standards provides guidance for the producers. Moreover, the interaction with manifold partners in the frame of the MSI helps to reach scale. And the MSI fosters the expected compliance with the standards, thereby contributing to the sustainability of the interventions. On the “pull” side, the MSIs are seen as the vehicle to assure a growing market for more sustainably produced goods, beyond the lifespan of a development project. The exchange with other members of the MSIs allows for crowding in of new partners. As regards “policy” influence, the MSIs are seen to potentially serve as a platform to raise awareness among government representatives of policy gaps that prevent the efficient use of water. SDC, as a donor, and Helvetas, as an implementing international NGO, recognise engagement with MSIs as an opportunity to influence global standards.

One crucial benefit of MSIs from a development perspective is the assurance of sustainability in the long term. Even though a development project may have ended, the value chain partners continue to follow the standard, thereby ensuring sustainable production. In return, by joining WAPRO, the three MSIs saw an opportunity to increase the application of their standards, to further develop their standards based on field-level experience especially among smallholders in the Global South and to shape strategies of participating members, including donors and NGOs.

... and challenges of MSIs

A reflection among Helvetas and the MSIs involved in WAPRO identified four main challenges for successful sustainable multi-stakeholder partnerships:

Representation of producers. Assuring a true and meaningful participation of primary stakeholders (the producers of agricultural commodities) in decision-making processes of MSIs and avoiding power asymmetries remains a challenge despite all goodwill and efforts. The MSIs partnering in the frame of WAPRO

address this issue through reserved seats in their governing bodies respectively through the expectation that NGOs such as Helvetas defend the interests of the primary stakeholders. In addition, the periodic review of the standards is organised in such a manner that primary stakeholders can express their point of view.

Stringency versus scale. The standards of the MSIs have different ambitions regarding stringency. As a promoter of organic agriculture, Helvetas experienced this situation itself, which triggered internal discussions. The commodity standards BCI and SRP are committed to sustainable production but do not promote pure organic production methods. Ultimately, it is the market, respectively the consumers, who define which standard is reaching scale. The WAPRO project provides evidence that among participating farmers a gradual shift from softer towards more stringent ecological production practices happens, if supported with knowledge exchange and learning within and across MSIs. This was, for example, the case in the WAPRO sub-project in Pakistan, where farmers adopted biological pest control measures.

Reputational risk of being associated with dishonest MSI members. Even with the best standard and assurance system, an MSI may be abused as a fig-leaf to hide violations. Beyond well-functioning compliance and governance processes, dealing with this uncomfortable situation requires clearly communicating what an MSI stands for and ensuring the continuous improvement of the system in response to what has been learnt in the field and from exchange with others. To this end, the WAPRO sub-projects – and of course others – served as testing ground for the two commodity standards for rice and cotton.

Assured compliance in times of rapid growth. To assure compliance in times of rapid growth is a challenge to any standard. The answer to this challenge lies in the periodic revision of the standards and collaboration with specialised organisations to monitor compliance. To this end, WAPRO, for example, served as a vehicle to integrate the aspect of water stewardship into the Better Cotton standard.

Summing up

The participating organisations experienced the collaboration with and among three MSIs in the frame of WAPRO as being beneficial for all involved. The initial hypothesis that

MSIs can serve as a vehicle to reach scale held true. Over 80,000 rice and cotton farmers in six countries are now applying more water-efficient irrigation techniques and have thereby increased their incomes. By bringing together producers and buyers the commodity-based MSIs Better Cotton (BC) and Sustainable Rice Platform (SRP) play an important role in ensuring markets for participating farmers. In the case of SRP – whose assurance scheme was launched only in 2020 – there is still considerable scope for market growth and upscaling. It is for example only a recent achievement that SRP-labelled rice can be bought in European supermarkets such as Germany’s Lidl and that the leading Italian grain brand, Riso Gallo, is SRP-labelled. Both MSIs offer solutions for the marketing of smaller quantities, too, which results in a market-levelling effect to the benefit of smaller producers. For example, the SRP member “Rice Exchange” has developed a digital blockchain-enabled rice trading platform that also allows matchmaking between smaller SRP-compliant producers with global customers.

The project organised periodic implementers and partner meetings, thus serving as a forum for cross-fertilisation among the MSIs, which helped to improve standards but also provided insights into the strategic thinking of Helvetas, particularly with regard to its engagement with private sector partners. The main insight stemming from the discussion of the four challenges faced is that multi-stakeholder initiatives and their standards are, and have to be, learning organisations that improve their governance and tools based on the feedback from their stakeholders, including the primary producers.

An engagement of private partners is essential for reaching the SDGs in general and for contributing to the financing of food systems in particular. Therefore, Helvetas seeks collaboration with private partners based on its long experience and proven skills, while respecting due diligence requirements. The example of the WAPRO project has confirmed that a carefully managed collaboration between private sector companies and development organisations leads to impact at scale, sustainability of the results and innovation.

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" Private actors are much closer to reality "

Mr Grover, what was your motivation to start working with the WAPRO project?

NatureBiofoods has always been a very sustainability-driven, responsible organisation. We are one of the pioneers of the organic movement in India, and we are one of the largest fair trade producers in the country, with about 7,000 farmers who are registered under the Fair Trade programme. So it is not just working with the farmers to produce organic ingredients and to bring in the products, but we also engage with them on the overall socio-economic development of their communities. We have adopted schools in various villages where the children of our farmers go and study, we have developed sewing centres for the women of the rural households to allow them generate an income, we have developed roads, water irrigation systems, land laser levelling for improving the fields ... So while our focus remains on commerce, our company has a strong social side, too. And having a development organisation like Helvetas on board helps to strengthen this social aspect. Moreover, I assume that today, 50 per cent of the water consumed in agriculture goes into rice cultivation alone. So understanding how rice production impacts the overall water cycle and acting responsibly on water productivity is of utmost importance.

What is your role in this partnership?

We are the ones who work with the farmers and train them. For anything that has to happen in the field, for any kind of package of practices that needs to be developed, put in practice or changed, we deploy our team. Since the beginning of our operations, we have gone into the remote villages of the county where we have been able to meet the like-minded farmers – plus, most importantly, which the chemical companies have not reached. So we have gone there, developed those areas, worked with the farmers, and made them understand the organic movement. Today, we have an ambit of 74,000 farmers in a land area of about 94,000 hectares.

What have you learnt from this long-term cooperation with farmers?

We learn from the farmers every day. We have to keep in mind that every farmer – and we are talking about farms that often do not have more than one hectare – has a different agronomy. The package of practices he uses is something that comes from his own experience. And it has an impact on crop production which in turn has an impact on the environment. When



Rohan Grover is Managing Director of NatureBiofoods, a rice-sourcing partner of WAPRO.

farmers tell you about what they have learnt over the time, you get to know which practice works on a specific site – with its own climatic, water, soil conditions – and which doesn't. It is amazing to be with the farmers and see how their perspectives are and how intelligently and thoughtfully they do what they do.

Given this huge diversity, wouldn't it be easier for a company like yours to work with big farms?

Yes. But working with smallholders has its merits. A small impact gives a big impact to them. If a farmer is doing things himself – because a small farmer always does things himself, whereas a larger farmer employs people to do some of the harvesting and sowing – any package of practice that you want to deploy in the field becomes more efficient because the farmer feels what he is doing – and he is doing everything to protect his livelihood. And with a community of small farmers, you can spread a message throughout the village, and then people kind of follow each other, so that things fall in place there. The demerit is that you have to put in a lot of time and effort. And one accident, one single problem, can result in a bigger problem on a larger scale. But keep in mind that India has about 115 million farmers, and in all, 600 million people today depending on farming, which is half of the country's population. Agriculture contributes to 13 per cent of our GDP. Do you see the gap? If we continue to support the bigger farmers, the future of

the smaller farmers, who cannot afford better practices, knowhow and learnings, will look gloomy – and so will our country's future.

What makes multi-stakeholder partnerships a success?

Collaboration and thinking alike. When you work together on a common objective and you have many problems ahead of you, you form a much better team than you would if the problems were not there. While you are busy doing things, not seeing what's on the right or what's on the left, different partners bring in different perspectives, which are very important for the overall goal. So bringing learnings, like-mindedness and motivation to each other always helps.

Where do you see the role of the private sector in transforming our food systems?

I would say that the roles of private bodies are always very critical. As a private company, you have the opportunity to take the ownership when you want to change things. What you are doing in your limited scope, your limited area and horizon, makes an impact. And since you don't have the pressure to make an impact on a larger scale, to show your results to anybody else, you end up doing things very effectively. Private bodies are the ones who are actually on the ground, who understand and see the results faster than anybody else. By no means do I want to say that the involvement of the other stakeholders is not important. I just think that private actors are much closer to reality and much more equipped to change things in a smaller space, and with all these small spaces coming together, the overall impact can be much better.

Interview: Silvia Richter

NatureBiofoods was founded in 1997 as a subsidiary of LT Foods, a rice specialist company, dealing with Basmati and other aromatic rice from India in various brands across the World. Family-run NatureBiofoods is India's largest seller of organic crops. The WAPRO project rice is cleaned and polished in the processing facility in India and exported to, among others, the subsidiary in the Netherlands, where it is packaged. Farmers receive a minimum support price which has to at least correspond to the market price plus premiums attached to organic cultivation practices.



We have a shared goal to improve the sustainability impact of the agri-food sector



Launched in December 2021, the G7 Sustainable Supply Chains Initiative brings together stakeholders from the public and private sectors to support supply chain sustainability and due diligence. Shivani Kannabhiran from the Centre for Responsible Business Conduct at the Organisation for Economic Co-operation and Development (OECD) presents the initiative.

Ms Kannabhiran, why is it important to involve the private sector in the transformation towards more sustainable and inclusive global food systems?

The desired transformation of the food sector can only be achieved if all relevant actors, including the private sector, contribute and play their part. International food and agriculture companies bring significant leverage and collectively bear responsibility for improving the environmental and social sustainability of food systems. By engaging with companies along the entire supply chain – from input suppliers to producers, food manufacturers and retailers – we can work to transform the sector as a whole and move from commitments to action together.

And this is precisely what the G7 Sustainable Supply Chains Initiative sets out from?

Yes. The Initiative – G7 SSCI for short – brings together 22 leading global food and agriculture



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companies headquartered in G7 countries, representing both upstream and downstream segments of the value chain. These companies have committed to action that will improve the environmental, nutritional and social impact of their operations. The implementation of sustainability commitments on climate, human rights and the environment in line with international recommendations in company operations could be a significant catalyst in developing more sustainable supply chains. The group as a whole earns 500 billion US dollars in annual global revenues and employs over two million people directly.

Commitment is all good and well. But how are companies actually assessed regarding their efforts to achieve sustainability?

The Initiative uses the Food and Agriculture Benchmark of the World Benchmarking Alliance (WBA), which is an independent reference framework to measure the sustainability performance of companies. The Benchmark evaluates the activities of the 350 largest global food and agriculture companies. Launched in 2021, it builds upon the Guidance for Responsible Agricultural Supply Chains drawn up by the OECD and the UN Food and Agriculture Organization (FAO), which enables companies of all sizes to implement a due diligence framework to address environmental, human rights and governance risks in global supply chains. The WBA Benchmark applies 45 indicators to assess companies on their environmental, nutritional and social impacts in these supply chains. The results indicate the extent to which companies contribute to the achievement of the SDGs.

And where do the companies currently stand?

So far, the findings demonstrate worrying gaps in the industry's adaptation to climate change, progress on human rights and contribution to healthy diets. For instance, the 2021 Benchmark report revealed that only 26 out of the 350 companies are currently working to reduce greenhouse gas emissions in line with the Paris Agreement, despite the fact that indirect

greenhouse gas emissions from supply chains (also known as scope 3 emissions) make up around 80 per cent of the emissions for food companies. Over 200 of these companies do not publicly report on scope 3 emissions or set targets to reduce them.

The data available in 2021 also revealed a lack of action on eliminating child and forced labour. Despite the existence of global frameworks such as the UN Guiding Principles on Business and Human Rights and the OECD-FAO Guidance, just eight per cent of the 350 companies have a comprehensive human rights due diligence mechanism in place.

The private sector also plays a significant part in ensuring our diets support public health goals, and that safe and nutritious food is available and accessible to all. This role has gained urgency in light of the food security crisis linked to the current war in Ukraine. However, three quarters of the companies benchmarked have not yet made commitments to improving the accessibility and affordability of healthy food. The results demonstrate an urgent need for action.

And what about the companies in the initiative?

The 22 pledged companies had their performance re-evaluated in 2022 to assess progress, with a report being launched at the 50th Committee of World Food Security (CFS50) session in Rome. Overall, we are pleased to see improvements at 16 of the 22 companies over the past twelve months, particularly with regard to environment measures. At the same time, however, we recognise a great need for improvement to realise the sustainable transformation of supply chains, especially in the areas of nutrition and social impacts.

How will this transformation be promoted?

Through the Initiative, we are closely engaging with the companies who have committed to be part of the G7 SSCI, with the WBA Benchmark and the OECD-FAO Guidance playing complementary roles. Here, the latter provides companies with internationally backed recommendations on how to opera-

tionalise social and environmental corporate risk-management in their business decisions and global supply chains. The 5-step OECD due diligence framework helps companies identify, prevent and mitigate a wide range of risks associated with food and agricultural supply chains. WBA's benchmark focuses attention on critical issues around the transformation of food systems and serves as an accountability mechanism with public reporting on the performance of global agri-food companies every two years. Through improved transparency, collective action and accountability, the initiative is promoting responsible business performance. OECD recommendations on due diligence are increasingly referenced in legislation, public policy and guidance on corporate conduct, besides providing a resource to policy-makers on how to incentivise responsible business conduct.

In the framework of the G7 SSCI, we also aim to create a dialogue between policy-makers and the private sector that promotes an improved understanding of the role different actors play in value chains, and how actions from each can address challenges to scaling impact. We have a shared goal to improve the sustainability impact of the agri-food sector. It is only through partnership, collaboration and clarity on what is needed that we can truly transform our global food systems.

What has happened so far since the launch of the initiative last December?

A technical workshop with G7 SSCI companies was hosted by the WBA in March this year, and we formally kicked off the G7 SSCI under the German G7 presidency on the 13th July 2022, following the G7 summit at the end of June. During the July meeting, government representatives of the G7 and European Union countries, as well as 15 of the 22 member companies, were able to jointly define goals and issues to prioritise. In September, we held a company workshop with the aim of defining company commitments and preparing the group for our high-level event at the end of this year. And in mid-November we presented the initiative at a hybrid side event at the COP 27 Food Systems Pavilion, focusing on youth action in food systems. We are particularly interested in young people's thoughts and how we can address their needs.

What is next?

The highlight of this year's activities will be a high-level ministerial and CEO level event in Berlin, Germany, beginning of December. This is to include an overview of progress, milestones and challenges as well as the promotion of further dialogue between the private and public sectors. We aim to discuss areas in

The G7 Sustainable Supply Chains Initiative (G7 SSCI) was launched in December 2021 under the UK's G7 Presidency. With the aim of transforming global food systems to be more sustainable, inclusive and resilient, as set out by the UN Food Systems Summit in 2021, the Initiative seeks to strengthen efforts to meet the Sustainable Development Goals. The Centre for Responsible Business Conduct at the OECD acts as the G7 SSCI secretariat for the duration of the German Presidency in 2022.

which companies can improve their social and environmental impacts and scale up corporate actions with the support of policy-makers.

Are you planning to open the G7 SSCI to other companies as well?

Absolutely! The initiative is open to all companies and we plan to grow it to increase collective impact. As a starting point, the current focus is on companies headquartered in G7 countries. We plan to extend the scope of the initiative beyond G7 countries, so that all companies have the opportunity to join and work together to transform the sector for the better.

The above is an updated and revised version of an interview published at: www.weltoehnung.org

OECD-FAO Guidance for Responsible Agricultural Supply Chains

In a world shaped by climate change and limited natural resources, agriculture plays a decisive role in sustainable economic development. The OECD-FAO Guidance for Responsible Agricultural Supply Chains was published in 2016 to help address this.

The guidance was developed to assist companies in complying with existing standards for responsible business along agricultural supply chains. These standards include the OECD Guidelines for Multinational Enterprises, the Principles for Responsible Investment in Agriculture and Food Systems, and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. Observing these standards helps enterprises mitigate their adverse impacts and contribute to the achievement of the Sustainable Development Goals (SDGs).

The guidance contains four parts:

- A model enterprise policy outlining the standards that enterprises should observe

to build responsible agricultural supply chains. Thematic areas covered include gender and benefit sharing, human rights, labour rights, health and safety, food security and nutrition, tenure rights, animal welfare, environmental protection, the sustainable use of natural resources, governance, technology and innovation.

- A framework for risk-based due diligence describing the five steps that enterprises should follow to identify, assess, prioritise, mitigate and account for how they address the actual and potential negative impacts of their activities. While all enterprises should conduct due diligence, the implementation of this framework can be tailored to their position in the supply chain.
- A description of the major risks faced by enterprises and the measures to mitigate these risks.
- Specific guidance on engaging with indigenous peoples.

All enterprises operating along agricultural supply chains are addressed by the guidance,

whether they are local or international, private or public, small, medium or large-scale. The guidance covers agricultural upstream and downstream sectors from input supply and production to post-harvest handling, processing, transportation, marketing, distribution and retailing.

OECD and FAO developed the guidance through a two-year multistakeholder process. It was approved by the OECD Investment Committee, the OECD Committee for Agriculture, and the Cabinet of the FAO Director-General. A recommendation on the guidance was adopted by the OECD Council. While not legally binding, the recommendation reflects the common position and political commitment of OECD members and non-member adherents. The OECD has also developed tailored guidance to help enterprises build responsible supply chains in the following sectors: garments and footwear, finance, and extractives (particularly minerals from conflict-affected and high-risk areas).

State subsidies for broad insurances of aquaculture stocks are socially unjust

Can subsidised crop insurances contribute to rural development? The European Union allows subsidies for insurances of aquaculture stocks, and the FAO suggests this helps to increase seafood production. However, studies on livestock and crop insurances do not support such proposals. National development is better served by farmers who invest in truly risk-reducing technologies, our author argues.

By Roel H. Bosma

Recently, the UN Food and Agriculture Organization (FAO) advised governments to subsidise multi-peril or broad insurances of aquaculture stocks – based on a report that reviewed ten years of such insurances through an online survey in 29 countries. Globally, still very few producers contract these insurances, while insurers have become less hesitant for two reasons: more data on risks in aquaculture, and the availability of more subsidies for insurances. Using less resources per kg protein than most animal products, aquaculture is a relatively young sector for which few studies exist on the efficiency of stock insurances. Setting out from literature on crop and livestock insurances, I will show that such insurances come along with hazards, and that their subsidies are socially unjust.

Crop and livestock insurances – and their hazards

In high-income countries, most farmers, primary producers of food, insure their buildings and other facilities (machinery) against risks of fire. This insurance is not subsidised by governments, but crop insurances against risks of damage from heavy hail, storms and floods often are. Although some insurances of the latter three are run without subsidies, premi-

um subsidies or government insurances can be justified. If these risks are not insured, the government is called upon after every disaster. In Africa, the International Livestock Research Institute (ILRI) has tested index-based insurances (IBIs) for livestock covering the risk of death due to drought. At a symposium, one of the researchers involved told us that even people without livestock bought such insurances, which shows why insurers are not enthusiastic. Also, there is a considerable risk that farmers will not maintain their livestock optimally. In general, as soon as their animals or crops are insured, entrepreneurs, consciously or unconsciously, take more risks. Economists call this strategy rent-seeking or moral hazard. Owing to farmers' rent-seeking in the USA, multi-peril crop insurances have led to greater soil erosion and more use of fragile soils. In the long term the latter leads to food insecurity, as the Dust Bowl in the Great Plains area showed in the 1930s. That is why in Australia, farmers cannot insure their sheep against drought. Rent-seeking is also one of the causes of overgrazing and overfishing – the tragedy of the commons. Overgrazing can only be prevented successfully through holistic pasture management.

Index-based insurances calculate pay-outs based on external indices extracted from ob-

servable weather or satellite data, such as intensity of rainfall, satellite images of vegetative cover, or direct measures of yields for the zone that the insurance contract covers. An IBI's strength is its use of a single index to assess a group's losses. In Ethiopia, an IBI reduced the moral hazard among crop farmers – after its adoption, household consumption and investments for pesticides in high-risk crops increased. The sustainability of such investments can be questioned. IBIs for livestock have worked for the wealthier with large herds, but are less valuable to the poorest. According to the ILRI study, to make an IBI work as a poverty reduction tool, an insurance programme needs to be complemented by an asset accumulation programme. Even without drought, the latter will lead to a new tragedy of the commons. For effective poverty reduction, resource-poor households should be enabled to make a decent living outside agriculture.

The main shortcoming of IBIs is the imperfect correlation between computed indices and real losses (basis risk). If the index is weakly correlated with individual farm level losses, IBIs cannot credibly reveal the real value of the loss pay-out. This hazard is higher in regions where farm plots are small. There, costs for both farmers and insurers will also remain high. Even in the Netherlands, multi-peril weather crop insurances against damages to crops and infrastructures have not really taken off, despite the government providing subsidies.

Costly premiums and high deductibles

In order to reduce the risk of rent-seeking, to keep premiums low and farmers interested, multi-peril crop insurances usually have high deductibles, or limits to loss-pay-outs. The pay-out can be based on an average harvest. Good farmers have no interest in paying premiums for average returns, but invest in risk-reducing technologies. The latter usually leads to higher returns, while costing less. Examples include using compost, inter-cropping,

An intensive fish farm in Vietnam, part of a company with shareholders, which may have an interest in stock insurances, especially if the owners also have shares in insurance companies.

Photo: Aquaculture Stewardship Council



anti-erosion bunds, irrigation and diversification (horticulture, livestock, tree crops). Other strategies are to work off-farm, to save or to loan (self-insurance).

Small producers in less developed countries frequently lack access to financial services, which increases the cost of administration and control for the insurer. The FAO report does not advocate multi-peril stock insurances for small aquaculture producers. Indeed, above-mentioned benefits, costs and returns may be different for large aquaculture companies having shareholders. Within such companies, the management is more tightly organised via protocols, and insurers may dare to take the risk without subsidised premiums.

What about efficiency?

In China, Indonesia, Japan and Vietnam, the number of insurances of aquaculture stocks has risen sharply since 2020, most probably thanks to premium subsidies or tax relaxations. Such policies aim to stimulate investments in aquaculture. Crop insurances by private companies in Spain and the USA, for example, are up to 70 per cent subsidised. There, subsidised premiums for broad stock insurance by private companies (continue to) exist for political reasons, and thanks to lobbying by the insurers. Studies confirm that these subsidies are good for their shareholders, but do not help farmers to maintain or improve their harvest. Farmers' attitude to save for resilience to shocks makes more sense. Similar to other low- or middle-income countries, crop insurances in some Indian states are compulsory for farmers contracting input loans.

Crop insurances carried out by the state can be up to four times more efficient than those provided by subsidised private insurers, because, notwithstanding the inefficiencies attributed to the former, the latter consider more costs, aim for a high margin and work in a market with too little competition. Whether or not multi-peril insurances increase overall welfare has hardly been studied. The theoretical model indicates that welfare decreases with increasing levels of subsidies. It appears that supporting farmers to mitigate risk and subsidising insurances addressing specific perils is a more viable approach regarding state support. Generally, multi-peril insurances ought to be left to private firms, although state insurance support could be considered for start-up farms.

Development projects for draft oxen (arable farming mechanisation) and milking heifers

("Pass your gift on") often insured these animals collectively with the benefiting group of households. The latter are then obliged to check each other socially. Such mutual insurance policies have proved difficult to be profitable for both small farmers and insurers. In India, community involvement was the best way to get small farmers on board. However, multi-peril crop insurances alone could neither guarantee a stable income nor food security for all farmers.

In Burundi, crop insurances were tested in a pilot within a total package of services by a public-private-funded research project. In the next project phase, the insurance company had dropped out because farmers were not making enough income to pay for the premiums and had other ways to cover the harvest fluctuations. Without insurances, the package was scaled-up and scaled-out successfully in two successive projects. This demonstrates again that insurance programmes do not outperform well-organised risk-reducing grant programmes supporting farmers to stabilise harvests and income. The latter will cost less to tax-payers while improving national food security.

Insurances for aquaculture stocks

Notwithstanding the above, the EU regulations do allow subsidies of broad insurances of fish.

In addition to issues addressed by stock insurances in other sectors, aquaculture stock insurances can cover losses caused by the following: environmental pollution, deoxygenation or other deteriorations of water quality; predation, or specific diseases or parasites; technical failure of equipment; theft, riots, strikes, etc. Coverage is broader than for any crop or livestock insurance.

When a wide variety of interest groups were involved, the lobbies in the Europe Union were not biased towards either corporations, or civic and environmental organisations. However, the list of lobbying groups in the EU related to insurances contains no civic society organisation that can counterbalance those of the insurance companies. The latter makes these lobbies biased towards the financial gains for their shareholders, which thus also allows for socially unjust subsidies for broad stock insurances in aquaculture. A suggested insurance against loss of coral reefs is an example where even states try to outsource their responsibilities for sustainable stewardship.



Roel H. Bosma has worked in rural development, education and farming systems research projects in several African and Asian countries, and at Wageningen University in the Netherlands. In his latest jobs, he focused on sustainable co-existence of people, mangroves and aquaculture in the land-sea interface.
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Conclusions

Studies on livestock and crop insurances do not support policies subsidising multi-peril insurances. Subsidies of such insurances for livestock and crops become a direct transfer of tax-payers' money to the insurance corporations, while national food security may suffer and farmers' resilience does not improve. Farmers have cheaper options to reduce most of their risks. However, without subsidised premiums, private insurers might be interested to contract multi-peril insurances for the stocks of tightly managed large aquaculture companies (with shareholders), but whether this increases seafood production or maintains producers' net margins remains hypothetical.

That several countries subsidise such insurances, directly or indirectly, and that the EU allows such subsidies is due to unbalanced lobbies by insurance companies. Subsidised insurances provided by private companies guarantee that the companies' shareholders always make a good profit, and are thus a transfer of tax-payer's money to the richer, which is socially irresponsible. Both farmers and tax-payers are better served by targeted support for investments in risk-reducing technologies.

Brazil's approach to low-carbon agriculture

Brazil has set itself the goal of achieving a net zero CO₂ economy by 2040. Low-carbon agriculture is to make a crucial contribution to this goal. The scientific foundations it requires are being provided by the national agricultural research centres. A visit to Embrapa Agrossilvipastoril in Mato Grosso.

By Silvia Richter

As always with this experiment, Orlando Lúcio de Oliveira Júnior, standing in the shade of an Inga tree, is looking forward to the sudden insight that he will now evoke among his visitors. The waist-high wooden frame standing in front of him holds three red plastic tubs, one next to the other and filled with the red soil typical of tropical regions. The tubs represent three agricultural systems: conventional farming, direct planting and integrated systems. At the front end of each vessel, a small downpipe feeds into a little round plastic dish. Using a watering can, Oliveira Júnior now simulates the effect of a rain shower. A few seconds later, the dish with the sign reading “conventional farming” is full of red-coloured water. The water flows into the dish belonging to the “direct planting” system with a delay and is only slightly turbid. In the “integrated system”, the watering can has to be used a second time before the water even starts to fill the dish, coming out slowly and crystal-clear. Thus, the visitors can literally watch the evolution of soil conservation.

Integrated production systems

Orlando Lúcio de Oliveira Júnior is an analyst in the technical team of Embrapa Agrossilvipastoril, one of 43 research units run by the Brazilian Agricultural Research Corporation Embrapa. Located in Sinop in the Federal State of Mato Grosso, in the buffer zone between the Amazon and the Cerrado region, this research centre, founded in 2009, concentrates on systems of integrated agricultural production – i.e. the scientific foundations of the analyst's presentation. Within this strategy, different production systems are combined within the same area. It can be implemented as mixed cropping, succession cropping or crop rotation. Here, different combinations and hence intensities can be chosen: crop-livestock (ICL), crop-forest (ICF), livestock-forest (ILF) and crop-livestock-forest (ICLF).

These systems are part of the Low Carbon Agriculture Plan (Plan ABC+; see Box on page 40), launched by the Brazilian Government in 2010. Its aim is the sustainable intensification



Today, integrated production systems are being applied on more than 17 million hectares in Brazil.

Photo: Silvia Richter

of Brazilian agriculture. Greenhouse gas emissions are to be reduced while area productivity is to be simultaneously enhanced. Currently, more than 17 million hectares is under integrated management – according to ABC+, by 2030, it is to be 30 million hectares, with expansion above all taking place in regions with degraded pastures. After all, degradation affects 90 million hectares out of the 168 million hectares of the country's pastureland.

Partnerships are key

“Most of our research is done through partnerships,” says Laurimar Gonçalves Vendrusculo, who has been heading Embrapa Agrossilvipastoril since early 2022. In 2012, the ICLF Development Network was founded, a public-private partnership in which 19 Embrapa research centres throughout the country have joined forces with the agricultural cooperative Cocamar, seed merchants SOESP, the financial enterprise Bradesco and internationally operating firms such as John Deere and Syngenta to promote the introduction of integrated cultivation. The network supports 97 technological reference units across Brazil which are run by rural producers or institutions linked to a production sector in which an ICLF configuration has been adopted. These areas are mon-

itored by the Embrapa technical team and are used to evaluate the technologies. Research and technology transfer – through field days, courses, technical visits and communication material – is financed via REM (REDD+ Early Movers) Mato Grosso (REDD = Reducing Emissions from Deforestation and Forest Degradation). The programme, funded by Germany, rewards efforts to reduce CO₂ emissions through forest conservation actions. In Brazil, it is being implemented in two States: Acre (since 2014) and Mato Grosso (since 2017).

One of the Embrapa partners at farm level is the Fazenda Santiago, in the municipality of Sorriso, around 80 kilometres away from Sinop, and situated on Highway BR 163. Just like so many of their present professional colleagues, its owners, Luiz Fernando Paiva and Dudy Paiva, moved from Brazil's economic and financial centre São Paulo to Mato Grosso in the 1970s, when the region was only little developed in terms of infrastructure. With their newly established farm, they first specialised in beef and dairy farming, only to enter crop production shortly afterwards – and already with the no-tillage system, which is now being practised in Brazil in a total area of 35 million hectares. “With our 1,500 hectares, we are a medium-sized farm,” the owners' son Juliano Ribeiro Graça Paiva remarks. Proper-



Orlando Lúcio de Oliveira Júnior demonstrating soil conservation in Embrapa's employees orchard.

Photo: Sílvia Richter



"Our research activities are committed to the SDGs," says Laurimar Gonçalves Vendrusculo.

Photo: Gabriel Faria/ Embrapa



Juliano Ribeiro Graça Paiva and his wife Marcia Salete Becker Paiva.

Photo: Sílvia Richter

ties of up to 500 hectares would be regarded as small, with farms from 3,000 hectares on counting as large.

Focusing on straw yield and pasture quality

With an area under cultivation of 10.46 million hectares, Mato Grosso is one of the country's largest soy-growing regions; around 100 cultivars are available for cultivation, with around five per cent of them GMO-free materials. As is customary in the Federal State, the first growing season – the rainy season from October to February, also known as safra – is devoted to this crop, which is grown on 1,100 hectares. In the second growing season (February/March – August/September, also referred to as safrinha), 750 hectares is dedicated to corn, while another 210 hectares is used for pastures for the 250 cattle. After the maize harvest, the cattle are kept on the harvested maize fields for three months. Signal grass (*Brachiaria*) is traditionally grown as cattle feed on the farm. In the tropics, it is a widespread grass family which produces a large mass of organic matter. Via the research and technology transfer project with Embrapa, one aspect the family farm is testing is the suitability of various plant communities for the production of straw for the next soybean season in the no-tillage system. Here, comparing *Brachiaria brizantha cv. Piatã* in monoculture, various combinations of the grass are examined with cowpea beans (*Vigna unguiculata*), sorghum, radish (*Raphanus sativus L.*), sunflower, pigeon pea (*Cajanus cajan*), buckwheat (*Fagopyrum esculentum*), finger millet (*Eleusine coracana*) and stylo (*Stylosanthes guianensis*). A second experiment focuses on improving pasture quality in an integrated crop-livestock system, in which growing maize in monoculture is compared with various combinations of *Brachiaria ruziziensis*, *Crotalaria spectabilis*, forage sorghum, grain sorghum, stylo, pigeon pea, radish, buckwheat and niger (*Guizotia abyssinica*).

"All the experiments start at Embrapa's experimental field. The ones that have promising

results then go to the farms," explains Flávio Jesus Wruck, Deputy Head of Technology Transfer at Embrapa Agrossilvipastoril. The choice of species depends on the characteristics of the area and the historic of cultivation, and above all on the specific problems that need to be solved on the farm. Factors such as soil decompaction, nutrient uptake, nitrogen fixation or increase of soil organic matter are being analysed. With view to animal husbandry, factors such as nutrient content and digestibility of the forage or the reduction of soil nematodes are of interest.

The trials on the farm have not been completed yet, but there are promising initial results. In the plant consortia, not only has soil porosity been raised thanks to the plants involved bearing aggressive root systems, but more than ten tonnes of straw has been produced per hectare – this is more than the minimum that is needed to have a good covering of the soil in no-tillage systems. Moreover, it has been revealed that in a crop system with soybean production, 600 kilograms of carbon can be accumulated in one hectare of land. In addition, the straw's nutrient content – phosphorus, potassium and nitrogen – has risen, the latter above all thanks to the use of legumes. "Considering the high price of fertilisers, this reuse of nutrients is an important economic factor for the farmers," Wruck remarks.

Payments for responsible production

"With crop-livestock integration, we can increase productivity in a sustainable way," says the farm's junior manager. In numerical terms, he generates a per hectare yield of 3,600 kilograms of soy plus 6,000 kilograms of corn plus 60 kilograms of meat. "Combining the three products makes our farmers very competitive in the international markets," adds Flávio Wruck. Certifying via the Roundtable of Responsible Soy (RTRS) forms a further income source for the farm. The main representatives of the soy value chain as well as civil society organisations are organised in this multi-stakeholder platform, which was set up in Zürich,

Switzerland, in 2006. Every certified farm is audited once a year on the basis of 106 items concerning environmental and social standards. If it fulfils all criteria, it receives one RTRS credit for every tonne of soybeans. These credits can be traded via an online platform, and the price for them is 2–3 US dollars (USD) at the moment. Cristina Delicato of CAT (*Clube Amigos da Terra*/Friends of the Earth) NGO in Sorriso, which is a member of RTRS, has been campaigning for sustainable soy cultivation, environmental and forest conservation and family farming in the region for 20 years. She says that 180,000 hectares has been certified or is in the process of certification in the region – according to RTRS, the total for Brazil is just below 980,000 hectares. The purchasers of the credits are above all companies in Europe.

A further step towards integration

Around 85 per cent of the Brazilian farms under integrated management have opted for the crop-livestock system. Things become ecologically and, above all, economically more interesting for the farms if they also integrate the third component – forestry. Here, Embrapa Agrossilvipastoril is running long-term trials with a wide range of combinations (ICF, ILF, ICLF), in order to recommend the most suitable configuration for the farmer – tailored to his goal (reforestation, income generation, thermal comfort of the animals, etc.) and type of utilisation (bioenergy, sawmill, etc.). So far, eucalyptus has been used as the sole tree component – thanks to its rapid growth and its large variety of uses, such as bioenergy, civil construction, fences or furniture, but also because the largest amount of silvicultural knowledge is available in this area. In addition, on the partnering farms and in the technological showcase of the research centre, further tree species are being tested, such as teak and African mahogany, whose wood is suitable for furniture, civil or naval construction, or the Brazilian nut, cashew or rubber tree. "Gliricidia could also be interesting, as the legume fixes nitrogen in the soil and can feed the cattle as well," Embrapa forestry expert Maurel Behling says.

Some of the observations so far:

- In the integrated systems, the trees grow faster than in tree monoculture.
- As integration increases, productivity rises in beef production. In the ICLF system, while maintaining optimum protein supply for the animals, and using 100 kilogrammes of NPK (nitrogen, phosphorus, potassium)/hectare, yields of 600 kilogrammes (300 kg meat) have been achieved per hectare, compared to around 450 kilogrammes (225 kg meat) per hectare under ILF and ICL management. For comparison, the average productivity in beef production in Mato Grosso is at 60 kilogrammes/hectare (30 kg meat).
- In the ICLF system, a milk production of 15 litres a day has been reached (average for Mato Grosso: 8 litres/day). The number of somatic cells is also lower in integrated systems.
- A comparison of timber yield in different integrated systems with beef production (9–10.5 cubic metres per hectare and year) with those in eucalyptus monoculture in the trials (34 m³/ha/year) shows that in rough terms, it is possible to simultaneously produce a third of the timber yield from monocultures in an area with beef production.
- Examinations regarding pests yielded mixed results. Whereas, for example, in eucalyptus monocultures, the caterpillar *Glena unipennaria* represented a problem, it did not occur among the trees in the ICLF system.
- A large variety of insects were observed in the ICLF system. However, these included both pests and beneficial species.

Carbon neutral meat and low carbon protocols

In the course of the Brazilian Government's low-carbon strategy, Embrapa has established a

partnership with Mafrig, one of the largest beef producers world-wide. In its context, the Carbon-Neutral Meat seal (*Carne Carbono Neutro*, CCN) has been developed, under which a handful of farms have so far been certified. It campaigns with the attributes “carbon off-setting”, “animal well-being” and “meat quality”. What this refers to is that thanks to their staying in the shade provided by the trees, the animals require less energy to regulate their body temperature. Furthermore, the pastures in the shade are more nutritious. The animals build up weight more quickly and can thus be slaughtered at a younger age. This means that per kilogram of dressed weight, less methane is emitted. Also, the meat of younger animals is softer. The farmers receive an eight per cent supplement for meat that is produced either in ILF or in ICLF systems. Moreover, Embrapa is about to finish the elaboration of a Low Carbon Meat Protocol in which cattle are considered that have been raised in integrated crop livestock systems, i.e. without tree integration. “We expect that this can be released next year,” says Wruck.

Measuring emissions intensity

To draw up this protocol, the researchers in Sinop measure greenhouse gas emissions from the different production systems as well as the potential of soils and trees as carbon sinks. Here, the methodology of the Guidelines for National Greenhouse Gas Inventories of the Intergovernmental Panel on Climate Change (IPCC) is employed. “The intensification of food production leads to higher productivity, but also to higher gas emissions. Thus, if we only analyse gas emissions and do not correlate these data with productivity, from the point of view of climate change, we arrive at the conclusion that intensifying is bad,” soil and plant

nutrition expert Alexandre Ferreira do Nascimento, explains. This is why the emissions intensity of the different systems is examined. For the dairy systems, for instance, this means that all gas outputs – methane (CH₄) from the animals, methane and nitrous oxide (N₂O) from urine and dung, and N₂O from nitrogen fertilisers – and all the carbon inputs (carbon stock in the soil and trees) as well as the milk production of the animals are measured. At the end of the project, all the emissions are transformed in terms of carbon equivalent in order to establish the kilo of carbon dioxide emitted per kilo of milk production. The results of these examinations are yet to emerge, so that so far, no recommendations can be made. But what the scientists have found out in the course of examining N₂O dynamics in the soil is that integrated systems with three products per agricultural year (such as soybean, corn and meat) do not lead to more N₂O emissions from the soil than those systems with only one or two products per year. Furthermore, Alexandre Ferreira do Nascimento and his colleagues have established that under the climatic conditions in Mato Grosso, the emission factor for nitrogen fertilisers is not, as stated in the corresponding IPCC protocol, at 1 per cent, but at around 0.4 per cent.

All the research efforts centring on low-carbon agriculture are to help enhancing production in Brazil's agriculture “without even one single tree being felled in the Amazon”, and ultimately help provide the farmers with more income. Or, as Embrapa President Celso Moretti recently put it at a branch event: “We want to have carbon as a fourth harvest.” To Laurimar Gonçalves Vendrusculo, working for the institute has another, very different value. “Each Real invested in research in 2021 gave a social return of 23.38 Reales to Brazilian society,” she emphasises.

The Brazilian Forest Code

In 2012, Brazil adopted its current Forest Code, which “seeks to reconcile environmental preservation with agricultural production in rural properties”. It stipulates that all rural properties have to maintain a minimum reserve area – referred to as the Legal Reserve – for native vegetation. The share of this area is 80 per cent in the Amazon, 35 per cent in the Cerrado and 20 per cent in the other biomes. The base for this is 2000 – legislation does not apply to farms which already existed earlier. Forest areas along the margins of the rivers and the tops of the mountains are viewed as permanent protected areas and must not be touched. All farmers are obliged

to register their land in the Rural Environmental Register (CAR – *Cadastro Ambiental Rural*), established with the Forest Code. If their documentation does not coincide with continuously updated satellite images, they have to take appropriate steps – otherwise they will be in for penalties. Those seeking to apply for bank credits have to submit the CAR entry as proof of their legal entitlement to the respective areas.

The Low Carbon Emission Plan

In April 2021, the Brazilian Ministry of Agriculture, Livestock, and Food Supply (MAPA) announced its Plan for Climate Change Adaptation and Low Carbon Emission in Ag-

riculture, called ABC+. It covers the years 2020–2030 and follows up on the ABC Plan adopted in 2010. The latter stipulated targets for lowering CO₂ emissions in various areas by 2020, which were to be achieved with six technologies: recovery of degraded pasture, Integrated crop-livestock-forestry systems (ICLFS), no-till farming, biological nitrogen fixation, planted forests and animal manure management. According to data from the Brazilian Ministry of Agriculture, sustainable agricultural technologies have been implemented on 59 million hectares through the ABC plan, which corresponds to a quarter of land under cultivation. Farmers applying corresponding technologies are granted low-interest credits.

Locally produced fertiliser instead of costly imports

With global prices soaring, alternatives to chemical fertilisers can be a big help for small farmers. Our authors present two schemes for locally sourced fertiliser in the State of Odisha in India.

By Thea Ritter, Jonathan Mockshell and Tisorn Songsermsawas

For years, small-scale producers around the world have been threatened by rising fertiliser prices. In 2020 there were supply chain disruptions caused by the Covid-19 pandemic and natural disasters. This year, consequences of the Russia – Ukraine crisis exacerbated the situation. Prices surged in the beginning of the crisis because exports of fuel and fertiliser were nearly at a standstill and the production and movement of nitrogen in Eastern Europe was significantly curtailed. In more recent months, prices have dropped due to a variety of factors. In July, the United Nations brokered a 120-day agreement called the Black Sea Grain Initiative between Russia, Ukraine, and Turkey that reintroduced food and fertiliser exports. Also, in reaction to the high cost of fertiliser, farmers around the world are delaying its purchase, which is driving demand down. Nevertheless, fertiliser prices are still higher than a year ago and remain unstable due to the ongoing conflict in Ukraine and uncertainties about the legalities of conducting business with Russia. The United Nations recently warned that “the current crisis of affordability will turn into a crisis of availability”.

One way for small-scale producers to mitigate the shocks in global fertiliser markets is to use locally sourced alternatives. Supported by the International Fund for Agricultural Development (IFAD), the Odisha Particularly Vulnerable Tribal Group Empowerment and Livelihood Project (OPELIP) in Odisha, India, is encouraging producers to do just that. Odisha is one of the poorest states in India. It is also home to the largest number of particularly vulnerable tribal groups. The agriculture they practice makes use of basic farming techniques, and they rely entirely on rain to feed their crops. Malnutrition is unfortunately common in the population, especially in children, and they experience high rates of related conditions like underweight and anaemia.

OPELIP’s goal is to empower and improve the livelihoods of these vulnerable tribal groups through a variety of interventions. One of them is the use of home gardens, which involves teaching participants how to grow vegetables and fruits in gardens next to their homes. As part of this intervention, OPELIP taught farmers how to make and use two alternatives to



An OPELIP frontline worker teaching participants how to make Jeevamruta in Duipani village, Odisha, India.

Photo: OPELIP

chemical fertilisers that can be produced locally, with just a few common ingredients. One, called Jeevamruta, is an organic manure and bio-pesticide that has been in use for centuries. It is made by fermenting cow dung, cow urine, jaggery (a traditional, unrefined sugar), pulses, flour, soil and water for one week. The result is a natural source of nitrogen, potassium, phosphorus, and other micronutrients that is suitable for all crops. It also helps maintain the soil’s acidity level, improves aeration and boosts plant growth and yield. The other, called vermicompost, takes longer than Jeevamruta to prepare, but it serves as a rich natural source of organic nitrogen, phosphorous and potassium. A wide variety of biodegradable materials can be used as ingredients, but in OPELIP’s case, participants were taught how to use a combination of food waste, water and bedding materials. Earthworms are then added to the mixture, which is processed for 40 to 50 days. The end result is a product called vermicast, which contains water-soluble nutrients ideal for plants. “Previously, beneficiaries were cultivating in a traditional way, and they left the fields alone. Now, we are teaching them how to get more crop by applying Jeevamruta, Nimastra, and other organic pesticides for better yield and soil fertility,” an OPELIP agricultural officer explains. “Equipped with the right knowledge and practical experience, households from these tribal groups are now

increasing their ability to cultivate fruits and vegetables for household consumption, improving their nutritional intake and creating income-generating opportunities through the sale of surplus crops.”

With fertiliser from Russia, Ukraine and Belarus accounting for about ten per cent of India’s total fertiliser imports, prices across the country are expected to increase for the foreseeable future. But when small-scale producers are able to rely on their own knowledge and resources to produce alternatives, they are better equipped to both face short-term shocks like rising prices and build sustainable, resilient food systems over the long term.

Thea Ritter and **Jonathan Mockshell** are agricultural economists at the Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT). **Tisorn Songsermsawas** is an economist with IFAD’s Research and Impact Assessment Division.
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Greening a cold desert in the Himalayas – boon or bane?

Planting trees to tackle the impacts of air pollution and climate change – a measure which would appear to suggest itself. However, scientists warn against negative effects this could have in fragile ecosystems. The cold desert of Ladakh in the western Himalayas is one such system.

By Athar Parvaiz

Gyan Thinlay is happy to soon see a huge area in his village going green. He is the man in charge of nurturing a newly set up nursery of 150,000 tree saplings with the help of his fellow villagers. The trend of planting trees is growing in Chushul, a village in eastern Ladakh, a cold desert in the western Himalayas near the border between India and China. Often called the “Roof of the World”, little grows in the Ladakh Himalayas, where average elevation is 3,353 metres above the sea level and temperatures swing between minus 35 degrees Celsius in winters and 35 degrees in the summer. Annual rainfall in the region is less than 100 millimetres. With its altitude of more than 4,270 metres, Chushul lies even higher up than most areas of Ladakh. Yet this did not discourage the villagers from going for massive tree plantation in a huge area in their village. “All we see around us is barren mountains. We now look forward to see greenery too,” says Thinlay, the Buddhist monk and deputy chairman of Go Green Go Organic Ladakh, the non-profit organisation behind the afforestation project. Thinlay is excitedly watching villagers irrigating the tree saplings which they planted this June, on the eve of World Envi-

ronment Day. The water comes from a small stream which is fed by glacier-melt from June to October. When glacier-melt is not available in early summer, the villagers use solar powered motors to irrigate the tree saplings with ground water.

Benefits for livelihoods and the environment

Besides the greenery and fresh air, the trees are to help insects grow around them to make it easy for birds to feed on them. And they are to support livelihoods of villagers. People in Chushul traditionally depend on livestock rearing and have not shown interest in large-scale tree plantations so far, says the Councillor of the village, Konchok Stanzin. “But since 2015, our religious leader, His Holiness Chetsang Rinpoche, has informed people about the environmental and economic benefits of trees such as their role in reducing air pollution, feeding livestock and supporting the construction industry. This has attracted people towards tree plantation,” Stanzin notes, adding that villagers in other parts of his constituen-

cy have participated in tree plantation drives thrice since 2019.

The tree plantation drive in the region is not only backed by the religious leaders. The planting project has been supported by the forest department and the local administrative council, which are both government institutions. Soon after the plantation drive in Chushul on the 5th June, a tweet was put out on the official twitter handle of M. K. Mathur, Ladakh region’s administrative head, lauding the effort.

This support is not a coincidence. In India, a massive push to develop infrastructure is intensifying deforestation, a major driver of climate change. As much as 554 square kilometres of forest area has been diverted for non-forestry use in the last three years – for constructing roads, hydroelectric projects and other infrastructure construction. In the cold desert of Ladakh, where people have lived in traditional ways, such as by building houses with mud and wood and using dry toilets, construction activities and vehicular traffic have witnessed a sharp increase. “In my view, the number of vehicles in Ladakh has increased tenfold



Villagers in Chushul irrigate the newly planted tree saplings.

Photos: Athar Parvaiz

in the past few years and the region has also witnessed a construction boom,” says Nordan Otzer, a prominent social and environmental activist in Ladakh.

Planting trees in a cold desert – ‘not cool’

Like most people in the region, environmental activists such as Otzer believe that planting trees in the desert will help reducing pollution and will lend a green look to Himalayan desert where the landscape is dominated by bare mountains. But scientists are not convinced as they assert that “mindless” tree-planting on a massive scale will damage the fragile and unique ecosystem of the cold desert. “Planting trees in deserts can be as harmful as cutting trees in forests,” Abi Tamim Vanak, senior fellow at Ashoka Trust for Research in Ecology and the Environment (ATREE), Bengaluru-India is convinced. The native fauna and flora of Ladakh, including the snow leopard, blue sheep and other wildlife, were not adapted to forested ecosystems, Vanak maintains. “Creating plantations, especially in areas where people don’t reside could harm native habitats and make them unusable for wildlife,” he states.

Moreover, trees require a lot of water, and this could increase aridity in areas that already face water stress, Vanak adds. He explains: “In effect, trees in the wrong places can ‘steal’ water from desert-adapted shrubs and herbs, and thereby outcompete them, resulting in less food for wildlife.”

Impacts of climate change are on the increase in the cold desert of Ladakh. “Although it is difficult to say that it is happening because of climate change, we have noticed some changes in weather patterns in the Ladakh region in recent years. Glaciers are melting fast while rain and snow patterns have undergone changes with extreme weather events such as cloud-bursts occurring with more frequency,” says Mukhtar Ahmad, a scientist with the Indian Meteorological Department. To spread awareness about changing climate in Ladakh, young people in villages along the Pangong Tso Lake in the cold desert have started making arrangements for organising a 22 kilometre run over the frozen Lake in February 2023, naming it “The Last Run”, as they apprehend that the Lake might not freeze in coming years because of climate change.

Farmers in Ladakh say that because of unreliable water supply from glacier-melt, they increasingly depend on bore-wells to irrigate



Solar energy is used to irrigate the tree saplings with ground water in early summer, when glacier-melt is not available.

their farms. Cham Dolma, a 56-year-old farmer of Leh town, reports that her family had to spend 150,000 rupees (USD 1,900) a year on irrigating their farm near the house and on maintaining a sustainable supply of drinking water for the household. “What else can we do? We are only able to get a constant supply of water when it sufficiently snows during winter,” Dolma explains.

Pitfalls of tree plantations

Forrest Fleischman, an Associate Professor at the Department of Forest Resources at the University of Minnesota, USA, is convinced that establishing tree plantations where forests did not historically occur destroys the habitats of plants and animals adapted to open ecosystems and threatens the livelihoods of people dependent on those ecosystems to produce wild game and domestic livestock. “The iconic savannahs of Africa are a prime example of the ecosystems that are threatened by large-scale afforestation campaigns,” he says. “Avoiding deforestation, improving forest management and protecting grasslands, peatlands and shrublands from land-use conversion should be the priority,” Fleischman maintains, quoting from the Paper *Pitfalls of Tree Planting* he published with co-authors in *Nature* in May this year. In their publication, the authors have also analysed the effects of tree planting on water resources. They come to the conclusion that large-scale tree-cover expansion can increase water availability by up to six per cent in some regions, while decreasing it by up to 38 per cent in others. They also stress the divergent impact on large river basins: some rivers could

lose six per cent of their stream-flow due to enhanced evaporation, while for other rivers, the greater evaporation is counterbalanced by more moisture recycling. The publication has further concluded that several so-called hot spots for forest restoration could lose water, including regions that are already facing water scarcity today. “Tree restoration significantly shifts terrestrial water fluxes, and we emphasise that future tree-restoration strategies should consider these hydrological effects,” the paper states.

Jigmat Takpa, the former Joint Secretary in India’s Ministry of Environment and a Ladakhi himself, does not share these concerns for his region. “If you plant trees in one or two square kilometres out of 57,000 square kilometres, how can it damage the desert?” he asks, adding that “trees will rather help reducing pollution and absorbing carbon emissions”. The Indian government has not given any estimate or plan of how much land it intends to bring under plantation. Stanzin Dolker, a young woman who was tending to the newly planted trees along with a group of other villagers, expresses hope that the trees will give a new look to her village. “We will make sure that each of these saplings grows into a tree. This is our resolve. We will work hard to irrigate them and help them grow,” she says. For Go Green Go Organic, planting trees is part of the organisation’s vision towards living sustainably in harmony with nature.

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