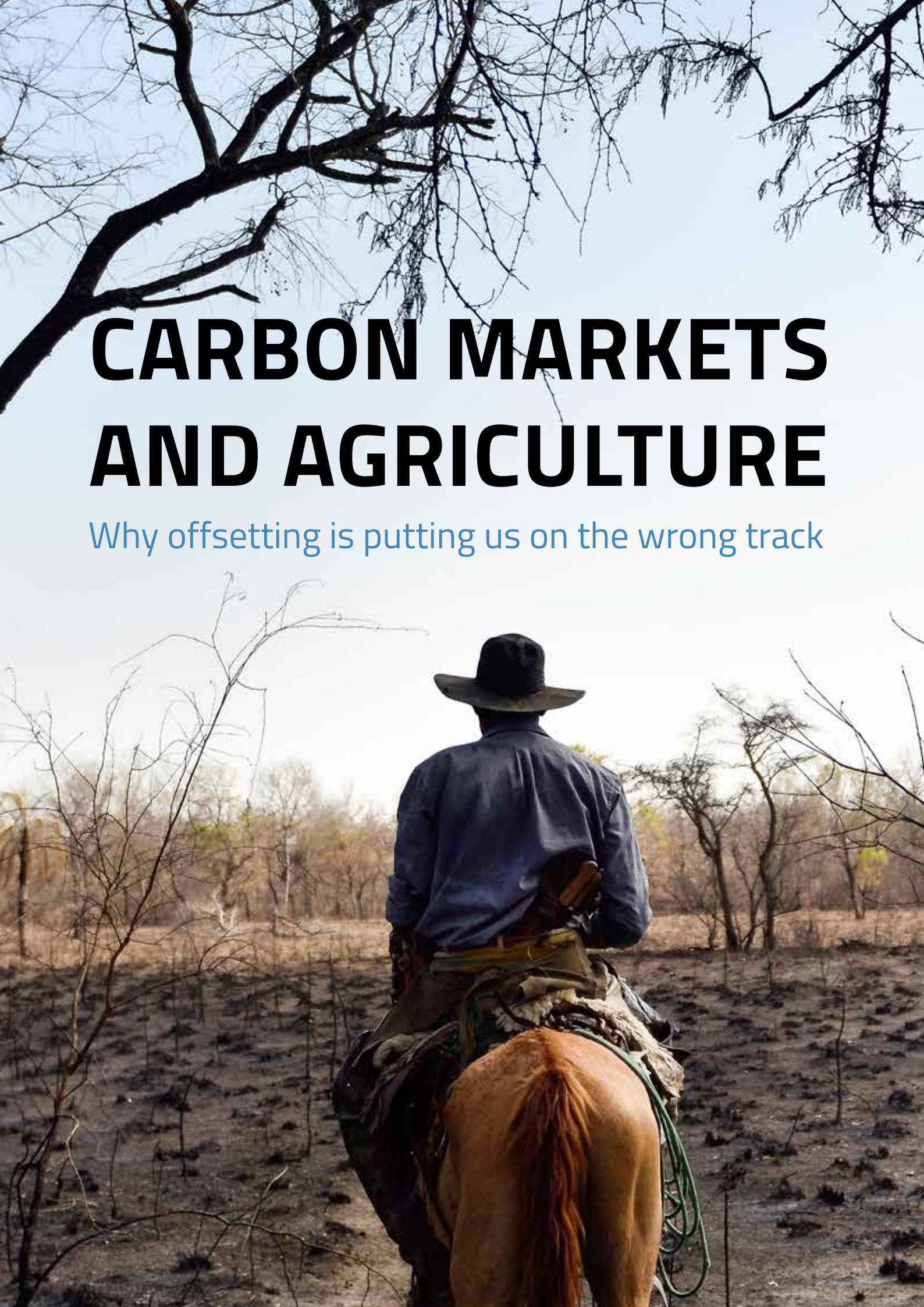
CARBON MARKETS AND AGRICULTURE

Why offsetting is putting us on the wrong track



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Introduction

The world is currently far from being on track to meet the targets agreed upon in the Paris Agreement (2015) to limit global warming to 1.5°C.

The IPCC Special Report on Land and Climate (2019) showed how necessary it is to protect and restore degraded ecosystems if we are to meet our climate targets. But it also articulated very clearly that land can only support a small portion of our efforts, which means it cannot be used to compensate for our current emissions levels, let alone a continuous increase in GHG emissions. Climate action simultaneously requires an immediate drastic cut in emissions, and protection and restoration of ecosystems.

In climate policies around the world, those learnings from science are being dangerously ignored.

We've seen in the last decade an increased appetite for carbon markets without absolute limits on emissions, that is, carbon markets that do not set an absolute amount of credits that can be traded[1]. Such carbon markets cannot solve the climate crisis. They provide cheap and abundant credits that fail to create real incentives for GHG emission reductions. But, most importantly, **allowing emissions reductions in one sector to offset emissions in a different sector does not reduce overall GHG emissions,** let alone GHG concentration in the atmosphere, which is what ultimately drives climate change.

> **SAYING THAT AN EMISSION HAS BEEN CANCELLED ASSUMES THAT THE TREES THAT SEQUESTERED THE CARBON WILL NEVER BURN OR DECOMPOSE, AND THAT THE SOIL WILL NEVER RELEASE ITS CARBON THROUGH A CHANGE IN MANAGEMENT PRACTICES OR BECAUSE OF EXTREME WEATHER EVENTS.**

In the land sector, the problem of offsets is even worse. Carbon sequestered in soils and trees is often used to compensate for GHG emissions elsewhere. Planting trees in order to offset emissions from a flight, for instance, is a well-known practice. But saying that an emission has been cancelled assumes that the trees that sequestered the carbon will never burn or decompose, and that the soil will never release its carbon through a change in management practices or because of extreme weather events. This could be ensured over the course of a few years, but these assumptions are utterly unrealistic in the long run.

In recent years, countries and companies have shown increasing interest in using voluntary agricultural carbon markets to offset their emissions. **Many of these markets are created or supported by large oil or agro-industrial companies.** For instance, Japan Petroleum and the Syngenta Foundation are members of the World Bank's BioCarbon Fund, and Bayer just launched its own carbon market initiative[2].

This note discusses the specific problems related to offsetting schemes in agriculture.

I. The problems with carbon offsets in agriculture

I.A. Reducing our chances to reach climate goals

I.A.1 Agriculture : carbon markets won't meet the double challenge of mitigation and adaptation.

To limit global warming to 1.5°C by 2100, agriculture has an important part to play. The worldwide agricultural system emits around 1/3 of total GHG emissions[3], and farmers are at the forefront of the consequences of the climate crisis. The sector needs to befundamentally transformed to both reduce its emissions and adapt to a changing environment, but carbon offsets will not help achieve these goals.

- **By focusing on short-term climate goals and ignoring other metrics (ie. biodiversity, water quality, soil health, etc.), carbon offsets maintain or incentivize practices that are detrimental to real climate ambition.** To avoid tilling, some conservation agriculture projects resort to glyphosate-based pesticides (e.g. the Biocarbon Fund's project in Costa Rica[4]), or promote the use of genetically modified seeds. Yet, no-till agriculture can only play a marginal role in soil health[5]. For instance, Bayer in the US and Brazil created their own offsetting scheme to sell more of their products[6]. The Clean Development Mechanism (CDM), the main carbon market under the Kyoto Protocol, also approved a methodology developed by the biotech company Arcadia Biosciences[7] to generate credits based on the use of GMOs[8].

The Kenya Agricultural Carbon Project (KACP) (2009-2029) is supported by the World Bank's BioCarbon fund, which involves the French Development Agency (AFD)[9], alongside agribusiness representatives (the Syngenta Foundation) and an oil company (Japan Petroleum). Its goal is to "train farmers to (...) move out of subsistence farming practices, and transformed to agribusiness"[10] and "GHG removal through soil and tree carbon sequestration". It implemented a carbon offset mechanism over 45,000 ha of land in Kenya[11].

These products and technologies hinder climate adaptation by reducing the diversity of plants and wildlife and impoverishing soils[12]. Farmers thus risk becoming dependent on these products to produce food, therefore lessening their autonomy (ie. their capacity to not depend on external resources to farm) and food security. In addition, synthetic inputs are significant sources of emissions, including indirect emissions[13] which are regularly not included in the accounting of carbon offset schemes[14].In the livestock sector, some offsetting mechanisms promote anaerobic digesters or "new animal feed" to reduce the animals' methane emissions[15]. This is the case in California's carbon market, which encourages the development of anaerobic digesters on large dairies.

The California's Global Warming Solutions Act (AB 32 - 2006) enacted a carbon market that set a cap on allowable greenhouse gas emissions. In this cap-and-trade program, agriculture is primarily involved through offset projects.

> **CHEAPER AND MORE SUSTAINABLE OPTIONS (AGROECOLOGY, AGROFORESTRY, ETC.), WHICH ARE FAVOURED OPTIONS BY THE SCIENTIFIC COMMUNITY (IPPC, IPBES), SHOULD BE INCENTIVISED, WITHOUT ALLOWING THE ACHIEVED EMISSION REDUCTIONS TO JUSTIFY POLLUTION ELSEWHERE.**

Anaerobic digester technology has been touted as a way to turn factory farm waste into renewable energy, but in actuality, public investment in this technology entrenches factory farming by using public dollars to clean up massive amounts of animal waste rather than avoiding it in the first place by investing in climate-friendly practices like pasture-based production. Factory farms are responsible for recent increases in GHG emissions[16] from agriculture. Offsetting schemes promoting such practices fail to promote the real solutions we need in our animal agriculture system - well-managed pasture-based systems, shifting feed production and processing and shrinking herd sizes[17]. These short-term fixes stand in the way of urgent long-term structural changes.

- **Voluntary carbon markets in agriculture have high project implementation costs and divert decision-makers from implementing more sustainable, cheaper and proven options.** The FAO estimates that it would cost 3.8 billion euros between 2010 and 2030 to establish relevant market infrastructure such as that required for monitoring, reporting and verifying methodologies and converting emission reductions into carbon credits[18]. Costs are so high that in the KACP project, farmers are expected to receive negligible income (estimated before the project at just over 1 dollar per year over the 20 years of the project). The main benefit for farmers is often presented as increased yields[19], which, if real in the short term, are precarious since such projects do not increase farmers' autonomy and typically lock them in agricultural practices dependent on agrochemical inputs that cause environmental degradation.

Decision-makers seem to increasingly promote agricultural change through privately-funded offsetting mechanisms that benefit private entities[20]. This is problematic, since private actors remain firstly guided by their own profit, and do not have the capacity to contribute to the transformational change needed along the whole food supply chain. Instead, cheaper and more sustainable options (agroecology, agroforestry, etc.), which are favoured options by the scientific community (IPCC, IPBES)[21], should be incentivised, without allowing the achieved emission reductions to justify pollution elsewhere.

Because they have such high transaction costs, offsetting projects are profitable only at large scales, thereby promoting land concentration and disadvantaging smaller and more diversified farms. For instance, the Nori offset standard is intended for farms of 400 hectares and up[22] and the California carbon market promotes the development of anaerobic digesters on dairies, which are generally only economically feasible on farms with over 2000 cows[23].

- **Carbon markets in agriculture imply that farmers, including in Southern countries, need to change, when the main sources of agricultural GHG emissions are off-farm and agribusiness-led.** Less than half of total agricultural GHG emissions are emitted on cultivated land. The rest of it comes from deforestation, input production and transportation (fertilizers, seeds, chemicals), energy use, food processing, packaging, transportation, and food waste[24]. In offsetting projects, the responsibility of mitigation is put on farmers, when GHGs can be most meaningfully reduced along the entire supply chain.

More importantly, these markets miss the point when they focus exclusively on smallholder farmers in the South who are least responsible for causing climate change and suffering most from its consequences.

I.A.2 Climate : land-based offsets do not reduce emissions

Agriculture offsets can result in an overall *increase* in emissions. There are three main reasons for this: the impossibility to ensure permanence, measurement challenges and lack of additionality.

- **Ensuring that carbon sequestered will not be released (i.e. "permanence") : the impossible project of land-based offsetting initiatives.** Carbon, whether stored in trees through agroforestry projects or in soils on agricultural land, can easily be released. Human action, natural catastrophes or even global warming affect carbon sinks (IPCC)[25]. It is therefore virtually impossible to ensure that carbon will remain stored on the timescale needed to compensate for fossil fuel emissions, since CO2 emitted continues to affect global warming for several hundred years. This is particularly true for certain types of agriculture projects, where farmers might be forced to engage in practices that will reverse the carbon storage gains, because of climate adaptation needs, e.g. farmers might need to till their land more to better adapt to climate impacts.

The most widely used option to deal with this issue is to use buffers, which set a certain amount of carbon credits aside as insurance. These credits are not sold, and the farmers hence do not get paid for these credits. Buffers are meant to guarantee permanence for a duration of 10 to 40 years. If the carbon is released, then some of the credits set aside are cancelled to account for that "reversal", i.e. the credits can never be used, because the carbon they represent is no longer stored. This assumes that no major reversal will occur beyond the monitoring period (typically 10-40 years, although one standard requires monitoring over a 100-year period). Such insurance either means that standards or project developers will monitor field practices for several decades, or that land use practices will not evolve over the same time-period - both prospects seem highly unlikely.

- **Satisfactory tools to measure carbon sequestered in agricultural soils are not available.** There are significant measurement uncertainties associated with agriculture projects, and specifically soil carbon sequestration. Scientists estimate that the percentage of global GHG emissions that soils could sequester could be between 1.6% and 35% per year[26]. Indeed, it is very difficult to accurately measure the soil carbon content of a given area of land. Under some standards, soil carbon is measured by collecting soil samples and analyzing them for their carbon content. This method is the most accurate one, but is too costly and time-consuming to be widely used[27].

Other standards measure soil carbon through mathematical equations, using default factors. For example, COMET-farm is a common tool used across the US, a country where offset projects are increasingly being developed. This tool assigns default factors to measure how much carbon is stored on one hectare of land, based on the region and the practices applied by a farmer. However, land use and soil type vary even at the farm-level, making such a proxy unreliable while detailed data is necessary to issue offsets.

- **Carbon offsets should finance new projects (i.e. generate "additional" emission reductions), but in reality, this does not always happen.** A carbon market project generates "additional" emission reductions only if the reductions would not have happened in the absence of the carbon market. A project needs to be additional in order to trigger change; otherwise, the offsets simply finance an emission reduction that would have happened anyway.

A common approach to assess additionality is to compare the project scenario with a scenario in which the project would not have happened ("baseline scenario"). This is typically done by ensuring that the project is not required by law, is not common practice, and faces barriers to its implementation (e.g. a financial barrier).

In practice, offsets frequently lack additionality, often because there is some leeway to design the "baseline scenario". Under the CDM, emissions reductions policies can be ignored if they were adopted after 2001, or if they are not enforced - which then offers many options for project developers to design their baseline scenario. When looking at land-use projects, the CDM also allows any land-use activity adopted in a given area since 1990 to be deemed a "realistic" land-use scenario to establish a baseline. For example, if a project developer wants to plant trees on a land which used to be exploited for intensive cattle farming from 1990 to 1991; this developer can assume that intensive cattle farming would be the alternative land use practice if he had not implemented his project. The quantity of carbon credits generated will therefore be the difference between actual emissions from the project, and estimated emissions if the land had been used for intensive cattle farming. This is regardless of whether or not intensive cattle farming is still a realistic land-use activity in that area today.

These are not agriculture-specific issues, but they are used to varying extent by most standards to design their agriculture methodologies and limit the additionality of agriculture projects[28].

Several programs also use "positive lists" of projects. If a project meets certain criteria (e.g. being located in a least developed country and being small scale), then it is automatically counted as additional. This can lead to further non-additional projects being registered, which considerably weakens climate action.

Some projects generate carbon credits based on "carbon intensity", which is a metric that does not ensure absolute emissions reductions. The Mount Helgon project generates credits based on carbon intensity - reducing emissions per unit of milk produced rather than looking at overall emissions.

The Mount Helgon Project (2016-2026) in Kenya was created by the Livelihoods Fund – an initiative of Danone and Mars Inc.[29] The project is supported by private companies aiming to offset their emissions. It is co-funded by the dairy company Brookside Africa Ltd, 40% of which is owned by Danone[30]. It is an agro-forestry and dairy project that aims to "*implement smart agricultural practices to sustainably increase yield and milk production*"[31]. The project is endorsed by the initiative 4p1000[32].

Emissions intensity metrics ignore increases in overall production. Even if herds expand, thereby generating more GHG emissions overall, the project can still be considered effective if it reduces emissions per unit produced[33]. Issuing carbon credits for expanding herds provides a false sense of addressing the climate crisis, while absolute emissions are actually rising.

> **"WITH CARBON INTENSITY, EVEN IF HERDS EXPAND, THEREBY GENERATING MORE GHG EMISSIONS OVERALL, THE PROJECT CAN NONETHELESS BE CONSIDERED AS ENABLING EMISSIONS REDUCTIONS"**

I.B. Food security and food sovereignty impacts

Offsetting projects lessen farmers' autonomy and food security because they create dependency on agribusiness companies, transform the use of land and threaten land security.

- **Some projects increase farmers' dependency** on agribusiness by resorting to GM seeds or chemical inputs (pesticides, fertilizers, etc.)[34] These practices threaten farmers' autonomy by replacing or preventing them from using traditional knowledge of fighting pests and fertilizing soils[35], and they tend to deplete soil's natural fertility[36]. This creates a dependency on the multinational corporations that sell the inputs and raises the question of how a farmer's livelihood will be impacted once an offset project ends and they have become dependent on synthetic inputs.

There is also a risk for farmers to become dependent on agroindustries as buyers of their products. In the Mount Helgon project, farmers specialize in dairy farming, with Brookside Africa committed to buying all milk produced over 10 years. Once the farmers have become milk producers and the project ends, they will find themselves without external support to renegotiate the terms of the contracts with Brookside Africa.

This also undercuts communities' ability to develop local markets for local populations.

- **Agroforestry offsetting projects tend to push local populations off the land to make room for tree plantations.** Agroforestry systems include both traditional and modern land-use systems in which trees are managed together with crops and/or animal production systems in agricultural settings. Offsetting projects on the other hand, tend to convert part of the land to dedicate it only to forest plantations, leaving only a portion of the land for agriculture purposes, or displacing the agricultural activity[37]. Such projects often take place in developing countries where rights over natural resources are unclear[38]. Some certification standards require an agreement which recognizes ownership of land, but instead of protecting local livelihoods, the risk exists that project developers attribute land ownership on a private property basis, without taking into account local ownership practices. REDD+ (Reducing Emissions from Deforestation and Forest Degradation) is an international initiative sometimes used within offsetting mechanisms, which seeks to combat climate change by reducing GHG emissions from deforestation and forest degradation. This mechanism revealed several limitations that may repeat in agroforestry offsetting. In certain REDD+ cases, local populations have seen their access to forests for traditional subsistence activities limited, which had an impact on tenure and their access to land[39].

- **Offsetting projects risk increasing financialization of land and land-grabbing.** When land becomes a financial asset, smallholder farmers' access to it is threatened[40]. Since the carbon storage potential of land can increase its value[41], agricultural land risks becoming an attractive investment option. Initiatives such as the development of a rating agency for agricultural land, which would assess the potential for carbon sequestration[42], shows that the ability to store carbon can affect that land's value, although it is not yet clear how large this impact could be.

II. Key messages and policy recommendations

II.A. Key messages

- **While farmers and the agricultural sector need to be supported in transitioning to climate-friendly practices, using carbon offsets to compensate for emissions elsewhere does not bring about the necessary changes.** Some projects only marginally improve agricultural practices, when others entrench factory farming. Even if some projects support good agricultural practices, they never contribute to the holistic change that scientists call for, and risk increasing competition over land. From a climate perspective, projects based on soil carbon storage are particularly problematic because of the large measurement uncertainties, the impossibility to guarantee permanence on the needed timescale, and the risks it poses to populations. Instead, a transformation of industrial food systems towards agroecological[43], localized and plant based food systems would allow to answer both the climate and food crises.

- **Offsetting projects mostly bring short-term benefits to agribusiness companies, and no long-term benefits to local communities or the climate.** Multinational companies benefit from agricultural offsetting schemes by using them to sell their products or to offset their emissions without having to change their business practices. Local communities can sometimes see short-term economic gains, but such projects infringe on their autonomy and food security.

- **It is necessary to adopt a systemic approach to emission reductions that not only looks at greenhouse gas emissions but also takes into account biodiversity and empowers local populations. In the food and agricultural sector, this entails shifting towards agroecological practices.** The primary function of agroecology is to ensure food security by increasing and diversifying local production.

The COVID-19 crisis showed the extreme vulnerability of globalized production systems, and the better resilience of local food systems. Agroecology also emits fewer GHGs due to the absence, or minimal use, of external inputs. It is more efficient to create resilient agroecological food systems instead of focusing narrowly on the amount of carbon sequestered: it is better for farmers, for consumers, for food security, and in the end, for the climate[44].

Transitioning towards agroecology requires a shift in public investment and public policies, without necessarily increasing overall budgets[45].

- **The private sector can contribute to climate goals by directly reducing emissions within their activities/scope and supporting the transition towards agroecology.** Policy-makers must build the legislative framework to make private sector activities compatible with a 1.5°C goal. No voluntary commitments or mechanisms can replace strong policies and public investment for a just transition.

II.B. Policy recommendations

- **National policy level**

  - States must not develop or encourage any carbon market or offsetting project that uses land-based credits.

  - States must develop a broad public strategy for transitioning towards agroecology that involves all actors from farmers to consumers, and that redirects public budgets to incentivize practices that benefit biodiversity, food security and climate. Policy-makers must ensure that other sectoral policies (trade, etc.) do not hamper this transition.

  - Policy-makers should allow private actors to contribute to the agroecological transition by helping fund the transition towards agroecology. Such climate finance must be regulated by the state. For instance, the "label bas-carbone" in France must evolve from an unambitious offsetting mechanism towards an ambitious lever for agroecology led by public authorities, in which private actors can financially contribute. This is necessary for such a tool to contribute to real climate ambition and not become a greenwashing instrument.

- **European policy level**

  - The EU carbon farming initiative must not encourage the use of agricultural carbon offsets, but should rather establish a mechanism to provide important financial support to help farmers transition to agroecology.

  - The Common Agricultural Policy must stop Single Farm Payments (SFPs) and increase finance through the second pillar (rural development) to increase finance for agroecology and organic agriculture.

- **International**

  - Countries need to exclude the land sector from carbon markets under the Paris Agreement (article 6).

  - Developed countries must increase their contribution to the UN Green Climate Fund and the Adaptation Fund to help poorer countries implement a fair transition towards agroecology, and these funds should focus on financing agroecology projects in their agriculture portfolio.

- **Carbon market standards**

  - Governments and carbon market standards must not issue or approve carbon offsets for agricultural projects, especially from those focused on carbon sequestration, given the large uncertainties associated with such projects, and the risk of non-permanence.

  - Governments must ensure that climate finance protects and restores carbon sinks and contributes to systemic change.

  - Existing mechanisms must ensure transparency: public report of the identity of buyers on their registries, amount of credits each buyer bought or volume of finance contributed if no credits are bought, as well as display of the selling price.

  - All climate finance must ensure respect of local communities and Indigenous Peoples' human rights as well as the free, prior and informed consent (FPIC) protocols.

Notes de fin de page (en anglais of course !)

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