LAND MATRIX

*Few development benefits, many human and environmental risks*

# Taking stock of the global land rush

Analytical Report III | 2021

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The Land Matrix Initiative's parters are:

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# Acronyms

| | |
|---|---|
| **AFA** | Asian Farmers' Association for Sustainable Rural Development |
| **ASEAN** | Association of Southeast Asian Nations |
| **CDE** | Centre for Development and Environment |
| **CED** | Centre for Environment and Development |
| **CIRAD** | Centre de cooperation Internationale en Recherche Agronomique pour le Développement |
| **CSO** | Civil society organisation |
| **DFI** | Development finance institution |
| **FAO** | Food and Agriculture Organization |
| **FAOSTAT** | Food and Agriculture Organization Corporate Statistical Database |
| **FDI** | Foreign direct investment |
| **FPIC** | Free, prior, and informed consent |
| **FSC** | Forestry Stewardship Certification |
| **FUNDAPAZ** | Fundación para el Desarrollo en Justicia y Paz |
| **GC-LTS** | Global Index of the Governance Context for Land Tenure Security |
| **GIGA** | German Institute for Global and Area Studies |
| **GIS** | Geographic information system |
| **GIZ** | Gesellschaft für Internationale Zusammenarbeit |
| **HCV** | High Conservation Value |
| **ILC** | International Land Coalition |
| **ILO** | International Labour Organization |
| **IPBES** | Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services |
| **LMI** | Land Matrix Initiative |
| **LSLA** | Large-scale land acquisition |
| **MENA** | Middle East and North Africa |
| **MODIS** | Moderate Resolution Imaging Spectroradiometer |
| **NGO** | Non-governmental organisation |
| **NLO** | National Land Observatories |
| **RAI** | Principles for Responsible Investment in Agriculture and Food Systems |
| **RFP** | Regional Focal Point |
| **RSPO** | Roundtable on Sustainable Palm Oil |
| **RTRS** | Roundtable for Responsible Soy |
| **TLIC** | "Turning Land into Capital" policy |
| **VGGT** | Voluntary Guidelines on the Responsible Governance of Tenure |

# The Land Matrix Initiative and the scope of this report

The Land Matrix Initiative (LMI) is a partnership between the Centre for Development and Environment (CDE) at the University of Bern, Centre de cooperation Internationale en Recherche Agronomique pour le Développement (CIRAD), German Institute for Global and Area Studies (GIGA), Gesellschaft für Internationale Zusammenarbeit (GIZ), and International Land Coalition (ILC) at global level, and the Asian Farmers' Association for Sustainable Rural Development (AFA), Centre for Environmental Initiatives Ecoaction, Fundación para el Desarrollo en Justicia y Paz (FUNDAPAZ), and University of Pretoria at regional level.

Established in 2009[1] to address the gap in robust data on the real extent and nature of the "global land rush", the LMI has evolved into an independent land monitoring initiative that promotes transparency and accountability in decisions over large-scale land acquisitions (LSLAs) in low- and middle-income countries in response to the need to monitor such complex investment flows. We do this by collecting, capturing, and sharing data about LSLAs at global, regional, and national level on our online open access platform. Our four Regional Focal Points (RFPs), located in Africa, in Asia, Eastern Europe, and Latin America, as well as our National Land Observatories (NLOs) in Argentina, Cameroon, Philippines, Senegal, and Uganda are responsible for data collection in their respective regions. Generally, we collect data for deals targeting agricultural production, timber plantations and extraction, carbon trading, industry, renewable energy production, conservation, and tourism in low- and middle-income countries. Specifically, we record transactions that entail a transfer of rights to use, control, or own land through sale, lease, or concession; that cover 200 hectares or more; and that have been concluded since the year 2000. We also mostly consider land deals that imply the potential conversion of land from smallholder production, local community use, or important ecosystem service provision to commercial use. In this report, however, we also include those deals targeting land formerly used for commercial agriculture in order to ensure that LSLAs in Eastern Europe and parts of Latin America are not under-represented. To allow for meaningful comparisons across regions, we focus on transnational deals in the agricultural sector. While there has been an increase in the number of domestic and non-agricultural deals recorded in the database, the coverage of these data are not yet sufficiently developed. In addition, as intended and failed deals are inherently difficult to verify, unless specified otherwise, most numbers presented in this report only refer to concluded deals, given their high level of reliability. Concluded deals are defined as deals where we have credible reports about an oral agreement or a signed contract. Nevertheless, since other stages of the negotiation process do impact communities and have socio-economic and environmental effects, we dedicate certain parts of the report to the analysis of the evolution of LSLAs, including intended and failed deals.

Finally, deals are only included in our public database if the country is listed and there is information on at least one investor name, one data source, and either the intended, contracted, or operational size. This explains why our database is not exhaustive, although we strive to get much more precise and complete data on each deal where possible. We discuss data coverage limitations further in Chapter 1, Box 1.
This report is based on a snapshot of the data available in our database taken on 20 August 2020. Since the database is continuously updated and data quality improved, the exact numbers and information available in this report will differ from the information available on the website currently. Our data is open-access and can be accessed through www.landmatrix.org. Please refer to our frequently asked questions at www.landmatrix.org/faq for a list of the countries we actively monitor, or to find out more about how we capture, analyse, verify, and use the data.

[1] *The first version of the database was launched in 2012.*

# EXECUTIVE SUMMARY

More than 10 years after the surge in large-scale land acquisitions (LSLAs) in developing countries following the spike in agricultural commodity prices in the late 2000s, the Land Matrix Initiative has taken stock of the "global land rush" and its socio-economic and environmental impacts. Our findings draw on evidence from the Land Matrix database as well as a literature review in order to analyse and better understand the wide-ranging effects of LSLAs.

The results of our review and complementary analyses are sobering, in part alarming. Compliance with the principles of responsible business conduct is rare, and scant consultation with the affected communities is common. The non-consensual and uncompensated loss of land often comes with only little socio-economic benefits – be they employment, positive productivity spillovers, or infrastructure. "Business-as-usual" continues to destroy rainforests, natural habitats, and biodiversity on the agricultural frontiers of the Amazon, Southeast Asia, and the Congo Basin. Although progress has been made with regard to land governance, a lack of policy implementation in this area is evident. This is particularly apparent from our assessment of the application of the Voluntary Guidelines on the Responsible Governance of Tenure (VGGTs) and the transparency of land acquisitions.

While the development community has different views on desirable or feasible patterns of rural development and which instruments, policies, and priorities are required to achieve this in a sustainable way – views which are echoed within the Land Matrix Initiative and among the authors of this report, based on the evidence we have collected, we have reached a consensus that, by and large, LSLAs have not delivered on their promises for rural development.
As the ongoing implementation of LSLAs continues to pose significant threats to rural livelihoods and natural habitats, swift and decisive action is needed to protect both. To address the failings of LSLAs to date, we recommend policy changes in five priority areas:

**1. Land governance reforms and their effective implementation, based on the VGGTs, should be pursued and fast-tracked by governments.** Implementation of and follow-up on the VGGTs should be made a prerequisite imposed by all donors and investor countries for land- and agricultural-related financial support or investments. In this way, key risks associated with LSLAs can be addressed and effective land policy reform assured. Policy compliance and effective implementation should be secured through national and local multi-stakeholder engagement platforms. Importantly, these platforms need to be strengthened and supported by governments and donors.

**2. Local development should take centre stage, with a focus on spillovers to and the inclusion of smallholder farmers.** Not only do LSLAs need to comply with the principles of Responsible Investment in Agriculture and Food Systems (RAI), but host governments also need to develop and implement a strategic approach to rural development that pays more attention to local endogenous growth patterns and to positive spillovers for broad-based rural development. In particular, targeted measures should enhance benefits for smallholder farmers, and local development in affected areas should be prioritised.

**3. International investment treaties must integrate human rights and environmental provisions, and human rights due diligence should be mandatory.** To change the conduct of businesses, human rights and environmental provisions that reflect the specific risks of LSLAs should be included in international investment treaties. Further, we support the introduction of mandatory sustainability due diligence legislation. However, such legislation can only lead to more responsible land-based investments if the affected populations are able to use it effectively in the context of LSLAs. Relatedly, it is of the utmost importance that the participation of citizens, parliaments, and civil society in discussions about the treaties and frameworks that concern human and other basic rights in LSLA contractual arrangements is supported and encouraged.

**4. LSLAs that lead to deforestation, the conversion of other valuable natural habitats, or damage important carbon stores such as peatlands need to be stopped.** Host governments must develop comprehensive landscape plans that address the trade-offs between environmental, economic, and social objectives. Drastic action is urgently

required – for example, through moratoria. Such measures can be incentivised by the international community with benefits such as climate funding. Environmental governance around the risks associated with LSLAs, including the emergence of zoonotic diseases and declining water resources, also needs to be improved through stricter environmental impact assessments, broader planning approaches, and new methodologies.

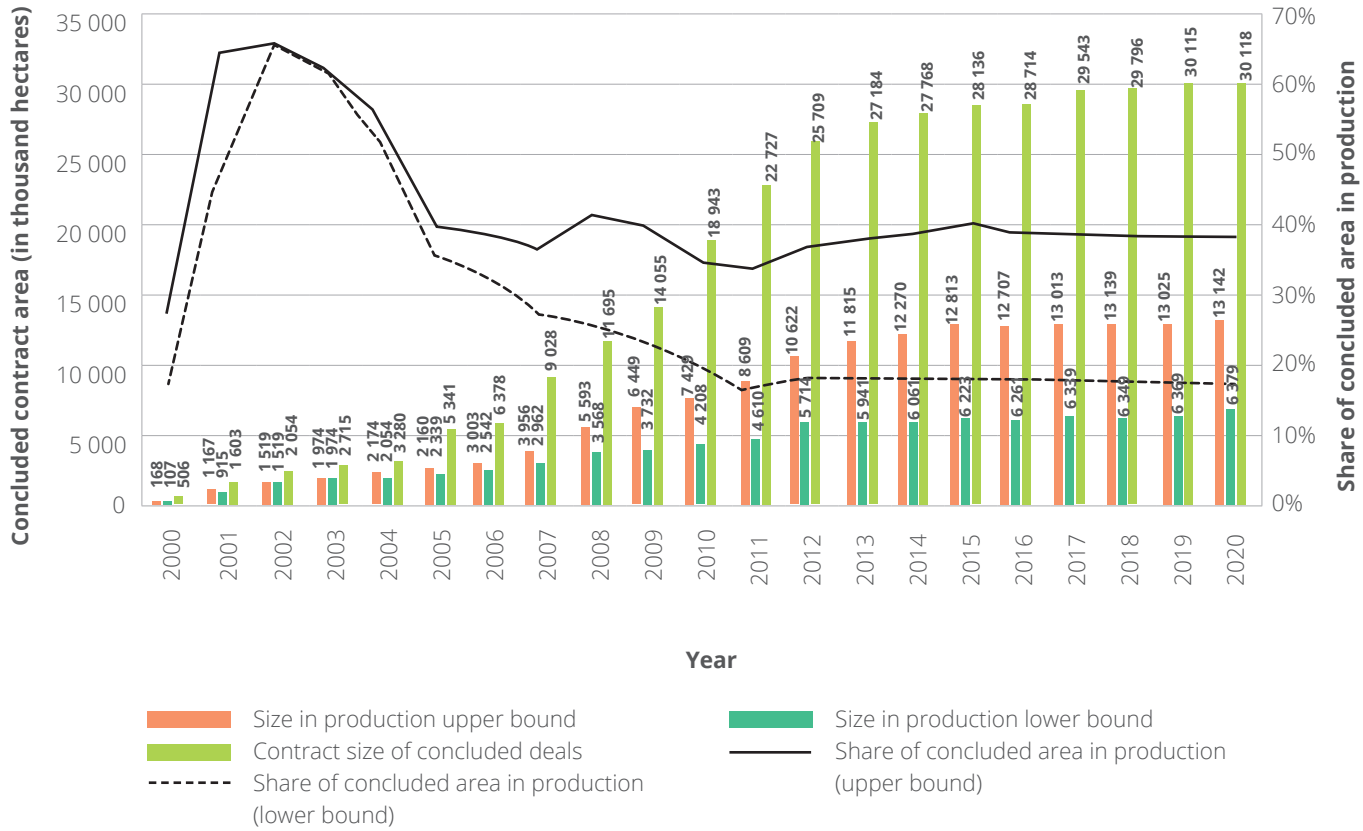
**5. Binding commitments to increase transparency are needed, for all stakeholders.** Transparency should be increased by, firstly, making it mandatory if public capital is involved; secondly, supporting independent transparency and monitoring initiatives; and thirdly, monitoring land ownership, land transactions, and land-use change at the local level. We call on all stakeholders to step up their efforts. Target countries should draw up transparent land-based contracts guided by the VGGTs and RAIs; commodity fora should apply transparency requirements to their members; and donor countries should support independent transparency and monitoring initiatives, including those at the local level.

# Main findings of the report

**After a decade of gradually declining LSLAs, is a new land rush in the making?** The analysis of the Land Matrix data presented in this report clearly reflects a surge in LSLAs in the wake of the commodity price hike of 2007/08, which saw investors hastening to secure land worldwide. This rush for land plateaued after 2010, and since 2013, deals totalling approximately 3 million hectares (ha) have been captured in the database compared to the total volume of 33 million ha for the 1 865 deals recorded by 2020 (of which 1 560 deals with 30 million ha are concluded). More moderate price expectations could be one reason for the slowdown in additional LSLAs after 2013, but policies have also changed. These include land moratoria in important target countries, dwindling support for first-generation biofuels, and restrictions on selling land to foreign investors in some cases.

However, the pendulum may well swing back again as economies try to recover from the pandemic-induced economic crisis. Restrictions could be lifted and more favourable economic conditions – possibly a new "commodity super-cycle" driven by the post-COVID economic recovery – could once more accelerate global LSLAs. Indeed, some countries, including Indonesia and India, have already liberalised their land markets to attract foreign investments.

**Figure 0.1:** Cumulative global contract size of concluded deals over time and size under production (left axis) and share of concluded size under production (right axis)




Notes: Calculations based on Land Matrix data. The lines show the upper and lower bound of the share of contract size (excl. failed deals) in production. The bars show the absolute size per negotiation status per year. Note that in addition to the accumulative size in production by 2020 there is an additional size in production without year information between 1.6 (lower bound) and 8.2 (upper bound) million hectares.

**The slow but steady implementation of land deals** can be observed, with many also being (re)negotiated, transferred, or abandoned. The report has also uncovered **huge regional variation** in implementation rates. Since 2012 – taking into consideration an upper- and lower-bound estimate due to incomplete information on the exact size of the area under production and the additional area under production without year information – we estimate that between 30% and 73% of the contracted land has been put into production. These figures show that the LSLAs documented by the Land Matrix since the year 2000 had, by 2020, put an area of somewhere between 8 million ha, comparable in size to Sierra Leone or Austria, and 21 million ha, equivalent in size to Ghana or Great Britain, into agricultural production. They also imply that between 9 million and 22 million ha of the 30 million ha of land currently acquired by investors have not yet been used for production. In many world regions, especially sub-Saharan Africa, the Asia-Pacific region, Europe and Central Asia, deal implementation has been slow in the 10 years following the global land rush.

**Delays in land deals often result from long negotiation phases, while deal implementation proceeds quickly following deal conclusion.** Although land deals remain in the negotiation phase for 6.6 years on average, once a deal is concluded, investors (in 64% of the cases) generally start production in the same year. The effects of the different timing and trajectories of land deals are not known, and the reasons for the delays are not always clear. In some cases, delays occur because careful consultation with local communities draws out the process, but in others, they are due to technical and management challenges on the part of investors.

**Deal failures are significant and grounded in the jatropha hype and other ill-conceived investments.** The hasty acquisition of land (often that which is used by local farmers and pastoralists) for ill-planned projects in the aftermath of price spikes led to a significant number of project failures, particularly in sub-Saharan Africa, which accounted for half of all failed deals. Failed deals may cause lasting harm, especially if they involve conflicts over land. The reasons for failed deals vary, from miscalculations and misconceptions in planning and management to "realities on the ground", which include financing problems, the underestimation of set-up costs, and agronomic difficulties. However, one crop stands out as "attracting" such problems: 50% of the deals intended for jatropha cultivation, again mostly in sub-Saharan Africa, have failed to date.

**LSLAs are related to big global business** that focuses on international commodity markets. Oil palm-related LSLAs recorded in the Land Matrix database account for more than 20% of the area currently cultivated with this crop worldwide, a share which is also well above the 10% (of currently cultivated area) for rubber and sugar beet and the 5% for sugar cane. This demonstrates how substantially LSLAs have already added or will add to the global production of these crops. For staple crops, on the other hand, the shares are much lower. Estimates reveal, for example, that fully implemented LSLAs for maize, rice, or wheat would make up less than 1% of the globally cultivated area. However, in absolute terms these crops still cover large tracts of land – approximately 2 million ha each for maize and wheat.

**Investors are diverse and truly global, originating from the North, the South, and tax havens.** In addition to hailing from both the global North and the global South, many investors operate through investment hubs, many of them tax havens, thus obscuring their "real" origin. This explains why the top-10 investor origins include countries such as Cyprus (in fourth place), Singapore (seventh place), the British Virgin Islands (eighth place) and Hong Kong (ninth place). Other top investor countries are developing countries with competitive agricultural sectors, like Brazil and Malaysia, and high-income countries such as Great Britain, the Netherlands, and the United States. China also features, having climbed up the ladder to third place among the top investor nations over the last few years. However, contrary to the widely held belief that sub-Saharan Africa is the primary target for investors from China, only 23% of deals with Chinese investors actually occurred in this region. In fact, Chinese investors are far more active in neighbouring countries such as Cambodia, Laos, and Myanmar, with 54% of deals with Chinese involvement taking place in one of these three countries.

**LSLAs occur regardless of the degree of land tenure security.** While the literature confirms that land tenure security clearly plays a role in investors' interest in specific deals, no linear relationship exists between the locational choice of investors and land tenure systems at the country level. In contrast to the case for other forms of foreign investment, land-based investments can frequently be found in countries with weak institutions. Indeed, in such contexts, LSLAs may lead to increased corruption and competition for land, particularly with locals whose land rights are less protected.

**The land targeted by investors is often already used by smallholders, leading to competition over land and displacement without consultation or compensation.** According to current Land Matrix data, in at least 18% of concluded deals, the land (or part of the land) was previously or is currently used for smallholder agriculture, pastoralism, or shifting cultivation. When combined with weak tenure security, this frequently leads to one of the most adverse outcomes of LSLAs: the displacement of local communities. Such displacement, as well as other forms of conflict, could be avoided through proper consultation. However, as the report

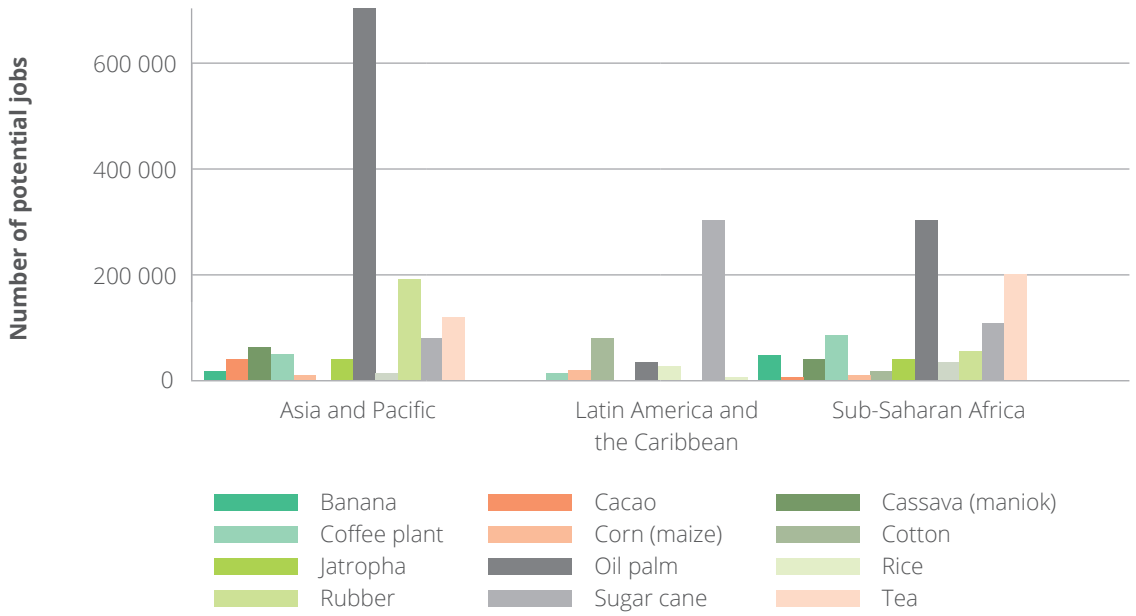
shows, consultation on LSLAs is inadequate in most cases. Indeed, for the more than 250 deals globally for which the Land Matrix has information on consultation, only 15% report that free, prior, and informed consent (FPIC) was given, while almost 45% report no consultation whatsoever.

**LSLAs often exacerbate the weaknesses of land governance systems** since they affect tenure security and the perception of it, particularly with regard to customary land and collective land rights. Indeed, the exclusion of local communities from their land, as well as from the decision-making processes and institutions governing the land, are putting enormous strain on land rights and governance systems. In many countries in Africa, for example, customary rights will be lost permanently, often leaving institutional voids. LSLAs can also induce institutional, structural, and practice-based changes, such as contract farming or tenure formalisation, which may reinforce pre-existing inequalities that fuel land insecurity and conflicts.

The emerging evidence on the socio-economic development impacts of LSLAs suggests that **the rural development expectations have remained largely unfulfilled** and that the promises of jobs, rural infrastructure, and positive spillovers to smallholders have been broken, particularly in sub-Saharan Africa. **There is only limited employment creation due to the low labour intensity of production on most large-scale farms.** Depending on the crops and locations, our assessment of the effect of LSLAs on the quantity of rural jobs highlights that the net employment effects of large farms may be relatively small, or even negative, when LSLAs replace smallholder farms. Only highly labour-intensive crops, such as vegetables and roses, can replicate the labour intensity of smallholder farms (estimated at two permanent jobs per ha) at scale. In contrast, highly mechanised production – for example, in South America – employs one worker on approximately 100 ha, while semi-mechanised production in India employs one worker on approximately 7 ha.

**Only a few crops generate significant employment.** One such crop is oil palm, the cultivation of which is relatively labour intensive. Since this crop covers large tracts of land in Southeast Asia in particular, and increasingly in sub-Saharan Africa, it could potentially create close to one million jobs worldwide if the LSLAs are fully implemented. Rubber, another relatively labour-intensive crop, could generate up to 200 000 jobs in Southeast Asia, while in Latin America, sugar cane

**Figure 0.2:** Potential employment creation through LSLAs by crop type




Notes: Calculations based on Land Matrix data. For the selected crops and regions, the total area is 13 168 545 ha.
Only concluded deals are included, with the exception of abandoned deals. We only show data for crops with a potential employment creation larger than 50 000 and not less than 15 concluded deals in the selected regions.

could create a further 300 000 potential jobs. The employment impact of other crops is generally lower at the country or global level, either due to the relatively small area, as is the case for cocoa, coffee, and tea, or due to low labour intensity, as is the case for most staple crops such as barley, sorghum, teff, and wheat. Most rural labour markets will therefore not benefit significantly from transnational LSLAs, except in some less densely populated countries – for instance, the Democratic Republic of Congo, Gabon, Laos, Namibia, and Papua New Guinea – where LSLAs hold some promise because the job creation potential relative to the labour force is high. On average, though, less than 0.5% of the national workforce will be employed on acquired land in most countries.

**LSLAs are not a remedy for precarious labour markets since temporary and underpaid jobs prevail.** The limited evidence focusing on LSLA job quality indicates a trend towards less permanent salaried work, except for the few management positions, and a greater reliance on casual temporary work. While these temporary jobs may help diversify the income portfolio of the local population, they can only serve as an additional source of income alongside other permanent sources of income. Nevertheless, exceptions to this rather bleak assessment have been documented, including formal work in Kenya's horticultural sector and in selected soya production projects in Mozambique. It is important to note that there is often a gender dimension to LSLA labour demand. For example, while horticultural production in Kenya and Ethiopia predominantly uses unskilled female labour, oil palm (Indonesia) and sugar cane production (Liberia) is more male labour intensive.

**Positive spillovers to smallholders are rare due to the inadaptability of capital intensive and scale-dependent new technologies.** Evidence on spillovers from newly established large-scale farms for grains and staples in sub-Saharan Africa suggests that they are extremely limited, and only moderately positive overall. This holds in particular for crops with larger yield gaps between smallholders and large-scale farms, such as maize production in Zambia where smallholder yields increased by 20% if farms were located near large-scale farms. In the oil palm sector on the other hand, smallholders, particularly in Southeast Asia, quickly took up the newly introduced oil palm, given that it is highly profitable even on a small scale. In Indonesia, smallholders currently account for over 40% of the total oil palm area. However, in many cases, new technologies are not adaptable to the small plots, limited budgets, and traditional skillsets of smallholder farmers. Although contract farming arrangements can help overcome some of these constraints, such arrangements are only found in 15% of the concluded deals captured in the database. Moreover, contract farming may not always be beneficial for smallholder farmers because of unequal risk-sharing and high costs. There is also very little evidence on spillovers through local land, labour, and product markets, such as the depression of local crop prices for staples such as maize. Indeed, there is some evidence from West Africa on potentially adverse impacts on local smallholder farmers through the labour market due to increased wages for hired labour.

**The expectation that large-scale land-based investment would improve social and physical infrastructure has remained unfulfilled.** Just 15% of the concluded deals recorded in the Land Matrix have information on the benefits promised in terms of infrastructure development, and of these, in only half of the cases have these benefits actually materialised on the ground. Even so, these data should be interpreted with caution due to potential under-reporting. Furthermore, LSLAs bring little to no tax revenue. Companies are often exempted from customs duties, income, and excise taxes, and sometimes even receive subsidies. If at all, tax revenue comes from the one-off sale of licenses and concessions. In fact, some companies even "optimise" taxes, for example, in Ukraine, where Land Matrix data reveals that countries such as Cyprus and Luxemburg, which are known for low corporate taxes, are the primary location of investors.

**Under specific conditions, LSLAs can lead to poverty reduction, but the bulk of them do not.** In sub-Saharan Africa, the evidence suggests that the effects of LSLAs on poverty will be very limited, if not poverty-augmenting. In Asia, however, empirical evidence suggests that the oil palm sector, the primary target of investments according to the Land Matrix, has lifted millions of Indonesians out of poverty, while in Laos, LSLAs focused on various crops have contributed to poverty reduction. Both cases suggest that LSLAs are associated with poverty reduction when smallholders are included, farmers in the target region have the skillset to adopt the newly introduced crops and technologies, , and LSLAs do not compete for smallholder and pastoral lands. The latter, however, often means that LSLAs encroach on non-agricultural land, such as forests, as has been widely documented with respect to the oil palm sector.

**Local elites often control the redistribution of land, thereby reinforcing inequality.** LSLAs have, to date, received little attention in terms of their inequality effects. On the one hand, there is some evidence that local elites can take advantage of the redistribution of land or compensation, thus reinforcing pre-existing inequalities. On the other hand, recent

research indicates that employment and labour market effects could favour relatively poor households with little land, which may have positive distributional effects.

**LSLAs have a limited impact on food security and cause competition for land to increase.** Export-oriented LSLAs, particularly when related to biofuel production, have often been associated with threats to food security in target countries as they compete with food production for scarce resources. The empirical evidence on such effects is, however, ambiguous. For example, at the household level, the effect of specialised cash crop production on local dietary diversity is negative, but the effect tends to be small in size. In addition, positive income effects, such as income from cash crops or wage employment, partly counteract the potential losses in dietary diversity. Still, in certain settings where food markets are not easily accessible and income-generating activities are rare, on-farm production diversity may remain important for local food security.

**LSLAs continue to be a key deforestation threat.** LSLAs are a core driver of land-use change, contribute substantially to deforestation, habitat destruction, and land degradation, and, consequently, are associated with massive losses of biodiversity and high carbon emissions, particularly when tropical rainforests are affected. This grim assessment is supported by our own analysis, which combines Land Matrix data on international LSLAs with data on forest cover. Looking at data from 964 geo-located land deals in tropical regions with a total contract area of 19 million ha, we have found, for example, that whereas approximately 9.4 million ha were still forested in 2000, this area had been reduced by 20.2% (1.9 million ha) by 2019.

**East Asia shows continued forest loss, tropical rainforests are at risk in sub-Saharan Africa, and old and new agricultural frontiers have emerged in Latin America.** Some LSLA target countries, including Brazil and Indonesia, have been hotspots for deforestation for decades, but LSLAs have also created new deforestation frontiers worldwide. In East Asia and the Pacific, for instance, approximately 74% of the area around the location of the deals was still forested in 2000, a share which has declined by 16 percentage points over the past 20 years (mainly through oil palm expansions in Malaysia and Indonesia, but also through new agricultural frontiers in Cambodia, China, Laos, and Vietnam). Although deforestation rates have generally been lower in sub-Saharan Africa to date, partly due to the slower pace of LSLA implementation, tropical rainforests in Africa are presently also at risk. This is particularly the case at new frontiers, with huge deforestation threats in the Congo Basin and West Africa (specifically in Côte d'Ivoire, Liberia, and Sierra Leone) – often supported by deliberate government policies.

**Of grave concern, many deforestation impacts from LSLAs are still expected.** Our spatial analysis shows that, based on a 50% tree-cover threshold, approximately 39% of the total LSLA area was still forested in 2019; however, as many LSLAs begin to move into implementation, an imminent threat for remaining forests looms. **With increasing deforestation and damage to other ecosystems, biodiversity is equally affected.** Our data shows that 87% of LSLAs are located in regions of medium-to-high terrestrial biodiversity, of which 39% fall, at least partially, within biodiversity hotspot areas. The current pattern of LSLAs, which generally sees deals concentrated in tropical areas (where endemic diversity is higher), is harming global biodiversity far more than if these deals were located in more temperate climates. **The link between LSLAs and pandemic risks is another reason for concern.** Several mechanisms accompanying agricultural deals may contribute to the emergence of zoonotic diseases, and whole outbreaks of these diseases are seldom, if ever, factored in when assessing the benefits and costs of agricultural investments. Initial estimates indicate that the costs of a change in policies by creating incentives that reduce deforestation and wildlife trade – and thus the risk of pandemics – could be low compared to the cost of a pandemic.

**LSLAs frequently produce crops requiring a large amount of water – even in dryland zones.** Water resources are an important dimension of the potential environmental consequences of land acquisitions, as starkly illustrated by the fact that 54% of all deals recorded in the Land Matrix database are intended to produce water-intensive crops, including cotton, oil palm, rubber, and sugar cane. Worse yet, 34% of these deals take place in dryland zones, with 10% of them producing crops that require large amounts of water. The intensive use of water for LSLAs can also have negative environmental impacts in humid areas due to significant changes in the hydrological cycle through the conversion of rainforests to agricultural land. However, in many dryland areas, such as the Nile region, water-intensive crops like cotton, fodder, potatoes, and sugarcane have the added issue of being likely to cause increased competition and conflict between different users, sectors, and even countries.

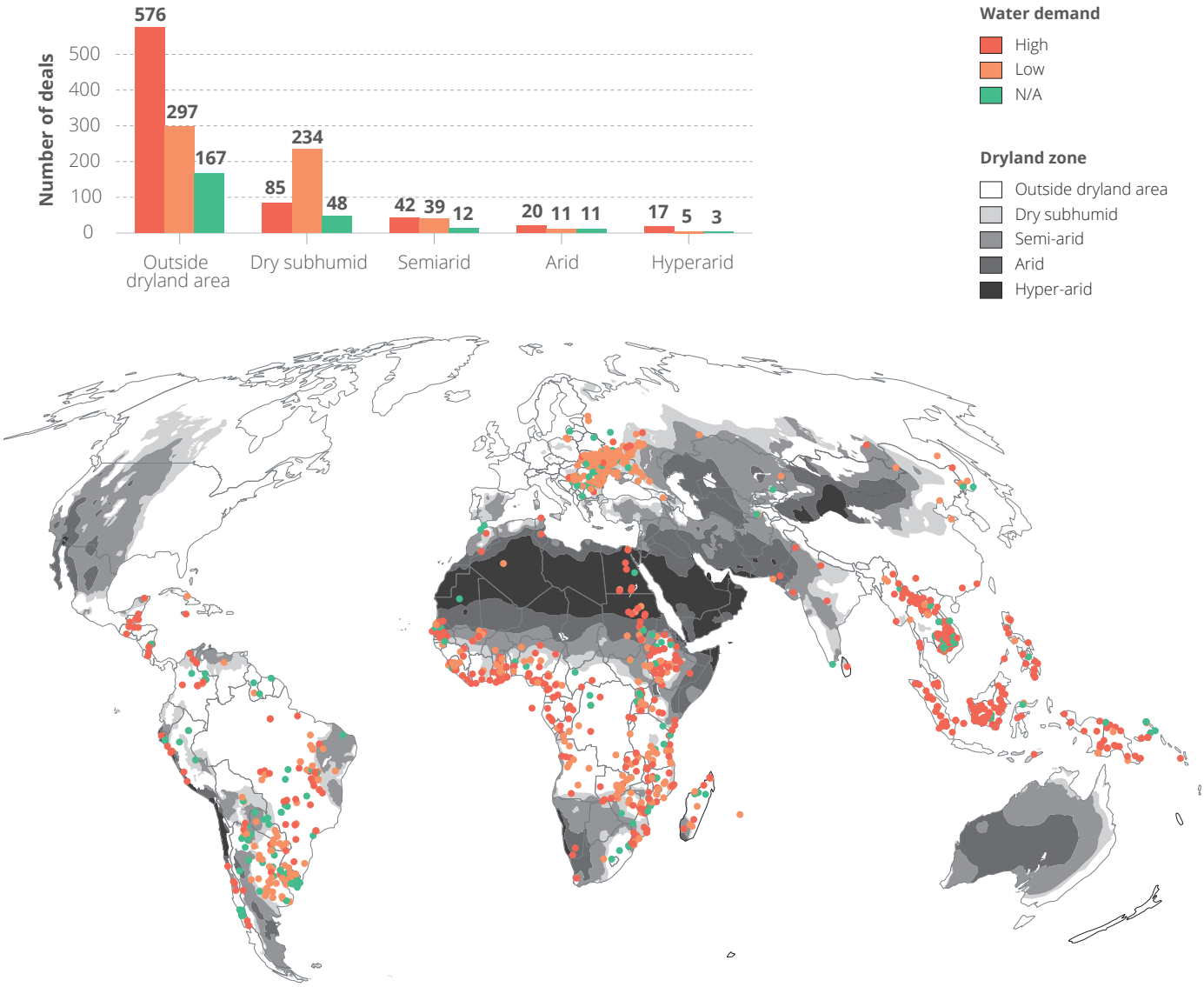
**This report clearly shows the urgent need to rethink LSLAs.** The current practices of large-scale agricultural investments need to be transformed into responsible and sustainable contributions to economic and social development that respect human rights and the environment. In addition, our report shows the necessity of promoting broad-based rural development and endogenous growth patterns with clear priority given to smallholder development. In order to achieve these goals, fundamental changes in the conduct of both domestic and international businesses, as well as dedicated and targeted efforts by investor and host-country

governments, are required. Although progress has been made with the VGGTS and RAIs, much remains to be done at all levels, from global to local, to effectively ensure that land rights are protected, social development in target regions is enhanced, and the environment is respected.

**The implementation of the VGGTs and associated principles at the country and deal level remains low.** Our analysis shows that in Africa, for instance, almost one-third of the deals assessed do not comply with the VGGT guidelines and standards at all, and only 25% are considered to have achieved the minimum compliance. Additional analyses on the transparency of land deals in other regions show a similar picture.

**LSLAs remain opaque due to the lack of information emanating from the local level in target regions, as well as investors, including those from the bigger and**

**Figure 0.3:** Water demand categories of crops cultivated in LSLAs and dryland zones




Notes: Water demand categories based on Johansson et al. (2016) (High: > 8 500 m3/ha; Low: <= 8 500 m3/ha; NA: Crop demand not classified). Map background showing different dryland zones (in grey). LSLAs: n=1 568.

**most developed countries, failing on transparency.** Even though some publicly accessible information regarding LSLAs is provided by companies and governments from G20 member states, detailed analysis of Land Matrix data shows that the operating company is known in less than 20% of deals, the exact location of the land investments is communicated to the public in only 15% of all G20 deals, and less than 10% of investors publish the purchase price or leasing fee. Regardless of prior efforts by the G20, to date its member states are no more transparent on average than non-G20 investing and target regions. Indeed, despite the continuous and rigorous efforts of the Land Matrix Initiative over the last 10 years, the persistent shortcomings in the data confirm that there is a dearth of reliable information around the processes of LSLAs, in all countries.

**Our report provides 11 specific policy recommendations for the road ahead.**

# Policy recommendations

Recommendation 1:
*All governments need to pursue and fast-track land governance reforms and their effective implementation based on the VGGTs.*

Recommendation 2:
*Governments should utilise national and local multi-stakeholder engagement platforms to ensure policy compliance with regard to land management and investment.*

Recommendation 3:
*Land deals and their related projects need to comply with RAI principles and put local development centre stage.*

Recommendation 4:
*Governments need to develop and implement a strategic approach for land-based investments that pays more attention to positive spillovers for broad-based rural development, particularly through spillovers to and inclusion of smallholder farmers.*

Recommendation 5:
*Human and other basic rights (right to food, right to water, right to land), as well as aspects related to the environment, need to be included in international investment treaties.*

Recommendation 6:
*Mandatory human and other basic rights due diligence legislation should be introduced and affected populations should be empowered to effectively use such legislation in the context of LSLAs.*

Recommendation 7:
*LSLAs that lead to (or might lead to if implemented) deforestation, the destruction of other valuable natural resources or habitats, or damage to important carbon stores need to be stopped.*

Recommendation 8:
*Governments should develop comprehensive landscape plans that address the trade-offs between environmental, economic, and social objectives, and in which the purpose, role, and dimensions of LSLAs are clarified.*

Recommendation 9:
*All actors engaged in large-scale agricultural investment projects must increase transparency; indeed, when public capital is involved, it should be made compulsory.*

Recommendation 10:
*Donor countries should provide a mandate to and support independent transparency and monitoring initiatives.*

Recommendation 11:
*All countries should, at the local level, continuously monitor land ownership and control, land transactions, and land-use change.*

# 1
# Taking stock:
## The evolution of the global land rush

After 10 years of intensive data collection following the hype around large-scale land acquisitions (LSLAs), we take stock of their impacts across the world.

This chapter provides an important introduction to the analytical report, outlining how the land rush unfolded in the wake of a spike in the late 2000s. It also lays the ground for the chapters that follow, which explore the impact of LSLAs in the context of land governance and the effect on wider socio-economic development and the environment. We conclude the report with policy recommendations.

The extent of the impact of LSLAs depends on various factors. Firstly, size matters. How much land is acquired, and how much of it is converted into agricultural land, has a bearing on the global, national, and local relevance of LSLAs – with all their potential opportunities and threats. Opportunities can be shaped by local or national development through job creation, higher productivity in agriculture, or improved environmental efficiency. Threats accrue from increased pressure on and competition for land and water, loss of livelihoods of disadvantaged populations, or negative environmental externalities, all of which directly depend on the number and size of LSLAs.

Secondly, the negotiation and implementation paths of land deals influence whether they elicit positive or negative effects in targeted regions. For example, moving into production swiftly following transparent negotiations of land deals makes positive development impulses more likely, but only if deals are operational. On the other hand, long, arduous, and conflictive negotiations or deal failures hamper positive outcomes. It is therefore crucial to understand these dynamics, as well as the drivers of success and failure.

Thirdly, the global and local implications of LSLAs largely depend on the type of crop production taking place on the acquired land. This is because, in principle, LSLAs can lower local food prices and improve the access to food, but only if the type of production reflects local food baskets, as opposed to being targeted at pure production for export markets.

Finally, the origin and type of investors can influence the effects on target regions. For example, some investors of certain origins, such as China or Saudi Arabia, show lower levels of transparency around land negotiations (Flachsbarth et al., 2020); a pre-condition for including local populations and, potentially, local acceptance. Similarly, different investor types – from different origins – come with different investment objectives. While some investors, from global private equity firms to domestic urban elites, may have purely speculative motives, other investors, some of which are supported by development institutions, may focus on creating positive spillover effects for affected population groups in targeted countries.

## 1.1. The land boom that levelled off

The Land Matrix database has captured 1 865 transnational agricultural deals globally, of which 1 560 are concluded. This corresponds to a total targeted size of more than 33 million hectares (ha), of which 30 million ha are concluded[2]. The 10 most important target countries according to contract size are, in descending order, Indonesia, Ukraine, Russia, Brazil, Papua New Guinea, Argentina, Philippines, Ethiopia, Myanmar, South Sudan, and Ghana. As the Land Matrix is likely to under-report large-scale land deals in certain countries and regions, interpretation of numbers should be treated with caution (see Box 1 at the end of Chapter 1 for details on under-reported regions in the database).

*The Land Matrix database has captured 1 865 transnational agricultural deals globally*

*This corresponds to a total targeted size of more than 33 million hectares*

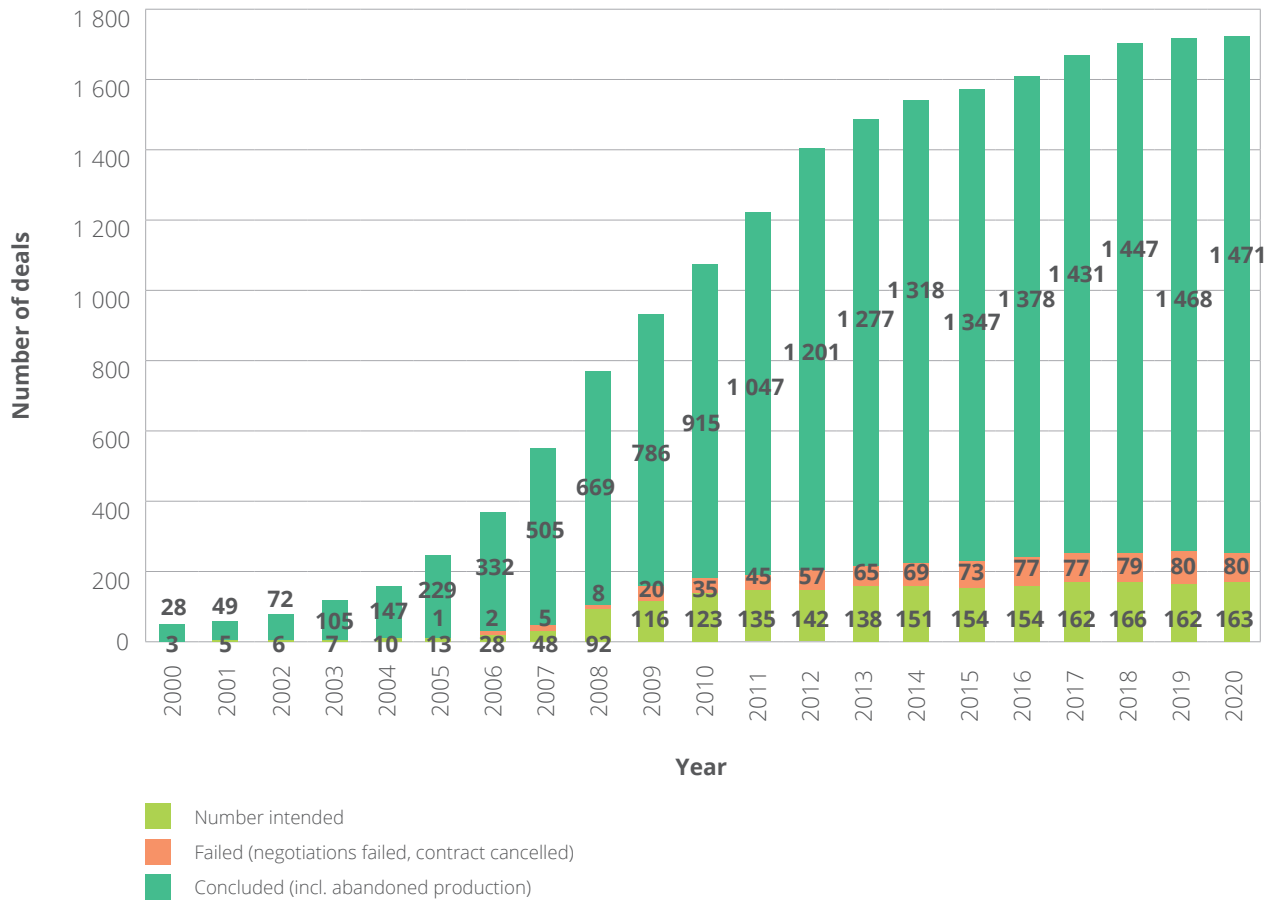
[2]*The terminology used by the Land Matrix for, among others, transnational deals as well as the methods applied are defined in Box 1 at the end of Chapter 1.*

## A new land rush in the making?

Although the Land Matrix data may somewhat under-report transnational deals that occurred in the early 2000s, Figure 1.1 clearly shows the "global rush for land" (Arezki et al., 2015; Cotula, 2012) was already underway, triggered in part by the food price spikes of 2007/08 and the expectation of permanently higher prices for agricultural commodities. It is important to note, however, that a significant number of land-based investment projects that were initiated during this time later failed, which we discuss in more detail further in this section. Fewer deals have been concluded since 2015, and while more moderate price expectations may partly explain why, this slowdown is also rooted in the policy sphere, such as Brazil's soy moratorium (2006), Indonesia's moratorium on forest clearance (2011), and dwindling support for first-generation biofuels (Chiaramonti et al., 2021; Gibbs et al., 2015). In addition, several countries restricted the selling of land to foreign investors, which is discussed in more detail in Chapter 5. Even so, these restrictions may well be lifted, and some countries, including Indonesia and India, have already liberalised their land markets again to attract foreign investments (Rights and Resources Initiative, 2020). Moreover, more favourable economic conditions – possibly a new "commodity super-cycle" driven by post-COVID recovery – could accelerate global LSLAs once again. This is demonstrated in Figure 1.1, which reveals that, although the number of intended deals stagnated in 2019 and the first half of 2020, investors still continue to negotiate a considerable number (163) of acquisitions.

*Fewer deals have been concluded since 2015*

**Figure 1.1:** Cumulative number of deals globally in each negotiation status

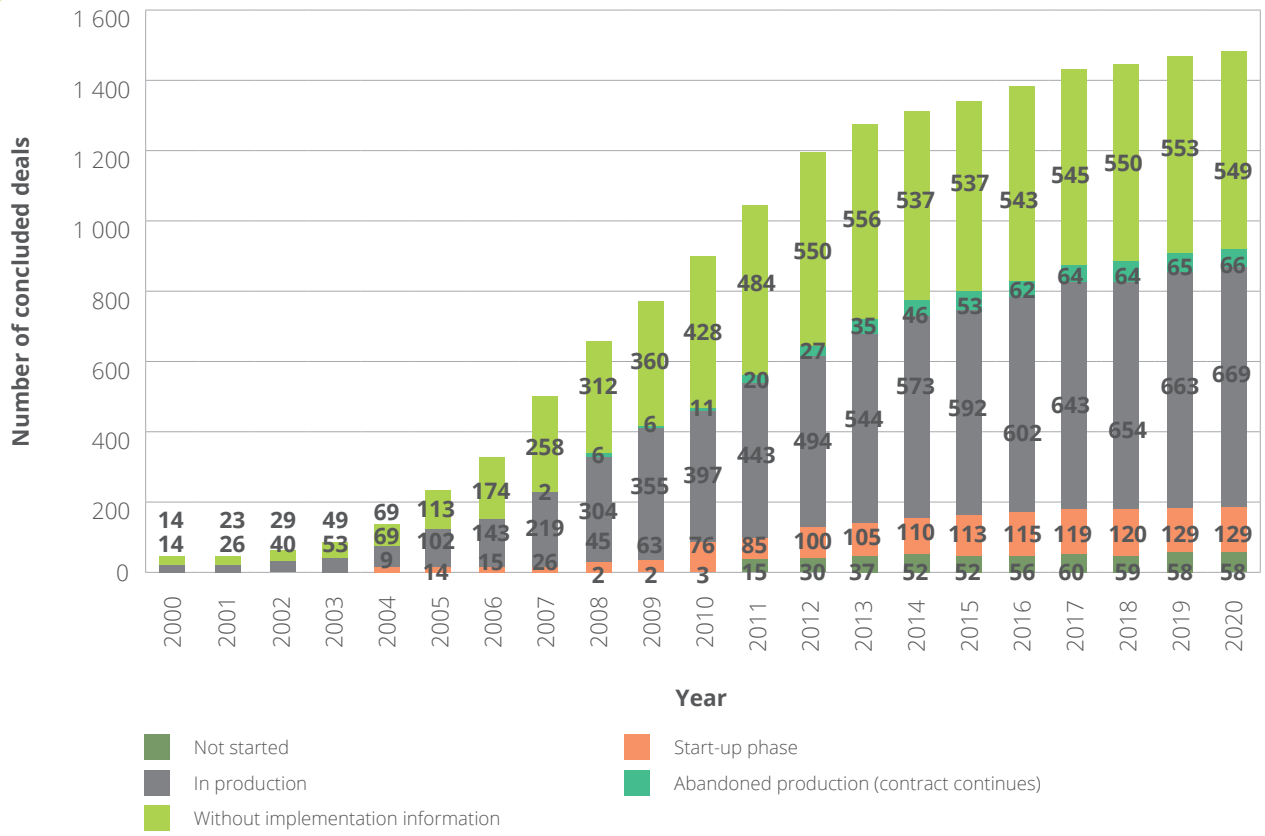



Notes: Calculations based on Land Matrix data. The number of concluded and failed deals are under-reported in this dynamic illustration (as compared to the static 'current' number of deals per negotiation status) because deals for which information on the specific year relating to the negotiation status is lacking are excluded. Conversely, the number of intended deals is slightly over-reported because the few deals which have been concluded in an unknown year are included here as 'intended'. For detailed information on how the dynamics are calculated, see Box 1.

In Figure 1.2, which provides a global overview of the implementation dynamics of concluded deals, we see that even though many increasingly entered the production phase, a substantial number of deals are still not operating or never go into production. This is important in view of the fact that most potential impacts of LSLAs, both adverse and beneficial, hinge on the implementation of deals (the socio-economic and environmental consequences of implemented land deals are discussed in depth in Chapters 3 and 4, respectively). Nevertheless, some impacts of LSLAs already begin to emerge in the early phases of projects. For example, opaque negotiations commonly pose threats to local communities using that land (examined in detail in Chapter 2).

In order to understand local impacts, it is important to be aware of deal dynamics. The following sections therefore provide an overview of the evolution of land deals across the different regions.

**Figure 1.2:** Cumulative number of concluded deals globally in each implementation status




Notes: Calculations based on Land Matrix data. Although there are 1,099 concluded deals currently in operation, the number of operating deals in this dynamic illustration only adds up to 669 due to missing implementation year information, indicating that this should be interpreted as a lower bound. Likewise, the number of abandoned deals is under-reported in the dynamic illustration, but the accumulative number of projects not yet started and in start-up phase are almost exactly reflected in the dynamic statistics. For detailed information on how the dynamics are calculated, see Box 1.

## Slow but steady implementation with huge regional variation

Measuring the land area of LSLAs is not straightforward. Land acquisitions are dynamic processes, in which the size intended by an investor often exceeds the actual contract size once negotiations are complete. Moreover, reliable size information is often lacking, especially the size in operation, which can change over time, while up-to-date, spatially explicit information on implementation size is rarely provided by investors or governments. To tackle this information gap, the Land Matrix has taken steps to incorporate geospatial data and to use remote sensing data more systematically (see Box 2).

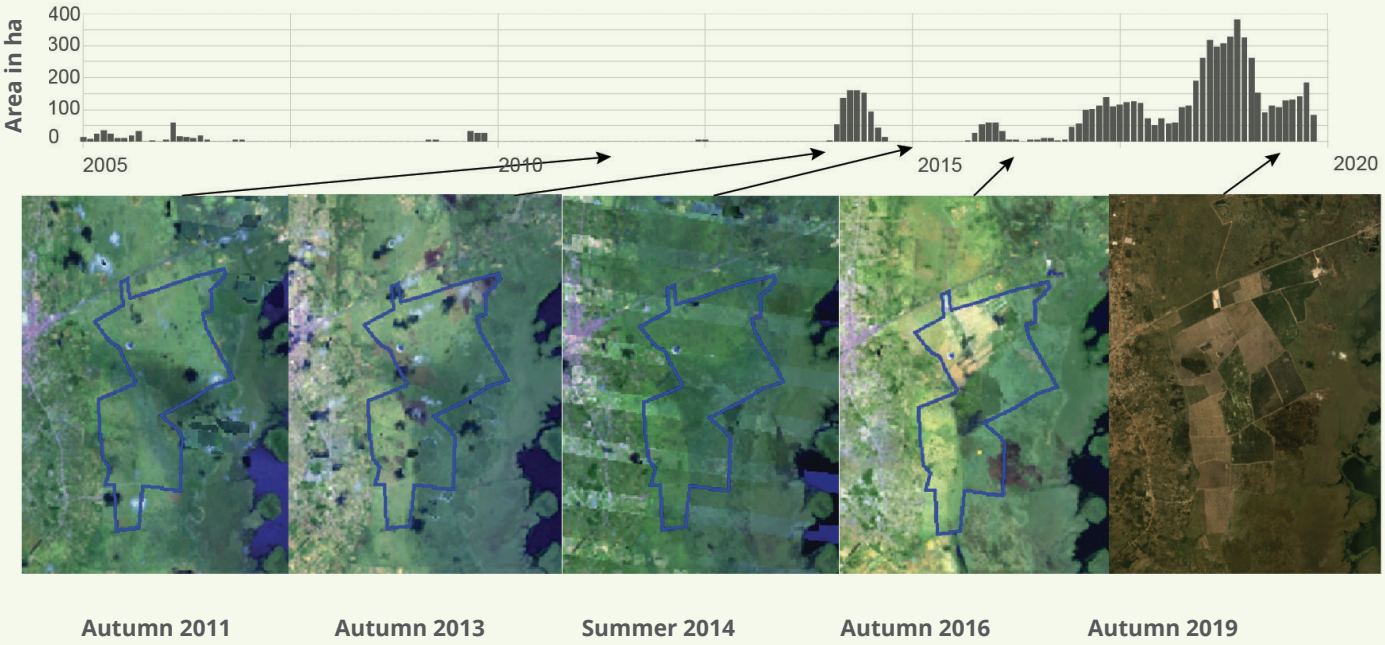
### BOX 2: Mapathon and geodata

In 2020, as part of our efforts to constantly improve the quantity and quality of deals in the database by using highly accurate location information, we conducted a Mapathon to refine the delineation of deals using Google Earth. Through the Mapathon, we identified all deals in the database with high location spatial accuracy, that is, exact coordinates or location, amounting to 1 159 deals, of which we were able to delineate 34% with high accuracy. More than half of the 359 delineated deals are located in Africa and almost all are currently in operation.

The Mapathon showed us how initiatives like these have the potential to address multiple objectives: improving the delineation of deals using accessible satellite imagery through Google Earth; evaluating the quality of the spatial information within the database; building capacity by using software that requires no background in geographic information systems (GIS) or cartography; and using it as a tool for future data collection.

The Mapathon also demonstrated useful insights in the use of geodata within the Land Matrix. Geodata, particularly time-series of satellite images, has the potential to support tasks like monitoring of deal implementation status.

**Figure 1.3:** Area with persistent vegetation greenness anomalies in the previous year in deal #7143, Uganda




Note: The blue border depicts the contract area of deal #7143.

The Moderate Resolution Imaging Spectroradiometer (MODIS), for example, provides daily satellite imagery across the globe at 250 metre resolution since 2001 which can be used to monitor vegetation dynamics. Changes that occurred within the Land Matrix inventory of deals can also be observed retrospectively, verified using anecdotal medium to high resolution satellite images, and complemented by the data gathered by reporters on the ground. Such remote monitoring systems can be especially valuable in cases where access on the ground is limited. For instance, Figure 1.3 shows persistent vegetation greenness phenology anomalies within a deal close to the shore of Lake Victoria, Uganda (deal #7143) – an indicator for within-deal dynamics. Since operations started in 2013, the Chinese investors' rice farm has continually increased its area of operation into the wetlands around the lake as illustrated by the medium to high resolution satellite images, which highlight the verification potential by comparing statistics and spatial patterns. For instance, few anomalies occur before 2013, followed by some change in 2013, no dynamics in 2014, and then increased dynamics after 2015 – a sign of expansion from west (2016) to east (2019).

Using the deal extents derived in the Mapathon, such approaches can contribute to a continuous near-real-time monitoring of deal implementation. The Land Matrix, connecting a repository with a large inventory of deals with in-country experience on the ground and near-real time remote sensing data thus shows new ways of monitoring LSLAs across the globe. Furthermore, where political or financial interests or other limiting factors have stood in the way of Land Matrix reporters, satellite data can fill in the gaps.

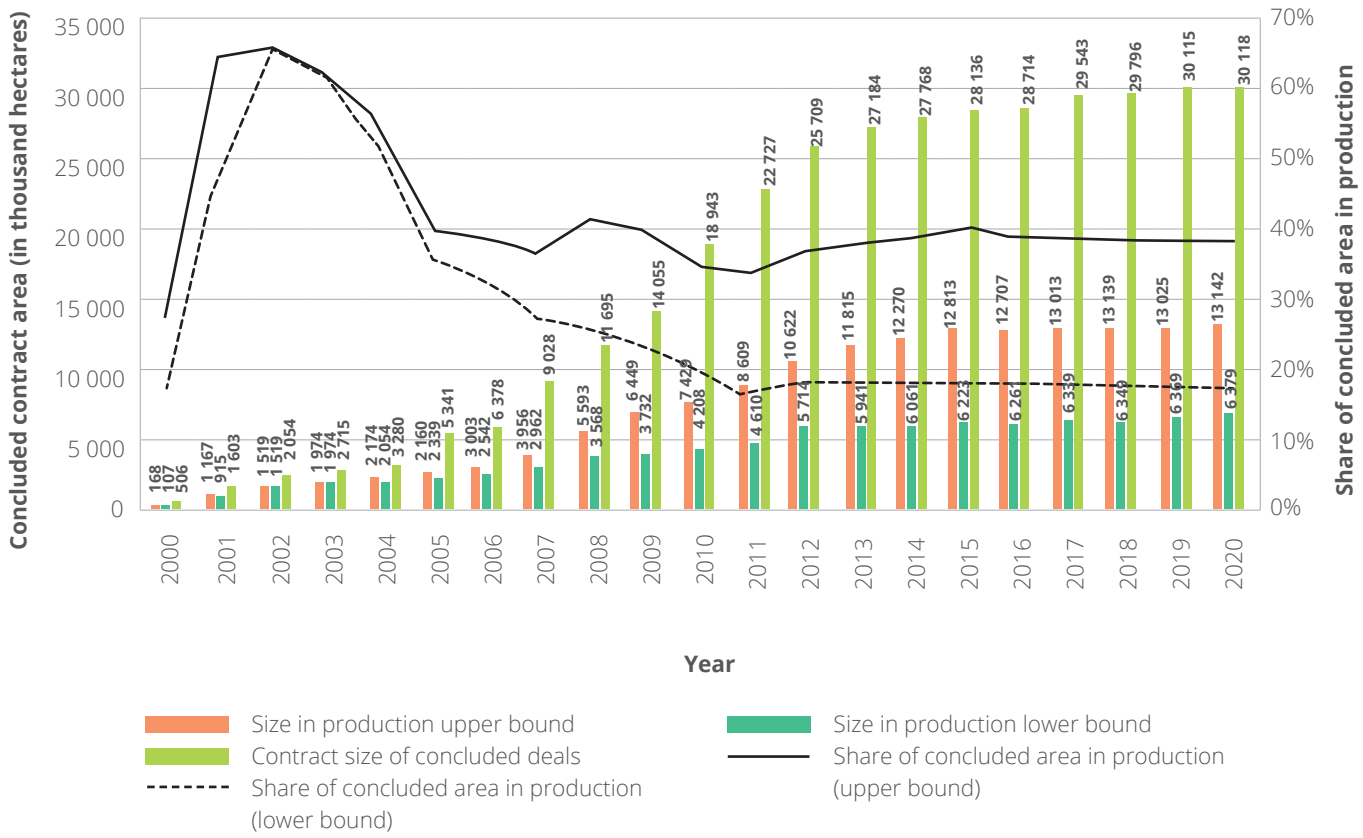
The area under LSLA-contracts increased most quickly between 2006 and 2013, as depicted in Figure 1.4, but since then, "only" about 3 million ha have been added to this global aggregate – in line with the previous observations. Figure 1.4 also illustrates the implementation dynamics, despite relying on incomplete data. Of the 1 099 concluded deals that are reported to be under production, 589 provide information on the area under production[3]. We use this information for the dotted line in Figure 1.4, which we interpret as a lower bound of the share of the contracted area under production. We also compute an upper-bound estimate – the solid line – for this share, assuming that all known operational deals were under production on their entire contracted area.

*...of agricultural land acquired globally by investors, between 9 and 22 million ha have yet to be used for production*

The results of this exercise demonstrate that before the year 2007, the share of concluded deals in production was relatively high. With the land rush, the implementation rate drops considerably, possibly because projects were not well-prepared or investors were less experienced. Yet, since 2012, at least one-quarter of contracted land has been put into production. Our upper-bound estimate of 45% suggests that actual implementation might be substantially higher. This means that the LSLAs documented by the Land Matrix since 2000 have, by 2020, put an area somewhere between 8 million ha, an area comparable in size to Sierra Leone or Austria, and 21 million ha, equivalent in size to Ghana or Great Britain, into agricultural production[4]. On the other hand, it implies that of the currently 30 million ha of agricultural land acquired globally by investors, between 9 and 22 million ha have yet to be used for production.

*[3]These and the following numbers include the size information we have for 2020 as well as the size information for which we are lacking a concrete implementation year, but for which we know that it is the most current status.*
*[4]The number of hectares result from the sum of hectares in production in 2020 plus the remaining hectares without exact implementation year information available (but known as currently under production).*

**Figure 1.4:** Cumulative global contract size of concluded deals over time and size under production (left axis) and share of concluded size under production (right axis)




Notes: Calculations based on Land Matrix data. The lines show the upper and lower bound of the share of contract size (excl. failed deals) in production. The bars show the absolute size per negotiation status per year. Note that in addition to the accumulative size in production by 2020 there is an additional size in production without year information between 1.6 (lower bound) and 8.2 (upper bound) million hectares.

These global aggregates may conceal important regional differences. For example, Figure 1.5 illustrates the regionally disaggregated total contract size of concluded deals divided into the size in production and the unimplemented size. The total acquired area has stagnated around 7.3 million ha in sub-Saharan Africa, 6 million ha in Latin America, and 8.6 million ha in Asia and Pacific since the early 2010s. Only in Europe and Central Asia has the aggregate area under contract continued to increase by 25% overall in the last five years, to 7.3 million ha in total. This also holds for the Middle East and North Africa (MENA) region, although at a very low absolute level. The minor relevance of the MENA region is not surprising, since this region is largely water scarce, and therefore less suitable for agricultural production[5].

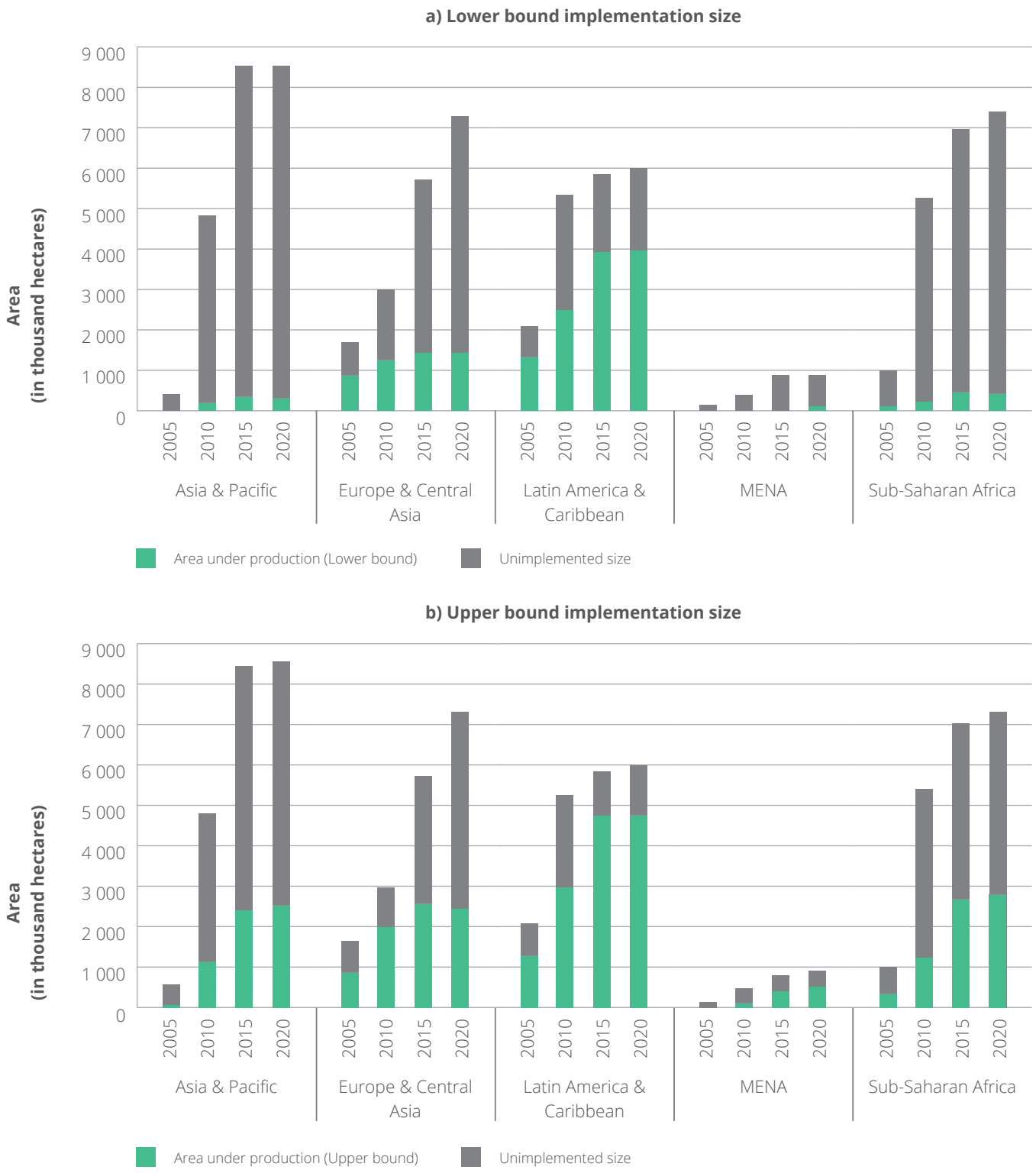
*In many parts of the world, but particularly in sub-Saharan Africa, Asia and Pacific, and Europe and Central Asia, deal implementation has been slow in the 10 years since the land rush*

Figure 1.5 also shows that the implementation size – defined as the area that is put into agricultural production – varies across regions. With 4.7 million ha under production (out of 6 million ha under contract), the implementation rate (79%) is particularly high in Latin America. This corresponds to 0.7% of the entire agricultural area, including livestock area, on the South American continent. In sub-Saharan Africa, Asia, and MENA, an increasing number of deals have come into operation too. This drives our upper-bound estimates for share of the area under production to above 50% in the MENA region, 39% in sub-Saharan Africa, and 30% in Asia, yet the actual confirmed share of area under production remains at roughly 5% in all three regions. In contrast, in Europe and Central Asia, the addition of new deals has caused the share of area under production to fall in recent years to 20% of contract area in production. However, in absolute terms, the implemented area size in this region has also increased by 1.5 million ha over the last five years.

This shows that in many parts of the world, but particularly in sub-Saharan Africa, Asia and Pacific, and Europe and Central Asia, deal implementation has been slow in the 10 years since the land rush.

[5]*The total agricultural land area equals 1.01 billion ha in sub-Saharan Africa, 710 million ha in Latin America and the Caribbean, 1.43 billion ha in Asia and Pacific, 1 billion ha in Europe and Central Asia, and 370 million ha in the MENA region. This translates into a share of agricultural land targeted by LSLAs between 0.25% and 1%.*

**Figure 1.5:** Cumulative contract size of operational deals over time per region




Notes: Calculations based on Land Matrix data. The lower bound share of concluded area under production only considers those deals for which the Land Matrix provides data on area under production. The upper bound is an estimate under the assumption that the entire contract area is in production for all operational deals.

The large gap between the upper- and lower-bound estimate of share of contract area in production leaves us with some uncertainly about the real extent of implementation. One reason for the gap is the dearth of information on the exact size in production, even though we do know that many deals are in operation. However, this gap can also be explained by the fact that investors often deliberately do not fully develop the entire contract land. This may happen because setup and production (operational and input) costs are higher than anticipated, in particular in sub-Saharan Africa. For instance, in Zimbabwe, the lack of stable electricity and water supply that hindered production expansion (deal #4924) on one grain farm in turn ceased other planned plantations elsewhere in the country by the same investor. In Sudan, on the other hand, when the 10 000 ha plantation leased in 2013 by private company Jenaan Investment from the United Arab Emirates (of which 2 000 ha are implemented) for the production of Rhodes grass, Sudan grass, alfalfa, and corn suffered from poor soil composition, thus creating yield gaps, a technical advisory group was put in place to improve soil quality with the aim of increasing production levels and lowering operational costs (deal #2293). Investors often also aim for bigger land areas due to high transaction costs in the negotiation process. In other words, the relatively low land prices are only part of the total costs of land acquisitions. Therefore, if the investment turns out to be successful, the investors have additional land available at no additional transaction costs. At the same times, this setup frequently leads to large areas of acquired, but unused, land.

Another reason for the gap between concluded contracts and the area under production is that international investors sometimes plan to not produce on the entire contract area, but rather set aside some area for conservational purposes. This is often the case for large palm oil deals which are Roundtable on Sustainable Palm Oil (RSPO) certified[6]. Under RSPO certification, land that contains or supports High Conservation Values (HCVs) cannot be cleared for production. For example, Olam International Ltd has several palm oil deals in Gabon which include areas with HCVs. In deal #7626, 18 323 ha out of the total contract size of 35 354 ha have been set aside (52%), while in deal #2236, the investor set aside 12 482 ha for conservation areas and buffer zones out of a total 20 030 ha. However, compliance with these regulations may well be imperfect. For example, some investors, such as First Resources in Kalimantan, Indonesia (deal #4162), have been accused of clearing such conservation areas despite RSPO registration[7].

## 1.2. From intention to implementation or failure: The pace and dynamics of land deals

These insights on implementation illustrate that land deals go through a range of project phases at varying speeds. Some will be implemented quickly, others very slowly; still others may fail entirely, sometimes without even a contract signed. What these different paths mean in terms of impacts is difficult to predict, but they will be related to underlying mechanisms. Delayed implementation, for example, may result from careful consultation with local communities or from technical and management challenges for the investor. If the latter explains why a project fails, effects may be less severe than a failure rooted in local land conflicts that may persist even though the project may never have commenced. In other words, failed deals may leave scars. Even rumours about the arrival of foreign investors can have real impacts, such as on perceived and even actual land tenure security (see Chapter 2). Then there are the many impacts that unfold once operations are established, and land is put into agricultural use. These include the loss of access to land (see Chapter 2), employment opportunities, access to infrastructure and productivity spillovers (see Chapter 3), and environmental effects, such as deforestation and water impacts (see Chapter 4). There is also "reverse causality" at work – that is, how the potential and perceived impacts of an LSLA influence a deal's trajectory. For example, early local protests against a "land grab" triggered by ill-informed rumours may quickly defy any well-intentioned project.

[6]*Principle 5 of the RSPO principles and criteria for sustainable palm oil production relates to environmental responsibility and conservation of natural resources and biodiversity. Criterion 5.2 states that HCV habitats within plantations must be identified and managed accordingly (protected). HCVs are biological, ecological, social or cultural values of outstanding significance or critical importance within a landscape (RSPO, 2017). Certain forestry deals which apply the Forestry Stewardship Certification (FSC) also conserve HCVs.*
[7]*For other examples of HCV deals, see Land Matrix deals #2236, #4162, #4934, #7626, #1393, and #178.*

## Long negotiation phases but quick implementation

As demonstrated in Figure 1.1 and Figure 1.2, the majority of deals are concluded, but new deals enter the database as intentions. In 2020, there were 163 such intended deals without an official agreement between the parties.[8] On average, land deals remain in the negotiation phase for 6.6 years.[9] The median intended time is five years, which shows that the mean is biased slightly upwards. Deals are, on average, concluded quickest after four years (median three years) in Europe and Central Asia, while in Asia and the Pacific and the MENA region, deals are on average concluded after eight years' of negotiation (median nine and eight years, respectively). In Latin America and sub-Saharan Africa, deals take an average of six years until they are concluded (median four and five years, respectively).

*On average, land deals remain in this negotiation phase, for 6.6 years*

Even after the deal is finally concluded, there is sometimes a time lag until the deal is implemented. Earlier studies argue that deal implementation could take years after the deal is concluded (Brüntrup, 2014). However, although it may take time to mobilise the required capital and the former land use does have a bearing, the most recent Land Matrix data shows that, by contrast, 64% of global deals are implemented in the same year as the contract is concluded (see Table 1.1). For instance, only 32 out of 687 concluded deals in production needed more than five years to become productive – albeit with regional differences. For example, sub-Saharan Africa and the MENA region show slower implementation, while production starts more quickly on average in Eastern Europe, Central Asia, and Latin America. In fact, in the latter two regions, production starts immediately after the contract is concluded in 80% of the cases. One likely reason for this fast implementation is that more land was "ready for cultivation" than in other regions, since it was, at least partly, already cleared or even under cultivation before. This means that the necessary infrastructure was already in place before the (new) investor acquired the land (Müller et al., 2021), which is also the case if remaining (typically secondary) forests, shrubland, or grassland fragments in landscape dominated by agricultural uses are being cleared (see Chapter 3). Indeed, when we compute the time from contract to implementation for different LSLAs with different land used, we find the expected pattern. Of those deals that start in the same year after contract conclusion, 61% are on land which was formerly used for commercial agriculture and 28% on land formerly used by smallholders.

**Table 1.1:** Average speed of deal implementation after deal is concluded

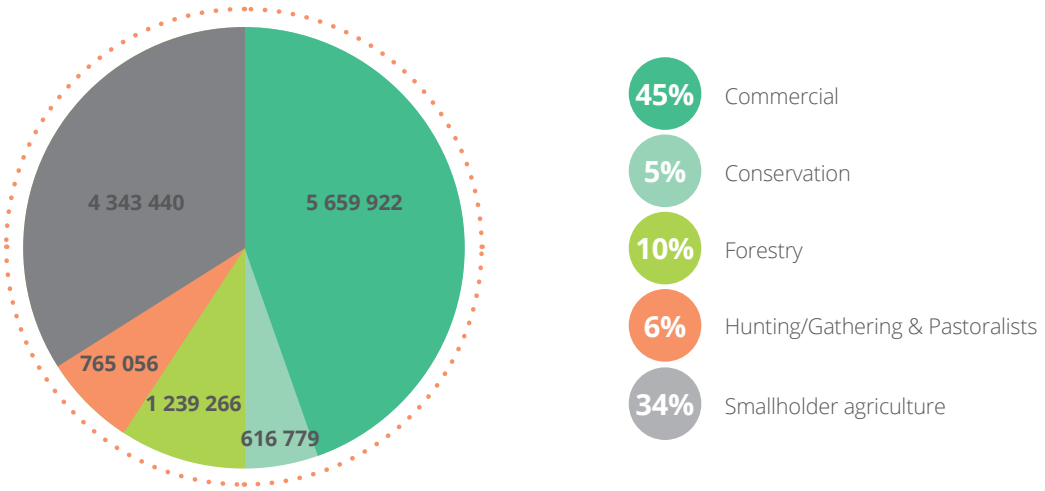
| | GLOBAL | | ASIA AND PACIFIC | | EUROPE AND CENTRAL ASIA | | LATIN AMERICA AND CARIBBEAN | | MENA | | SUB-SAHARAN AFRICA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years between conclusion and start of production | Freq. | Share of N | Freq. | Share of N | Freq. | Share of N | Freq. | Share of N | Freq. | Share of N | Freq. | Share of N |
| 0 | 439 | 0.64 | 70 | 0.53 | 119 | 0.76 | 165 | 0.83 | 7 | 0.41 | 78 | 0.43 |
| 1 | 88 | 0.13 | 17 | 0.13 | 19 | 0.12 | 16 | 0.08 | 3 | 0.18 | 33 | 0.18 |
| 2 | 41 | 0.06 | 14 | 0.11 | 5 | 0.03 | 2 | 0.01 | 1 | 0.06 | 19 | 0.11 |
| 3 | 38 | 0.06 | 12 | 0.09 | 7 | 0.04 | 4 | 0.02 | 1 | 0.06 | 14 | 0.08 |
| 4 | 26 | 0.04 | 7 | 0.05 | 2 | 0.01 | 4 | 0.02 | 1 | 0.06 | 12 | 0.07 |
| 5 | 14 | 0.02 | 4 | 0.03 | 1 | 0.01 | 4 | 0.02 | 0 | 0.00 | 5 | 0.03 |
| 6 | 15 | 0.02 | 3 | 0.02 | 2 | 0.01 | 0 | 0.00 | 1 | 0.06 | 9 | 0.05 |
| >7 | 17 | 0.02 | 1 | 0.01 | 2 | 0.01 | 4 | 0.02 | 2 | 0.12 | 8 | 0.04 |
| Total (N) | 687 | | 133 | | 157 | | 200 | | 17 | | 180 | |
| **Average years until start of production** | **1.17** | | **1.45** | | **0.6** | | **0.61** | | **2.41** | | **1.95** | |

Note: Calculations based on Land Matrix data.

[8] *These deals are mainly located in sub-Saharan Africa (93 deals), followed by Asia and the Pacific (45 deals).*
[9] *Note that this number also includes deals which stay "intended" and to date have never switched to "concluded". This may exaggerate the average time a deal is "intended" before being concluded because some of those negotiations may have actually failed already. However, even if all those deals are excluded from the calculation, the average global "intended" time is still five years.*

How and by whom the land is used when a deal is initiated matters for the socio-economic dynamics which subsequently play out, as well as for the environmental impacts. The literature provides clear evidence that investors compete for land with other land users, in particular smallholders (Lay et al., 2021; Messerli et al., 2014; Oberlack et al., 2016). Data on former land use, which is presented in Figure 1.6 and Table 1.2 supports this. Smallholder agriculture is the predominant former land use type in sub-Saharan Africa, with 50% of all deals in the region being located on land formerly used by smallholders. Most of them are found in Ethiopia (18 deals), Senegal (15 deals), Ghana (14 deals), and Mozambique (12 deals), as well as in Sierra Leone, Tanzania, and Uganda (seven deals each). Furthermore, an important share of the LSLAs (45%) target land previously used for commercial farming before the acquisition took place. Table 1.2 shows that these shares are especially high in Europe and Central Asia, with over 70%, and in Latin America and the Caribbean, with almost 50%.

**Figure 1.6:** Former land use shares (contract size in hectares and share of former use type globally)




Notes: Calculations based on Land Matrix data. Individual deals list up to six different former uses. The Land Matrix does not provide information on the share of area for each type of former use; hence, for this analysis, we have divided the area under contract and attributed equal shares to each former land use. N (deals) = 591, N (former land use) = 727. The shares for former land uses are based on the 591 deals for which information is available. For the remaining 969 concluded deals no former land use information is available. Of note, the category "forestry" may be over-estimated and can include forest area – not forestry – due to imprecise sources.

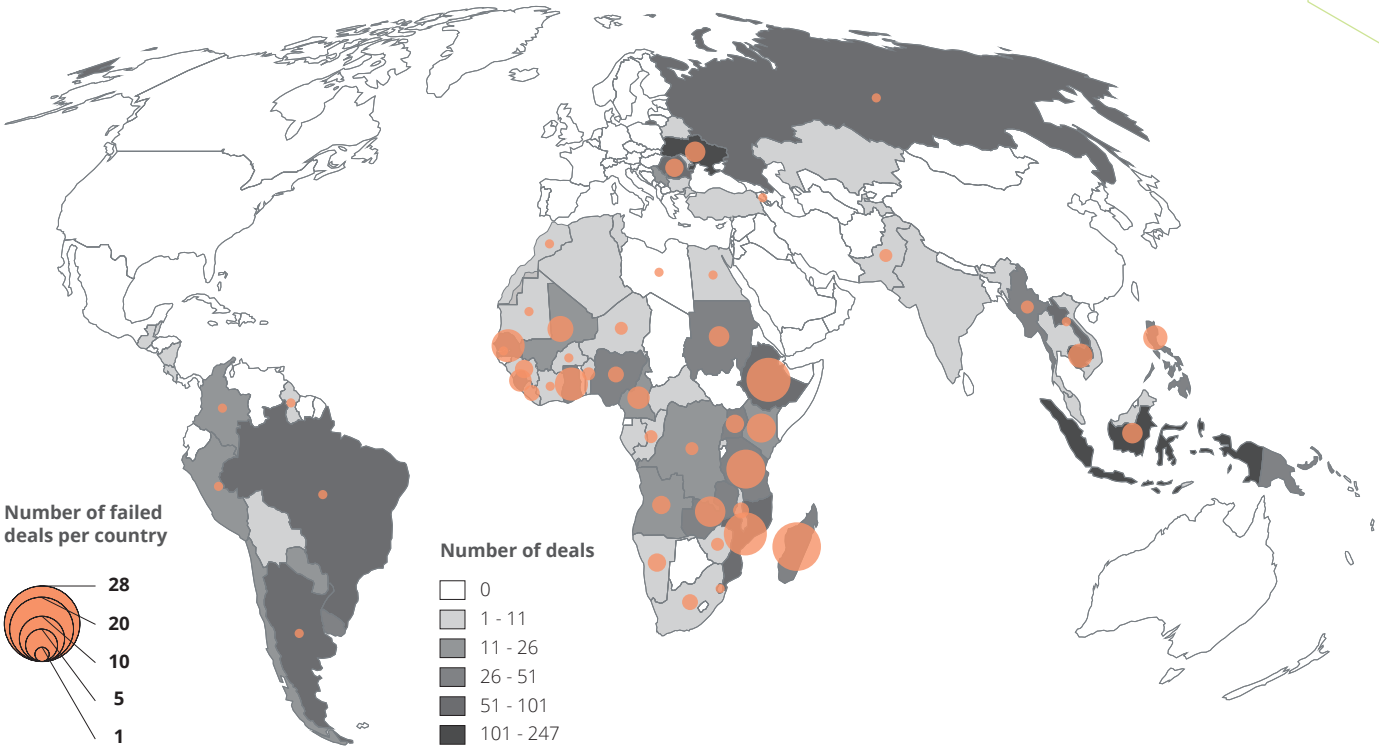
**Table 1.2:** Former land use by regions

| | COMMERCIAL | CONSER-VATION | FORESTRY | HUNTING | PASTORALISTS | SHIFTING CULTIVATION | SMALL-HOLDERS |
|---|---|---|---|---|---|---|---|
| **Contract area in thousand hectares with share within regions in brackets** | | | | | | | |
| Asia and Pacific | 569 (38.9%) | 153 (10.5%) | 226 (15.5%) | 4 (0.3%) | 38 (2.6%) | 4 (0.3%) | 468 (32%) |
| Europe and Central Asia | 3060 (70.9%) | 3 (0.1%) | 0 0%) | 0 (0%) | 119 (2.8%) | 0 (0%) | 1135 (26.3%) |
| Latin America and Caribbean | 1284 (49%) | 131 (5%) | 253 (9.7%) | 0 (0%) | 229 (8.7%) | 0 (0%) | 726 (27.7%) |
| MENA | 1 (1.9%) | 25 (86.4%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (11.7%) |
| Sub-Saharan Africa | 747 (17.8%) | 305 (7.3%) | 760 (18.1%) | 0 (0%) | 376 (9%) | 25 (0.6%) | 1983 (47.3%) |
| **Total** | **5660** | **617** | **1239** | **4** | **761** | **29** | **4315** |
| | **44.8%** | **4.9%** | **9.8%** | **0%** | **6%** | **0.2%** | **34.2%** |

Note: Calculations based on Land Matrix data. Individual deals list up to six different former users. The Land Matrix does not provide information on the share of area for each type of former use; hence, for this analysis, we have divided the area under contract and attributed equal shares to each former land user. N (deals global) = 591, N (former land user global) = 727. The shares for former land users show the share of the 591 deals for which information is available. For the remaining 969 concluded deals no former land use information is available.

As highlighted earlier, failed deals may still entail permanent changes in land ownership and persistent land use change from prior land preparation (GRAIN, 2018; Nolte, 2020). Figure 1.7 illustrates that sub-Saharan Africa is especially prone to deal failures. Globally, 50% of all failures occurred in the following countries: Madagascar (28 deals, representing 80% of the LSLA in the country), followed by Ethiopia (23 deals, 25%), Mozambique (22 deals, 27%), Tanzania (18 deals, 39%), Senegal (13 deals, 42%), Ghana (13 deals, 28%), and Zimbabwe (11 deals, 23%).

**Figure 1.7:** Number of all deals and failed deals across the world




Notes: Calculations based on Land Matrix data. Countries are shaded in grey tones according to the number of projects they host: the darker the country is shaded the more projects are found in this country. Failed projects are displayed using red circles with the circle size being proportional to the number of failed projects in a given country.

The underlying reasons for land deal failures vary across regions and investors. Project failure typically results from miscalculations and misconceptions in planning and management, as well as the realities "on the ground". In Africa, for example, earlier studies by Cotula et al. (2014) and Burnod et al. (2015) highlighted that some investors withdrew from projects due to financing problems and underestimation of set-up costs, while other projects proved insufficiently profitable due to agronomic difficulties (see Box 3). The prominent series of deal failures in Madagascar, on the other hand, were due to an unfavourable climate, pests, and diseases (Burnod et al., 2015). In addition, some investors lacked experience in the agricultural sector and others reported issues such as theft and arson (Burnod et al., 2015), which was also reported by the investor Sime Darby for its oil palm investment (Deal #1388) in Liberia (Chain Reaction Research, 2019).

The complexity of negotiations, in particular in land matters, was also frequently underestimated, as were expectations of local populations. In a number of countries, negotiations of deals can be complicated by burdensome bureaucracy, dysfunctional institutions, or corruption. For example, in Madagascar, investors faced an endless and multilevel negotiation process with various stakeholders which was time consuming and very costly, ranging from formal expenses (such as taxes and administrative fees) to informal expenses (like corruption) (Burnod et al., 2013). Corruption at the local level as well as conflicts with affected populations over the lack of consultation, access to land, and potential benefits (such as infrastructure and employment) often trigger social protest (see, for example, Burnod et al., 2015, and Ahmed et al., 2018). From reviewing the Land Matrix data, an overview of the frequencies of the discussed underlying reasons for deal failures is given in Table 1.3. It reveals that conflicts and protest are the most dominant given reason for deal failure, followed by financing problems. As already discussed, most deal failures are located on the African continent. While in absolute terms investors from China, India, the UK, and the USA dominate deal failures, there is no clear investor country pattern visible regarding the different underlying reasons for failure. Furthermore, the numbers in part reflect the total investment dominance of those countries (see Figure 1.10) and figures thus need to be treated with caution, because information is only available for a subset of failed deals.

*Most deal failures are located on the African continent*

**Table 1.3:** Frequencies of deal failures clustered by reasons

| Deal failure reason | Deal IDs in Land Matrix database | Target countries | Investor countries |
|---|---|---|---|
| Financing problems | 1096, 1202, 1290, 3755, 1334, 3772, 4354, 6621, 1414, 1645, 1526, 2271, 7651, 1769, 1772, 2297, 1041 | Angola, Ethiopia (3) Ghana (3), Kenya, Madagascar, Malawi, Mozambique (3), Senegal (2), Sudan, Ukraine | USA (2), Portugal, Angola, India, Switzerland (2), Benin, Canada (2), Ghana (2), Denmark (2), Kenya (2), Saudi Arabia (2), UK (4), Belgium, China, Cyprus |
| Unfavourable climate/ environmental conditions | 1201, 1204, 1306, 1228, 1323, 229, 1554, 4742, 5632, 1653, 8134, 1839, 1875 | Ethiopia (4), Ghana, Laos, Mozambique (3), Namibia, Senegal, Tanzania (2) | UK (5), Ethiopia, India, China (2), Israel, Italy, Mauritius, Zimbabwe, Namibia (2), Morocco, Tanzania, USA, Norway |
| Change in world market prices | 1839, 1877 | Tanzania (2) | Sweden |
| Conflicts/protests | 3552, 61, 1189, 1228, 3832, 3925, 188, 1362, 1363, 1365, 3362, 1397, 1399, 2254, 2253, 4939, 1474, 1481, 1523, 5104, 3465, 4269, 3435, 4058, 4524, 1744, 1866, 1877, 4165, 4295 | Armenia, Cambodia, Ethiopia (4), Indonesia, Kenya (4), Liberia, Libya, Madagascar (2), Malawi, Mali (2), Mozambique, Namibia, Nigeria, Pakistan, Senegal (2), South Africa, South Sudan, Tanzania (2), Uganda, Ukraine | Iran, Australia, Luxembourg, Germany, Ethiopia, Turkey, Malaysia (2), Belgium, Canada, UK, Italy, Libya (3), South Africa, Korea (2), India (2), Mali, USA (3), Guinea, Mauritius, Liechtenstein, Israel, United Arab Emirates (2), Spain, South Sudan, Netherlands, China (2), Ukraine |
| Regulatory difficulties (malfunctioning local institutions, corruption) | 751, 1308, 3931, 1656, 3333, 3436, 3797, 1874, 1895, 3739 | Brazil, Ethiopia, Guyana, Namibia (2), Senegal, Sudan, Tanzania (2), Zambia | China, India, India, South Africa, UK, Italy, Saudi Arabia, USA / Tanzania, Sweden / Tanzania, Zambia / China |
| Legal difficulties | 719, 106, 1348, 1339, 3791, 3792, 920, 443, 5477, 6041, 5559 | Argentina, Cambodia, Ghana (2), Niger (2), Peru, Philippines, Senegal, Sierra Leone , South Africa | China, Vietnam, USA (2), Ghana, Saudi Arabia (2), Korea (2), Morocco, China, India, South Africa |
| Other reasons | 1984, 4432, 3826, 3835, 3854, 2237, 173, 163, 3894, 3167, 4481, 2039, 3905 | DR Congo (2), Ethiopia (2), Gambia, Ghana, Indonesia (3), Swaziland, Uganda, Zambia (2) | China (2), South Africa, Congo, India (3), Romania, Norway, Korea, UK (2), South Africa (2), India, Zambia |

Note: Evidence based on Land Matrix data. A reason for deal failure is given for 96 out of the 253 deals which are currently marked as "failed or abandoned" in the Land Matrix database. This means that the target and investor country frequencies are not representative, and are biased towards those countries/investors which provide information.

Changing policies also contribute to deal failure in some countries, while other countries require investors to quickly enter the production phase, threatening to withdraw the concession if this does not happen. In 2012, for instance, following local and international pressure, Laos implemented policies that allowed the government to withdraw land concessions if the land was left vacant (Oldenburg & Neef, 2014). Similarly, in Ethiopia, some contracts include specific clauses requiring the investor to start production on the land within a few years after the contract signature. For example, in one deal (#3835) signed in 2011, the Ethiopian government demanded that the investor, Indian Saber Group, plant one-fifth of the land within one year and the entire contract area of 25 000 ha within five years of the deal conclusion. Due to non-compliance, the contract was cancelled by the government in 2015 (see also deal #1202 in Ethiopia which failed and #1304 which has not failed yet, despite non-compliance).

All of these cases have specific combinations of factors that eventually explain failure. A comparative global study by Nolte (2020) using Land Matrix data confirms a general pattern. She finds that, on average, larger projects, biofuel deals, and projects targeting land formerly used by smallholders or pastoralists are more likely to fail. By contrast, projects that involve domestic investors or those in countries with better existing infrastructure are less likely to fail. These results are supported by Table 1.4, which provides an overview of the regional distribution of deal failures and how they relate to different crop production systems. It is striking that almost 80% of deal failures occur in sub-Saharan Africa, out of which almost 75% were located on formerly smallholder land. While there is no clear crop-specific pattern in deal failures, one crop does stand out: 50% of jatropha deals – again mostly located in sub-Saharan Africa – fail.[10]

**Table 1.4:** Regional and crop distribution of failed deals (number of deals and share of failed deals over total deals per crop)

| CROP | ASIA AND PACIFIC | EUROPE AND CENTRAL ASIA | LATIN AMERICA AND CARIBBEAN | MENA | SUB-SAHARAN AFRICA | TOTAL NUMBER OF FAILED DEALS | TOTAL NUMBER OF DEALS | SHARE OF FAILED DEALS |
|---|---|---|---|---|---|---|---|---|
| Jatropha | 5 | 0 | 0 | 0 | 68 | 73 | 151 | 48% |
| Vegetables (unspecific) | 1 | 0 | 1 | 1 | 17 | 20 | 76 | 26% |
| Rice | 2 | 0 | 0 | 1 | 31 | 34 | 167 | 20% |
| Sugar cane | 0 | 0 | 1 | 1 | 27 | 29 | 148 | 20% |
| Fruit (unspecified) | 0 | 0 | 1 | 0 | 10 | 11 | 57 | 19% |
| Cotton | 0 | 0 | 0 | 0 | 9 | 9 | 51 | 18% |
| Sorghum | 1 | 0 | 0 | 2 | 6 | 9 | 51 | 18% |
| Cassava (maniok) | 2 | 0 | 0 | 0 | 6 | 8 | 52 | 15% |
| Oil palm | 4 | 0 | 0 | 0 | 32 | 36 | 301 | 12% |
| No information | 3 | 1 | 1 | 1 | 16 | 22 | 187 | 12% |
| Corn (maize) | 4 | 8 | 0 | 3 | 33 | 48 | 493 | 10% |
| Soya beans | 0 | 4 | 2 | 1 | 18 | 25 | 360 | 7% |
| Sun flower | 0 | 4 | 0 | 0 | 14 | 18 | 274 | 7% |
| Wheat | 0 | 7 | 1 | 4 | 9 | 21 | 378 | 6% |
| Rubber tree | 4 | 0 | 0 | 0 | 3 | 7 | 169 | 4% |
| Rapeseed | 0 | 5 | 1 | 0 | 0 | 6 | 149 | 4% |
| Sum of all other crops | 7 | 15 | 0 | 11 | 70 | 103 | 920 | 11% |
| **Total** | **33** | **44** | **8** | **25** | **369** | **479** | **3 984** | **12%** |

Note: Calculations based on Land Matrix data. Crops are only listed if total number of deals > 50, otherwise deals are listed under the category "sum of all other crops with failures". Deals are counted repeatedly if multiple crops are produced per deal. In total, N failed = 253 deals, out of which 92 are counted multiple times due to multiple crops. N total = 1,865, out of which 826 count multiple times.

Given the global relevance of biofuel deals in LSLAs and the high failure rates of jatropha, we take a closer look at this sector. Figure 1.7 shows that a large number of deals fail in Southern and Eastern Africa. It was in these regions where investors intended to replicate the ambitions of biofuel production in other regions of the world. For instance, in 2010, Brazil planned to replace about 10% of the world's fossil fuels by 2025 with ethanol made of sugar cane. At the same

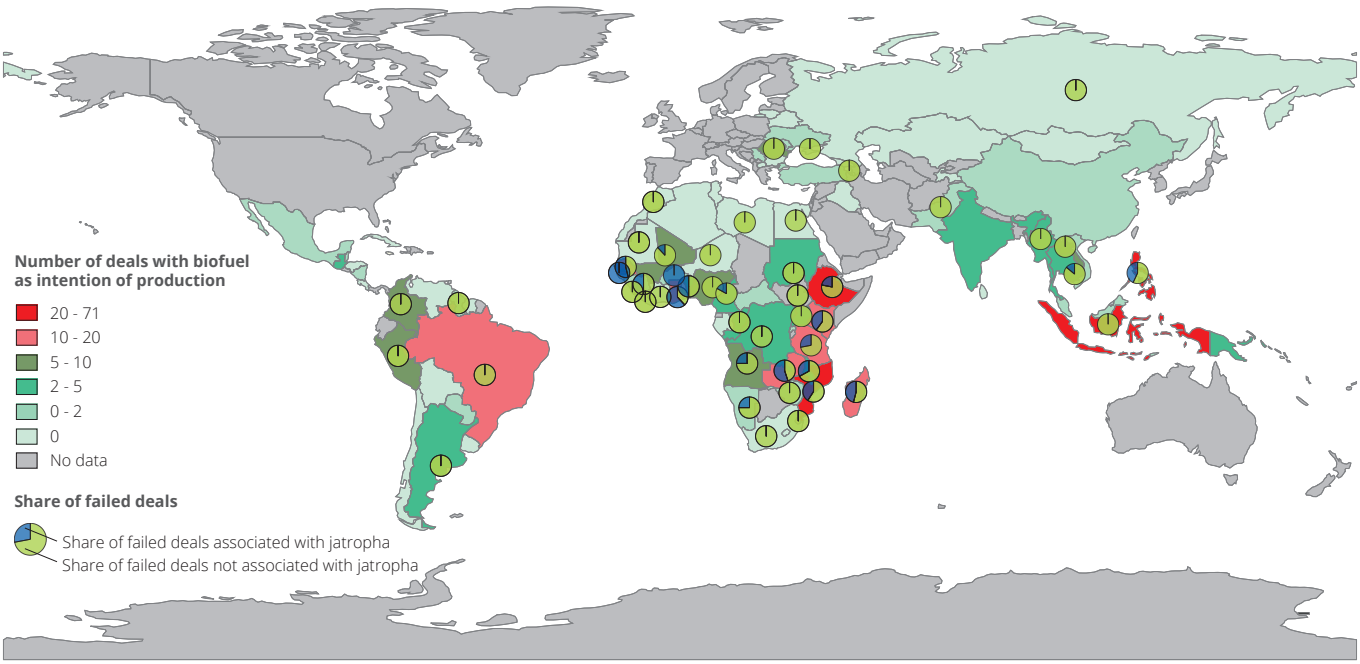
[10] *Of the Jatropha deal failures, 80% occurred in Madagascar (13 deals), Mozambique (9 deals), Ghana (8 deals), Senegal (7 deals), Zambia (6 deals), Ethiopia (5 deals), and Kenya (4 deals). In total, 83 of the rice, vegetable, and sugar cane farms have failed in Mali, Tanzania, Nigeria, Senegal, Niger, Vietnam, Ethiopia, Mozambique, and Kenya.*

time, Malaysia and Indonesia intended to supply 20% of the biodiesel consumed in the European Union with their large oil palm sector (Borras et al., 2010). This trend is also apparent in the Land Matrix data.

*In countries such as Madagascar, Zambia, and Mozambique, about half of all failed deals are associated with jatropha*

Figure 1.8 shows a large number of ("unfailed") biofuel deals in Brazil and Southeast Asia driven by the sugar cane and oil palm sector, respectively. Similarly, in Africa, different crops are used for biofuel production, but jatropha was the crop that was hailed as Africa's ticket to biofuel production with promises of high yields, low water demand, and its adaptability to marginal lands (Von Maltitz et al., 2014). In particular, the adaptability to semi-arid areas with limited potential for food crops was seen as crucial to mitigate the trade-off between biofuel production and the preservation of tropical rainforests, as well as the trade-off between biofuel and food production. In the end, these expectations were rarely realised. Yields were overestimated, while the management costs were underestimated due to malfunctioning institutions and the absence of the necessary infrastructure (Ahmed et al., 2017; K. Singh et al., 2014; Von Maltitz et al., 2014). As shown in Figure 1.8, in countries such as Madagascar, Zambia, and Mozambique, about half of all failed deals are associated with jatropha.

**Figure 1.8:** Deal failures in the biofuel sector




Notes: Calculations based on Land Matrix data. Country colours show the number of deals where one of the intentions of production was biofuels. The pie chart shows in blue share of failed deals associated with jatropha, in green the share of failed deals not associated with jatropha.

**BOX 3:**
**Biofuel development in Ghana:**
**Policies of expansion and drivers of failure in the jatropha sector**

In Ghana, biofuel production for the domestic market was the primary driver of the recent surge in LSLAs following the announcement by the Ghanaian government of a 20% blending target by 2020. Since then, the trajectories of large-scale land investments have been dynamic. In 2003, the initial government strategy was to acquire 1 million ha to pilot smallholder-based projects in 53 districts across the country. This strategy was abandoned by a new government in 2008 due to challenges in land acquisition for smallholders. The new government instead provided incentives to attract foreign direct investment (FDIs) for LSLAs.

Studies have reported mixed results about the total number of companies, deals, and land sizes. Findings suggest 31 biofuel-related LSLAs, totalling 950 131 ha of land, were made between 2006 and 2011, with a verified 15 foreign and two Ghanaian companies (Ahmed et al., 2017). Foreign companies are mostly from Europe, with some from Asia, America, and other parts of Africa. The size of land deals varies considerably, from 202 ha to 400 000 ha. Jatropha and oil palm were the dominant crops.

Some of these projects have provided employment, increased rural income, and served as a major source of livelihood, especially in the rural areas. However, community resistance through agitation and protest has been common in most areas due to lack of consultation, non-payment of compensation, use of illicit processes of acquisition, and lack of employment for the youth. Furthermore, many local communities lost their lands and were left with small pieces of land for subsistence farming, which negatively affected fallow periods and food availability. In addition, both seasonal and permanent employment offered by these investments have affected household labour and time allocation for subsistence farming.

As a result of these interrelated factors, over 21 of these projects, amounting to 482 311 ha, have been abandoned or collapsed at different stages. The main reasons for these failures are low productivity of feedstock (especially jatropha), weak business planning, community resistance, conflicts over land ownership between communities, and civil society opposition. However, since most of the land for these abandoned projects is leased, ownership rights are still held by the investors. In spite of this, local communities have encroached on most of these lands for small-scale subsistence farming. Even so, some deals have seen a change of ownership, some investors have changed from biofuel crops to food crops, and other investors have reduced their activities or have left the land altogether. The trajectory of land investment is therefore characterised by rapid dynamics as manifested in a shift from smallholder-based to large-scale land investments and then, finally, to smaller deals. Aside from the dynamics in land sizes, the trajectory is also characterised by changes in investors and land transfers between investors.

## 1.3. LSLAs are related to big global business

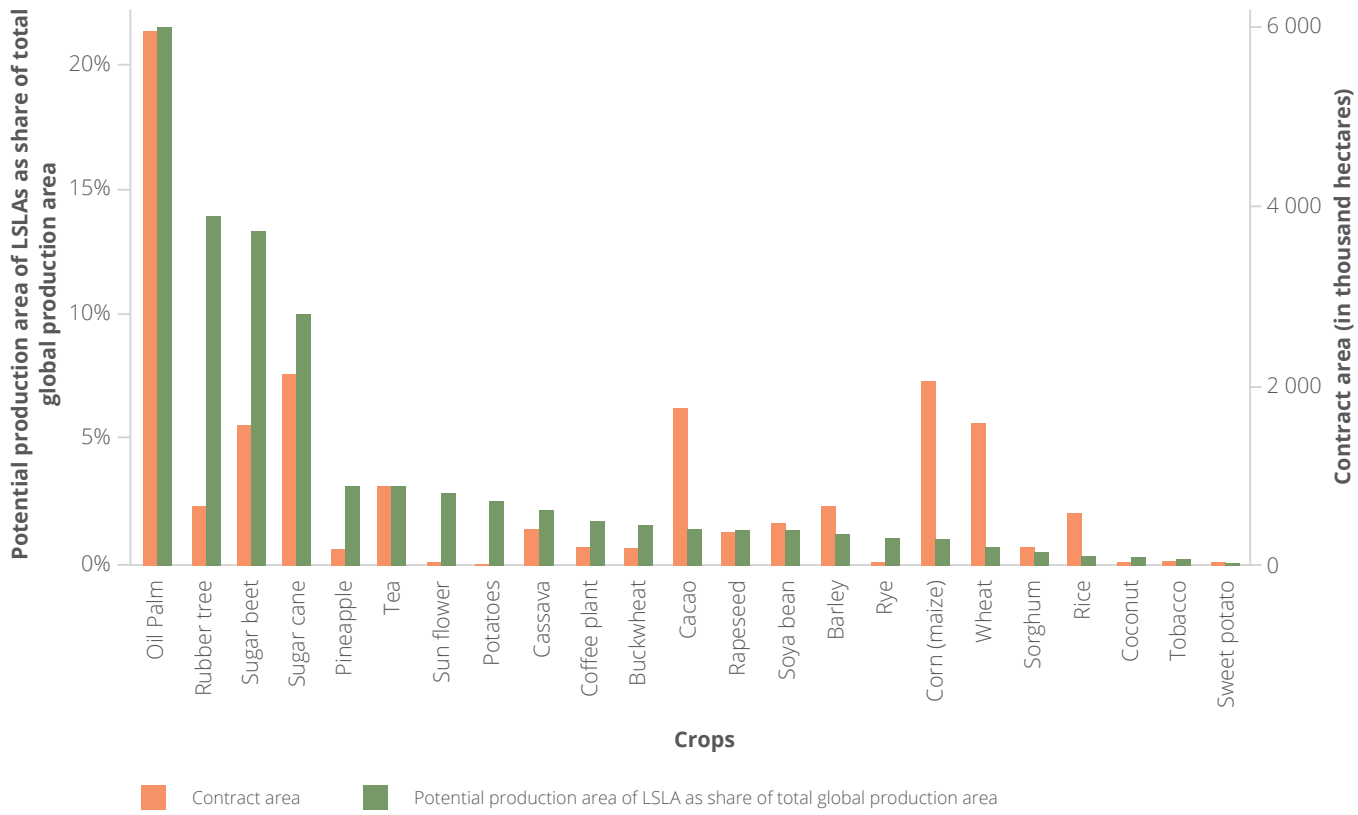
In principle, LSLAs can address problems of food supply in developing countries, thus lowering local food prices and improving the access to food. Yet most land deals are not focused on providing food for local markets, but rather on crops for export markets, as already documented by other studies using Land Matrix data (Mechiche-Alami et al., 2021; Nolte et al., 2016). Figure 1.9 substantiates these findings by comparing the potential production of LSLAs to global production. The figure shows that – from a global production perspective – LSLAs are a key driver of increased commodity production: oil palm-related LSLAs documented in the Land Matrix account for more than 20% of the global area cultivated with this crop. This share is well above the 10% for rubber and sugar beet and the 5% for sugar cane. For

*Most land deals are not focused on providing food for local markets, but rather on crops for export markets*

staple crops, on the other hand, the shares are much lower. Estimates suggest, for example, that fully productive maize, rice, and wheat deals would make up for less than 1% of the global production area of the respective crop if the entire area under contract came into production. Thus, these numbers again present an upper bound as not all deals will become fully productive, and some may even fail. It should be noted, however, that the Land Matrix data is unlikely to be a full inventory of global LSLAs.

As for the share of global production area, oil palm comes first, with a contract area of around 6 million ha reflecting its importance on the global market with its multiple uses like food, fuel, and cosmetics (Figure 1.9). In contrast, the global market for rubber and sugar beet is comparably small, which explains why the high share in global production area does not translate into a large total contract area. Nevertheless, these crops cluster in certain regions and still cover large areas of land. Rubber is most prevalent in Southeast Asia, with 1.3 million ha, while sugar beet cultivation is concentrated in Eastern Europe, with 600 000 ha. Other crops, such as sugar cane, are also highly regionally concentrated, with 1.2 million ha in Brazil alone. Conversely, in line with the estimates above, deals focusing on staple crop production, such as maize, rice, and wheat are comparably less relevant from a global production perspective. However, in absolute terms, they still cover large tracts of land, with around 2 million ha for maize and wheat each. LSLAs producing these crops remain, therefore, important drivers of the land use changes described in Chapter 4.[11] Furthermore, as explained above, demand for global land may accelerate again in the near future due to more aggressive biofuel policies to combat climate change, fear of food inflation, geopolitical tensions, and post-COVID demand stimuli.

**Figure 1.9:** Potential production area of LSLA as share of total global production area




Notes: Calculations based on Land Matirx data and FAO (2020). Only concluded deals are included while failed deals are excluded from area caculations.

## Diverse investors: From the North, South, and through tax havens

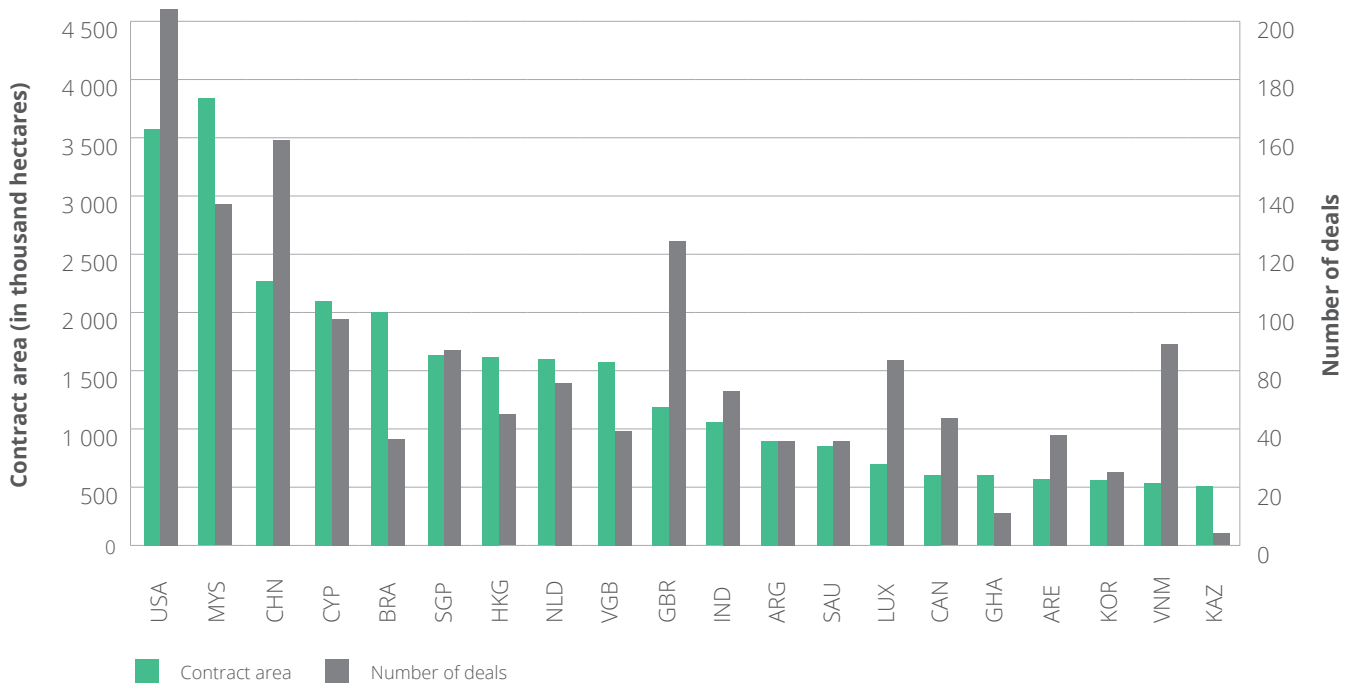
Along with hailing from both the global North and South, many investors operate through investment hubs, many of them tax havens. Already widely documented, and as seen in Figure 1.10, which shows the top 20 investor countries in terms of the area under contract, developing countries with competitive agricultural sectors, such as Brazil and Malaysia, as well as high-income countries, such as Great Britain, the Netherlands, and the USA are among the top investor countries. However, China is making up ground, having climbed up the ladder to third place among the top

[11] *When interpreting the numbers, especially for crops like maize and wheat, bear in mind that the data coverage of the Land Matrix is limited to countries of the Global South, thus, excluding important production regions of those crops. For details see Box 1.*

investing nations over the last few years.[12] Chinese investors are particularly active in Cambodia, Laos, and Myanmar, with 54% of the deals with Chinese involvement taking place in one of these three countries. Despite the widely held believe that sub-Saharan Africa is the primary target for investors from China, only 23% of deals with Chinese investors actually occurred in this region. Less prominent countries are on the list as well, for example, Kazakhstan, where one investor was involved in a single but very large deal in Russia. For many LSLAs, the "real" origin of the investor remains obscure as the parent company has set up shop in financial hubs and tax havens. This explains why the top 10 investor origins include Cyprus (in fourth place), Singapore (seventh place), British Virgin Islands (eighth place) and Hong Kong (nineth place) (see Figure 1.10). Cyprus in particular hosts numerous companies and holdings that serve as investment vehicles for individuals and companies from other countries, as well as multilateral investment banks such as the European Bank for Reconstruction and Development (Flachsbarth et al., 2020). These financial hubs are also home to institutional investors, such as investment and pension funds (Ducastel & Anseeuw, 2018), and that were found, for instance, to invest in land deals in South Africa. These investors aim to diversify their portfolio through investments in agriculture, as seen in one case study from Papua New Guinea, where Hambloch, (2018) describes the changes of investor types. Over time, land-based investments by the Australian government and the World Bank shifted to entirely private investment projects by companies with complex financial structures, starting around the late 2000s.

This shift in the type of investors has implications for local livelihoods as well, as governments and international organisations often also engage in the agricultural sector to improve local living standards. For example, Hambloch (2018) shows that in Papua New Guinea, public investors often involved in contract farming schemes that source 50% of production from smallholder farmers. In contrast, many private companies in the country focus on short-term profits from logging activities, which often entail only limited employment generation (see Chapter 3). On the island of New Britain of Papua New Guinea, for instance, most investors, such as Gilford Ltd (deals #3653, #3652, #3654, #3687), are or were subsidiaries of large Malaysian logging companies, like the Rimbunan Hijau Group (Hambloch, 2018). The dominance of the private sector matches our data across all regions, which shows that many investors are private companies (35%), stock-exchange listed companies (17%), investment funds (10%), or individual entrepreneurs (5%).[13] Overall, although some common trends can be identified, our data documents large regional variations in the speed and status of implementation, crop types, and investors. These differences play a crucial role in determining the impacts of LSLAs on socio-economic indicators, the environment, and policies – as we discuss in the following chapters.

**Figure 1.10:** Top 20 investor countries for concluded deals




Notes: Calculations based on Land Matrix data. In case of multiple investors per deal, the full contract size of each deal is attributed to each investor to indicate the countries' total involvement in LSLAs.

[12]*This increase in China's relevance can in part be explained by eight new deals that were concluded since 2016. However, a number of deals had already started before 2016 but were missing in the older versions of the database. This means that the rise is also due to a time lag in deal reporting (Nolte et al., 2016).*
[13]*No information available for 24% of the investors. Governments, state-/government-owned companies, and semi state-owned companies make up 9% of the investors.*

## BOX 1:
## Data preparation, assumptions, definitions and biases

***Deal dynamics:*** Land deals in different negotiation and implementation phases

The Land Matrix differentiates between key stages in the negotiation and implementation process each deal passes through over time. LSLAs start with an expression of interest by investors and/or when parties are in the phase of contract negotiations (intended deals). This status continues until negotiations either fail (failed deals) or the parties reach an oral or written agreement (concluded deals). After deals are concluded, we further track the implementation status. Initially, the status of deals will reflect as "not started" because, for example, banks and financial investors often wait for land acquisition before they make funding available, which can cause time lags until concluded deals move into production (Brüntrup, 2014).

A "start-up period" follows, in which the land is prepared and first processing steps are established if necessary. Only afterwards does actual production start on the land. However, deals are sometimes abandoned after the start-up phase or even after production. Deals are considered abandoned when the contract gets cancelled or production ends (even if the contract is still in place).

*The different stages of the negotiation status are defined as follows:*

- Intended: Expression of interest
  Under negotiation
  Memorandum of Understanding
- Concluded: Oral agreement
  Contract signed
  Change of ownership
- Failed: Negotiations failed
  Contract cancelled

*The different stages of the implementation status are defined as follows:*

- Project not started
- Start-up phase (no production)
- In operation (in production)
- Project (production) abandoned

***Methods and assumptions for capturing deal dynamics***

The Land Matrix has information on the described negotiation and implementation statuses per deal and captures changes over time, thus making it possible to not only ascertain the current deal status, but also to analyse deal dynamics. Since the data often shows missing entries in either the implementation or negotiation status or in the exact time dimension, we worked with the following assumptions for our dynamic analysis in this chapter to increase the number of observations over time:

- *If the year information of the negotiation status is missing, it is replaced by:*
  - the given year information for the contract size (if available);
  - the year information given for the implementation status if the deal is concluded and the implementation status is anything but "project abandoned".
- *If the year information of the exact contract size – which can change over time due to change in investors or an expansion or contraction in size – is missing, it is replaced by the year information given for the negotiation status if contract concluded.*
- *If the year information of the exact size in production is missing, it is replaced by the year information given for the implementation status if "in production". In this case, the size in production is assumed to be constant over time.*
- *If the implementation status of a deal indicates that a deal is in production and the negotiation status is missing, the deal is set to being "concluded" in the same year as production is known to have started.*
- *Sometimes deals move from one negotiation or implementation stage within one year. To avoid double counting of deals within one year, we keep only the "more progressed" negotiation or implementation status in that same year, respectively.*
- *Some deals show the negotiation status "intended" after they have been concluded. In these few cases, the negotiation status is kept as concluded only to avoid double counts in different negotiation stages within one deal. This may happen in large conglomerates when the original investor negotiates with new investors who plan to enter the deal.*

Despite our attempt to fill the missing time information, various deals remain for which specific time information on changes in negotiation or implementation status is not available. This leads to a discrepancy in numbers of those deals considered in the dynamic analysis and the number of deals considered in the static analysis. This means that for several deals, the exact time information is lacking, but we know that the given negotiation or implementation status is "current". For the data used in this report – downloaded on 20 August 2020 – this results in the following shortcoming of the dynamic analysis:

- *The total number of deals marked as "currently concluded" in the database is 1 560. In this dynamic illustration, only 1 471 appear in 2020. As such, the number of concluded deals is slightly under-reported here because we lack specific year information on the negotiation status for some deals. Equivalently, the number of failed deals is under reported (compared to 141 deals "currently failed") due to lacking year information on negotiation failures. Likewise, the number of intended deals is slightly over-reported in the dynamic illustration (compared to 152 "currently intended"), because few deals are already concluded without knowing the year of contract signature.*

- *The described limitations only hold for the dynamic analyses presented in Chapter 1. For all remaining chapters (and those figures provided in Chapter 1 without year dimension) all deals are included in the analyses for which we have a "current" negotiation status.*

### *Multiple crops, multiple former land cover and former land use*

Individual deals list up to six different former uses, four different former land covers, and multiple crops in the database, but we do not provide information on the share of area for each type of former use or former land cover or crop. Throughout this report, we have thus divided the area under contract and attributed equal shares to each former land use or former land cover or crop, respectively. It should be noted, however, that this method may lead to over- or underestimation of area shares for certain forms of land use or cover or crop areas.

### *Investor countries*

Given that the ownership structures of firms are often complex, verifying the country of origin of the investors is not so straightforward. We therefore define the investor countries as those from which the top parent companies originate, that is, the countries in which the investors are registered. Where it is not possible to determine the locations of registration, the countries in which the companies' headquarters are based are listed as investor countries. While we also endeavour to consider the complex (and often opaque) structures of investor chains, whereby numerous intermediary companies are commonly registered in different locations, since it is extremely difficult to obtain reliable information on these investor chains, we abstain from using this information in this report. Nevertheless, for selective deals, this information is provided on the website at https://landmatrix.org/list/investors.

A second issue arises when dealing with investments in which multiple investors are engaged. For these cases, the full size of the deal is attributed to the country of origin of each of the international investors involved to indicate the countries' total involvement in LSLAs. This results in a degree of double-counting and thus a higher number of deals and a larger area than the total number of unique deals.

### *Geographic regions*

For this report we follow the definition of the United Nation's geographic region classification, which can be found at https://unstats.un.org/unsd/methodology/m49/. We further aggregate the following world regions:

- *Asia and Pacific:* Melanesia, South-eastern Asia, Eastern Asia, Southern Asia
- *Europe and Central Asia:* Eastern Europe, Northern Europe, Southern Europe, Central Asia, Western Asia
- *Latin America and the Caribbean*
- *Middle East and North Africa*
- *Sub-Saharan Africa*

### *Data biases: Under-reported regions and countries in the Land Matrix database*

The Land Matrix systematically collects information on LSLAs in all low- and middle-income countries according to the World Bank classification as of 2010. The data collection process is not, however, equally successful for all countries, economic sectors, and indicators. As such, a number of data biases are inherent. Although these are addressed and largely countered in this report by limiting the analyses to transnational LSLAs in the agricultural sector, data biases from under-reporting in certain countries or regions remain, leading to inaccuracies in our absolute and relative numbers across regions.

The reasons for under-reporting are manifold, but can roughly be divided into external and internal causes. The main external causes include the varying degree of transparency in the host countries' land sector and among the investors involved in LSLAs (Flachsbarth et al., 2020), as well as our access to data being dependent on the information provided by civil society organisations (CSOs), research institutions, and the media in the host countries, which is not always forthcoming. In line with this, the main internal cause, is the location of Land Matrix partners, networks, and Regional

Focal Points (RFPs) in relation to certain world regions, with data coverage generally decreasing the further away they are. This could often be exacerbated by language barriers as well. For example, Central Asia is likely to be under-represented not only as a result of the lack of transparency in the region on the whole, but also because the Land Matrix lacks local partners and networks in this area. Nevertheless, after many years of data sourcing and networking, the RFPs have made significant strides in developing their own local knowledge base and networks of country experts, which enable them to at least assess the likelihood of substantial under-reporting for most of the countries in our focus regions, as follows:

- **Africa:** Equatorial Guinea, Eritrea, Guinea-Bissau, Morocco, and Togo
- **Europe and Central Asia:** Belarus and North Macedonia, and all countries in Central Asia
- **Latin America:** Belize, Costa Rica, Cuba, Dominican Republic, Guyana, Honduras, Panama, Venezuela
- **Asia:** India and China

In response to the data collection shortcomings, a number of internal data initiatives by the Land Matrix made a concerted effort to uncover new land transactions (see for example Box 2). This cannot, however, completely compensate for the inherent lack of transparency in the sector. Consequently, unbalanced data coverage across countries is unavoidable and, therefore, the absolute numbers and direct comparisons between countries and regions should be interpreted with some caution throughout this report.

Despite these caveats, the Land Matrix database represents the most used and complete dataset on international large-scale land acquisitions that is currently available.

# 2
# LSLAs and land tenure security:
## Weak land governance exposed

As competition over land due to LSLAs intensifies, the need for strong land governance systems becomes increasingly important to ensure that the rights and tenure security of local land users are protected. The importance of land tenure security – a landholder's perception that rights will be respected by society (Sjaastad & Bromley, 2000) – for agriculture, land use, and rural livelihoods more generally has long been recognised (Bruce & Migot-Adholla, 1994; Otsuka et al., 2001). In the worst-case scenario, weak tenure security implies that LSLAs cause local land users, often smallholder farmers, to lose access to land, be it to their own farmland or communally used common-pool resources, such as forests or grazing land, without consultation and compensation. In addition, more vulnerable groups with particularly insecure tenure, including migrants, young people, women, and poorer people who rely more on common-pool resources, may be most affected.

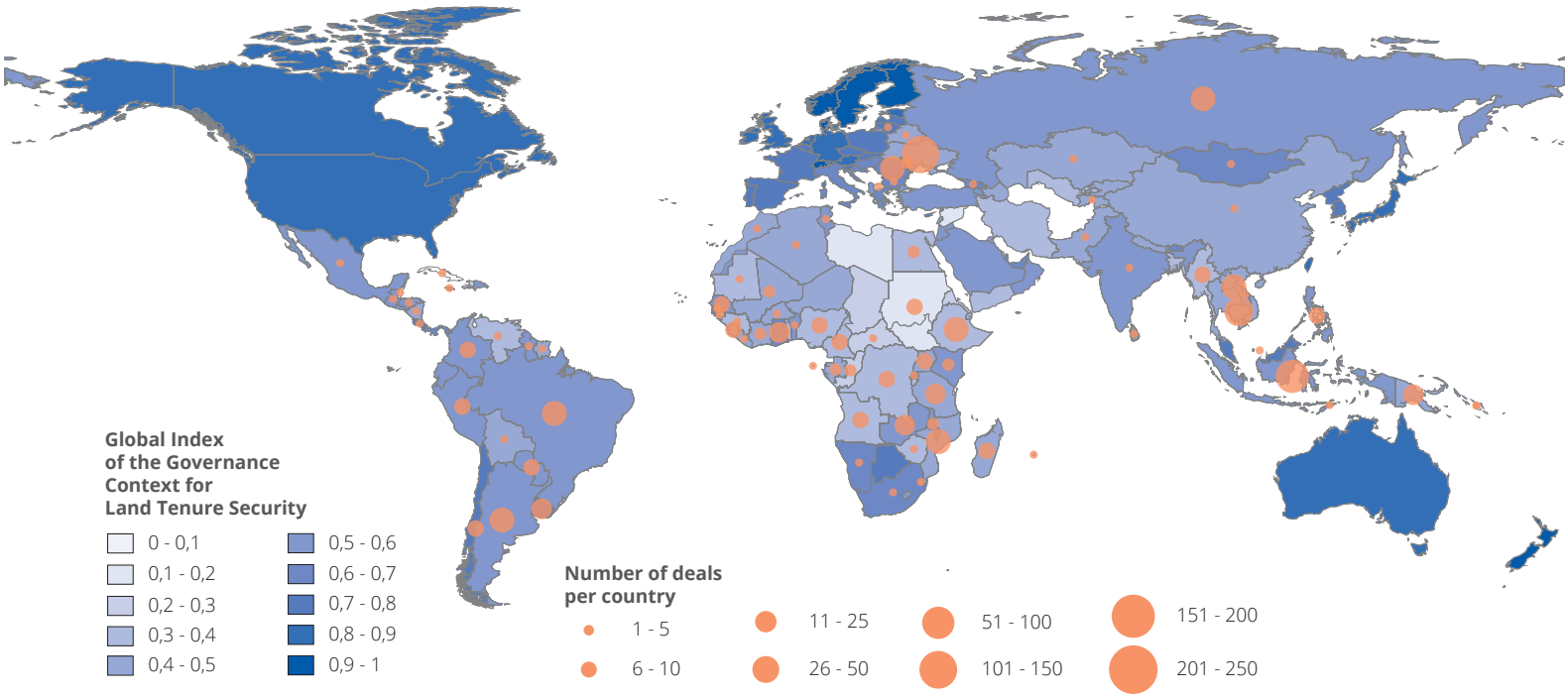
While weak land governance systems that tend to disadvantage certain groups are not new, their problems and adverse impacts are often exacerbated because of LSLAs. Moreover, LSLAs sometimes directly affect land governance and tenure security. The induced changes, for example, an increased formalisation of land rights, may or may not be beneficial for local landowners. Beyond that, tenure security is important for the agricultural performance of smallholders and investments in agriculture, such as through increasing access to credit, participation in land rental markets, land productivity, and women's empowerment (Abdulai et al., 2011; Fenske, 2011).

## 2.1. Competition for land under weak land governance

A number of studies from across the globe suggest that investors exploit weaknesses in land institutions in the Global South (Bottazzi et al., 2016; Fonjong et al., 2016; Friis & Nielsen, 2016; German et al., 2013; Kenney-Lazar, 2012; Nolte & Väth, 2015). However, there is no linear relationship between the locational choice of an investor and land tenure systems at country level: indeed, LSLAs occur regardless of low or high land tenure security. In fact, contrary to other forms of foreign investment, land-based investments do not appear to avoid countries with weak institutions (Arezki et al., 2015; Lay & Nolte, 2018). In such contexts, LSLAs may actually take advantage of corruption and compete for land, in particular with locals whose land rights are less well protected. It is also important to stress that land tenure security may vary at the subnational level, also conditional on the form of prevalent tenure arrangements (Boone, 2014; Giger et al., 2020). For instance, Giger et al. (2020) observe that only a few LSLAs took place in Kenya's Nanyuki area, where land was gradually subdivided and privatised after independence, and those that did take place focused on smaller areas which were generally purchased or leased from private landowners as land tenure rights are relatively secure.

*LSLAs occur regardless of low or high land tenure security*

**Figure 2.1:** Global Index of the Governance Context for Land Tenure Security (GC-LTS) and number of LSLAs




Notes: Countries are depicted in shades of blue according to the GC-LTS; the darker the shade the greater the land tenure security. The size of the red circles corresponds to the number of deals per country. Calculations based on Land Matrix data (concluded deals) using the GC-LTS (Kelly et al., 2017).

### Land targeted by investors is often already used by smallholders

A number of recent studies based on more comprehensive data cast doubt on frequent claims that investors largely acquire "idle land", and in fact show that investors often target land that is being used by smallholders, thus forcing local land users to compete with commercial large-scale investors. For instance, looking at the spatial patterns of LSLAs in Zambia, Lay et al. (2021) find that the targeted land typically lies in relatively well-connected and populated rural areas, potentially creating pressure on smallholders' access to land. This is in line with an earlier analysis by Messerli et al. (2014) of the land cover of 139 geo-referenced deals from the Land Matrix, which found that 35% of these deals targeted densely populated and easily accessible croplands. Furthermore, according to current Land Matrix data, in approximately 40% of the deals with information on former use, the land (or part of the land) was previously or is currently used for smallholder agriculture, pastoralism, or shifting cultivation. Besides smallholder farmland, LSLAs appropriate water resources, for instance, by blocking access to rivers (Zaehringer, Wambugu, et al., 2018), and target forests and grasslands, which are important sources of livelihood for selected communities which may be highly dependent on these local resources. Both a review of case studies by Vedeld et al. (2007) and a more recent cross-country study on the relative forest income of selected rural households in developing countries (which includes households' subsistence extraction and production) by Angelsen et al. (2014) report that, on average, 22-28% of the total income of surveyed households stems from resources from forests or wildlands without forest cover. This demonstrates that LSLAs indeed pose a considerable threat to such livelihoods, as also highlighted by a meta-study of 66 case studies , which found that the loss of access to land and natural resources was the most frequently reported negative livelihood impact (Oberlack et al., 2016; see also Chapter 4).

## 2.2. Displacements, minimal consultation, and the lack of compensation

While strong land tenure security ensures that local communities are consulted prior to an acquisition and receive adequate compensation thereafter, weak tenure security, in contrast, is often associated with the displacement of local communities and diminishing access to land. Even though information on displacements is lacking for most deals, the Land Matrix has still recorded a significant 82 deals for which there are reports of original land users facing displacement. Box 4 provides some examples from Latin America.

## BOX 4:
## Displacements in Latin America

Displacement of people as a result of land acquisitions occurs frequently in Latin America, with tenure insecurity, which is still common in the region, as one of the main reasons. Of the 12 cases of LSLA-related displacement recorded by the Land Matrix for Latin America, one in particular has gained global prominence in recent years: the investments in agricultural land in Brazil between 2007 and 2008 by Harvard University (deal #6868) through the Harvard Management Company (HMC), the university's USA-registered endowment fund. Involving more than 400 000 ha of land and intended primarily to produce food crops and biofuels, the deal led to several conflicts with local dwellers. There were not only reports of displacement and harassment of rural communities, but also of a number of restrictions on their access to natural resources, such as water and forests, and severely detrimental ecological impacts connected to deforestation of the fragile Brazilian "Cerrado" ecosystem. According to media reports, the HMC is now attempting to reduce its share of agricultural land in the region, while local community leaders, together with Harvard University students, have called for the resolution of the social conflicts connected with these investments.

Similarly, in Colombia, the purchase of 3 000 ha of land for a palm oil plantation by the company Aportes San Isidro S. A. y C. I. Tequendama (deal #802) in 2007, allegedly illegally since the land had been legally claimed by the peasants who were using it, resulted in 600 people (123 families) being displaced. The dispute with the evicted peasants continues, with legal and judicial proceedings still unresolved.

Moreover, the lack – or even complete absence – of adequate consultation and compensation, an important symptom of weak land tenure security, is common (Nolte & Voget-Kleschin, 2014; Vermeulen & Cotula, 2010), and frequently leads to the overriding of landholders' rights. For example, of the more than 250 deals for which the Land Matrix has information on consultation, only 15% report that free, prior, and informed consent (FPIC) took place; almost 45% report no consultation whatsoever, and the remaining cases report limited forms of consultation. Likewise, complete compensation for the initial loss of access to land appears to be rare (Aisbett & Barbanente, 2016; Anseeuw et al., 2012; German et al., 2013). This is evident in the case of Laos, where only 52 of the 152 villages where land losses were reported received monetary compensation (Nanhthavong et al., 2020). The very few cases of effective compensation that can be found in the Land Matrix database highlight this, with compensation promised in only 90 cases, and just 27 cases of actual compensation reported.

*Of the more than 250 deals for which the Land Matrix has information on consultation, only 15% report that free, prior, and informed consent (FPIC) took place*

Box 5 provides further examples of how inadequate consultation and compensation in different contexts across Africa have led to rejection by the respective communities and sparked conflicts between the investors and the local land users.

**BOX 5:**
**Differences in consultation and compensation in African LSLAs**

The level of consultation and compensation undertaken by investors in Africa is mixed. In Gabon, for example, Olam Palm Gabon SA (deal #2236) made a substantial effort to ensure that the community was satisfied, even obtaining FPIC. Together with community representatives, the investor adopted procedures for consultation and assessed which community members were entitled to compensation. Besides providing compensation to individuals, Olam Palm Gabon SA invested in significant community infrastructure, including the building and refurbishing of 14 schools and distribution of 5 000 school kits, establishment of worker health centres, drilling of 60 village wells, installation of over 2 200 solar lamps for streets and homes, building of two village cassava mills, and training of small farmers to produce better yields.

In Cameroon, in contrast, SG Sustainable Oils Cameroon (deal #1159) did not carry out any actual consultation with community members, but used the contract signed by the community chiefs – who did not understand what they were signing – as "proof" of consultation. Community members subsequently rejected the project and have protested on several occasions, which has led to some of them being arrested by the police. In February 2012, the Cameroonian NGO Centre for Environment and Development (CED) published a report raising concerns about the displacement of small-scale subsistence farmers from arable lands, food insecurity, a lack of adequate jobs to compensate for the loss of farmland, environmental damage, a lack of access to water, and inconsistency or complete lack of transparency in environmental and social impact assessments. Locals and farmers have since sued SG Sustainable Oils Cameroon for trespassing and damaging their livelihoods, however, the outcome of this process is not known.

In another case in Nigeria, the Great Northern Agribusiness Ltd (deal #5465) did not give community members any option to comment on the investor plans at all. In fact, the community was not even aware of the project until land surveyors arrived on the communal land and announced that a sugarcane plantation was in the process of development. As a result, the community members rejected the project and formed an association to seek justice from the High Court of Jigawa State. In 2017, the court issued a restraining order against further encroachment by the investor and the state government.

## 2.3. Customary and community land rights under pressure

The risks of weak land tenure security when investors acquire land, that is, displacements and inadequate consultation and compensation, are not evenly distributed across and within countries. In sub-Saharan Africa, for example, 48% of women report feeling tenure insecure when faced with widowhood or divorce, as do 24% of young people (aged 18-25 years), especially those with basic levels of education and low incomes (Prindex, 2020). Migrants' land tenure security is particularly weak, and even more so when land pressure increases (Boone & Duku, 2012; Ghebru & Lambrecht, 2017).

### LSLAs often exacerbate the weaknesses of land governance systems

Certain population groups also tend to bear particularly high costs if their land is under customary tenure. Even so, the form of tenure may not necessarily imply tenure security. For example, titled land does not automatically translate into strong land tenure security (Robinson et al., 2014), nor does it guarantee protection from losing access to land (Boone, 2015). Nevertheless, in the context of LSLAs, the evidence suggests that customary tenure is frequently associated with weaker tenure security (Lund, 2008), and more so where customary tenure regimes coexist with statutory tenure and weak local institutions – as is the case in many sub-Saharan African countries (Alden Wily, 2011; Boone, 2014). In such circumstances, LSLAs not only often target insecure land tenure systems, they also further weaken them. For instance, Herrmann (2017) finds that investments implemented on former village land in Tanzania are likely to exhibit more land

conflicts compared with investments on former government land. In the case of Laos, the Sino-Lao Rubber Company acquired a 7 000 ha concession for rubber production in Luang Prabang in 2004 (deal #4013), claiming 328 ha of land as part of its land concession that was privately held by farmers without any formal land titles. While village authorities successfully negotiated the claim down to 100 ha, recall data shows that the number of farm households who perceived their land tenure as insecure increased by 27% between 2005 and 2016 (Keovilignavong & Suhardiman, 2020).

LSLAs often target community land as well, posing a threat to tenure security, which is likewise typically held under customary or traditional forms of tenure (Dell'Angelo et al., 2017; Giger et al., 2019) as formal recognition of these tenure systems is still rare. While these systems have been found to be resilient to endogenous factors (Agrawal, 2001; Ostrom, 1990), they may still be unable to cope with external pressure such as LSLAs. It is also not uncommon for LSLAs to involve the recognition of individual claims to former communal land by a village authority before the land is transferred to the investor from said individuals. With this initial change in tenure, communal village land is then sold as individually-held plots to companies as cases in Indonesia, for example, document (McCarthy & Zen, 2016). In so doing, customary rights may be lost for many generations, or even permanently. Furthermore, such processes are prone to power misuse and corruption (Lund & Boone, 2013; Nolte, 2014), often leaving institutional voids (German et al., 2013). In Ghana, for instance, the leasing of land to external investors by traditional chiefs led to a decrease in trust in customary institutions (Nolte & Väth, 2015).

*LSLAs can deepen pre-existing inequalities by both changing land tenure arrangements and weakening existing institutions*

These examples illustrate that LSLAs can induce changes in land tenure arrangements that affect tenure security and may reinforce previous inequalities, in particular with regard to access to land. Bottazzi et al. (2016), for instance, show how a large-scale sugar cane project in Sierra Leone embarked on a process of land registration and tenure formalisation aimed at increasing land tenure security of land users who typically held some part of communal land under customary tenure. Instead, however, this led to reinforced inequalities and the fuelling of conflicts over land. In fact, the tenure formalisation increased the entitlements of local landowners while simultaneously exacerbating exclusion from access to land by "traditional non-owners" such as women, youth, and migrants. Similar dynamics can be observed in Indonesia, where LSLAs in the oil palm sector have been accompanied by contract farming and migration programmes. However, because the contract farmers received land titles, this created communities (often transmigrants) with a high share of land titles versus autochthonous communities that still rely on customary – and less secure – tenure (Krishna et al., 2017).

Overall, this evidence suggests that LSLAs can deepen pre-existing inequalities, for instance between men and women, migrants and locals, and different ethnic groups, by both changing land tenure arrangements and weakening existing institutions, in particular in regions where customary and communal tenure still exist.

# 3
# Socio-economic development impacts of LSLAs:
## Unfulfilled expectations and broken promises

The potential for LSLAs to foster local rural economic development – in particular through creating employment and raising agricultural productivity (Collier 2008; Deininger and Byerlee 2011) – was widely touted in the early 2000s, as land-based investments started to accelerate in developing countries. Over a decade later, however, emerging evidence suggests that they have only had limited positive, if not negative, impacts, in particular in Africa. In fact, as this chapter reveals, LSLAs have significantly altered rural development and livelihoods with, at times, dramatic consequences.

This is borne out in numerous qualitative case studies and news reports which have highlighted the adverse effects of LSLAs on smallholders' access to land. In Chapter 2, for example, we demonstrate that LSLAs have restricted the access of rural populations to cultivable land, forests, and pasture, which has in turn severe negative consequences on local economic development. While such adverse effects could be mitigated by direct compensations (see Chapter 2.2), in general, complete compensations of the initial loss of access to land seem to be rare (Aisbett & Barbanente, 2016; Anseeuw et al., 2012; German et al., 2013). This then raises an important question: under which circumstances – and to what extent – are the negative effects of LSLAs on land access counterbalanced by positive effects, such as employment generation, knowledge spillovers to smallholder farmers, and infrastructure development?

A number of recent studies from sub-Saharan Africa point to limited employment generation and wage gains and few positive technology spillovers to smallholders from LSLAs. These studies, unlike some earlier studies, are based on comprehensive repositories of LSLAs at country or regional level, as well as representative household surveys (Ahlerup & Tengstam, 2015; Ali et al., 2019; Deininger & Xia, 2016; Lay et al., 2021). While more or larger positive spillovers to smallholder farmers would have been expected, the employment effects were anticipated to be limited given that the studies focus mostly on grain crops, where mechanised cultivation does not require much labour per hectare.[14] These studies also illustrate a more general point: The effects of LSLAs on local economic development and smallholder livelihoods strongly depend on the cultivated crop, the former land use, and the nature of the links between large and small farms, including contract farming (Nolte & Ostermeier, 2017). This implies that LSLAs only turn into "success stories" for broader and inclusive rural development when certain conditions – usually in combination – are met. For example, the rapid and ongoing development of the oil palm sector in Southeast Asia, an important driver of land acquisitions in this region, significantly contributed to rural income growth and poverty reduction due to, among other reasons, a strong involvement of smallholder farmers (Edwards, 2019; Kubitza et al., 2019).[15] Similarly, in Africa and Latin America, although the scale of employment gains is more limited, investments in high-value and labour-intensive horticulture projects have spurred local development, resulting in income gains and rural poverty reduction (Korovkin, 2003; Maertens et al., 2011; Suzuki et al., 2018; van den Broeck et al., 2017).

In this chapter, we review the evidence on the local development and rural livelihood impacts of LSLAs over the past 10 to 15 years, with a specific focus on their localised socio-economic effects. In other words, we examine their impacts in terms of geographical proximity to the land acquisition, including job creation on large-scale farms and local economic spillovers. To do this, we first revisit the evidence on the effects of LSLAs on rural labour markets, putting local employment creation into a national context. We then assess what is known on spillovers on smallholder farms and discuss the current evidence on social and physical infrastructure. Lastly, we examine the net effects of LSLAs on livelihood outcomes like poverty, inequality, and food security. To complement the review, we present case studies and in-depth insights from the Land Matrix RFPs to better understand the ambiguous impacts by analysing the context conditions and different transmission channels.

*[14]This includes maize (in Ethiopia, Mozambique, and Zambia), sorghum (in Ethiopia and Mozambique), teff and wheat (in Ethiopia), cassava and rice (in Mozambique), but also peanuts and sugar cane (in Mozambique).*
*[15]The broad-based rural development effects of oil palm expansion can partly be attributed to the hundreds of thousands of smallholder farmers that adopted oil palm, either independently or with the help of contract farming arrangements. In 2018, around 2.7 million smallholder farmers cultivated oil palm in Indonesia (Ministry of Agriculture, 2020). On the other hand, oil palm expansion also led to significant land-use changes, such as deforestation, which will be further discussed in Chapter 4.*

## 3.1. Employment effects: Few and temporary jobs with some exceptions

While large-scale farms do require labour to operate, which in turn may generate gainful wage employment over time, critics of LSLAs point out that they are usually more capital-intensive and use less labour than smallholder farms. Recent evidence from Africa, which shows only limited employment effects of LSLAs (Ali, Deininger, and Harris 2019; Deininger and Xia 2016), seems to corroborate this.[16] In Asia, Anti (2021) likewise finds little evidence of additional employment from a study in Cambodia, only observing a shift away from independent smallholder farming towards agricultural employment. Such general conclusions, however, should be viewed through a more nuanced lens, since the employment effects of LSLAs depend on multiple factors, including the former land use, crop type, and production methods applied (Nolte & Ostermeier, 2017). Nevertheless, the evidence on land competition between large-scale farms and smallholders does suggest that the former may at least partially replace smallholder farms. This implies that the net employment effects of large farms might be smaller, or even negative, compared to the jobs directly created on large-scale farms.

*The net employment effects of large farms might be smaller, or even negative, compared to the jobs directly created on large-scale farms*

### Little employment creation due to low labour-intensive crops on most large-scale farms

For Kenya, Madagascar, and Mozambique, Mercandalli et al. (2021) estimate that an average smallholder farm creates about 1.5 to 2 permanent jobs per hectare. With suitable agroclimatic and ecological conditions, LSLAs with highly labour-intensive crops like roses and vegetables could create a similar number of jobs per hectare, or even higher in the case of roses. However, other crops such as grains, and even tea, are less efficient than smallholder farming in terms of job creation. The research by Ali, Deininger, and Harris (2019) and Deininger and Xia (2016), which concentrated on the farming of grains and staples, also confirms the critics' assertion that large-scale farms tend to be much less labour-intensive than smallholder farms. For instance, large sorghum farms in Ethiopia employ 3.7 temporary workers per hectare and large wheat farms employ around 1.3 temporary workers, while one permanent worker is on average responsible for 254 ha of wheat, 83 ha of sorghum, and 32 ha of teff (Ali, Deininger, and Harris 2019). Although directly comparable figures are difficult to come by, the size of land needed for one permanent worker is relatively large in relation to the typical farm size of one hectare that sustains the average smallholder household in the country (FAO, 2018; Headey et al., 2014).

Even though LSLAs often create less jobs per hectare compared to smallholder farms, land-based investments can generate wage jobs for the local population which could help to diversify the income portfolio of local communities. Box 6 presents the number of actual jobs created by seven land deals recorded by the Land Matrix, ranging from 3 300 workers for a 1 670 ha plantation in Uganda (deal #1963) to 24 jobs for a 3 000 ha farm in Romania (deal #4412).

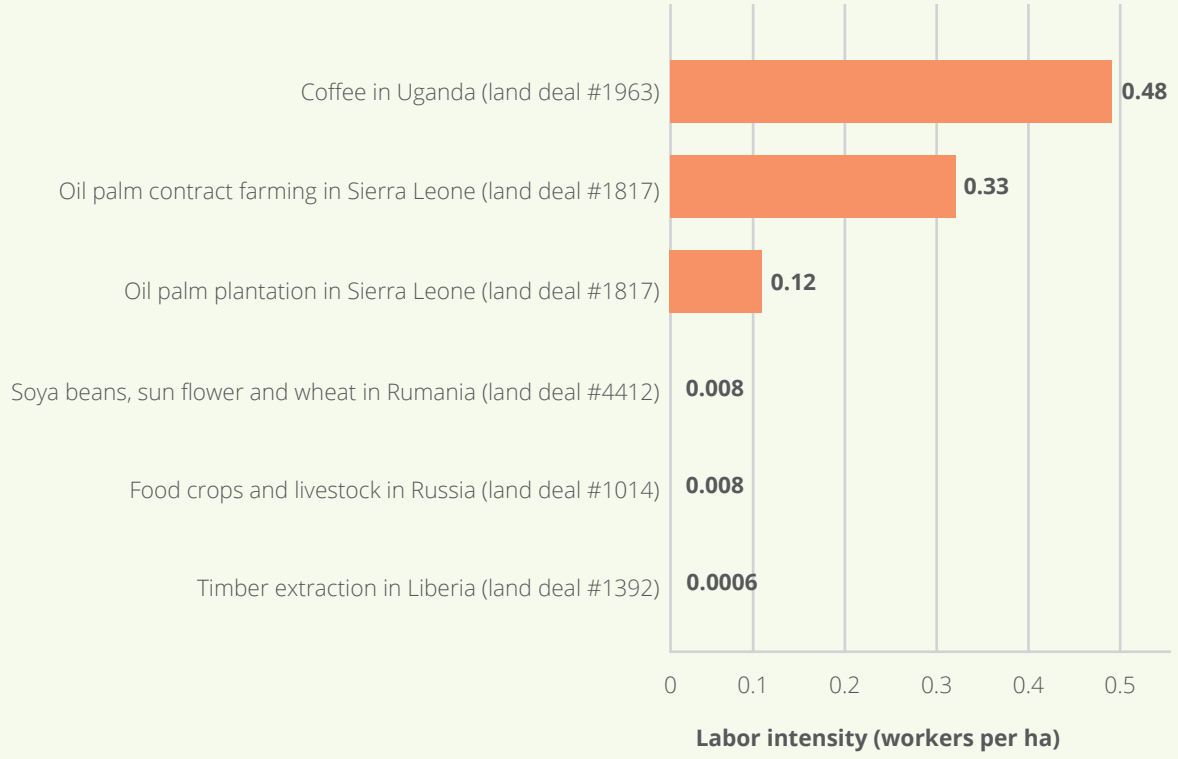
[16] *Unlike studies that only account for direct employment effects from working on large-scale farms, these studies are closer to the net employment effects of LSLAs as they account for indirect employment effects as well. Indirect employment effects can be positive if the LSLAs increase income and local demand, creating further jobs outside the large-scale farms. The expectation that, despite low labour intensity, higher wages and infrastructure investments from large plantations spark the creation of jobs outside the plantation sector thus also seems doubtful, at least for similar study contexts.*

## BOX 6:
## Best- and worst-case scenarios for employment generation

Employment generation and quality of employment varies widely between land deals. Some deals report dismal numbers. In Russia, for example, only 45 workers are employed to work on 5 500 ha of food crops and livestock (deal #1014), while in Romania, 3 000 ha of soya beans, sunflower, and wheat yielded only 24 jobs (deal #4412). Similarly, timber concessions, where large swaths of land are often handed to investors, generally provide only limited employment per hectare. For instance, although Alpha Logging and Wood Processing Corporation (Woodmann Group from Malaysia) signed a contract for 119 240 ha in 2008 for timber extraction in Liberia (deal #1392), as of 2019, only 75 workers were employed, and of these, only 15% were full-time employees. Most workers had short-term contracts for up to six months as the heavy machinery could only be used during the dry season, and the wages for some of these workers were even lower than the official minimum wage. In addition, measures to ensure work safety were mostly missing. While it is expected that timber concessions create little employment on the whole since no frequent harvesting and maintenance work is needed, perennial crops such as oil palm, on the other hand, cannot be completely mechanised, which explains the relatively high employment numbers per hectare, as seen in Sierra Leone, where Goldtree (S.L.) Ltd. employed 300 workers for a 2 424 ha oil palm plantation in 2019 (deal #1817). The company also cooperates with about 8 000 to 10 000 farmers for around 30 000 ha of smallholder oil palm plantations, who benefit from an outgrower support programme on best practices in farming as well. Furthermore, the company implemented a programme to upgrade and maintain local road networks and supported communities during the Ebola crisis.

A similar pattern can be observed for other perennial crops such as coffee, such as in the case of Uganda, where the Kaweri Coffee Plantation Ltd. (Neumann Group from Germany) employed about 800 permanent workers on only 1 670 ha of land (deal #1963), of which almost 50% were women. During harvest time, approximately 2 500 additional coffee pickers were also employed. Similar high labour intensities are found only rarely for staple crops, for example in the Philippines, where one company intends to cultivate 20 500 ha for the production of rice and banana with 40 000 workers (deal #404).

**Figure 3.1:** Labour intensities for different land deals




Notes: Calculations based on Land Matrix data.

Due to the low transparency of the investments, the actual number of jobs created is not reported for all LSLAs recorded by the Land Matrix. To address this data gap, we compute the potential employment generation. We assume that deals are becoming operational on the full area under contract and use crop-specific labour intensities derived from Land Matrix employment data.[17] Figure 3.2 shows (gross) employment generation linked to specific crops, grouped by region. The estimates represent an upper bound to gross employment effects as not all land deals will become fully productive, and some may even fail as described in Chapter 1.

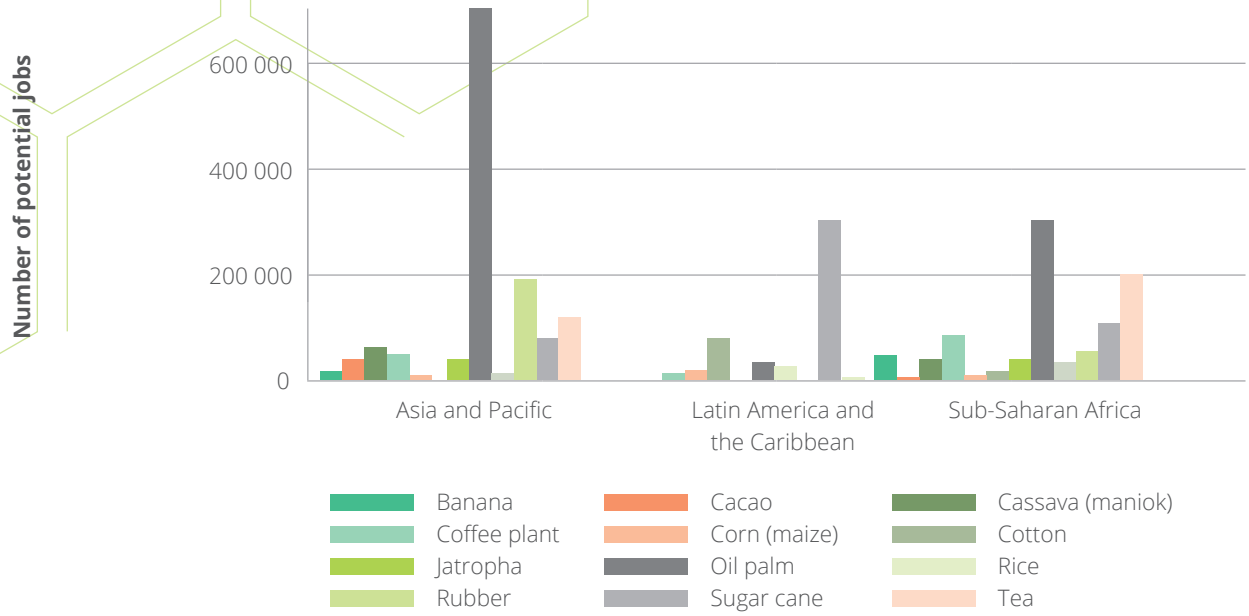
*Only a few crops significantly contribute to local labour markets. One such crop is oil palm, which creates close to one million potential jobs worldwide*

This exercise illustrates that only a few crops significantly contribute to local labour markets. One such crop is oil palm, which creates close to one million potential jobs worldwide, mostly in Southeast Asia, where palm oil production is concentrated. Rubber, another important crop in the region, could generate up to a further 200 000 jobs. The oil palm sector is also expanding in sub-Saharan Africa, potentially creating 200 000 jobs as well, while sugar cane stands out in Latin America with 300 000 potential jobs. Some other relatively labour-intensive crops, such as cassava, coffee, cotton, and tea show moderate job creation potential in selected regions. This also holds true for other crops with high labour intensities that are not listed in Figure 3.2. For instance, looking at the example of Kenya, Madagascar, and Mozambique again, Mercandalli et al. (2021) estimate that rose production and processing is highly labour intensive, with 17 permanent jobs and 2 temporary jobs generated per hectare. Vegetable production shows a relatively high labour intensity as well, with 2.1 permanent jobs and 2.25 temporary jobs per hectare. However, as the size of LSLAs in these sectors remains limited, the labour market impacts are small and localised. In contrast, and in line with the above results from Ethiopia, most staple crops, including barley, sorghum, teff, and wheat have limited employment effects (all less than 50 000 potential jobs) due to their low labour intensities.[18]

Besides crop-specific labour intensities, different production methods – which were not included in the above computations – can imply considerable differences in employment effects. A case in point is soya bean production: whereas in South America it is heavily mechanised and capital intensive, in India it is only semi-mechanised. For example, on average, only one worker is employed for close to 100 ha of soya bean in Brazil (Bustos et al., 2016), compared to India, where one worker is employed for about 7 ha (Byerlee et al., 2016). Likewise, for sugarcane, farms using mechanical harvesting create 15 jobs for 100 ha, compared to those using manual harvesting, which create 70 jobs for 100 ha (Deininger & Byerlee, 2011).

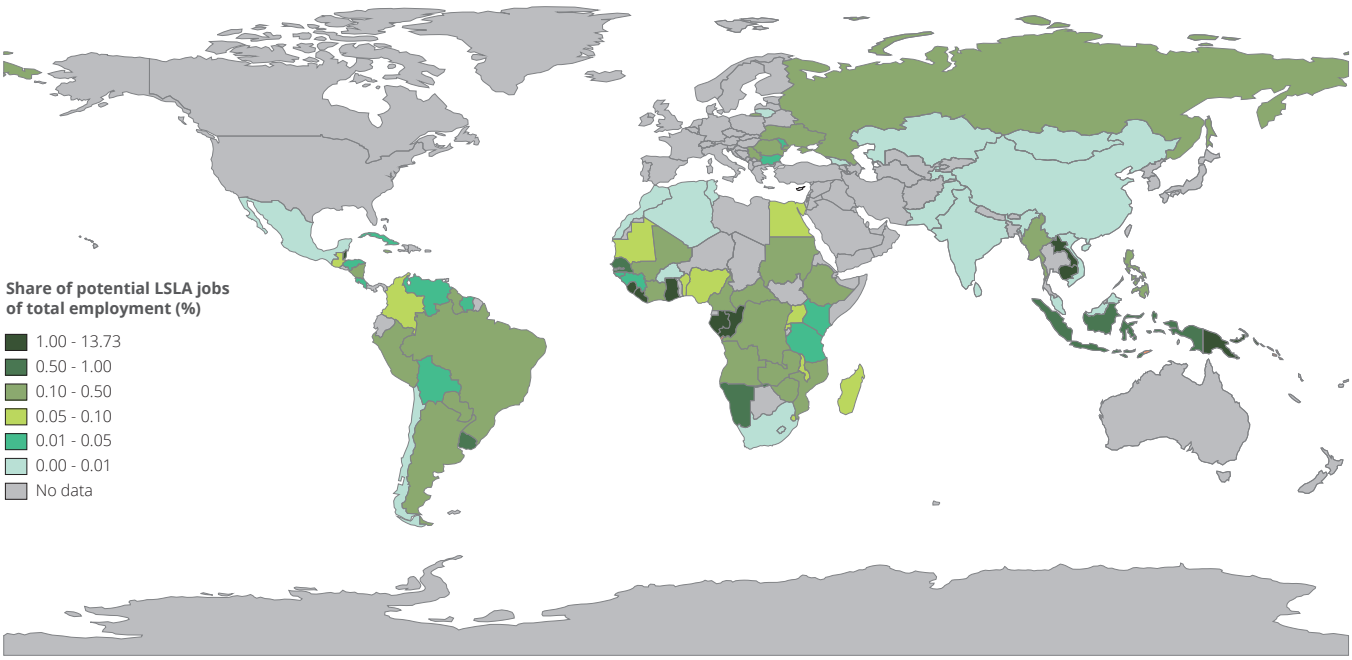
[17] *As only a limited number of deals report data on employment, we use the median labour intensity of all deals with the respective crop, which we multiply with the area under contract of concluded deals.*
[18] *We also did not find significant employment effects for the regions of Europe and Central Asia, the Middle East, or North Africa, which were thus not included.*

**Figure 3.2:** Potential employment creation through LSLAs by crop type




Notes: Calculations based on Land Matrix data. For the selected crops and regions, the total area is 13 168 545 ha. Only concluded deals are included, with the exception of abandoned deals. We only show data for crops with a potential employment creation larger than 50 000 and not less than 15 concluded deals in the selected regions.

**Figure 3.3:** Map of potential employment creation through LSLAs as a share of total employment




Notes: Calculations based on data from the Land Matrix and International Labour Organisation (ILO 2020). Only concluded deals are included, with the exception of abandoned deals.

Due to agro-ecological conditions, certain types of cropping systems and their associated labour intensities are regionally clustered, leading to possibly strong localised labour market effects. Figure 3.3 puts employment generation in perspective by presenting the potential employment creation of LSLAs as a share of total employment by country. The map shows that, at national level, most labour markets will not be significantly affected by transnational LSLAs. Overall, based on our current sample of deals and assuming full implementation, less than 0.5% of the national workforce will be employed on the acquired land in the majority of countries. For selected countries with relatively small population density, effects will be larger, including the Democratic Republic of Congo, Gabon, Laos, Namibia, and Papua New Guinea, although this is also seen in some more densely populated countries that are important targets for land deals, such as Ghana and Sierra Leone.

*Assuming full implementation, less than 0.5% of the national workforce will be employed on the acquired land in the majority of countries*

Future demographic changes are also worrying: about 375 million young people will enter the labour market in sub-Saharan Africa between 2015 and 2030, the majority of which still reside in rural areas, despite urbanisation (Losch, 2016). These substantial demographic changes, along with the limited effects on the current labour market, cast doubt on the importance of LSLAs in decreasing unemployment in most countries. We caution, however, that due to the data limitations outlined in Chapter 1, there may be unaccounted deals which could downward bias our estimates for some countries.

## No remedy for precarious labour markets: Temporary and underpaid jobs prevail

So far, although we have emphasised the (potential) quantity of employment, we have not discussed its quality. The limited literature focusing on LSLA job quality indicates a trend towards less permanent salaried work, except for the few management positions (often taken up by migrant workers), and towards a greater reliance on casual temporary work (Ali, 2020; Gibbon, 2011; Oya, 2013). In particular, large-scale farms that cultivate grain crops can often only offer temporary employment during the harvest and land preparation seasons. Such irregular income sources can supplement the income portfolio of rural households, but they cannot substitute their own farming activities. It is also concerning that, in some cases, the highly seasonal labour demand of large-scale farms could lead to competition with smallholders that also seasonally depend on local labour. We discuss evidence on this mechanism in the following section on spillovers to smallholders.

*The disconnect between LSLA job creation and improvement of social conditions of work persists*

Beyond the general trend of limited and low-quality job creation, impacts regarding LSLA job quality can vary dramatically. The quality of jobs provided by LSLAs, defined in terms of work conditions, contract duration, level of remuneration, and access to extra-salary benefits such as social insurance, depends strongly on production models, labour policies, and value chain organisation. It also depends on local factors such as overall employment opportunities and geographic proximity to the LSLA. In a country like Kenya, for example, the quality of jobs in agriculture is shaped by horticulture production models, long-standing and well-structured value chains, and relatively strong labour policies, as illustrated in the Nanyuki area. In the 28 LSLAs implemented in the area, for instance, 82% of the jobs are permanent (see Table 3.1). This is linked to the roses and vegetables production models that demand specific – often relatively well-qualified – labour all year round. Most of the permanent employment contracts are duly formalised, of which about half come with extra-salary benefits such as health insurance and vacation entitlements, and a minority with pensions and maternity leave of absence (Mercandalli et al., 2021). That said, although the contracts are still aligned with Kenyan agricultural minimum wages (280 to 360 KS per day in 2017), these wages remain less attractive than those of other local wage jobs (around 420 KS per day).

Intermediary situations can be identified in, for example, Mozambique, a country that is in a preliminary labour structuration phase, which, despite the labour trend towards poor job quality in the LSLA sector, has seen improvements in emerging and export-oriented value chains. Nevertheless, in analysing LSLAs in the regions along the Numpula corridor, Mercandalli et al. (2021), underscore that the majority of jobs are casual, as is observed in 71% of the cases at the national level (Di Matteo & Schoneveld, 2016). For instance, in the Gurué and Monapo areas, with dominant tea or sisal production models, 62% and 73% of jobs, respectively, are temporary, with the large majority of them not being formalised with a contract. Tea cultivation, performed on aging plantations and oriented to regional markets, does not meet standard requirements either, with remuneration of only 80 MZN per day – well below the minimum agriculture wage (114 MZN per day). In all these cases, jobs often lack any kind of side benefits and can present dire working conditions (Agy, 2018; Governo de Moçambique, 2017; Mercandalli et al., 2021), demonstrating how, in these sectors, the disconnect between LSLA job creation and improvement of social conditions of work persists (Ali & Muinga, 2016).

In contrast, a second, but limited, trend appears in Ruacé-Lioma, where soya-oriented production models have developed more recently. Table 3.1 shows that permanent employment prevails (60%), and is mostly formal (62%). Such contracts come with combinations of health insurance, leave entitlement, and pension rights (Baumert et al., 2019; Mercandalli et al., 2021). Recent studies in this area indicate that the wages are slightly above the monthly minimum wage, and are 73% higher in foreign companies than in national companies (Di Matteo & Schoneveld, 2016).

At the other extreme, we find countries like Madagascar, where the very few LSLAs remaining reflect the only job opportunities in rural areas. However, the lack of alternatives, combined with the staple crop production models LSLAs generally engage in, result in extremely low labour conditions, as seen in the only LSLA still operating in the south of the country. In this maize production model, diversified with plants dedicated to essential oil production, about 80% of the workers access temporary positions, and the majority have no contract. Furthermore, casual workers only have access to a few benefits, of which the main one is access to a local hospital sponsored by the company, and their working day for the company is more demanding than daily labour for the local farmers, with no meals provided and working hours ending later in the afternoon. These casual labour conditions are also related to the seasonality of labour demand and poor standards in the sector overall. The remaining 20% are permanent workers, who are engaged in the more technical tasks. As shown in Table 3.1, they mostly benefit from formal contracts (65%) with extra-salary benefits such as health insurance, leave entitlements, and pension (Mercandalli et al., 2021). Moreover, the remuneration offered by the LSLA is up to twofold that of other job opportunities in the rural countryside and, consequently, its job attractiveness is high. About 15% of rural households interviewed by Mercandalli et al. (2021), however, stated that although they had tried to get a position, they were not recruited.

**Table 3.1:** Quality of LSLA jobs in three countries with diverse labour structures

| | MOZAMBIQUE MONAPO | MOZAMBIQUE GURUÉ | MOZAMBIQUE LIOMA | KENYA NANYUKI | MADAGASCAR SATROKALA |
|---|---|---|---|---|---|
| **TYPE OF JOBS** | | | | | |
| % of permanent workers | 27 | 38 | 60 | 82 | 21 |
| % of temporary workers | 73 | 62 | 40 | 18 | 79 |
| % of all workers with contract | 19 | 37 | 42 | 80 | 24 |
| % of permanent workers with contract | 18 | 76 | 62 | 86 | 65 |
| % of temporary workers with contract | 24 | 8 | 18 | 37 | 2 |
| **REMUNERATION PER DAY (LOCAL CURRENCY)** | Currency: MZN | Currency: MZN | Currency: MZN | Currency: KS | Currency: MGA |
| Agribusiness jobs | 20 | 80 | - | 320 | 7 500 |
| Non-agriculture employment | 80 | 110 | 220 | 420 | 3 500 |
| Self-employment | 100 | 90 | 100 | 250 | 2 900 |

Notes: Calculations based on Mercandalli et al. (2021). Having a contract is defined as having a contract that is formalised. Permanent work is defined as working more than eight months per year. Wages are reported as average wages per day, for all permanent and daily workers.

Assessments of the socio-economic profiles of LSLA employees and their households stress that the predominantly temporary jobs for day labourers or seasonal workers created on LSLAs tend to benefit the most vulnerable segments of the population: poor households, migrants, the youth, and women. Indeed, young people and migrants are the most frequently recruited for temporary and casual labour. Precarious jobs remain more open to women who, unlike men, find it difficult to access employment in other sectors of the rural economy.

However, results also show that, in the framework of improving labour conditions, such as in Kenya, other segments of the population aiming to build more sustainable livelihood strategies can be engaged, for example, older workers accessing permanent, decent opportunities. This illustrates how local conditions play a critical role in the unfolding outcomes of LSLA labour relations, livelihoods, and local economies.

## 3.2. Spillovers to smallholder farms depend on crops and business models

The productivity of smallholder farmers unquestionably needs to improve, in particular in sub-Saharan Africa (Beegle & Christiaensen, 2019; Tian & Yu, 2019). However, while targeted interventions, including more and better extension services, are in no doubt an effective way to achieve this, harnessing positive spillovers from large-scale farms (Deininger and Byerlee 2011) holds enormous potential to augment the capacity of smallholder farmers. Not only can large-scale farms improve the availability and access to inputs and technologies, including fertiliser, improved seeds, tractors, and storage facilities, but they also open up new marketing channels, through the emergence of new buyers for example, including the farm itself. Large-scale farms may also explicitly or implicitly offer credit to smallholders. These positive spillovers can be facilitated through closer relationships between smallholders and large-scale farms, such as through contract farming arrangements, but also depend on a variety of conditions. First, the spillovers depend on the crops cultivated by both investors and smallholders, which will, for instance, determine whether the large-scale farms' technologies and management practices can be adapted or equipment and advanced inputs (seeds or chemical fertiliser) used. Second, smallholder productivity improvements depend on initial yield gaps; improvements may be smaller when large farms have lower land productivity than smallholders, as documented by studies on the inverse relationship between farm size and productivity (Carletto et al., 2013). Lastly, the spillover effects of LSLAs and the feasibility of contract farming are determined by other local conditions, in particular on land (availability of land and land rights) and labour markets (availability of labour and feasibility of internal migration).

### Positive spillovers to smallholders are rare due to inadaptability of capital intense and scale-dependent new technologies

Negative spillovers from LSLAs may also occur, for instance through the increased competition for scarce resources, be it land, water, or labour – resulting in constrained access to these resources and/or higher prices for smallholders. We have already shown evidence that land indeed becomes scarcer, and we will provide evidence for increased competition over water in Chapter 4, where we discuss environmental impacts. Nevertheless, evidence on spillovers from LSLAs from newly established large-scale farms in grains and staples in sub-Saharan Africa suggests that they are moderately positive overall, but with differences between crops (Ali et al., 2019; Deininger & Xia, 2016; Lay et al., 2021). For example, they appear to be larger in maize production, where the yield difference between small and large producers is significantly larger in comparison to millet, sorghum, or wheat (Ittersum et al., 2016).[19] The substantial increase of about 20% in smallholder maize yields (on average 1.7 tonnes per hectare) in regions in Zambia where large-scale farms were established illustrates this point, although this effect could not be observed for "micro" smallholders with less than 1.4 ha of land (Lay et al., 2021).

Spillovers also depend on whether the type of crop and technology applied is adaptable to independent smallholder

[19]*Smallholder maize yields, for example, often reach only about 20% of their yield potential, producing one to two tonnes per hectare. In contrast, maize yields on larger farms – as well as on smaller demonstration farms – can be as high as three to six tonnes per hectare (Ittersum et al., 2016; World Bank, 2008).*

farming, which may not be the case for flower production, high-value vegetables for export, or no-till farming. On the other hand, in the oil palm sector, one of the key drivers of LSLAs worldwide, smallholders, particularly in Southeast Asia, quickly took up a newly introduced crop and its related management practices. The primary reason is that oil palm is highly profitable even at small scales since cultivation is hardly mechanised and still mainly depends on manual labour. This partly explains the widespread use of contract farming arrangements in this sector – although much less so in sub-Saharan Africa.[20] In Indonesia, for instance, smallholder farmers (as contract or independent farmers) currently account for over 40% of the total oil palm area (Kubitza & Gehrke, 2018). In fact, the evidence suggests that those households and communities that adopted oil palm cultivation often fare better than those that did not. We discuss the welfare and poverty effects in more detail below (Edwards, 2019; Euler et al., 2017; Kubitza et al., 2019), however, it is important to note that such positive spillovers are not uniformly distributed, particularly because not all households and communities have the necessary skills, assets, and access to additional land to take advantage of the new crop (Euler et al., 2016; Santika et al., 2019). Besides economic gains, contract farming between smallholders and large-scale plantations, especially in the early years of the oil palm boom, facilitated the adoption of the new crop among smallholder farmers. In Southeast Asia, the prevalence of contract farming in the oil palm sector is also due to the fact that large-scale plantations are often legally bound to set aside about 20% (or more) of their concession area for contract farming under the current regulations (Jelsma et al., 2017). Still, not all companies abide by the legal requirements, and the Land Matrix has recorded a number of major conflicts around the extent of contract farming between local communities and investors (deal #8046, for example).[21]

## Positive effects of contract farming may be counterbalanced by unequal risk-sharing and high costs

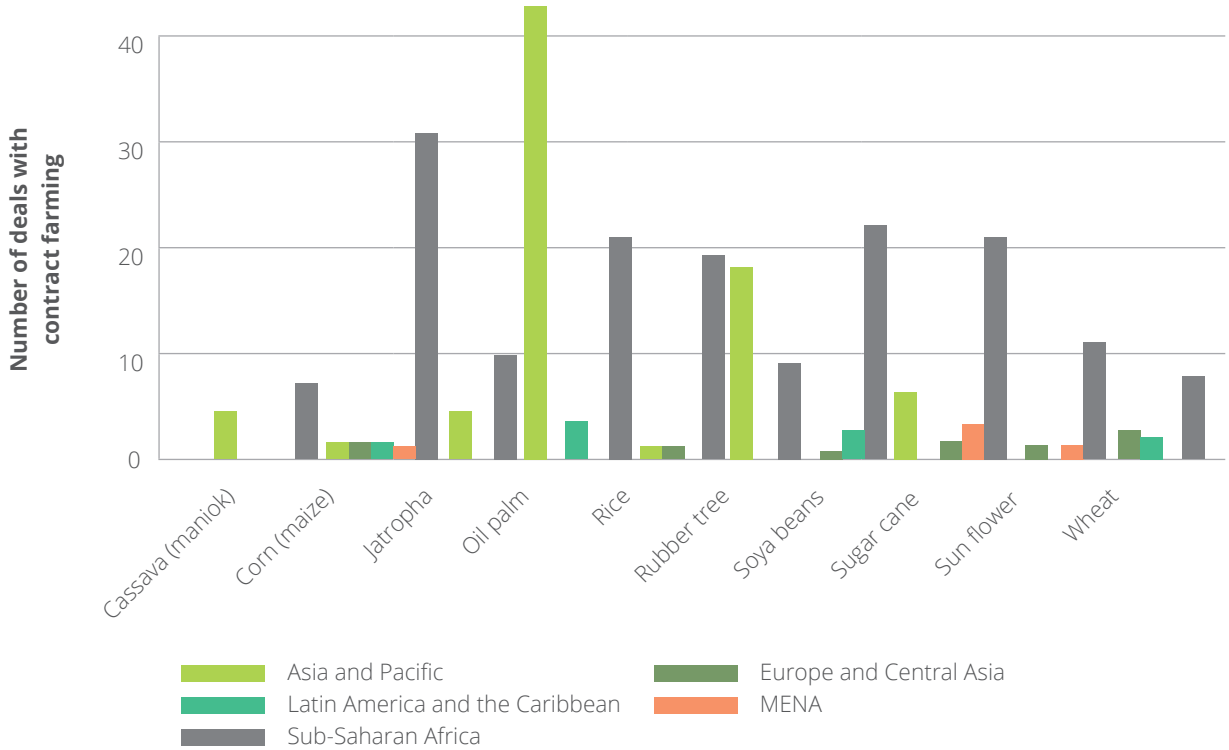
Importantly, contract farming is not limited to the oil palm sector. Figure 3.4 shows the number of land deals by crop with (some) contract farming based on Land Matrix data. In total, these deals account for only 15% of the total number of concluded deals. In Asia and the Pacific, we can see a number of deals with contract farming in rubber and oil palm – in line with current literature. In sub-Sahara Africa, a more diverse set of crops is linked to contract farming, including maize, oil palm, rubber, soya bean, and sugar cane.

*In Asia and the Pacific, we can see a number of deals with contract farming in rubber and oil palm. In sub-Sahara Africa, a more diverse set of crops is linked to contract farming*

[20] *In the oil palm sector, incentives on both sides exist to engage in contract farming. Oil palm farmers need to sell their harvest within two days to ensure high quality oil, and hence rarely store their harvest to obtain higher prices later on from different buyers. At the same time, the large-scale oil palm plantations often incorporate palm oil mills, and to run the mills at full capacity and profitability, companies usually rely on the harvest of smallholders additional to their own production.*

[21] *Links between smallholders and large-scale plantations may also be organised in different models, which include independent farmers that are linked to processing plants within large-scale plantations via local agents, farmer groups, or farmer-managed cooperatives. Further, smallholders may lease their land to companies against financial compensation. In particular, in Malaysia, a country with a very mature oil palm sector, smallholders gradually evolved into shareholders with labour being sourced from poorer countries, such as Indonesia (Cramb & McCarthy, 2016).*

**Figure 3.4:** Distribution of contract farming by crop type




Notes: Calculations based on Land Matrix data. Only concluded deals are included, with the exception of abandoned deals (n=1455). Only crops with more than 10 deals associated with contract farming are included.

In general, these contract farming arrangements can address frequently cited constraints in the smallholder farming sector, including limited access to input and output markets as well as credit, and facilitate knowledge spillovers. Indeed, certain studies find positive effects of contract farming arrangements on income, profit, and welfare of smallholder farmers (Meemken & Bellemare, 2020). Yet, using a new dataset on contract farming participation in six low- and middle-income countries,[22] Meemken and Bellemare (2020) argue that contract farming may not always be beneficial for smallholder farmers.[23] The ambiguous effects of contract farming may be explained by, for example, knowledge transfer often being more limited than assumed (Chamberlain & Anseeuw, 2019), and specific characteristics of contracts being in favour of the company, rather than the smallholders. Box 7 describes different contract farming arrangements linked to two major land deals in Ghana and their impact on local livelihoods.

[22]*Bangladesh, Côte d'Ivoire, Mozambique, Nigeria, Tanzania, and Uganda.*
[23]*Meemken and Bellemare (2020) argue that many studies tend to lack external validity, as they focus on small geographic areas and specific contract farming schemes. In fact, using their (more representative) new dataset on contract farming participation in six low- and middle-income countries, they find only moderate gains – incomes of contract farming households are only 10% higher than those of other comparable households – driven by larger gains of 25-30% in two of the country cases.*

**BOX 7:**
**Effects on local production depend on the type of contract farming schemes**

Contract farming arrangements between large-scale farms and smallholders are often considered essential to allow for broader rural development effects of LSLAs, and yet, overall empirical evidence on contract farming and smallholder livelihoods is considerably mixed. The specific characteristics of contracts might be an important source of effect heterogeneity, as illustrated in the case of Ghana, where two major oil palm companies, Benso Oil Palm Plantation (BOPP), a subsidiary of Wilmar International Limited (land deal #1346), and Twifo Oil Palm Plantation (TOPP), owned by Unilever (deal #6775), operate nucleus estates with large oil palm plantations and processing mills that were previously state-owned.

After privatisation, and the subsequent upgrading of their respective mills' processing capacity to 20-30 tonnes per hour, while both companies were incentivised to develop contract farming schemes to obtain oil palm fruit bunches from smallholder farmers, the contracts they offered differed substantially. Where BOPP offers simple marketing contracts that only specify an annual fixed price and regular pick-ups of the harvest at the farm gate, TOPP offers resource-providing contracts which specify an annual fixed price, regular pick-ups, and the provision of in-kind credits. These credits include an initial in-kind credit for the set-up of the plantation (planting material, agrochemical inputs, tools, and machinery) and additional in-kind credits for agrochemical inputs throughout the contract duration of 20-25 years. The in-kind credits are paid back by the farmers through a share of each harvest, until the debt is paid in full.

Unsurprisingly, a recent study found that both contracts affect the production and productivity of smallholders differently: while the more comprehensive resource-providing contract leads to increased adoption of agrochemical inputs, higher productivity, and a more specialised and larger scale of production, the marketing contract that offers no input support does not lead to production changes. Thus, it is important to note that while descriptive statistics on land deals with and without contract farming are insightful, researchers and policy-makers have to be aware of the large diversity of contract farming schemes.

*Source: Ruml & Qaim (2020)*

Up to this point, we have looked at the direct effects of LSLAs on smallholders, but important spillovers may also stem from their impacts on local factors (land and labour) and product markets. It is conceivable that the large-scale production of crops that are not mainly destined for export markets, including maize and other staples, affects local supplies and thus depresses crop prices. To our knowledge, these possible effects have not yet been examined, but there is some evidence on potentially adverse impacts on local smallholder farmers through the labour market. Hofman et al. (2019), for example, report a considerable drop in average incomes – of about 10% – for smallholders in Sierra Leone adjacent to a large-scale sugar plantation established in 2010. In 2017, according to the Land Matrix (deal #1798), the company leased 23 500 ha of land and employed 2 400 local seasonal workers on the farm. Hofman et al. (2019) assume that this increased labour demand pushed up the wages of agricultural labourers, who thus gain from this development, with negative income effects on smallholder farmers who correspondingly have to afford higher wages of agricultural labourers during their harvest season. While more evidence on such spillover effects is needed, in general, crowding out of smallholder farms from input markets could be a substantial problem in malfunctioning markets, where smallholders find it difficult to adjust to changes caused by large-scale farms.

## 3.3. Unfulfilled expectations of better social and physical infrastructure

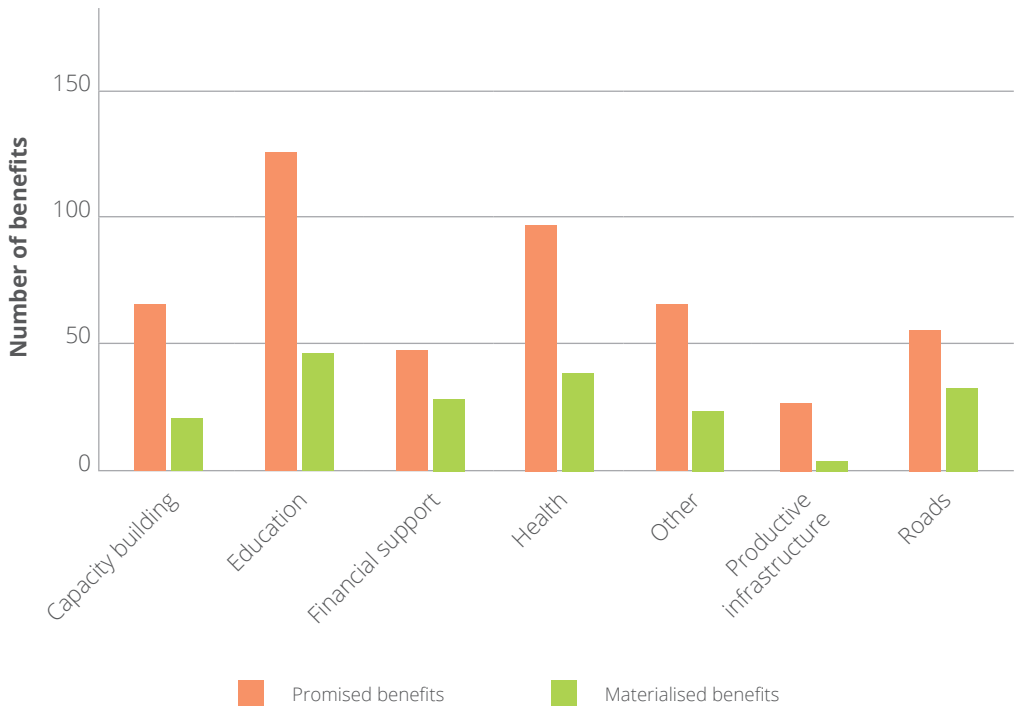
The establishment of large-scale farms typically requires an extension of existing rural infrastructure, in particular of roads. Some companies also provide social infrastructure, including housing, schools, and health centres, to their workers and their families. These services are sometimes accessible to non-employees as well. Infrastructure projects can also be part of contracts in order to compensate communities for land losses (see Box 5 in Chapter 2).

For 15% of concluded deals recorded in the Land Matrix, we have information on some promised benefits in terms of infrastructure development. Figure 3.5 shows Land Matrix data for promised benefits in terms of infrastructure development, as well as data on the actual implementation of benefits. In particular, health (for 7% of all concluded deals) and education facilities (for 9% of all concluded deals) for the local population were promised as benefits.

However, only a limited number of deals reported any benefits in terms of infrastructure that actually materialised (for 7% of all concluded deals), although these numbers could be downward biased, given a considerable number of deals have missing information. The Land Matrix data does not reveal which infrastructure projects were actually implemented, or if expectations of local people were met. In Box 8, we discuss these issues in the context of Laos, which supports the finding that, while high expectations concerning infrastructure development exist among the local population, companies often do not deliver. On the other hand, it is not surprising that profit-oriented investors do not feel obligated to build up infrastructure for the local population, especially in the case of unclear legal frameworks and weak enforcements. In addition, investments seem to occur in well-connected and populated areas, where investors do not have to bear the costs of developing their own infrastructure (Hett et al., 2020; Lay et al., 2021).

*Only a limited number of deals reported any benefits in terms of infrastructure that actually materialised*

**Figure 3.5:** Promised and materialised benefits from LSLAs for local communities




Notes: Calculations based on Land Matrix data. Only concluded deals are included, with the exception of abandoned deals. Note that one deal can include several benefits. (n=1 455)

## BOX 8:
## Promised but not delivered: Infrastructure development and land deals in Laos

Expectations of Lao citizens regarding the provision of public infrastructure as an additional benefit of private sector investments in agriculture or mining are generally high. These expectations are anchored in the common practice of government granting land and resource concessions to private companies in exchange for the development of infrastructure since the economic opening of Laos in the mid-1980s. They are also reflected in the so-called "Turning Land into Capital" (TLIC) policy, which was supposed to foster local economic development and reduce state spending on infrastructure through the commercialisation of land.

The interest in the potential economic benefits from land deals was likewise generally found to be high among the local population. A study of 296 land deals in nine provinces of Laos found that during the consultation process, economic benefits such as employment and monetary compensation, as well as infrastructure, were mentioned in 41% of all cases. These benefits were also the most frequently negotiated issue among village communities, even topping land allocation. However, for infrastructure, the study shows that for almost half of the deals, the promised contributions to local infrastructure such as roads, schools, or clean water provision systems were only partially or not at all fulfilled. In addition, the provision of infrastructure was promised in only a small number of land deal negotiations in the first place, since the local governments and affected communities were often unaware of their right to negotiate the provision of these benefits with the investors. A case study conducted in one province, Luang Pranag, found that out of 21 agricultural deals, only a very small number mention infrastructure development of any kind.

There are different reasons for the low rate of infrastructure development provided by land concession and lease projects for agricultural and mining products. First, as mentioned, the investors of these deals do not see it as their obligation to contribute to rural infrastructure. On the contrary, the studies suggest that investors perceive the lack of adequate infrastructure as a key constraint for land deals, and among one of the primary reasons for the clustering of deals in the accessible lowland and border areas of Laos. Based on a recent nationwide inventory of 1 038 deals, approximately two-thirds of all investigated deals occurred in the Mekong plains and lowland areas, with an average travel time of only two hours to the nearest provincial capital. In these locations, the investors therefore both minimise their transportation costs and the need to develop their own infrastructure. In addition, most investors also lack the access to capital for infrastructure investment. In fact, only 12% of the 296 investigated land deals were with publicly-listed corporations, which usually have access to significant amounts of capital, whereas the majority were developed by private companies and family businesses with more limited financial resources.

Compliance with legal obligations is frequently also low. Project development agreements or concession contracts are available for less than half of all land deals registered in a national inventory, while environmental impact assessments are only available for 2% of all investigated deals. In addition, the TLIC policy was never fully formalised, and hence the specific legislative text and bureaucratic procedures are missing for an effective monitoring and enforcement system. The poorly conceived policy, limited compliance, clustering of investments in relatively well-developed regions, and lack of interest of investors to spend their own resources on infrastructure development contribute to the considerable mismatch between expectations and real progress regarding infrastructure provision as an added value to agriculture and mining deals.

*Sources: Hett et al. (2020); Kenney-Lazar et al. (2018); Nanhthavong et al. (2020)*

Generally, if companies pay taxes or lease fees or buy land from the government, the government in turn has more room to invest in infrastructure, compensate displaced households, and implement projects for employment generation. However, in reality, many countries face considerable difficulties in adjusting their fiscal regime to secure revenue from selling off their natural resources. In addition, companies are often exempted from custom duties, income and excise taxes, and sometimes even receive subsidies (Anseeuw et al., 2012; Fraser, Alstair & Lungu, John, 2007; Richardson, 2010). The oil palm sector in Indonesia illustrates further shortcomings. The major source of tax revenues from oil palm plantations is not related to annual taxation of production, but to one-off revenues from selling licenses to clear forestland for plantations (Obidzinski et al., 2013).
Furthermore, it was estimated that only 11-14% of palm oil tax revenues were actually redistributed to local governments (Falconer et al., 2015). Companies often also avoid taxation. For example, Land Matrix data reveals that, in the case of Ukraine, countries such as Cyprus and Luxembourg, which are known for low corporate taxes, are the primary location of investors (Amosov et al., 2020). Besides the cited studies, however, little systematic evidence is available on the effects of LSLAs on infrastructure development and tax revenues.

## 3.4. How it adds up: Poverty, inequality, and food security effects

Thus far we have shown that LSLAs frequently target land that is used for smallholder agriculture, pastoralism, or shifting cultivation (see Chapter 2) – which can drastically affect local livelihoods – and demonstrated that (potential) employment effects are limited in most cases, especially in terms of the highly mechanised cultivation of soya bean and most grain crops. Nevertheless, considerable employment effects are possible with specific labour-intensive crops, for people living in close proximity to acquired land, and in countries with small labour markets. For spillovers on smallholder farms, the evidence hints at moderate crop-specific effects at best, but with the potential for larger positive spillover effects through contract farming. Based on the scarce available evidence, we also expect limited effects in terms of infrastructure development and tax revenues. Ultimately, these transmission mechanisms and the related changes in local livelihood strategies determine the effects of LSLAs on rural livelihood outcomes, including poverty, inequality, and food security.

In their recent review, Oberlack et al. (2016) report positive income effects for a significant number of cases of land deals. However, the magnitude of the income gains and poverty reduction is rarely established in these studies, and there are only a few empirical studies that compute the effects of LSLAs on poverty. For example, Herrmann and Grote (2015) show a large and significant difference of 40% in rates of extreme poverty between matched plantation workers on a sugar cane plantation in Malawi (10% live below the poverty line) and non-participants (50% live below the poverty line).[24] Although Hofman et al. (2019) do not report poverty rates, very poor households with members working on a sugar cane plantation in Sierra Leone (with an average cash income far below the international poverty line) experience moderate income gains. Relatively large positive effects are reported from wage employment in higher value crops, on the other hand. Van den Broeck, Swinnen, and Maertens (2017) find decreasing poverty for households with workers in the horticultural sector in Senegal, with increases in incomes among the poorest half of the population by 30% and for the poorest 10% by as much as 53%. However, in light of the limited employment effects of many large-scale plantations, more important effects on poverty may come from land loss, displacement, and spillovers to adjacent smallholders. In fact, the study by Hofman et al. (2019) on the sugar cane plantation in Sierra Leone finds adverse effects on poor smallholder farmers due to higher labour costs that outweigh the gains of the plantation workers.

### Poverty reductions in Indonesia's oil palm sector, but the bulk of LSLAs do not deliver

To capture the "net impact" of LSLAs, rather than the effects on specific types of households, it may be more instructive to look at average poverty in proximity to land deals. Such evidence, based on nationally representative data, comes from Nanhthavong et al. (2020) for Laos between 2005 and 2015, a period of heavy investor activity in the country. Their study provides descriptive evidence that poverty rates declined more rapidly in villages affected by LSLAs compared to other villages. This decline was particularly pronounced in villages with close collaboration between smallholders and plantations (in the rubber sector) and in more remote villages with little competition for land between smallholders and large-scale farms. Further evidence based on nationally representative data on poverty rates comes from the oil palm sector in Indonesia. Edwards (2019) finds that the oil palm boom lifted around 2.6 million Indonesians out of poverty. In

[24] *Herrmann and Grote (2015) acknowledge the limitation to their quasi-experimental approach, which may mean that they overestimate the positive impacts.*

Kalimantan, Indonesia, Santika et al. (2019) document more heterogeneous effects. While communities with previous experience in plantation agriculture benefitted from LSLAs, poorer communities that relied on subsistence-based livelihoods experienced deteriorating well-being. That Laos and Indonesia report relatively positive income impacts of LSLAs is no coincidence. Instead, this is in line with the above discussion on employment effects that suggest relatively strong employment impacts for both countries. In contrast, in a study from Cambodia, Anti (2021) shows a decline in household expenditures for households living close to as well as on the LSLA. Although we do not have any estimates on the "net" poverty effects for other countries, based on the evidence from the previous sections, we expect that the effects on poverty will be very limited if not poverty-augmenting, particularly in sub-Saharan Africa.

*Laos and Indonesia report relatively positive income impacts of LSLAs*

## Local elites often control the redistribution of land, thereby reinforcing inequality

The inequality impacts of LSLAs have, to date, received little attention, despite the fact that we can expect differential impacts of the discussed transmission channels on different population groups, including landowners, smallholders, workers, men and women, and ethnic groups. Furthermore, such effects may reinforce pre-existing inequalities, especially if the distribution of gains is determined by local-level institutions.[25] For instance, there are some indications that (richer) local elites take advantage of the redistribution of land or compensations (Hofman et al., 2019; Oberlack et al., 2016). While we know little on the distribution of benefits among smallholder farmers, it is conceivable that spillovers favour relatively richer farmers that have access to capital and land to implement new technologies. Indeed, Lay et al., (2021) find that in Zambia, only larger smallholder farms benefitted from neighbouring large-scale farms in terms of yield gains; thus possibly increasing inequality among smallholders. Similarly, barriers to engage in contract farming, including skills, land, and capital, may exacerbate inequality and foster the concentration of land ownership. Current evidence points to increasing global land inequality, in particular in Asia and the Pacific, with an increase by 11% from 1980 to today measured by the Gini coefficient (Anseeuw & Baldinelli, 2020). Although we cannot precisely measure to which extent LSLAs contribute to this trend, this development is worrying in light of the large and detrimental influence of land inequality on local livelihoods. In contrast, the cited evidence on the employment and labour market effects that favour relatively poor households with little land may have positive distributional effects.

## Gender-differentiated demand for labour

Some evidence is available on the gender effects of LSLAs, which are often related to whether labour demand is biased towards male or female labour. In Sierra Leone, for example, Bottazzi et al. (2018) find that from a random sample of households close to a large-scale sugar cane plantation, only 2% of women (but 19% of men) were employed by the plantation (#deal 1798). Oil palm plantations also tend to increase the (relative) demand for male labour, as oil palm harvesting is highly physically demanding. Kubitza et al. (2019) argue, however, that the emergence of a non-agricultural sector that followed the oil palm boom partly counteracted this effect, as it increased the demand for female labour. Some agricultural sectors also favour women, such as in the Ethiopian cut-flower sector, where 71% of all permanent workers are women, compared to 34% in an average Ethiopian firm (Suzuki et al., 2018). Similarly, in Kenya's Nanyuki area, of the total 8 200 employees on large-scale farms (the majority being specialised in horticulture), 49% of permanent workers and 62% of seasonal workers were women (Giger et al., 2020). However, research in Africa has also found a strong gender-based wage gap, with women earning 50% less than men, due to the employment of men in higher qualified technical or managerial jobs (Mercandalli et al., 2021). Yet, as highlighted by Kubitza et al. (2019), the relevant criteria to judge inequality effects carry less weight even if a certain cropping system is biased towards male or female labour if disadvantaged population groups have access to other rewarding employment opportunities in a changing economic environment. For example, in settings with limited access to the non-agricultural sector or scarce land resources, as discussed in Chapter 4, this may often not be the case.

[25] *Several studies highlight that local leaders, like mayors or village chiefs, can have a strong influence on the distribution of costs and benefits of development projects in their respective communities (Beekman et al., 2014), a mechanism that also applies to LSLAs (Nolte 2014).*

## Limited impact on food security – but competition for land increases

There is little doubt that LSLAs can affect food security through local food supply, as local smallholder production shifts to cash crop production or gets entirely replaced by export-oriented large-scale farms. The rise of oil crops, such as oil palm and soya bean, as well as sugarcane, where export-oriented agricultural production is strongly associated with LSLAs, is a case in point as documented by Land Matrix data (see Figure 1.9 in Chapter 1). These export-oriented LSLAs, in particular when related to biofuel production, have often been associated with threats to food security in target countries as they compete with food production for scarce resources (Borras et al., 2010; Matondi et al., 2011; Mechiche-Alami et al., 2021). In Brazil, for example, where the area of soya bean plantations tripled between 1990 and 2015, strong tensions exist between impoverished landless households that commonly engage in local food production and export-oriented large-scale farms (Byerlee et al., 2016; Wright & Wolford, 2003). The negative effect of specialised cash crop production at the household level on local dietary diversity is also noteworthy, although the effect is potentially minor. In a recent review of 45 studies, positive and significant associations between on-farm production diversity and dietary diversity in smallholder households were reported for 80% of the studies, however, the effects are small in size (Sibhatu & Qaim, 2018). In addition, the income from cash crops or wage employment – even under the typical imperfect market conditions in developing countries – could partly counteract the losses in dietary diversity due to declining on-farm production diversity. Still, in certain settings where food markets are not easily accessible and income generating activities are rare, on-farm production diversity may remain important for local food security (Ecker, 2018; Koppmair et al., 2017; S. Singh et al., 2020).

Aside from concerns for local food supply, LSLAs affect households' access to food as incomes and food prices change. Again, the rise of oil crops over the past few decades is a prominent example, given that at least 25% of the increase in total food calories in developing countries since 1970 comes from vegetables oils, which became relatively cheap in most countries (Byerlee et al., 2016). The effect of LSLAs on income is likely to be mixed as argued in the previous sections. It comes as no surprise, therefore, that the household-level evidence on the impacts of LSLAs on local food security is inconclusive as well. Even for the same land deal, studies derive different conclusions (Bottazzi et al., 2018; Hofman et al., 2019; Yengoh & Armah, 2015).[26] Box 9 discusses a case from Madagascar in more detail, where increases in local income eventually improved local food security.

Overall, although little systematic evidence is available on the net livelihood outcomes from LSLAs at regional or country level, the available studies cast doubt on the expectations that sizeable positive effects for poverty and food security will take place across the board. Nevertheless, despite this rather sobering global picture, a few regions and countries do seem to have benefitted from the rise of LSLAs in terms of poverty reduction and employment. Studying the respective success factors might help to improve future generations of LSLAs.

[26] *For the case of a large-scale sugar cane plantation in Sierra Leone, for instance, Yengoh and Armah (2015) argue that perceived food security decreased as the number of farmers producing food crops declined by about 20% (#deal 1798). For the same LSLA, Bottazzi et al. (2018) find evidence for significant increases in food consumption expenditure and perceived food security of households in affected villages compared to households in unaffected villages. The authors suggest that their method is more robust compared to Yengoh and Armah (2015) as they compare the level of food security indicators between villages close to the LSLA and unaffected control villages. Hofman et al. (2019) find no significant effect on food security (measured by incidence of hunger) for the same LSLA, likewise purporting that their method is more robust compared to Bottazzi et al. (2018) as they also control for pre-existing differences between villages close to the LSLA and unaffected control villages. These three studies highlight that sampling strategies and estimation methods strongly determine the subsequent findings.*

## BOX 9:
## Effects of LSLAs on food security in Madagascar differ between contract farming and wage employment

Madagascar is one of the primary target countries for land-based investments in Africa, with a total of 1.4 million ha of concluded deals. However, the impact of these is controversial, in particular regarding food security.
A recent study explored the food security effects of large-scale agricultural investments in two areas of Madagascar, covering two distinct agribusiness models, namely large-scale farming and contract farming. The first, Tozzi Green (deal #1454), is located in Satrokala and Andiolava in the district of Ihosy in Madagascar. The company owns and runs the farming operation for growing jatropha, soya, geranium, and other crops on about 3 500 ha of land. The second, Malto (deal #8278), is a contract farming scheme that involves 2 000 households who produce barley on their own land in the Amoron'i Mania region.

The study finds that only a few households reported losing their land rights. Households close to the companies, but not engaged with the agribusinesses, were also not found to be negatively affected in terms of food security at the time of the survey. However, food security status differed between households with employment at the large-scale farm and contract farmers. Households with members directly employed at the large-scale farm suffered from less hunger and fewer months of inadequate food provision than households that were engaged in contract farming. The households involved in contract farming were also worse off for most other food security indicators. The likely reason is that contract farming households received a lump-sum contract payment compared to the consumption-smoothing monthly or weekly payments of employed households. On the other hand, households involved in contract farming enjoyed diets with higher diversity than households where members were employed. This may arise from contract farming households having access to additional land to grow a variety of food crops for household consumption. Overall, certain groups were found to be disadvantaged in general, such as female-headed households. This may be due to divorced female-headed households losing their land rights and finding it more difficult to secure both employment and contracts from the LSLAs.

The study illustrates that assessing the effect of LSLAs on food security is complex due to the multiple transmission mechanisms. In addition, the effects of LSLAs depend on the different strata of the society used as comparison, but also on the selected indicators for food security.

*Source: Fitawek et al. (2020)*

# 4
# Environmental impacts of LSLAs:
## The looming threat to forests and water resources

LSLAs are commonly justified on the grounds that they establish 'modern', highly productive agricultural systems based on intensive – usually year-round – cultivation in contrast to more traditional production systems (Giger et al., 2019). However, these systems – typically monocultures – often also result in land conversion from natural habitats, either directly caused by the land deal itself or indirectly by pushing local people or bringing migrants to frontier areas – and are associated with a number of environmental changes and potentially negative impacts (Haggblade et al., 2017; IARC, 2017; Sharma et al., 2019; WHO & IPCS, 2010). These range from land use change, deforestation, and biodiversity loss, to greenhouse gas emissions, local climate change, and impacts on water resources (Zaehringer et al., 2021). In this chapter, we discuss these environmental impacts, focusing on land use changes and deforestation, as well as the related effects on water resources.

## 4.1. Land conversion, biodiversity loss and climate change

Land conversion is associated with massive losses of biodiversity, in particular when tropical rainforests are affected (Drescher et al., 2016; Giam, 2017). Davis et al., (2021) for example, suggest that if all concluded agricultural deals registered in the Land Matrix database were fully implemented, relative species richness, an important biodiversity indicator, would experience substantial declines, with losses being markedly prominent in Africa and Asia. In line with these findings, the study also hints at considerable overlap of contracted production areas of LSLAs with areas defined as biodiversity hotspots or critical habitat: 39% of agricultural LSLAs fall at least partially within biodiversity hotspot areas, while a smaller percentage (13%) partly overlaps with at least 40% of the contracted size with likely critical habitat. Our own analysis of the data also shows that 87% of these LSLAs are occurring in regions of medium-to-high biodiversity (Giger et al., 2021).

*39% of agricultural LSLAs fall at least partially within biodiversity hotspot areas*

In addition to biodiversity losses, the conversion of forests can contribute to climate change by directly releasing a large amount of carbon into the atmosphere (Liao et al., 2020), an effect that is particularly pronounced when forests or peatland are being burnt.[27] Moreover, LSLAs impact – mostly negatively – water, soils, the local climate, and biogeochemical cycles, as well as energy and nutrient fluxes. The impact of LSLAs on water has received notable attention, even being referred to as "water grabs" – rather than "land grabs", highlighting the increased appropriation of freshwater resources (Rulli et al., 2013; Tejada & Rist, 2017).

While it is widely acknowledged that agricultural expansion has long been an important driver of deforestation, we argue in this chapter that this threat to natural habitats remains highly relevant now and for the future, particularly since many of the concessions and areas under contract have not yet been converted or put under cultivation (see Chapter 1). However, as some studies tend to underscore, the establishment of highly productive agricultural systems resulting from LSLAs may also reduce pressure on environmental resources. Higher productivity could as such have a land sparing effect, by requiring potentially less land to be cultivated for the same amount of production. Through this effect, remaining natural ecosystems could be saved from conversion into agricultural land (Feniuk et al., 2019; Folberth et al., 2020; Grau et al., 2013; Phalan et al., 2014; Villoria, 2019). It is also important to note that not all unfavourable land use practices with negative external impacts, such as soil erosion, nutrient mining, or carbon emissions, are connected to LSLAs. Many of these, such as slash-and-burn practices with short fallow periods in between, are pre-existing and unrelated.

*Since many species are endemic to regional environments, biodiversity in one region cannot be offset with higher levels of biodiversity in another region*

As recognised in the literature on land sparing, however, there are some caveats to this line of argument. First, agricultural productivity on or within close proximity to LSLAs might not necessarily be substantially higher compared to regions without LSLAs. Furthermore, they may not be able to sustain higher productivity in the long run due to soil depletion or over-use of water (see Section 4.4). Second, much of the literature on land sparing (Folberth et al., 2020) relates to increasing productivity on existing cropland, and not to

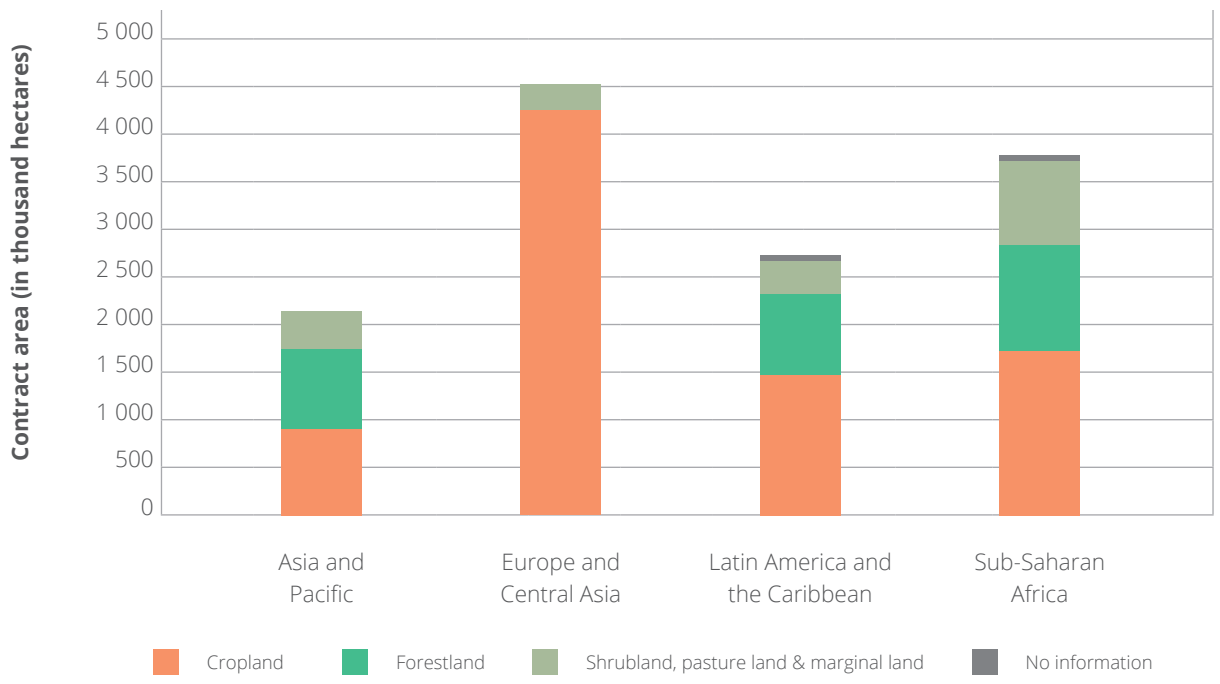
[27] *Liao et al. (2020) find a total of 18.9 million ha of forest being at threat of being cleared because of LSLAs which would lead to 3.5 Gt of additional CO2 emissions as a result of direct and indirect land use changes. This would account for about 10% of the global energy-related CO2 emissions in 2019.*

opening new cropland on previously uncultivated land, as is the case for an important fraction of LSLAs. Third, global land sparing is complex when it comes to biodiversity (Carrasco et al., 2014; Grau et al., 2013), and, since many species are endemic to regional environments, biodiversity in one region cannot be offset with higher levels of biodiversity in another region (Carrasco et al., 2014). For example, sparing land in regions with relatively low biodiversity, such as rapeseed in Germany, by expanding production with higher land productivity in regions with higher biodiversity, such as palm oil in Liberia, does not necessarily save biodiversity. These considerations highlight the importance of understanding the role of LSLAs as a direct and indirect driver of land use change and deforestation, which we address next.

## 4.2. LSLAs persist as a key deforestation threat

LSLAs are a key driver of land use change, thus contributing substantially to deforestation, habitat destruction, and land degradation (Davis et al., 2015, 2020; D'Odorico et al., 2017; Magliocca et al., 2019; Zaehringer, Wambugu, et al., 2018), as reflected in Land Matrix data on former land cover of acquired land. For example, globally, as Figure 4.1 shows, the majority of LSLAs (63%) are implemented on existing cropland, often leading to intensified land use, as is the case in Europe and Central Asia, while in the other regions, there is considerable cropland expansion which eats away at forests and natural vegetation cover, such as shrub, pasture, and marginal land.

**Figure 4.1:** Primary land cover type targeted by land deals and region (share by aggregate contract size)




Notes: Individual deals list up to four different types of former land covers. The Land Matrix does not provide information on the share of area for each type of former land cover; hence, for this analysis, we have divided the area under contract and attributed equal shares to each former land cover. N (deals) = 620, N (former land cover) = 1 560.
Calculations based on Land Matrix data.

In particular, LSLAs threaten tropical forests and their extraordinary biodiversity, and there is overwhelming evidence that LSLA-related agricultural expansion is a major determinant of large-scale deforestation in the humid tropics (Curtis et al., 2018; DeFries et al., 2010; Gibbs et al., 2010; Meyfroidt et al., 2014). For instance, Pendrill et al. (2019) demonstrate that in the period from 2005 to 2013, 62% (corresponding to 5.5 million ha per year) of forest loss could be attributed to expanding commercial cropland, pastures, and tree plantations. Henders et al. (2015) likewise show that the production of beef, soya bean, palm oil, and wood products in seven countries with high deforestation rates

(Argentina, Bolivia, Indonesia, Malaysia, Papua New Guinea, and Paraguay) account for 40% of total global tropical deforestation observed between 2000 and 2011. In Brazil, home to the world's largest tropical rainforest, deforestation has accelerated considerably under the Bolsonaro administration (Escobar, 2020) and it may well be that the – increasingly intensive – cattle ranching and soy production are the key economic drivers of frontier deforestation (Schielein & Börner, 2018). Similarly, in Indonesia, which has the world's third largest area of rainforest after the Amazon and Africa's Congo Basin, massive deforestation continued throughout the 2010s, driven by large-scale oil palm and timber plantations, in particular at the new frontiers on Kalimantan.

*There is overwhelming evidence that LSLA-related agricultural expansion is a major determinant of large-scale deforestation in the humid tropics*

While some of the countries mentioned have been hotspots for deforestation for decades, global land investments have, in the past 15 years, opened new deforestation frontiers worldwide. This grim assessment is supported by our own analysis that combines Land Matrix data on international LSLAs with Hansen's forest data. Specifically, we use the geographic point location of the LSLA registered in the Land Matrix and draw circular buffers around each deals' location corresponding to the respective contract size. Data on forest cover is derived from Hansen's tree cover in the year 2000 using two different thresholds of initial forest cover set to 25-100% and 50-100%, respectively, and the reported yearly losses until 2019 (Hansen et al., 2013).

**Table 4.1:** Loss of forest within LSLAs between 2000 and 2019

| REGIONS | NUMBER OF DEALS | SIZE OF CONTRACT AREA OF LSLA (HA) | SIZE OF FOREST COVER IN 2000 WITHIN LSLA (HA) | SIZE OF FOREST COVER IN 2019 WITHIN LSLA (HA) | SIZE OF FOREST LOSS BETWEEN 2000-2019 (HA) | SHARE OF FOREST WITHIN LSLA IN 2000 (%) | SHARE OF FOREST WITHIN LSLA IN 2019 (%) |
|---|---|---|---|---|---|---|---|
| **50% tree cover threshold** | | | | | | | |
| Sub-Saharan Africa | 390 | 6 396 817 | 2 145 056 | 1 798 447 | 346 609 | 33.53 | 28.11 |
| Latin America and Caribbean | 161 | 4 722 053 | 1 267 715 | 1 049 453 | 218 262 | 26.85 | 22.22 |
| Asia and Pacific | 414 | 8 150 117 | 5 993 934 | 4 713 072 | 1 280 867 | 73.54 | 57.83 |
| **Total** | **965** | **19 268 987** | **9 406 704** | **7 560 972** | **1 845 738** | **48.82** | **39.24** |
| **25% tree cover threshold** | | | | | | | |
| Sub-Saharan Africa | 390 | 6 396 817 | 3 631 400 | 3 130 189 | 501 211 | 56.77 | 48.93 |
| Latin America and Caribbean | 161 | 4 722 053 | 1 836 054 | 1 513 049 | 323 005 | 38.88 | 32.04 |
| Asia and Pacific | 414 | 8 150 117 | 6 348 887 | 5 015 229 | 1 333 658 | 77.90 | 61.54 |
| **Total** | **965** | **19 268 987** | **11 816 341** | **9 658 467** | **2 157 874** | **61.32** | **50.12** |

Notes: Calculations based on Land Matrix data and Hansen (2013). Concluded international deals within the tropical humid, moist or dry forest and tropical mountain regions. Deals with location precision only at country level were excluded.

Looking at data from 964 geo-located land deals in tropical regions with a total contract area of 19 million ha, the first half of Table 4.1, which uses a 50% tree cover threshold, shows that, about 9.4 million ha were still covered with forest in 2000. With a lower tree cover threshold, as used in the second half of Table 4.1, it is almost 12 million ha. However, there is significant regional variation, which is important to note: In Asia and the Pacific (with almost all selected deals being located in East Asia), about 74% of the area around the location of the deals was still covered with forest in 2000, which is considerably larger than the 26% and 33% in Latin America and sub-Saharan Africa, respectively.[28]

## East Asia shows continued forest loss

Nevertheless, East Asia is also the region with the highest loss of forest cover. According to our estimates, about 1.3 million ha were lost between 2000 and 2019 within the contract area of LSLAs, corresponding to a loss of 16 percentage points. In a previous, very similar study, zooming in to the country level, Davis et al., (2020) show that forest loss within LSLAs was particularly high in Cambodia, Indonesia, and Malaysia. Looking at the specific case of Cambodia, Magliocca et al., (2019) found that between 2000 and 2016, the country lost roughly 1.6 million ha of forest, corresponding to 22% of the country's total forest cover. Worth mentioning, 30% of these deforested areas are located within economic land concessions granted by the state to foreign and national investors.

*East Asia is also the region with the highest loss of forest cover. According to our estimates, about 1.3 million ha were lost between 2000 and 2019 within the contract area of LSLAs*

In Southeast Asia, these developments are largely driven by rubber and oil palm plantations (Austin et al., 2017; Chiarelli et al., 2018; Rulli et al., 2019), as shown by the Food and Agriculture Organization Corporate Statistical Database (FAOSTAT), which reveals that the area cultivated with rubber in this region increased from 5.7 to 9.5 million ha (66%) between 2000 and 2019 (FAOSTAT 2021). Hurni and Fox (2018) further found that rubber plantations increased by 8%, covering an area of 7.5 million ha, in the mainland Southeast Asia countries alone between 2003 and 2014. Of note, 70% of this expansion came at the expense of natural forests, with deforestation greatest in Cambodia and Laos, but also significant in parts of China and Vietnam. However, Indonesia and Malaysia host the vastest area of oil palm plantations, at about 18 million ha collectively (Index Mundi, 2021), much of which has likewise been established to the detriment of primary and secondary forests (Austin et al., 2017; Hunt, 2010). In fact, between 2001 and 2016, oil palm expansion directly caused 23% of the nationwide deforestation in Indonesia (Austin et al., 2019). Furthermore, a significant share has been implemented on carbon-rich peat swamp forest, which has considerable implications for global climate change (Fuller et al., 2011).

## Tropical rainforests are at risk in sub-Saharan Africa

In contrast to East Asia, deforestation in the proximity to LSLAs in sub-Saharan Africa was substantially slower, covering just 350 000 ha between 2000 and 2019 (Table 4.1) with a decline in forest cover of only about 5%, from 33.53% to 28.11%.[29] This concurs with the slow implementation of LSLAs in the region, as discussed in more detail in Chapter 1. It may also mean that the temporal patterns of forest loss and agricultural expansion are different. Deforestation within African LSLAs appears to frequently occur several years before the deals are concluded (Davis et al., 2021), suggesting that land deals in this region may have benefitted from previous land clearing (such as for pasture or smallholder farming).

Even with these caveats, tropical forests in Africa are under risk. Partly drawing on Land Matrix data and extrapolating recent trends in commodity production, Ordway et al., (2017) analysed the risk of agricultural expansion at the cost of forests in sub-Saharan Africa and found that it is undeniably increasing pressure on tropical forests, in particular in four Congo Basin countries as well as in Côte d'Ivoire, Liberia, and Sierra Leone. In these countries, high forest cover coincides with low proportions of potentially available cropland outside forest areas, but the authors also hint at an important role played by foreign large-scale investment in selected commodities, most notably palm oil, even though, overall, agricultural expansion is driven mainly by small-

[28] *This is in line with evidence presented by Davis et al. (2021), who used a smaller sample of deals in the Land Matrix database (with a contract size of 4 million ha).*
[29] *Note that lowering the threshold for tree cover to 25% considerably elevates the LSLA-area covered (although more sparsely) by trees in 2000 to more than 56%.*

and medium-scale farms rather than industrial plantations (Jayne et al., 2016). This is borne out by Gasparri et al. (2016), who show that there are indeed initiatives to facilitate and increase foreign investment, which typically come in the form of large-scale projects. A case in point is Cameroon, where the government's goal is to triple cocoa production (230 000 tonnes in 2010) and double oil palm production (600 000 tonnes in 2010) by 2035 (Ordway et al., 2017). The threat these plans entail for tropical forests, with approximately 17.3 million ha (68%) of land suitable for agriculture currently still being covered by dense tropical forest (Chamberlin et al., 2014) is cause for grave concern.

## Old and new agricultural frontiers in Latin America

The data from Latin America gives mixed signals. On the one hand, Table 4.1 suggests that about 39% of the LSLA area was forest in 2000 (25% tree cover threshold), which is less than in other regions. Deforestation within the contract size-buffered deal locations also appears relatively slow, albeit with a 7% loss in forest cover. On the other hand, these findings are at odds with the evidence that shows substantial deforestation linked to agricultural expansion in the region (Curtis et al., 2018). These apparent contradictions are not easily reconciled, however, partial data coverage of LSLAs, in particular of domestic investors – which are more important in Latin America than elsewhere but have received less attention than international deals – may be one reason for this.[30] Yet, for them to bias the percentages presented in Table 4.1, the non-covered deals would need to target more forested areas, which is not necessarily the case. In fact, we surmise that the data on LSLAs for Latin America is likely more partial than it is for other regions, in light of domestic investors not being the main focus of the Land Matrix to date (see Chapter 1).

*In Africa, the large share of yet-to-be implemented deals foreshadows a significant threat, in particular to the Central African rainforests*

Partial data coverage[31] is also likely to explain why we underestimate – when using Land Matrix data – deforestation in the Gran Chaco, which hosts the largest dry forest in South America. This area has seen rapid deforestation since 2000, with 7.8 million ha of the Chaco's forests converted into farmland or grazing land for soy and livestock production between 2001 and 2012, according to Fehlenberg et al. (2017). The soya bean area alone increased by 126%, from 2.3 million ha to 5.2 million ha, during the same period, and while livestock farming and feedstock production can of course be complementary, at the same time, displacement effects can occur when the expansion of soy production pushes livestock farmers to seek new grazing land at the frontier. This behaviour has frequently been observed in Brazil, where rangeland is converted to cropland by large-scale investments, resulting in livestock farmers converting surrounding forest into new grazing land in turn (Cohn et al., 2016; Hermele, 2013).

In addition, the Land Matrix data clearly reveals – in line with other studies – that there are "new" threats to forests on the horizon, such as oil palm plantations, which until recently have not been a common driver of deforestation in the region. Indeed, as suitable land for new oil palm plantations in Southeast Asia is depleting, companies have begun to look to new production frontiers, such as Colombia and Peru, which have experienced the highest growth rates in recent years. In the Peruvian Amazon, for example, oil palm has become an important strategy for development, which Vijay et al. (2018) warn is a major deforestation risk. This is supported by the findings of Bennett et al. (2018), which show that between 2000 and 2015, 40 000 ha of primary forest were cleared for large oil palm plantations in Peru alone.

These examples clearly illustrate that LSLAs – notwithstanding some regional variation – pose a major threat for further destruction of the world's remaining natural habitats. Whereas in Africa, the large share of yet-to-be implemented deals foreshadows a significant threat, in particular to the Central African rainforests, massive deforestation has never really slowed down in Southeast Asia, and LSLAs are now even targeting new frontier regions. Similarly, in Latin America, LSLAs have been adding new frontiers to the unresolved problems of deforestation in the Amazon for some time. Distressing as this is, perhaps what is most sobering is the fact that, overall, our own analysis (Table 4.1) is likely significantly underestimating (potential) LSLA-induced forest loss – at least in relative terms (share of land previously covered by forest), and certainly in absolute terms.

[30] *Domestic deals represent almost 60% of all land deals and almost 40% of the acquired area in the complete Land Matrix database for Latin America.*
[31] *Among the countries with agricultural expansion at scale with many investors, Indonesia stands out in terms of publicly reporting single projects.*

## 4.3. Indirect land use change and the loss of remaining fragments

There are two other mechanisms that drive LSLA-related land use change that bear mentioning. First, there is growing evidence that LSLAs are also responsible for indirect land use change, adding to the observed direct land use change (Oberlack et al., 2021). Indirect land use change is considered a spillover effect whereby former small-scale land users, displaced by the implementation of the LSLA, make new land arable, mostly through small-scale deforestation, elsewhere. This has been observed in Africa, Southeast Asia, and South America. For example, in their study on deforestation in and around land concessions in Cambodia, Magliocca et al., (2019) find that an additional 49 000-174 000 ha (depending on low or high estimates) of forest are lost around the concessions due to indirect land use change (3-10.7% of all forest lost in Cambodia by 2016). Similar observations were made in case studies from Mozambique, where small-scale mosaic croplands were acquired by LSLAs, forcing the affected small-scale farmers to clear forest for new arable land (Zaehringer, Atumane, et al., 2018).

*LSLAs not only escalate deforestation, but also contribute to forest fragmentation – with potentially strong negative effects on biodiversity of remaining forest patches*

Second, LSLAs not only escalate deforestation, but also contribute to forest fragmentation – with potentially strong negative effects on biodiversity of remaining forest patches (Davis et al., 2021; Zaehringer, Wambugu, et al., 2018). Beyond that, Hansen et al. (2020) recently pointed out that the remaining forest fragments decrease at a greater rate compared to large forest blocks, with clearing for agricultural production as a critical factor. This calls for as much attention to be paid to forests that are being fragmented as those that are being cleared.

## 4.4. The building pressure on water resources

The potential impact on water resources is an important dimension of the environmental consequences of land acquisitions. Since increasing land-based production is generally achieved through greater use of water, if the water demand cannot be met by rainfall, irrigation of "blue water" (see below) becomes necessary. Indeed, the link between LSLAs and increased water demand becomes patently clear when viewed in light of the fact that 54% of the land deals recorded in the Land Matrix database are intended to produce crops with high water use, such as oil palm, sugar cane, jatropha, cotton, and rubber.[32]

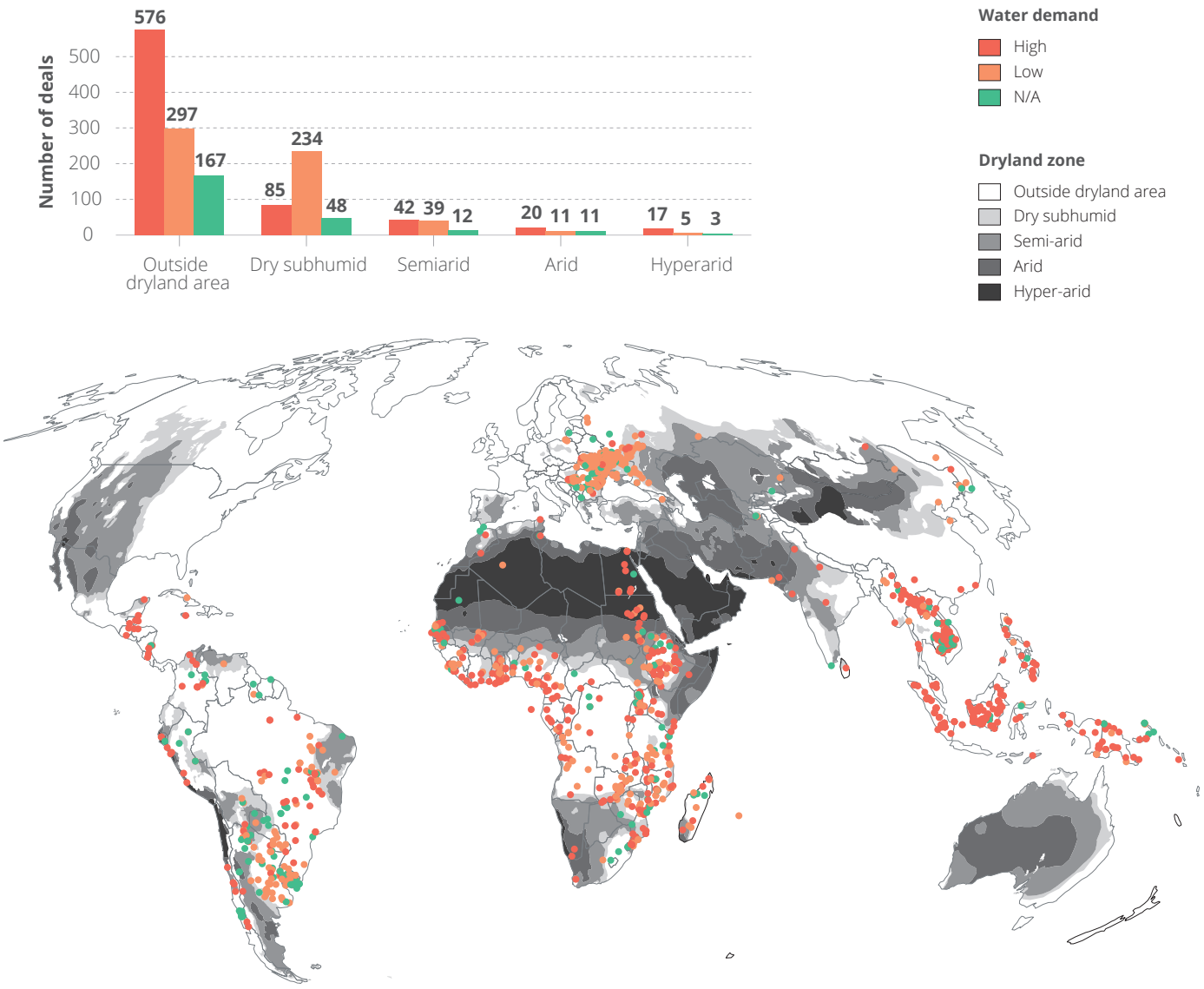
*54% of the land deals recorded in the Land Matrix database are intended to produce crops with high water use*

Another important potential effect of increased water use is that it can reduce the availability of water for the surrounding areas and downstream users (Chiarelli et al., 2018; Dell'Angelo et al., 2018; D'Odorico et al., 2017), which has implications for their livelihoods and food security. LSLAs can also impact water quality through increased run-off of nutrients and pesticides in the surrounding water bodies and environment (Giger et al., 2019; Muriithi & Yu, 2015; Oberlack et al., 2016; Zaehringer, Wambugu, et al., 2018).

Looking at Figure 4.2, which illustrates different water demand categories (high and low) in relation to global dryland zones, we note that water demand and availability according to the climate does not coincide everywhere. In Southeast Asia, for example, oil palm – a crop with high water demand – is produced in a region with mostly abundant rainfall. Conversely, for instance, in the Nile region but also in other places, other high water demanding crops (fodder, cotton, sugarcane, potatoes, and vegetables) are produced in an extremely dry area, requiring intensive irrigation. Our data show that 34% of deals take place in dryland zones where water resources are scarce by definition, with 10% of them producing crops that require large amounts of water. Crops with low water demand, like cereal, are often found in areas that are outside drylands and have sufficient water to produce these crops, such as those found in high concentration in Eastern Europe and parts of Latin America and Africa.

[32] *Tn=1 568. Categories based on Johansson et al. (2016). High: > 8 500 m3/ha; Low: <= 8 500 m3/ha; NA: Crop demand not classified.*

**Figure 4.2:** Water demand categories of crops cultivated in LSLAs and dryland zones




Notes: Water demand categories based on Johansson et al. (2016) (High: > 8 500 m3/ha; Low: <= 8 500 m3/ha; NA: Crop demand not classified). Map background showing different dryland zones (in grey). LSLAs: n=1 568.

In the absence of publicly available project documents, let alone environmental impact studies, data around water and irrigation is generally difficult to obtain. However, the Land Matrix database does have some information on water abstraction for a limited subset of 269 land deals, which account for an area of about 5.7 million ha and may be interpreted as a lower-bound estimate to the number of deals associated with water abstraction and corresponding adverse socio-environmental impacts. Surface water (water that comes from above the ground, including rivers, lakes, streams, wetlands, and reservoirs), is the most cited source of water (46% of deals), but groundwater (water that is found below the ground) is also mentioned (12% of deals). Both these sources of water are known as "blue water", as opposed to "green water", defined as rainfall that is subsequently stored in soils and consumed by plants (Falkenmark & Rockström, 2006; Johansson et al., 2016). Blue water thus represents the amount of water needed to meet production ends in addition to the water provided by rainfall. While green water is considered better or less problematic in the

context of LSLAs, using blue water is not necessarily "bad" if it does not increase water demand beyond the capacity of the agro-ecological[33] environment. In reality, however, there are many LSLAs that do cause blue water demand to increase substantially, placing considerable pressure on already water-stressed areas. Examples of land deals that have a very high proportion of blue water demand and take place in severely water-scarce areas can be found in Egypt, Namibia, and Sudan, for instance.

Using Land Matrix data for Africa in a crop-modelling exercise, Johansson et al. (2016) demonstrate that, based on current national irrigation efficiencies, 35% of all deals would take place in blue water use hotspots (that is, areas where their blue water demand is more than 50% of their total water demand). Furthermore, they found that even under more efficient sprinkler or drip irrigation technologies, up to 20% of the total deals in production would still fall in such hotspot areas.

### BOX 10:
### Blue water use in stressed contexts

One extreme example of the use of blue water in a water-stressed context (Deal #1172 covering 42 000 ha) comes from Egypt, where Gulf companies (from different countries) have invested in the country's Western Desert in Toska, transforming the desert land to agricultural land by diverted water from the Nile to produce alfalfa. This animal feed, requiring extremely high amounts of water to grow, is partly for domestic use, but is also exported to the Gulf, including to Saudi Arabia which imports fodder to produce milk and meat due to a production ban on animal feed that has been in place since 2017. The project has attracted much criticism regarding its contractual agreements (below market prices for water and land) and low number of jobs created. Moreover, the strategy of reclaiming desert land for high water demanding crops has been slated for reducing the availability of water for Egyptian farmers in the Nile valley to produce rice, wheat, and fruits, which are profitable and more water efficient crops, but currently need to be imported (Arafat and El Nour, 2020). Another example of blue water irrigation that causes adverse local impacts has been reported from Sierra Leone (deal #1798). Here, intensive sugar cane production has necessitated the installation of large irrigation structures, with the water being pumped from a local river flowing through the concession area and subsequently resulting in the nearby swamps falling dry. These swamps were previously used for rice production by the community, and especially by women farmers to produce vegetables during the dry season. The project's large-scale monoculture has also destroyed a highly diverse cultural landscape, significantly changing the quality of and access to land, water, and non-timber forest products which were of specific importance for marginal groups, including women and land users not originally from this region (Bottazzi et al., 2018; Marfurt et al., 2016).

While blue water matters for some crops and contexts, D'Odorico et al., (2017) point out the important fact that only a tiny fraction of total water used by LSLAs is from surface water or groundwater. Green water is thus likely to remain the major water source for most LSLAs. Nevertheless, the increased use of green water can create equally negative environmental impacts, depending on the context in which this water use arises. In Southeast Asia, for example, oil palm plantations, which are typically rain-fed, alter hydrological cycles with the conversion of rainforests to agricultural land (Merten et al., 2016), as young plantations increase run-off and temperatures, while established plantations increase evapotranspiration compared to natural forests. These combined effects, found in crop-modelling studies (Manoli et al., 2018), confirm perceptions of oil palm being a "water greedy" crop. However, some of these effects can be mitigated through current best practices using cover crops during the establishment phase.

Analysing the hydrological consequences of rubber expansion in Southeast Asia, which also relies on green water, Chiarelli et al. (2020) found evidence that the higher evapotranspiration of rubber plantations compared to shrubs, pastures, or less water-demanding crops, could reduce run-off, especially in dry seasons, and negatively impact water availability for downstream farmland. Chiarelli et al. (2020) also point to

[33]*Some irrigation systems in selected tropical areas, although using large amounts of water (paddy rice), are considered water management systems (regulating inundation and dry periods) for optimal crop management and are less likely to critically limit water available of adjacent areas.*

the "grey water consumption" – the amount of water that is required to dilute to below acceptable standards the concentration of pollutants – used in the production of rubber. Rubber plantations using fertilisers and pesticides contribute to downstream water pollution as well. Indeed, this is true for most LSLAs: increased economic activity through intensified agricultural production and processing of goods will create the possibility of increased pollution of water resources, which needs to be prevented or mitigated. The exact terms of the water rights granted with land concessions or purchases are rarely made public, which makes is difficult to assess the impact on water. It is nevertheless important to take into consideration not only the quantity of the water consumed by LSLAs, but also the many other factors involved, including the local context and availability of water sources. Conducting environmental impact studies is therefore critical, as is making the results of the studies available to the public and concerned stakeholders.

## BOX 11: LSLAs and pandemic risk

A recent report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2020) has drawn attention to the complex – sometimes ambiguous – relationship between biodiversity loss and pandemic risk (Dobson et al., 2020; Gibb et al., 2020; IPBES, 2020; Jones et al., 2013; Tollefson, 2020). For instance, deforestation in tropical regions is considered among the most important factors leading to the emergence of zoonotic diseases. While such a link has been discussed by specialists for decades (Borsky et al., 2020; Jones et al., 2013; Perrings et al., 2018; Wallace, 2016; Wallace et al., 2014), mainstream debates on land acquisitions have so far neglected to address this.

Based on the IPBES report, several mechanisms accompanying agricultural deals may contribute to increased risk of zoonotic disease outbreaks. First, continued expansion of the agricultural frontier and associated loss of biodiversity could reduce the buffering effect of biodiverse ecosystem niches by decimating the variety of animals that act as buffering species, slowing or stopping pathogen transmission (Keesing et al., 2006, 2010). Second, monocultures could modify zoonotic host diversity, increasing the share of host species. Third, implementation of LSLAs and related infrastructure in or near highly biodiverse natural habitats could increase forest fragmentation and bring more people in close contact with potential hosts of pathogens. Fourth, displacement could push people deeper into more remote areas, bringing them into contact with new reservoirs of pathogens. Fifth, conversely, risks of zoonosis might be mitigated if people's livelihoods change in ways that reduce hazardous human-wildlife interactions, for example, by increasing people's incomes and reducing their reliance on consumption of bushmeat.

To date, the risks of zoonotic disease emergence are seldom, if ever, factored in when assessing the benefits and costs of agricultural investments. However, initial estimates indicate that the costs of a change in policies by creating incentives that reduce deforestation and wildlife trade – and thus the risk of pandemics – could be low compared to the cost of a pandemic (Dobson et al., 2020).

Until now, zoonosis risks have not been taken into account by any of the mainstream global guidelines on responsible agricultural investment and land governance either (FAO, 2012; FAO et al., 2010). The call by the authors of the IPBES report for developing and incorporating pandemic and emerging disease risk health impact assessments in major land-use projects should therefore certainly apply to land acquisitions as well. Furthermore, agricultural policies should be reviewed along with LSLAs in view of preventing forest fragmentation and the further intrusion of land investments into biodiverse ecosystems. Importantly, avoidance of competition of land and displacement of people needs to be addressed even more urgently.

Finally, increased transparency on land acquisitions will be instrumental in advancing investigations into their relationship with zoonotic disease emergence.

*Source: The box is based on a commentary published in One Earth, May 2021. Giger Markus, Eckert S., Lay J. (2021). Large-scale land acquisitions, agricultural trade, and zoonotic diseases: overlooked links. One Earth, 4(5), 605-608.*

# 5

# From aspiration to practice:

## Policies for sustainable and inclusive land-based investments

This report clearly shows the urgent need to rethink LSLAs. On the one hand, there is a need to turn the current practices of large-scale agricultural investments into responsible and sustainable contributions to economic and social development that respect human rights and the environment. On the other hand, it becomes essential to look into other production models, as alternatives or alongside LSLAs, that include smallholder farmers or increase positive spillovers to them, to promote broad-based rural development and more endogenous growth patterns. Both require fundamental changes in the conduct of domestic and international businesses alike, and dedicated and targeted efforts by investor and host country governments. Although progress has already been made, for example through the Voluntary Guidelines on the Responsible Governance of Tenure (VGGTs) and Principles for Responsible Investment in Agriculture and Food Systems (RAIs), much remains to be done at all levels, from global to local, to effectively ensure that land rights are protected, social development in target regions is enhanced, and the environment is respected. We see five priority areas for action that we discuss in this chapter.

First, while policies in a number of countries have responded to the weaknesses of land governance that were exposed by the pressure that LSLA put on land and international soft law instruments, most notably the VGGTs, have increasingly been used as a basis for land policy scrutiny and reform, land governance needs further reforms, particularly to address key risks associated with LSLAs. In particular, as we will discuss below, despite progress at the policy level, more has to be done to effectively protect the land rights of those affected by LSLAs, especially smallholders, pastoralists, and indigenous groups.

Second, policies are needed that pro-actively guide, regulate, and monitor land-based investments to ensure their contribution to sustainable rural development in line with national development strategies and local needs given that, as the report has demonstrated, opening up (land) markets to international investment cannot create jobs, infrastructure, and rural development alone. In addition, despite the capacity challenges in target countries and at the local level, transparency and consultation will be key elements of more careful planning of projects and screening of investors.

Third, these policies will have to be complemented by efforts to change the global rules of the game. As this report has shown, many LSLAs involve multinational companies and are linked to global production networks. As such, international investment treaties as well as the regulations that govern production in global value chains will have to pay more attention to social and environmental sustainability in general, with LSLAs providing a case for immediate action.

Fourth, the environmental destruction caused by LSLAs must be stopped. Our report adds to the overwhelming evidence that agricultural commodity production continues to be a major environmental threat, in particular to the world's remaining tropical forests. We have shown that much of the area granted to investors has not yet been put under production and that new agricultural frontiers are emerging. These new frontiers, for example in Central Africa, the Andean countries, Cambodia, and Laos, do not replace "mature" frontiers in Brazil and Indonesia, where forests and forests remnants remain under threat – they add to them. It is therefore critical that these hotspots are placed at the centre of policy attention.

Fifth, related and transversal to the preceding priority areas, we reinforce our call for increased transparency. Despite relentless efforts by the Land Matrix and other initiatives to bring to light the actors involved in and the impacts of LSLAs, many land deals remain opaque. As we demonstrate below, both governments and the private sector are reluctant to share and publish information. We believe that regulatory action is required, which includes transparency as an element for more comprehensive sustainability due diligence.

We elaborate on these priority areas and present concrete policy recommendations below. Above all, as LSLAs continue to ignore people's land rights, threaten the rural livelihoods of smallholders, and cause environmental harm that will be very difficult or even impossible to reverse, swift and decisive action is urgent.

## 5.1. Improving land governance: The long road from aspirational policy frameworks to securing effective land rights

The last 10 years have seen the development and implementation of innovative legal, regulatory, and guiding frameworks to strengthen land governance at both national and international levels. These range from actions to operationalise international soft law instruments, more notably the VGGTs and RAIs, to globally recognised legal and financial instruments framing international investments, such as the complaint mechanisms for development finance institutions (DFIs) (Cotula et al., 2019; Daniel et al., 2016). The global land frameworks have increasingly been used as a basis for land policy scrutiny and reform. This has led to steps forward at the regional, national, and local levels and in both policy and practice. A case in point is the rolling out of the Framework and Guidelines on Land Policy in Africa, which has helped African Union member states to develop or review their land policies and to implement and evaluate these policies (ALPC, 2010). Similarly, the 2018 Association of Southeast Asian Nations (ASEAN) guidelines on promoting responsible investment in food, agriculture, and forestry can be considered a step in this direction (ATWGARD, 2018).

At national level, several examples of land-related policy reform exist, varying considerably in their nature and scope – from new national constitutions that, for the first time, entrench rights for the landless, to national legislation that covers wide-ranging policy areas, such as support for the collective registration of community, indigenous, or pastoral lands, as well as legislation focusing directly on LSLAs. These include, among others, legislative measures, for example, the reforming of land laws in relation to LSLAs in Malawi and Mali; LSLA-related legislation, for example the update of FPIC in Senegal; the "Forest Law" enacted in Argentina in 2007 to protect native forests and regulate the expansion of large-scale agriculture; and a range of moratoria, as seen in Cambodia, Indonesia, Kazakhstan, Niger, and Ukraine (see Box 12).

Notwithstanding the progress made in terms of land governance, a lack of policy being put into practice is evident, as shown throughout this report. This is well illustrated when VGGT implementation is assessed. Indeed, a scorecard exercise in which Land Matrix variables were aligned with VGGT articles and chapters confirms that effective implementation of the VGGTs remains low in practice. In Africa, for example, almost one-third of the deals assessed do not comply with the VGGTs and its principles at all, and only 25% can be considered to have achieved the minimum compliancy (Box 13). Additional analyses on transparency of land deals in other regions show a similar picture.

This priority area clearly demonstrates that many challenges remain when it comes to effective land governance: Competition over land exacerbates the fundamental problems of weak land governance, and we still observe too many cases of displacements, poor consultation, and little or no compensation. In such cases, vulnerable groups are usually hit the hardest. Despite a number of attempts to strengthen land governance systems as well as related voluntary guidelines and monitoring initiatives by the international community, substantive improvements still need to materialise. Governments often fail to protect the interests of affected populations, and the responsibility for what is happening on the ground frequently gets diffused in long and opaque investor chains. Worse still, emerging evidence suggests that in numerous cases, previous progress in land governance has been reversed in the context of the present COVID-19 pandemic (Box 14).

## BOX 12:
## Land moratoria in Ukraine and Kazakhstan

The cases of land moratoria in Ukraine and Kazakhstan illustrate stark differences in terms of efficiency. Whereas Ukraine is lifting its moratorium on the sale of agricultural land which has not been successful in preventing the accumulation of land by large private companies and has also been criticized for limiting the rights of Ukrainian citizens, Kazakhstan has recently implemented a moratorium preventing Kazakh citizens from buying agricultural land and foreigners from leasing it.

In the case of Ukraine, the government introduced a moratorium on the sale of agricultural land in 2001, and only lease agreements were allowed. The moratorium was intended to prevent land ownership being dominated by a select few, following the collapse of the Soviet Union and subsequent privatisation of land. In reality, however, the moratorium – to the detriment of the majority of Ukraine's farming and rural population – encouraged the emergence of large-scale companies that leased land from rural households, who were often forced to rent out their land, usually for trifling sums, because of a lack of capital and agricultural expertise and the fact that the plots were too fragmented for them to cultivate themselves. Ultimately, this led to a considerable part of the 41 million ha of agricultural land becoming concentrated under the control of investors, especially in the form of agroholdings. Based on statistics from 2019, for example, 4.7 million ha (11%) of agricultural land is cultivated by 28 788 officially registered farmers, while the five largest companies cultivate 1.4 million ha of land alone. On 31 March 2020, the moratorium was finally lifted, giving Ukrainians the right to buy and sell land from 2021. The economic consequences are likely to be manifold but will depend on land prices and transparent and fair negotiations between landowners, small farms, and large-scale companies.

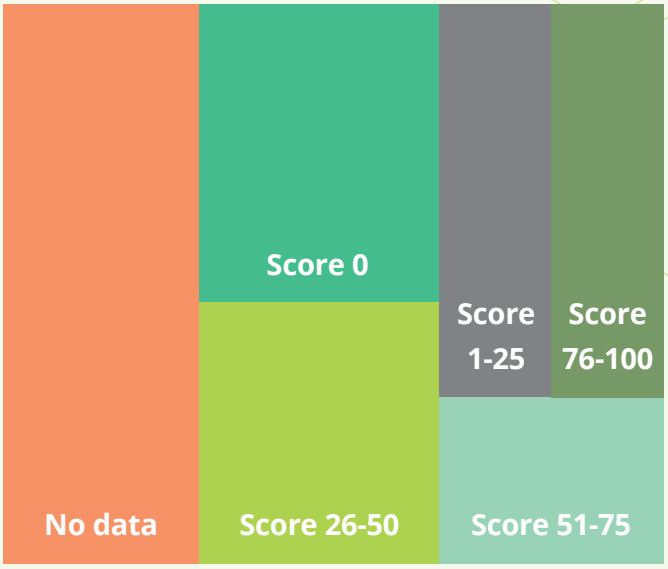
In contrast, in Kazakhstan, another post-Soviet country, the government implemented land moratoria to forestall the accumulation of land among few investors. To date, Kazakh citizens have been able to acquire land as private property, but foreigners have only had the option to lease land for a duration of 10 years. Loopholes have nevertheless allowed some foreign firms to acquire land under private titles, and policies were inconsistent. While the lease period was extended to 25 years in order to attract foreign investments in land (amendments and additions to the Land Code of the Republic of Kazakhstan) in 2015, the introduction of a moratorium in 2016 (in force until the end of 2021), again prevented foreigners from leasing land but also Kazakh citizens from acquiring any new land under private ownership (Decree of the President of the Republic of Kazakhstan dated May 6, 2016, No. 248). The moratorium was a direct reaction to Kazakh citizens' fears regarding foreign involvement in agriculture, of which there are several examples, such as the joint venture formed in 2010 between Oriental Patron and China Investment Corporation with the aim of leasing agricultural land. Another case is the creation of the MaZhiKo Holding LLP by the Kazakh government in 2012, which looked for foreign partners to help develop soya bean production and processing. It was also announced that more than 50 projects with Chinese participation would be implemented. This increased anti-Chinese sentiment and sparked a wave of protest across the country.

It is worth noting, however, that although the minister of agriculture claims that agricultural land is not currently leased to foreigners, our attempts to obtain information on foreign agricultural projects uncovered massive problems with transparency in the country. The latest official information on foreign investments in agricultural land dates from 2016, a month before the moratorium was implemented. Despite the minister's assertions, the population's fears surrounding foreign-controlled land persists, and in September 2020, organised rallies were held in four cities in Kazakhstan.

## BOX 13:
## The overall low implementation of global frameworks and guidelines – the case of the VGGTs in Africa

Taking a deeper dive into the thematic areas related to land acquisitions in the respective sections of the VGGTs, results show that, at a continental level, land deals in Africa are the worst performing with regard to i) consultative processes (chapter 12, paragraph 12.9); ii) respect of national law and legislation, including investment and land legislation (12.12); and iii) respect of legitimate tenure rights, including informal tenure (chapter 10) of local communities (chapter 4) and indigenous peoples (chapter 9) (Figure 5.3).

**Figure 5.1:** VGGT implementation at deal level in Africa

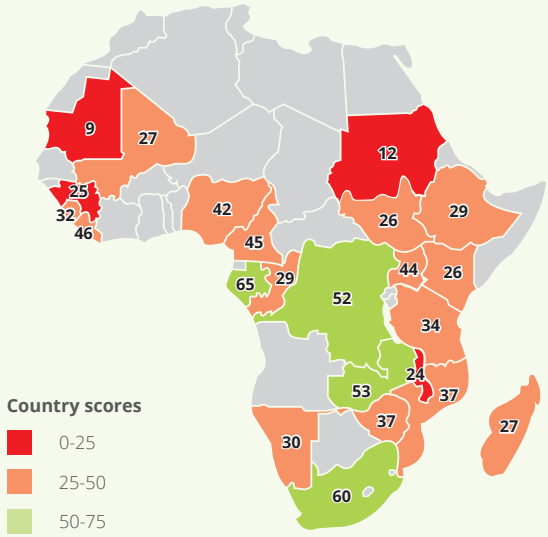



Notes: Calculations based on Land Matrix data.

Against this backdrop, measures to ensure the respect of human rights and provision of impartial and competent judicial and administrative bodies to timely, affordable, and effective means of resolving disputes over tenure rights, including alternative means of resolving such disputes, remain limited (Chapter 21). This is also the case for aspects related to safeguards (chapter 7) and unlawful expropriation and the application of agreed-upon compensation measures (both chapter 16). Public provision of information on large-scale land transactions (chapter 11 on markets and chapter 18 on valuation) is the one (and only) area with better results. Some countries, including Liberia and Sierra Leone, stand out in this regard, for instance, in the forestry sector, where more and more information is becoming available. This is also strongly related to transparency initiatives, such as OpenLandContracts and the Land Matrix. Governments and investors, however, still have a long way to go to more transparency.

Based on the analysis of Land Matrix data for LSLAs in 23 countries[34] in Africa, we find that almost one-third of the deals received a VGGT score of 0, meaning that none of the VGGT articles assessed were implemented, and around 75% show an unsatisfactory level of VGGT uptake and implementation, that is, a score under 50. The remaining 25%, while scoring above 50, nevertheless can still only be considered as complying to a minimum, as seen in Figure 5.1.

**Figure 5.2:** VGGT implementation at country level in Africa

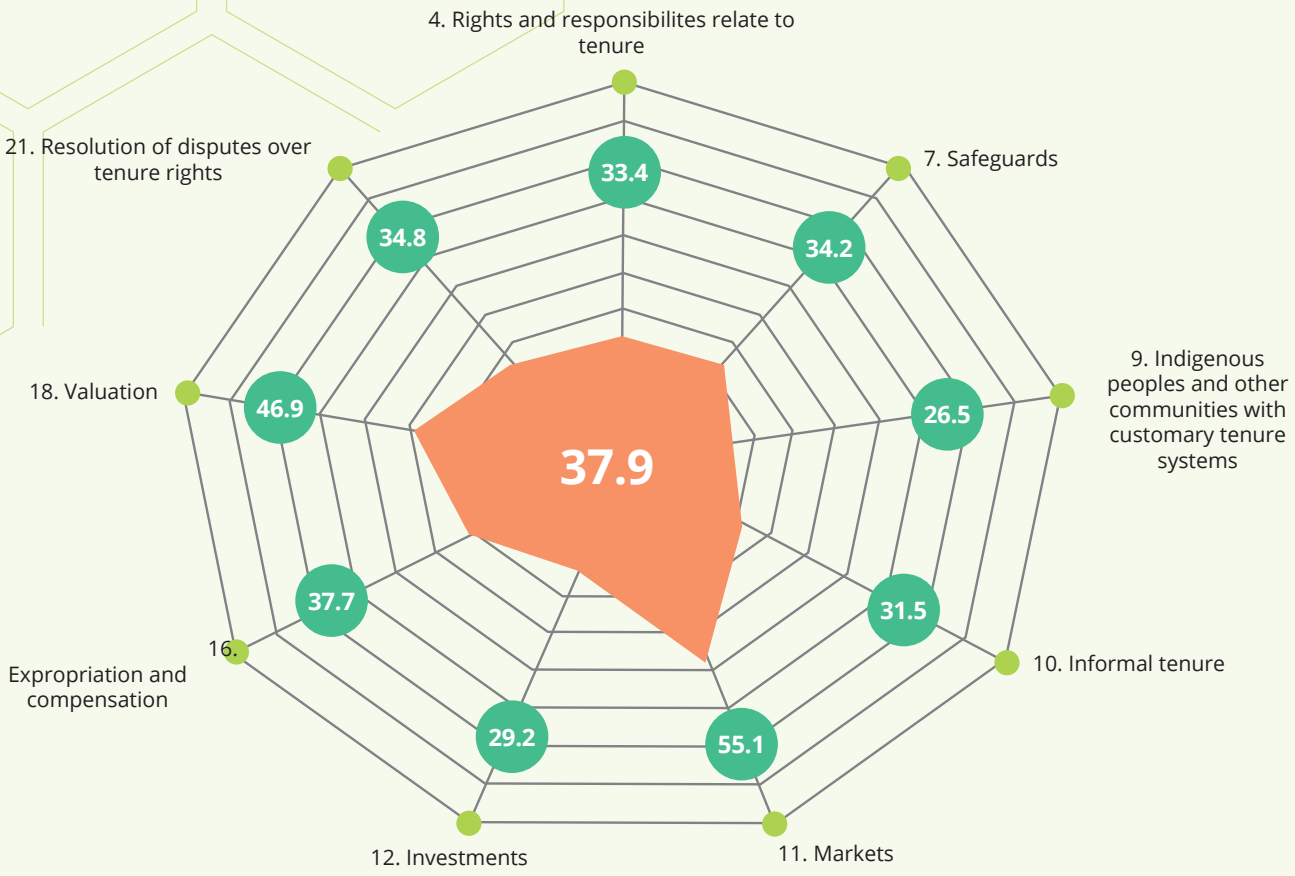



Notes: Calculations based on Land Matrix data.

A similar picture emerges when these results are aggregated at country level, as shown in Figure 5.2. The large majority (19 out of 23 countries, accounting for 83%) present unsatisfactory results regarding VGGT implementation (score lower than 50), with Mauritania, Sudan, and Guinea presenting the worst practices. Only four countries, representing a mere 17%, have a score above 50, with South Africa and Gabon presenting the best results. Aggregating these results at continental level, the average country VGGT score is 37.2, reflecting a dire situation with regard to responsible governance of land tenure in Africa.

[34] *These 23 countries were selected on the basis of data availability for this policy assessment. Among 733 deals in Africa, 226 did not show any information relevant to the monitoring of VGGTs. Only countries with at least two deals that have at least two VGGT-related variables with data are retained.*

**Figure 5.3:** Performance of Africa with regard to the implementation of the VGGTs (by chapter)




Notes: Calculations based on Land Matrix data.

Related to the results presented in this report and the above observations on land governance, we thus make the following policy recommendations:

Recommendation 1

***All governments need to pursue and fast-track land governance reforms and their effective implementation based on the VGGTs.***

*There is an urgent need for land governance reforms, and, more specifically, for their effective implementation. These should be aimed at sustainable, equitable, and inclusive land investments which minimise the possible negative impacts of LSLAs, avoid conflict, and halt the deepening land inequality trends. This calls for all countries (as they have ratified them at the CFS) to effectively implement the VGGTs in the context of national food security as a necessary and prerequisite step. In addition, implementation and follow-up of the VGGTs should become a prerequisite imposed by all donors and investor countries for land- and agricultural-related financial support or investments.*

Recommendation 2

***Governments should utilise national and local multi-stakeholder engagement platforms to ensure policy compliance with regard to land management and investment.***

*In order to follow up on the implementation – and compliance – of land policies at LSLA level, permanent mechanisms to regulate and control land use and investments are imperative. It will be necessary for governments, together with a broad and representative panel of land actors, to establish institutions, based on agreed upon rights and duties, that can establish and follow-up on decisions with a certain degree of autonomy. As such, the overarching objective should be the construction of institutions and mechanisms to control and assure policy compliance, in line with the achievement of the VGGTs and approved policy frameworks. While governments need to lead and enforce reforms, it is necessary for more inclusive institutions, such as national and local multistakeholder engagement platforms which include CSOs and other actors, to lead the way in following up on implementation, tracking compliance, and demanding rectifying actions and change. The strengthening of institutions and organisations that defend broader social and public interests in relation to land policy and investment is absolutely essential. As part of the push for land reform and the implementation of the VGGTs by donor countries, this should be done at national as well local level.*

## BOX 14: Retrograding – instead of progressing – responsible governance of land tenure in the context of COVID-19

Beyond its public health implications, the COVID-19 pandemic represents a major threat to land rights, especially for those without secure tenure, having already halted, or even undone, some of the progress made in this area to date. The UN Special Rapporteur on the rights of indigenous peoples, for example, expressed serious concerns about the way states of emergency related to COVID-19 are further marginalising indigenous communities (and local communities), while governments and companies force through agribusiness, mining, and infrastructure megaprojects on ancestral lands (Special Rapporteur on the Rights of Indigenous Peoples, 2020). Furthermore, exploiting reduced public scrutiny during the pandemic, governments have implemented a number of business-friendly policies, often on the pretext of economic recovery, that may facilitate land-based investments, including deregulation, streamlining of licensing, and tax incentives. While some of these policies were met by protests, resistance was weakened by lockdown regulations restricting social contact (ILC, 2020).

In Indonesia, for example, the Omnibus law, enacted in May 2020 and accompanied by the Presidential Regulation (Perpres) No. 66 2020 on Land Procurement for Public Interest Development Projects, re-introduced provisions of a controversial draft Land Bill with regard to a Land Bank, which is likely to dramatically accelerate land acquisitions, including environmentally-protected areas (AIPP et al., 2020). Similarly, in Brazil, the environmental minister called for environmental deregulation (Cotula, 2020). In addition, threats and attacks against land rights defenders have accelerated during the COVID-19 crisis, for instance in Colombia, Indonesia, Niger, and the Philippines (Global Witness, 2020). These developments can exacerbate longstanding problems and reverse hard-fought gains.

## 5.2. Giving local development and smallholder inclusion centre stage

Assuring that agricultural investments benefit local and national development in target regions and countries will require the prioritisation of local development from the earliest planning stages through to implementation, and, in many cases, with an emphasis on the inclusion of smallholder farmers.

As this report highlights, the initial phases of LSLAs, that is, project development and preparation, are particularly important. It is in this critical phase that potential development benefits and harm – to local land rights, livelihoods of local populations, and the environment – will have to be carefully assessed. For instance, unlike investments in the service or industry sector, LSLAs often have negative effects on local livelihoods by displacing smallholders and sparking land conflicts. One key element of project development should thus be the consultation of affected people and communities. Indeed, the achievement of FPIC should be non-negotiable. Although investors may think that support by a national government implies local acceptance and support, in practice, the interests of local populations and farmers may often not conform with or be reflected in plans and policies by national governments. Examples of this abound, with local communities rejecting plans for large-scale plantations by national governments in all parts of the world (see Chapters 1 and 2).

Of course, the best plans and intentions are of little value if they are not implemented. This report clearly shows that projects are often implemented with considerable delays and with major deviations from initial plans. As such, the implementation of plans that take into account local development needs and respect the environment – in line with international investment guidelines – must be monitored and investors held accountable: stringent contracts with well-developed conditions, specifications, and thresholds are necessary, and better and continuous screening and monitoring of investors and investment projects is crucial (see also recommendation 10 below).

Recommendation 3

***Land deals and their related projects need to comply with RAI principles and put local development centre stage.***

*Investors should fully adhere to international investment guidelines, such as the RAI principles and VGGTs. In addition, they should prioritise local development, giving local populations centre stage. The effective achievement of FPIC is essential and should be requested by investor countries, as well as national and international investor and commodity platforms, such as RSPO. Further, land-based investments must comply with applicable laws and i) uphold human rights, including basic rights such as the right to food, water, health, and possibly land; ii) act in accordance with the ILO Declaration on Fundamental Principles and Rights at Work and other international legislation when applicable; and iii) include grievance mechanisms based on international investment guidelines.*

Moreover, agricultural investments should go beyond just minimising the possible negative impacts of LSLAs – they should also promote investment practices and models that maximise opportunities for local farmers, and smallholders in particular. It is evident from this report that the benefits resulting from LSLAs, in particular to local populations, all too often remain marginal. True, the crop production associated with LSLAs may respond to increasing global demand, such as for vegetable oils and livestock feed, but the implied production and land use patterns do not have the capacity to sustainably transform agriculture in target countries and respond to the poverty, vulnerability, productivity, employment, and food security challenges in these contexts. The potential of LSLAs has been overestimated and there have been clear examples of formidable misconceptions, for example, regarding the "wonder crop" jatropha.

In addition, although large-scale farming can be one element of a rural development strategy, it has distinct limitations, since it hardly "trickles down": most LSLAs invest in production systems that are (at least partly) mechanised, only need small amounts of local labour, and may even displace labour-intensive smallholder farming systems. Positive spillovers to smallholders are likewise limited, and are not materialising at scale. On the other hand, this is not unexpected, given such positive spillovers may be limited by default – mainly because technologies of these farming systems are so different. Outgrower schemes are also no panacea for rural development, even though some sectors in some countries were more successful in including smallholder farmers, for example, palm oil in Indonesia.

Recommendation 4

***Governments need to develop and implement a strategic approach for land-based investments that pays more attention to positive spillovers for broad-based rural development, particularly through spillovers to and inclusion of smallholder farmers.***

*Considering the limitations of LSLAs, it becomes apparent that a more integrated approach that (also) promotes other production models and emphasises development spillovers is needed. A system of pluralistic agricultural support and advisory services (Birner et al., 2009) that goes beyond a "one-size-fits-all" approach (in terms of farm models, agricultural extension services, credit schemes, infrastructure, and so forth) and involves the private sector, NGOs,*

*and farmer organisations, will better provide for context-specific solutions, support, and services through a mix of instruments and formats, including group-based and participatory approaches. This therefore requires context-specific balances between state intervention and private sector initiative based on careful and inclusive planning that cannot rely on simple assumptions alone, for example, regarding the potential of LSLAs, contract farming, or of specific crops.*

## 5.3. Changing global rules: Human rights in investment treaties and in global value chains

Local and national efforts to secure land rights and promote sustainable development models are unlikely to achieve results at scale unless fundamental global economic and governance conditions are also addressed. For example, changes in international regulatory frameworks can contribute to the required change in the conduct of business towards respecting human rights and the environment through two leverage points: Bi- and multilateral investment treaties; and the emerging rules of sustainability due diligence.

LSLAs are often governed by international investment treaties, although the way they deal with land varies significantly. As Cotula (2015) highlights, in some instances (due to the most-favoured-nation clauses or "pre-establishment" investment treaties), they can require states to remove restrictions on the acquisition of land rights that treat foreign investors differently from local nationals, thereby fostering commercialisation of land relations in places where land has important social, cultural, and spiritual value. In other cases, such as the ASEAN's investment treaty, land is even excluded from the application of the treaty's protection against expropriation (Cotula, 2015). In particular, in poorer countries with weak state capacity, the legal protections enshrined in investment treaties risk compounding shortcomings in national land governance. This may result in protecting and enabling investors, while exposing target country governments to liability for promises that public officials made to investors before consulting communities.

For this reason, LSLAs provide a rationale for incorporating provisions into international investment treaties that reflect the specific risks related to the environment and the land rights of affected populations; and yet, responsible investment provisions remain rare, and are often underdeveloped relative to other clauses in investment treaties (with some recent exceptions referring to compliance with international standards of corporate social responsibility). Moreover, these provisions are not typically mandatory, nor are they assisted by effective enforcement mechanisms, with many of the international instruments being directed at states rather than investors. Public attention might, however, bring change. Until now, trade and investment treaties were often negotiated with little public and parliamentary oversight, but spaces for citizen engagement are evolving rapidly as people become more aware of the stakes and avenues for influence (Cotula, 2021).

Recommendation 5

***Human and other basic rights (right to food, right to water, right to land), as well as aspects related to the environment, need to be included in international investment treaties.***

*Such reforms should redesign investment protections, affirm investor obligations, particularly with regard to human rights and the environment, and exclude from protection investments that fail to comply. To achieve this, broad actions and restructuring at various levels will be necessary. At target country level, engaging national multistakeholder platforms in the development and follow-up of such treaties and frameworks is recommended. At international level, multilateral bodies, such as the G20 (through its Trade and Investment Working Group) or parliamentary bodies (for instance, specific working groups of the Pan-African Parliament or the European Parliament) should become fora through which investment treaties and trade agreements are discussed and monitored. Lastly, the ongoing negotiation of a multilateral treaty on business and human rights could also help rebalance rights and obligations.*

The report shows that LSLAs are often aimed at producing for global value chains which may directly involve multinationals but also smaller firms and individuals at local level. It is important, therefore, that attempts to change business conduct to comply with internationally agreed principles[35] encompass all these investors. On the other hand, the environmental and social sustainability of production in global value chains is increasingly being questioned – and LSLAs and their impacts, as illustrated in this report, provide important evidence why this is so. Recently, private sustainability standards, in particular in selected agricultural commodities, have been complemented by regulatory action. Mandatory due diligence standards with varying scope have been enacted or are discussed in the European Union, Germany, Great Britain, France, and the US, and such legislation – possibly in combination with voluntary sustainability standards – has great potential to hold investors (and buyers) accountable for the adverse impacts of LSLAs.

[35] *UN Guiding Principles on Business and Human Rights or the OECD Guidelines for Multinational Enterprises (United Nations 2011).*

Recommendation 6

***Mandatory human and other basic rights due diligence legislation should be introduced and affected populations should be empowered to effectively use such legislation in the context of LSLAs.***

*Human rights due diligence legislation should be enacted in all investor countries to hold investors (and their suppliers) based in those countries accountable with regard to investments abroad. Here again, the G20 should encourage its members states to apply this. In addition, local populations and affected communities need to be empowered to partake in the due diligence processes and make use of the legislation (possibly with the help of NGOs based in investor countries).*

## 5.4. Halting environmental destruction by LSLAs

Our analysis has shown that LSLAs are a key driver of deforestation and environmental degradation. This process is associated with massive losses of biodiversity, in particular when tropical rainforests are affected. The conversion of forests also contributes to climate change by directly releasing a large amount of carbon into the atmosphere. Considering that not all LSLAs have been implemented yet, and that the LSLA process will continue in the foreseeable future, urgent policy changes are needed to halt this destructive process. In Southeast Asia, for example, massive deforestation is ongoing, and LSLAs are now even targeting new frontier regions, like the island of Papua. In Latin America, LSLAs have been adding new frontiers to the unresolved problems of deforestation in the Amazon for some time as well. In Africa, the large share of yet to be implemented deals is a significant threat, in particular to the Central African rainforests, but also to remaining forests in West Africa. By setting the Sustainable Development Goals, the international community has committed to strong action to combat both biodiversity loss and climate change. Achieving these goals will not be possible without also changing policies regarding LSLAs.

The impact on water resources is another important dimension of the environmental consequences of land acquisitions. We have shown that more than half of the deals in the Land Matrix aim to produce crops with high water use, such as cotton, jatropha, oil palm, rubber, and sugar cane. Moreover, a significant fraction of them take place in water-scarce environments, adding to already strong competition for water. In this context, LSLAs contribute to overuse of water resources – to the detriment of smallholders, pastoralists, and other local water users. Basic human needs and rights on water and food therefore need to be adequately respected by investors and protected by governments. In addition, the more intensive production used by LSLAs increases the use of fertiliser and pesticides, a development which, if not carefully controlled, can be damaging to water resources and endanger human and environmental health in general.

Finally, the current COVID-19 pandemic has suddenly placed global health issues at the top of the agenda across the world, and yet the likely link between land use changes, deforestation, and the emergence of pandemics and zoonotic diseases has gone largely ignored in mainstream LSLA debates. However, as recently highlighted by an IPBES report, this threat provides additional and urgent motivation to halt large-scale destruction of forests and other natural habitats, and needs to be factored in when assessing benefits and cost of land use changes induced by LSLAs.

While remote sensing can monitor land conversion, the impacts on water and the environment in general can usually only be monitored on site and with specialised methods. Unfortunately, for the overwhelming number of LSLAs, neither environmental impact studies nor detailed concession agreements regarding water rights, environmental safeguards, or monitoring and verification agreements are made public. Transparency and stakeholder participation are key elements when it comes to environmental management of large investment projects, and these principles should also be upheld when LSLA projects are planned and implemented.

Recommendation 7

***LSLAs that lead (or might lead if implemented) to deforestation, the destruction of other valuable natural resources or habitats, or damage to important carbon stores need to be stopped.***

*Such policy changes have already been made in various target countries, albeit only for a restricted time (in the form of moratoria). These changes should be generalised for all target countries, extended in time, and actively enforced at local level. On one hand, the global donor community needs to support these changes by creating incentives for governments of target countries to commit to such changes. Climate policies and climate funding can support this, and need to be aligned with measures to reduce or avoid deforestation through LSLAs. On the other*

*hand, as highlighted in Recommendation 5, strong policies to halt deforestation and destruction of natural habitats through LSLAs need to be part of bilateral and multinational investment treaties and trade agreements. It will be important to accompany such agreements with strong safeguards and monitoring mechanisms to avoid environmental damages by a new wave of LSLAs. Countries involved should also agree on targets limiting or stopping deforestation and destruction of other important biomes. Finally, duties to respect safeguards and monitoring requirements should apply for companies in both host and investor countries.*

Recommendation 8

***Governments should develop comprehensive landscape plans that address the trade-offs between environmental, economic, and social objectives, and in which the purpose, role, and dimensions of LSLAs are clarified.***

*These comprehensive plans, coordinated by governments at national and local level in collaboration with investors, civil society, and land users, should consist of the following elements: First, they should include LSLA environmental impact assessments and environmental management plans to be carried out by investors and complying with requirements applicable under the law of the home state or the host state, whichever is more rigorous. They should also maintain appropriate environmental management systems. In water-scarce environments in particular, water governance issues related to LSLAs need to be carefully reviewed, and human rights for water and social, economic, and environmental utility of water at various spatial and temporal scales considered. Second, they should include emerging disease risk (including zoonotic diseases) and health impact assessments related to land use change and deforestation. Third, these environmental plans should be contextualised in broad land use plans at landscape level, also taking into consideration economic and social development objectives. Such landscape plans should be made public for independent expert and stakeholder review. Further, in alignment with Recommendation 11, this should be complemented with long-term monitoring of the land use and ensure the sustainability of land deals, as well as the longer-term sustainability of development trajectories. These should be monitored by the national and/or local multistakeholder land institutions (Recommendation 2).*

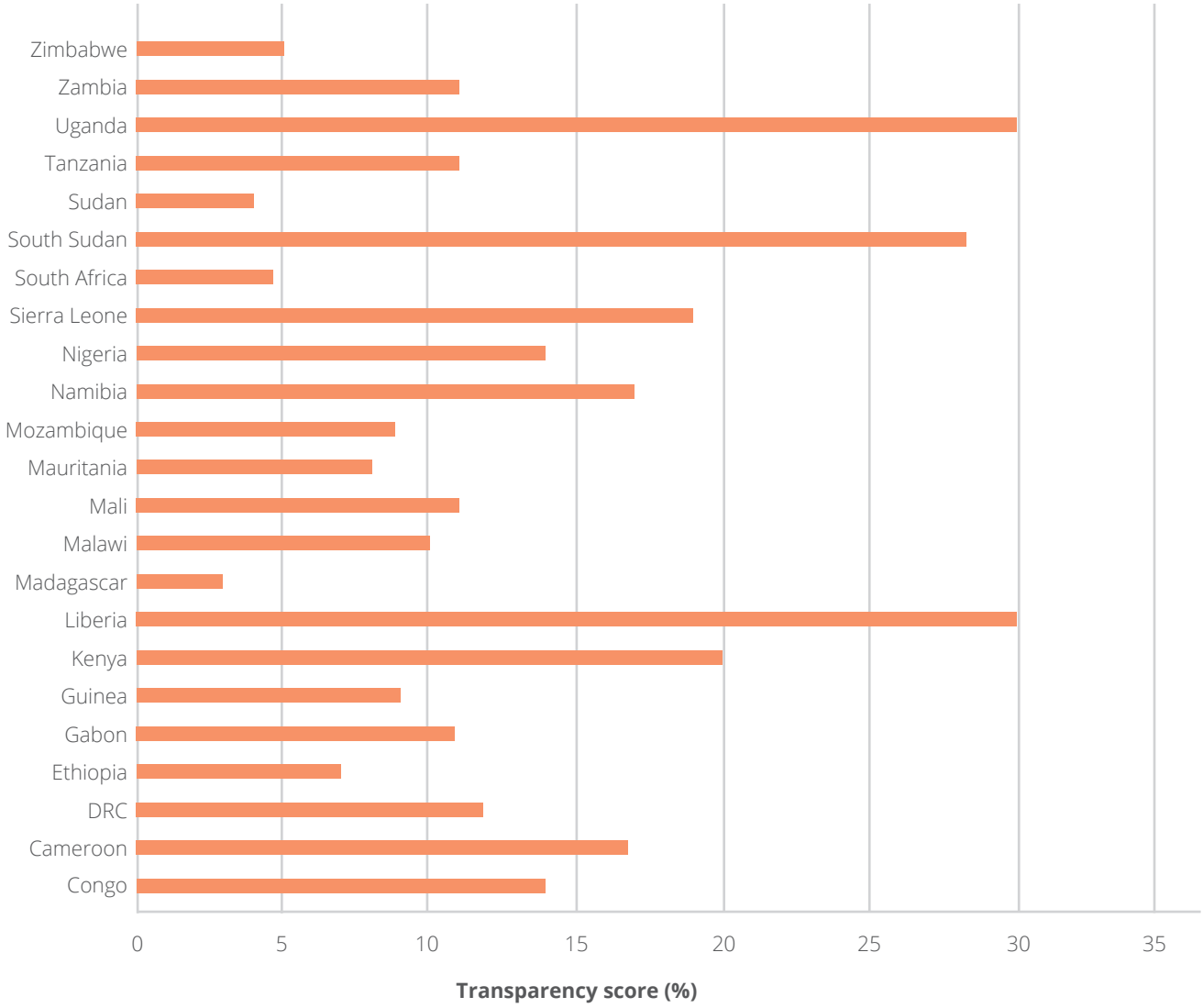
In addition, climate policies aimed at mitigation through afforestation or reforestation need to respect the VGGTs, in particular regarding land tenure. This is important since alienation of land use rights when land is acquired for climate protection or the promotion of renewable energies (afforestation, deforestation, solar farms, wind farms, mining for lithium, and so forth) may have detrimental impacts on local land users. The sobering track record of LSLAs for the production of biofuels provides important lessons in this regard.

## 5.5. Increasing transparency around LSLAs by target countries and investors alike

Throughout the report, we highlight issues related to the persistent lack of information and opaque nature of LSLAs. This is illustrated by the admittedly imperfect and partial statistics from the Land Matrix database as well (see Box 1). Indeed, despite our continuous and rigorous efforts over the last 10 years, the shortcomings in our data confirm that there is a dearth of reliable information around the processes of LSLAs, in all countries in general. This is all the more disconcerting given that transparency is a fundamental building block of responsible investments and one of the principle guidelines of the related global frameworks, for example, chapter 12 of the VGGTs dealing with investments, and principle No 3 of the RAIs.

In Africa, for instance, of the countries we monitor, only two have 30% of the required data to monitor the implementation of the VGGTs, while all others fall below (see Figure 5.4). Data is particularly scarce on investment processes (including consultations, realisation of FPIC, compensations, and displacements), as well as on socio-economic and environmental impacts (such as job creation, quality of employment, contribution to local production, and biodiversity loss). Although better technologies and methodologies are allowing us to collect more georeferenced data, these are still fairly limited to date (see Box 2).

**Figure 5.4:** Data availability in the Land Matrix for Africa




Notes: Calculations based on Land Matrlx data.

These data deficiencies not only apply to the other regions, but also to many investor countries, including the bigger and most developed ones. For example, even though some publicly accessible information regarding LSLAs is provided by companies and governments from G20 member states, detailed analysis of Land Matrix data shows that the operating company is known in less than 20% of the deals, the exact location of land investments is communicated to the public in only 15% of all G20 deals, and less than 10% of investors publish the purchase price or leasing fee (Flachsbarth et al., 2020). Regardless of prior efforts by the G20, to date, its member states are on average no more transparent than non-G20 investing and target regions (Box 15).

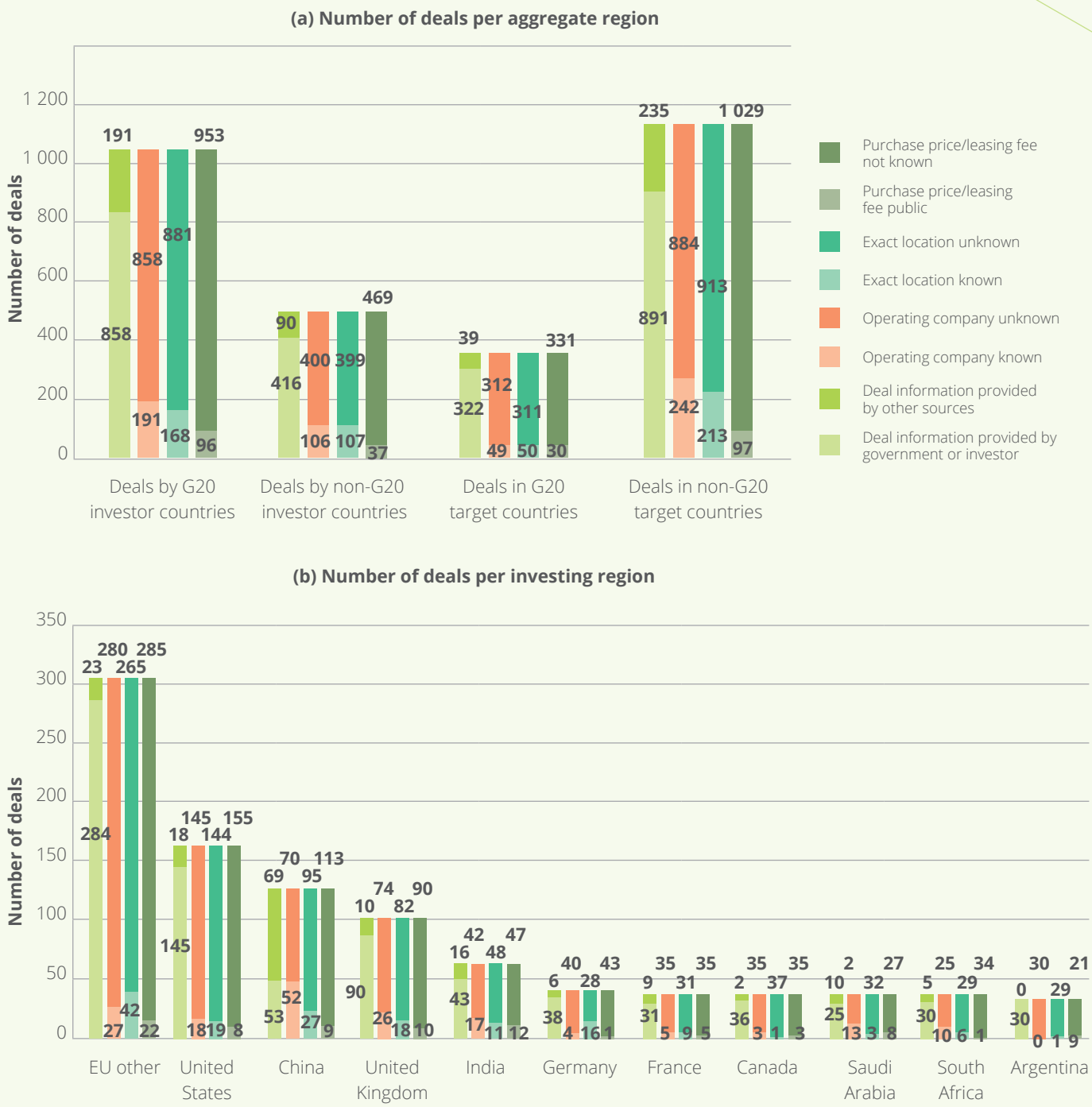
## BOX 15: Transparency around land deals in and by G20 countries

The US and several EU countries (including the Netherlands and Luxemburg) do not only rank among the most important global investors, but also among the most opaque. In around 90% of their investments, the operating company, exact location, and information on leasing or purchase fees are unknown. This holds with little variation for Canada, France, Germany, and the UK as well.

In contrast, the operating company is known in about 40% of Chinese and Saudi Arabian foreign land deals, although this information is generally target country generated and is mainly from non-official sources. Very few deals that involve investors from Saudi Arabia can be precisely located, and

investors from China hardly make available information on purchasing prices or leasing fees public (Flachsbarth et al., 2020). For other relevant variables, such as social and environmental impact assessments and consultation of local population or FPIC there is even less reliable information available. Again, looking at the G20 investor countries, information is particularly scarce for Argentina, Canada, other EU countries, Germany, and the US. Even where some information is available for certain deals, it appears that Canadian, German, and South African investors (almost) never consulted the local population beforehand. The data also indicate that for Saudi Arabian or Chinese investors, local communities — when consulted — rejected the deals in all or most of the known cases, respectively (contrary to what is promoted in Chapter 12 of the VGGTs). This reveals that it is not just information about the deals that is lacking, it is also the investment process itself that remains untransparent and non-inclusive.

**Figure 5.5:** Transparency around land deals in G20 and non-G20 investing and target regions




Source: Flachsbarth et al. (2020).

The results presented in this report clearly demonstrate that the objectives of transparency, as promoted in global frameworks such as the VGGTs and RAIs, have not been achieved so far. While the Land Matrix Initiative, through its regional partners, cannot review all deals in detail, it is plain that it is the profound lack of transparency on the side of governments and investors that impedes data collection. Even with extensive field visits and data campaigns in specific countries, it is difficult or even impossible to get more detailed information when neither governments nor investors are forthcoming. Three related recommendations are therefore applicable here.

Recommendation 9

***All actors engaged in large-scale agricultural investment projects must increase transparency; indeed, when public capital is involved, it should be made compulsory.***

*Donor and investor countries should make it compulsory for public entities to be fully transparent, and releasing information should be mandatory for investments and projects that receive public support (such as development finance) or public capital (such as public investment funds). Furthermore, donor and investor country governments should strongly encourage (private) projects and companies to release information. They could do so directly by reaching out to companies or via investor platforms, such as the Interlaken Group. The same recommendation applies to recipient countries, particularly if LSLAs concern public or collective/community lands under public authority. In these cases, recipient countries should make land-based contracts transparent on dedicated official websites or via independent open-data and monitoring initiatives. This could be requested by donors to their partner countries in the framework of the implementation of the VGGTS and the RAIs. In addition, the request for transparency should be extended to commodity fora/roundtables and should apply across the different segments of the commodity value chains. Moreover, investor countries should link transparency initiatives to voluntary standards and certification schemes for key crops. For example, anchoring these within the RSPO and the Roundtable for Responsible Soy (RTRS) would already cover one-third of all foreign land-based investments in major target countries.*

Recommendation 10

***Donor countries should provide a mandate to and support independent transparency and monitoring initiatives.***

*Donor countries should support independent monitoring of LSLAs. Specifically, project- and company-level information on large-scale agricultural projects should become publicly available on open data platforms, such as the Land Matrix, OpenLandContracts, and Global Forest Watch, and include information on processes and impacts to ensure that the project's contribution (or not) to sustainable development processes (from a socio-economic as well as environmental perspective) can be assessed. Open data on LSLAs for agricultural purposes will have an impact on the sustainability of these investments and investor responsibility if the information can be used by relevant stakeholders, in particular, to hold investors to account. In addition, donor countries should support the establishment of an independent multistakeholder working group, co-led with intergovernmental agencies, to monitor the progress of investors and target countries in implementing the guidelines on land tenure and responsible agricultural investments.*

Recommendation 11

***All countries should, at the local level, continuously monitor land ownership and control, land transactions, and land-use change.***

*All countries should support continuous monitoring of land transactions and land use change. Investments should be made in modern land administrations, including up-to-date cadastres and land use monitoring tools. These should be linked to decentralised multistakeholder institutions in order to promote evidence-based decision-making and intervention. This will also allow LSLAs to be monitored on a continuous basis, including their compliance with general investment conditions and more specific plans and contractual obligations.*

# References


*Abdulai, A., Owusu, V., & Goetz, R. (2011). Land tenure differences and investment in land improvement measures: Theoretical and empirical analyses. Journal of Development Economics, 96(1), 66–78. https://doi.org/10.1016/j.jdeveco.2010.08.002*

*Agrawal, A. (2001). Common Property Institutions and Sustainable Governance of Resources. World Development, 29(10), 1649–1672.*

*Agy, A. R. (2018). Participação das mulheres em projectos de investimento agrario no distrito de Monapo (Observador Rural 63). Observatório do Meio Rural.*

*Ahlerup, P., & Tengstam, S. (2015). Do the land-poor gain from agricultural investments? Empirical evidence from Zambia using panel data (Working Papers in Economics 624). University of Gothenburg.*

*Ahmed, A., Campion, B. B., & Gasparatos, A. (2017). Biofuel development in Ghana: Policies of expansion and drivers of failure in the jatropha sector. Renewable and Sustainable Energy Reviews, 70, 133–149. https://doi.org/10.1016/j.rser.2016.11.216*

*Ahmed, A., Kuusaana, E. D., & Gasparatos, A. (2018). The role of chiefs in large-scale land acquisitions for jatropha production in Ghana: Insights from agrarian political economy. Land Use Policy, 75, 570–582. https://doi.org/10.1016/j.landusepol.2018.04.033*

*AIPP (Asia Indigenous Peoples Pact), CTJI (Coalition for Tenure Justice in Indonesia), & RRI (Rights and Resources Initiative) (2020). Under the Cover of Covid: New Laws in Asia Favor Business at the Cost of Indigenous Peoples' and Local Communities' Land and Territorial Rights. Rights + Resources. https://rightsandresources.org/publication/under-the-cover-of-covid/*

*Aisbett, E., & Barbanente, G. (2016). Impacts of Large Scale Foreign Land Acquisitions on Rural Households: Evidence from Ethiopia (Crawford School Working Paper 1602). The Australian National University.*

*Alden Wily, L. (2011). `The Law is to Blame': The Vulnerable Status of Common Property Rights in Sub-Saharan Africa. Development and Change, 42(3), 733–757. https://doi.org/10.1111/j.1467-7660.2011.01712.x*

*Ali, D., Deininger, K., & Harris, A. (2019). Does Large Farm Establishment Create Benefits for Neighboring Smallholders? Evidence from Ethiopia. Land Economics, 95(1), 71–90. https://doi.org/10.3368/le.95.1.71*

*Ali, R. (2020). Job Creation and Social Conditions of Labor in the Forestry Agro-Industry in Mozambique. In E. S. Osabuohien (Ed.), The Palgrave Handbook of Agricultural and Rural Development in Africa (pp. 571–610). Springer International Publishing. https://doi.org/10.1007/978-3-030-41513-6_26*

*Ali, R., & Muinga, C. (2016). Emprego e Condições Sociais de Trabalho nas Agro-indústrias: Contradições e Desafios. In L. de Brito, C. N. Castel-Branco, S. Chichava, S. Forquilha, & A. Franciso (Eds.), Desafios para Moçambique. IESE (Instituto de Estudos Sociais e Económicos).*

*ALPC (2010). Framework and Guidelines (F&G) on land policy in Africa. ALPC (African Land Policy Centre).*
*Amosov, M., Pasyuk, O., & Zee-Pedra, D. (2020). Large-scale land acquisitions in Ukraine: A country perspective. Land Matrix Eastern Europe Regional Focal. www.landmatrix.org.*

*Angelsen, A., Jagger, P., Babigumira, R., Belcher, B., Hogarth, N. J., Bauch, S., Börner, J., Smith-Hall, C., & Wunder, S. (2014). Environmental Income and Rural Livelihoods: A Global-Comparative Analysis. World Development, 64, S12–S28. https://doi.org/10.1016/j.worlddev.2014.03.006*

*Anseeuw, W., Alden Wily, L., Cotula, L., & Taylor, M. (2012). Land rights and the rush for land: Findings of the global commercial pressures on land research project. International Land Coalition.*

*Anseeuw, W., & Baldinelli, G. M. (2020). Uneven Ground—Land Inequality at the heart of unequal societies. https://www.welthungerhilfe.de/aktuelles/publikation/detail/uneven-ground-land-inequality-at-the-heart-of-unequal-societies/*

*Anti, S. (2021). Land grabs and labor in Cambodia. Journal of Development Economics, 149, 102616. https://doi.org/10.1016/j.jdeveco.2020.102616*

*Arafat and El Nour. (2020, March 5). How Egypt's water feeds the Gulf. InfoNile. https://infonile.org/en/2020/03/how-egypts-water-feeds-the-gulf/*

*Arezki, R., Deininger, K., & Selod, H. (2015). What Drives the Global "Land Rush"? The World Bank Economic Review, 29(2), 207–233. https://doi.org/10.1093/wber/lht034*

*ATWGARD (2018). The ASEAN Guidelines on Promoting Responsible Investment in Food, Agriculture and Forestry. ATWGARD (ASEAN Technical Working Group on Agricultural Research and Development). http://exchange.growasia.org/asean-guidelines-promoting-responsible-investment-food-agriculture-and-forestry*

*Austin, K. G., Mosnier, A., Pirker, J., McCallum, I., Fritz, S., & Kasibhatla, P. S. (2017). Shifting patterns of oil palm driven deforestation in Indonesia and implications for zero-deforestation commitments. Land Use Policy, 69, 41–48. https://doi.org/10.1016/j.landusepol.2017.08.036*

*Austin, K. G., Schwantes, A., Gu, Y., & Kasibhatla, P. S. (2019). What causes deforestation in Indonesia? Environmental Research Letters, 14(2), 024007. https://doi.org/10.1088/1748-9326/aaf6db*

*Baumert, S., Fisher, J., Ryan, C., Woollen, E., Vollmer, F., Artur, L., Zorrilla-Miras, P., & Mahamane, M. (2019). Forgone opportunities of large-scale agricultural investment: A comparison of three models of soya production in Central Mozambique. World Development Perspectives, 16, 100145. https://doi.org/10.1016/j.wdp.2019.100145*

*Beegle, K., & Christiaensen, L. (Eds.). (2019). Accelerating Poverty Reduction in Africa. World Bank.*

*Beekman, G., Bulte, E., & Nillesen, E. (2014). Corruption, investments and contributions to public goods: Experimental evidence from rural Liberia. Journal of Public Economics, 115, 37–47. https://doi.org/10.1016/j.jpubeco.2014.04.004*

*Bennett, A., Ravikumar, A., & Paltán, H. (2018). The Political Ecology of Oil Palm Company-Community partnerships in the Peruvian Amazon: Deforestation consequences of the privatization of rural development. World Development, 109, 29–41. https://doi.org/10.1016/j.worlddev.2018.04.001*

*Birner, R., Davis, K., Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., Mbabu, A., Spielman, D. J., Horna, D.,*

*Benin, S., & Cohen, M. (2009). From Best Practice to Best Fit: A Framework for Designing and Analyzing Pluralistic Agricultural Advisory Services Worldwide. The Journal of Agricultural Education and Extension, 15(4), 341–355. https://doi.org/10.1080/13892240903309595*
*Boone, C. (2014). Property and political order in Africa: Land rights and the structure of politics. Cambridge University Press.*

*Boone, C. (2015). Land tenure regimes and state structure in rural Africa: Implications for forms of resistance to large-scale land acquisitions by outsiders. Journal of Contemporary African Studies, 33(2), 171–190. https://doi.org/10.1080/02589001.2015.1065576*

*Borras, S. M. Jr. B., McMichael, P., & Scoones, I. (2010). The politics of biofuels, land and agrarian change: Editors' introduction. The Journal of Peasant Studies, 37(4), 575–592. https://doi.org/10.1080/03066150.2010.512448*

*Borsky, S., Hennighausen, H. B., Leiter, A., & Williges, K. (2020). CITES and the Zoonotic Disease Content in International Wildlife Trade. Graz Economics Papers, 76(4), 1001–1017. https://doi.org/10.1007/s10640-020-00456-7*

*Bottazzi, P., Crespo, D., Bangura, L. O., & Rist, S. (2018). Evaluating the livelihood impacts of a large-scale agricultural investment: Lessons from the case of a biofuel production company in northern Sierra Leone. Land Use Policy, 73, 128–137. https://doi.org/10.1016/j.landusepol.2017.12.016*

*Bottazzi, P., Goguen, A., & Rist, S. (2016). Conflicts of customary land tenure in rural Africa: Is large-scale land acquisition a driver of 'institutional innovation'? The Journal of Peasant Studies, 43(5), 971–988. https://doi.org/10.1080/03066150.2015.1119119*

*Bruce, J. W., & Migot-Adholla, S. E. (Eds.). (1994). Searching for land tenure security in Africa. Kendall/Hunt.*

*Brüntrup, M. (2014). Large scale land acquisitions – challenges, conflicts and partial solutions in an agro-investment life cycle perspective. In I. Christoplos & A. Pain (Eds.), New Challenges to Food Security From Climate Change to Fragile States (p. 378). Routledge. https://doi.org/10.4324/9780203371176-13*

*Burnod, P., Gingembre, M., & Ratsialonana, R. A. (2013). Competition over Authority and Access: International Land Deals in Madagascar. Development and Change, 44(2), 357–379. https://doi.org/10.1111/dech.12015*

*Burnod, P., Rakotomalala, H., Rasolofo, P., & Bres, A. (2015, July 8). Large-scale plantation and contract farming effects: Qualitative and quantitative assessment in Madagascar. International Conference on Land Governance for Equitable and Sustainable Development. International Conference on Land Governance for Equitable and Sustainable Development, Utrecht. http://www.landgovernance.org/registration-2015-landac-conference/*

*Bustos, P., Caprettini, B., & Ponticelli, J. (2016). Agricultural Productivity and Structural Transformation: Evidence from Brazil. American Economic Review, 106(6), 1320–1365. https://doi.org/10.1257/aer.20131061*

*Byerlee, D., Falcon, W. P., & Naylor, R. (2016). The tropical oil crop revolution: Food, feed, fuel, and forests. Oxford University Press.*

*Carletto, C., Savastano, S., & Zezza, A. (2013). Fact or artifact: The impact of measurement errors on the farm size–productivity relationship. Journal of Development Economics, 103, 254–261. https://doi.org/10.1016/j.jdeveco.2013.03.004*

*Carrasco, L. R., Larrosa, C., Milner-Gulland, E. J., & Edwards, D. P. (2014). A double-edged sword for tropical forests. Science, 346(6205), 38–40. https://doi.org/10.1126/science.1256685*

*Chain Reaction Research (2019). The Chain: Sime Darby's Potential Liberian Divestment Emphasizes ESG Risks. Chain Reaction Research - Sustainability Risk Analysis. https://chainreactionresearch.com/sime-darbys-potential-liberian-divestment-emphasizes-esg-risks/*

*Chamberlain, W., & Anseeuw, W. (2019). Inclusive businesses in agriculture: Defining the concept and its complex and evolving partnership structures in the field. Land Use Policy, 83, 308–322. https://doi.org/10.1016/j.landusepol.2019.02.008*

*Chamberlin, J., Jayne, T. S., & Headey, D. (2014). Scarcity amidst abundance? Reassessing the potential for cropland expansion in Africa. Food Policy, 48, 51–65. https://doi.org/10.1016/j.foodpol.2014.05.002*

*Chiaramonti, D., Talluri, G., Scarlat, N., & Prussi, M. (2021). The challenge of forecasting the role of biofuel in EU transport decarbonisation at 2050: A meta-analysis review of published scenarios. Renewable and Sustainable Energy Reviews, 139, 110715. https://doi.org/10.1016/j.rser.2021.110715*

*Chiarelli, D. D., Passera, C., Rulli, M. C., Rosa, L., Ciraolo, G., & D'Odorico, P. (2020). Hydrological consequences of natural rubber plantations in Southeast Asia. Land Degradation & Development, 31(15), 2060–2073. https://doi.org/10.1002/ldr.3591*

*Chiarelli, D. D., Rosa, L., Rulli, M. C., & D'Odorico, P. (2018). The water-land-food nexus of natural rubber production. Journal of Cleaner Production, 172, 1739–1747. https://doi.org/10.1016/j.jclepro.2017.12.021*

*Cohn, A. S., Gil, J., Berger, T., Pellegrina, H., & Toledo, C. (2016). Patterns and processes of pasture to crop conversion in Brazil: Evidence from Mato Grosso State. Land Use Policy, 55, 108–120. https://doi.org/10.1016/j.landusepol.2016.03.005*

*Collier, P. (2008). The Politics of Hunger: How Illusion and Greed Fan the Food Crisis. Foreign Affairs, 87(6), 67–79.*

*Cotula, L. (2012). The international political economy of the global land rush: A critical appraisal of trends, scale, geography and drivers. The Journal of Peasant Studies, 39(3–4), 649–680. https://doi.org/10.1080/03066150.2012.674940*

*Cotula, L. (2015). Land rights and investment treaties: Exploring the interface. International Institute for Environment and Development. https://pubs.iied.org/12578iied*

*Cotula, L. (2020). Stopping land and policy grabs in the shadow of COVID-19. International Institute for Environment and Development. https://www.iied.org/stopping-land-policy-grabs-shadow-covid-19*

*Cotula, L. (2021). Public Participation and Investment Treaties: Towards a New Settlement? Public Participation and Foreign Investment Law, 16, 36–52. https://doi.org/10.1163/9789004397668_004*

*Cotula, L., Anseeuw, W., & Baldinelli, G. M. (2019). Between Promising Advances and Deepening Concerns: A Bottom-Up Review of Trends in Land Governance 2015–2018. Land, 8(7), 106. https://doi.org/10.3390/land8070106*

*Cotula, L., Oya, C., Codjoe, E. A., Eid, A., Kakraba-Ampeh, M., Keeley, J., Kidewa, A. L., Makwarimba, M., Seide, W. M., Nasha, W. O., Asare, R. O., & Rizzo, M. (2014). Testing Claims about Large Land Deals in Africa: Findings from a Multi-Country Study. The Journal of Development Studies, 50(7), 903–925. https://doi.org/10.1080/00220388.2014.901501*

*Cramb, R., & McCarthy, J. F. (2016). The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia. NUS Press.*

*Curtis, P. G., Slay, C. M., Harris, N. L., Tyukavina, A., & Hansen, M. C. (2018). Classifying drivers of global forest loss. Science, 361(6407), 1108–1111. https://doi.org/10.1126/science.aau3445*

*Daniel, C., Genovese, K., Hujstee, M. van, & Singh, S. (Eds.). (2016). Glass Half Full? The State of Accountability in Development Finance. SOMO. https://www.somo.nl/wp-content/uploads/2016/03/Glass-half-full.pdf*

*Davis, K. F., Koo, H. I., Dell'Angelo, J., D'Odorico, P., Estes, L., Kehoe, L. J., Kharratzadeh, M., Kuemmerle, T., Machava, D., Pais, A. de J. R., Ribeiro, N., Rulli, M. C., & Tatlhego, M. (2020). Tropical forest loss enhanced by large-scale land acquisitions. Nature Geoscience, 13(7), 482–488. https://doi.org/10.1038/s41561-020-0592-3*

*Davis, K. F., Müller, M. F., Rulli, M. C., Tatlhego, M., Ali, S., Baggio, J. A., Dell'Angelo, J., Jung, S., Kehoe, L. J., Niles, M. T., & Eckert, S. (2021). Transnational agricultural acquisitions threaten biodiversity in Africa and Asia. Unpublished Work.*

*Davis, K. F., Yu, K., Rulli, M. C., Pichdara, L., & D'Odorico, P. (2015). Accelerated deforestation driven by large-scale land acquisitions in Cambodia. Nature Geoscience, 8(10), 772–775. https://doi.org/10.1038/ngeo2540*

*DeFries, R. S., Rudel, T., Uriarte, M., & Hansen, M. (2010). Deforestation driven by urban population growth and agricultural trade in the twenty-first century. Nature Geoscience, 3(3), 178–181. https://doi.org/10.1038/ngeo756*
*Deininger, K. W., & Byerlee, D. (2011). Rising global interest in farmland. World Bank. https://doi.org/10.1596/978-0-8213-8591-3*

*Deininger, K., & Xia, F. (2016). Quantifying Spillover Effects from Large Land-based Investment: The Case of Mozambique. World Development, 87, 227–241. https://doi.org/10.1016/j.worlddev.2016.06.016*

*Dell'Angelo, J., D'Odorico, P., Rulli, M. C., & Marchand, P. (2017). The Tragedy of the Grabbed Commons: Coercion and Dispossession in the Global Land Rush. World Development, 92, 1–12. https://doi.org/10.1016/j.worlddev.2016.11.005*

*Dell'Angelo, J., Rulli, M. C., & D'Odorico, P. (2018). The Global Water Grabbing Syndrome. Ecological Economics, 143, 276–285. https://doi.org/10.1016/j.ecolecon.2017.06.033*

*Di Matteo, F., & Schoneveld, G. C. (2016). Agricultural investments in Mozambique: An analysis of investment trends, business models and social and environmental conduct. CIFOR.*

*Dobson, A. P., Pimm, S. L., Hannah, L., Kaufman, L., Ahumada, J. A., Ando, A. W., Bernstein, A., Busch, J., Daszak, P., Engelmann, J., Kinnaird, M. F., Li, B. V., Loch-Temzelides, T., Lovejoy, T., Nowak, K., Roehrdanz, P. R., & Vale, M. M. (2020).*
*Ecology and economics for pandemic prevention. Science, 369(6502), 379–381. https://doi.org/10.1126/science.abc3189*

*D'Odorico, P., Rulli, M. C., Dell'Angelo, J., & Davis, K. F. (2017). New frontiers of land and water commodification: Socio-environmental controversies of large-scale land acquisitions. Land Degradation & Development, 28(7), 2234–2244. https://doi.org/10.1002/ldr.2750*

*Drescher, J., Rembold, K., Allen, K., Beckschäfer, P., Buchori, D., Clough, Y., Faust, H., Fauzi, A. M., Gunawan, D., Hertel, D., Irawan, B., Jaya, I. N. S., Klarner, B., Kleinn, C., Knohl, A., Kotowska, M. M., Krashevska, V., Krishna, V., Leuschner, C., … Scheu, S. (2016). Ecological and socio-economic functions across tropical land use systems after rainforest conversion. Philosophical Transactions of the Royal Society B: Biological Sciences, 371(1694), 1–8. https://doi.org/10.1098/rstb.2015.0275*

*Ducastel, A., & Anseeuw, W. (2018). Large-scale land investments and financialisation of agriculture: An analysis based on agro-financial filières. In Ecology, Capitalism and the New Agricultural Economy (pp. 256–275). Routledge. https://doi.org/10.4324/9781351210041-13*

*Ecker, O. (2018). Agricultural transformation and food and nutrition security in Ghana: Does farm production diversity (still) matter for household dietary diversity? Food Policy, 79, 271–282. https://doi.org/10.1016/j.foodpol.2018.08.002*

*Edwards, R. (2019). Export agriculture and rural poverty: Evidence from Indonesian palm oil. Dartmouth College.*

*Escobar, H. (2020). Deforestation in the Brazilian Amazon is still rising sharply. Science, 369(6504), 613–613. https://doi.org/10.1126/science.369.6504.613*

*Euler, M., Krishna, V., Schwarze, S., Siregar, H., & Qaim, M. (2017). Oil Palm Adoption, Household Welfare, and Nutrition Among Smallholder Farmers in Indonesia. World Development, 93, 219–235. https://doi.org/10.1016/j.worlddev.2016.12.019*

*Euler, M., Schwarze, S., Siregar, H., & Qaim, M. (2016). Oil Palm Expansion among Smallholder Farmers in Sumatra, Indonesia. Journal of Agricultural Economics, 67(3), 658–676. https://doi.org/10.1111/1477-9552.12163*

*Falconer, A., Mafir, T., & Sutiyono, G. (2015). Improving land productivity through fiscal policy: Early insights on taxation in the palm oil supply chain. Climate Policy Initiative.*

*Falkenmark, M., & Rockström, J. (2006). The New Blue and Green Water Paradigm: Breaking New Ground for Water Resources Planning and Management. Journal of Water Resources Planning and Management, 132(3), 129–132. https://doi.org/10.1061/(ASCE)0733-9496(2006)132:3(129)*

*FAO (2012). Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. http://www.fao.org/3/i2801e/i2801e.pdf*

*FAO (2018). Small family farms country fact sheet — Ethopia. http://www.fao.org/3/i8911en/I8911EN.pdf*

*FAO (2020). Food and agriculture data. http://www.fao.org/faostat/en/#home*

*FAO, IFAD, UNCTAD, & World Bank Group (2010). Principles for responsible agricultural investment that respects rights, livelihoods and resources (extended version): A discussion note prepared by FAO, IFAD, UNCTAD and the World Bank Group to contribute to an ongoing global dialogue. http://www.fao.org/fileadmin/templates/est/INTERNATIONAL-TRADE/FDIs/RAI_Principles_Synoptic.pdf*

*FAOSTAT (2021). Crops Data South East Asia for Rubber. http://www.fao.org/faostat/en/#data/QC*

*Fehlenberg, V., Baumann, M., Gasparri, N. I., Piquer-Rodriguez, M., Gavier-Pizarro, G., & Kuemmerle, T. (2017). The role of soybean production as an underlying driver of deforestation in the South American Chaco. Global Environmental Change, 45, 24–34. https://doi.org/10.1016/j.gloenvcha.2017.05.001*

*Feniuk, C., Balmford, A., & Green, R. E. (2019). Land sparing to make space for species dependent on natural habitats and high nature value farmland. Proceedings of the Royal Society B: Biological Sciences, 286(1909), 20191483. https://doi.org/10.1098/rspb.2019.1483*

*Fenske, J. (2011). Land tenure and investment incentives: Evidence from West Africa. Journal of Development Economics, 95(2), 137–156.*

*Fitawek, W., Hendriks, S., Reys, A., & Fossi, F. (2020). The effect of large-scale agricultural investments on household food security in Madagascar. Food Security, 23, 1349–1365. https://doi.org/10.1007/s12571-020-01055-6*

*Flachsbarth, I., Lay, J., Nolte, K., Harding, A., Anseeuw, W., & Bourgoin, J. (2020). Responsible large-scale agricultural investments in and by G20 countries: A call for more transparency. G20 Insights, T20 Policy Brief (Task Force 10 Sustainable Energy, Water, and Food Systems). https://www.g20-insights.org/policy_briefs/responsible-large-scale-agricultural-investments-in-and-by-g20-countries-a-call-for-more-transparency/*

*Folberth, C., Khabarov, N., Balkovič, J., Skalský, R., Visconti, P., Ciais, P., Janssens, I. A., Peñuelas, J., & Obersteiner, M. (2020). The global cropland-sparing potential of high-yield farming. Nature Sustainability, 3(4), 281–289. https://doi.org/10.1038/s41893-020-0505-x*

*Fonjong, L., Sama-Lang, I., Fombe, L., & Abonge, C. (2016). Land governance and women's rights in large-scale land acquisitions in Cameroon. Development in Practice, 26(4), 420–430. https://doi.org/10.1080/09614524.2016.1162285*

*Fraser, Alstair & Lungu, John. (2007). 'For whom the windfalls.' Winners & losers in the privatisation of Zambia's copper mines. Civil Society Trade Network of Zambia (CSTNZ): Catholic Centre for Justice, Development and Peace (CCJDP).*

*Friis, C., & Nielsen, J. Ø. (2016). Small-scale land acquisitions, large-scale implications: Exploring the case of Chinese banana investments in Northern Laos. Land Use Policy, 57, 117–129. https://doi.org/10.1016/j.landusepol.2016.05.028*

*Fuller, D., Hardiono, M., & Meijaard, E. (2011). Deforestation Projections for Carbon-Rich Peat Swamp Forests of Central Kalimantan, Indonesia. Environmental Management, 48, 436–447. https://doi.org/10.1007/s00267-011-9643-2*

*Gasparri, N. I., Kuemmerle, T., Meyfroidt, P., Waroux, Y. le P. de, & Kreft, H. (2016). The Emerging Soybean Production Frontier in Southern Africa: Conservation Challenges and the Role of South-South Telecouplings. Conservation Letters, 9(1), 21–31. https://doi.org/10.1111/conl.12173*

*German, L., Schoneveld, G., & Mwangi, E. (2013). Contemporary Processes of Large-Scale Land Acquisition in Sub-Saharan Africa: Legal Deficiency or Elite Capture of the Rule of Law? World Development, 48, 1–18. https://doi.org/10.1016/j.worlddev.2013.03.006*

*Giam, X. (2017). Global biodiversity loss from tropical deforestation. Proceedings of the National Academy of Sciences, 114(23), 5775–5777. https://doi.org/10.1073/pnas.1706264114*

*Gibb, R., Redding, D. W., Chin, K. Q., Donnelly, C. A., Blackburn, T. M., Newbold, T., & Jones, K. E. (2020). Zoonotic host diversity increases in human-dominated ecosystems. Nature, 584(7821), 398–402. https://doi.org/10.1038/s41586-020-2562-8*

*Gibbon, P. (2011). Experiences of plantation and large-scale farming in 20th century Africa (2011:20; DIIS Working Paper No. 2011:20). Danish Institute for International Studies. https://www.econstor.eu/handle/10419/122246*

*Gibbs, H. K., Rausch, L., Munger, J., Schelly, I., Morton, D. C., Noojipady, P., Soares-Filho, B., Barreto, P., Micol, L., & Walker, N. F. (2015). Brazil's Soy Moratorium. Science, 347(6220), 377–378. https://doi.org/10.1126/science.aaa0181*

*Gibbs, H. K., Ruesch, A. S., Achard, F., Clayton, M. K., Holmgren, P., Ramankutty, N., & Foley, J. A. (2010). Tropical forests were the primary sources of new agricultural land in the 1980s and 1990s. Proceedings of the National Academy of Sciences, 107(38), 16732–16737. https://doi.org/10.1073/pnas.0910275107*

*Giger, M., Eckert, S., & Lay, J. (2021). Large-scale land acquisitions, agricultural trade, and zoonotic diseases: Overlooked links. One Earth, 4(5), 605–608. https://doi.org/10.1016/j.oneear.2021.04.020*

*Giger, M., Mutea, E., Kiteme, B., Eckert, S., Anseeuw, W., & Zaehringer, J. G. (2020). Large agricultural investments in Kenya's Nanyuki Area: Inventory and analysis of business models. Land Use Policy, 99, 104833. https://doi.org/10.1016/j.landusepol.2020.104833*

*Giger, M., Nolte, K., Anseeuw, W., Breu, T., Chamberlain, W., Messerli, P., Oberlack, C., & Haller, T. (2019). Impacts of large-scale land acquisitions on common-pool resources. Evidence from the Land Matrix. In The commons in a glocal world: Global connections and local responses. Routledge.*

*Global Witness (2020). Governments and business must stand up for land and environmental defenders now, so that they can help build a more resilient and fair future for us and our planet. Global Witness. https:///en/press-releases/governments-and-business-must-stand-land-and-environmental-defenders-now-so-they-can-help-build-more-resilient-and-fair-future-us-and-our-planet/*

*Governo de Moçambique (2017). Relatório sobre o emprego e segurança no trabalho-2017. Direcção Provincial do Trabalho, Emprego e Segurança Social.*

*GRAIN (2018). Failed farmland deals: A growing legacy of disaster and pain. GRAIN. https://www.grain.org/article/entries/5958-failed-farmland-deals-a-growing-legacy-of-disaster-and-pain*

*Grau, R., Kuemmerle, T., & Macchi, L. (2013). Beyond 'land sparing versus land sharing': Environmental heterogeneity, globalization and the balance between agricultural production and nature conservation. Current Opinion in Environmental Sustainability, 5(5), 477–483. https://doi.org/10.1016/j.cosust.2013.06.001*

*Haggblade, S., Minten, B., Pray, C., Reardon, T., & Zilberman, D. (2017). The Herbicide Revolution in Developing Countries: Patterns, Causes, and Implications. The European Journal of Development Research, 29(3), 533–559. https://doi.org/10.1057/s41287-017-0090-7*

*Hambloch, C. (2018). Land Formalization Turned Land Rush: The Case of the Palm Oil Industry in Papua New Guinea. Land Governance in an Interconnected World Annual World Bank Conference on Land and Poverty 2018, Washington DC. https://www.semanticscholar.org/paper/FORMALIZATION-TURNED-LAND-RUSH-%3A-THE-CASE-OF-THE-IN-Hambloch/547efd3b457b851ef2a31bcf818e630f2de8aa70*

*Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A., Tyukavina, A., Thau, D., Stehman, S. V., Goetz, S. J., Loveland, T. R., Kommareddy, A., Egorov, A., Chini, L., Justice, C. O., & Townshend, J. R. G. (2013). High-Resolution Global Maps of 21st-Century Forest Cover Change. Science, 342(6160), 850–853. https://doi.org/10.1126/science.1244693*

*Hansen, M. C., Wang, L., Song, X.-P., Tyukavina, A., Turubanova, S., Potapov, P. V., & Stehman, S. V. (2020). The fate of tropical forest fragments. Science Advances, 6(11), eaax8574. https://doi.org/10.1126/sciadv.aax8574*

*Headey, D., Dereje, M., & Taffesse, A. S. (2014). Land constraints and agricultural intensification in Ethiopia: A village-level analysis of high-potential areas. Food Policy, 48, 129–141. https://doi.org/10.1016/j.foodpol.2014.01.008*

*Henders, S., Persson, U. M., & Kastner, T. (2015). Trading forests: Land-use change and carbon emissions embodied in production and exports of forest-risk commodities. Environmental Research Letters, 10(12), 125012. https://doi.org/10.1088/1748-9326/10/12/125012*

*Hermele, K. (2013). The Appropriation of Ecological Space: Agrofuels, unequal exchange and environmental load displacements. Routledge.*

*Herrmann, R., & Grote, U. (2015). Large-scale Agro-Industrial Investments and Rural Poverty: Evidence from Sugarcane in Malawi. Journal of African Economies, 24(5), 645–676. https://doi.org/10.1093/jae/ejv015*

*Herrmann, R. T. (2017). Large-Scale Agricultural Investments and Smallholder Welfare: A Comparison of Wage Labor and Outgrower Channels in Tanzania. World Development, 90, 294–310. https://doi.org/10.1016/j.worlddev.2016.10.007*

*Hett, C., Nanhthavong, V., Hanephom, S., Phommachanh, A., Sidavong, B., Phouangphet, K., Lu, J., Shattuck, A., Ingalls, M., Bernhard, R., Phathitmixay, S., Phomphakdy, C., Heinimann, A., & Epprecht, M. (2020). Land Leases and Concessions in the Lao PDR: A characterization of investments in land and their impacts. Bern Open Publishing.*

*Hofman, P., Mokuwa, E., Richards, P., & Voors, M. (2019). Local Economy effects of Large-Scale Agricultural. Wageningen University. http://www.bioecon-network.org/pages/21th_2019/B4/Hofman,%20Paul%20-%20Local%20Economy%20effects%20of%20Large-Scale%20Agricultural%20Investments.pdf*

*Hunsberger, C. (2010). The politics of Jatropha-based biofuels in Kenya: Convergence and divergence among NGOs, donors, government officials and farmers. The Journal of Peasant Studies, 37(4), 939–962. https://doi.org/10.1080/03066150.2010.512465*

*Hunt, C. (2010). The costs of reducing deforestation in Indonesia. Bulletin of Indonesian Economic Studies, 46(2), 187–192. https://doi.org/10.1080/00074918.2010.503563*

*Hurni, K., & Fox, J. (2018). The expansion of tree-based boom crops in mainland Southeast Asia: 2001 to 2014. Journal of Land Use Science, 13(1–2), 198–219. https://doi.org/10.1080/1747423X.2018.1499830*

*IARC (2017). Some Organophosphate Insecticides and Herbicides. International Agency for Research on Cancer. https://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Some-Organophosphate-Insecticides-And-Herbicides-2017*

*ILC (2020). Building Back Better: Securing Land Rights in a Post-COVID world. ILC (International Land Coalition). https://www.landcoalition.org/en/resources/building-back-better-securing-land-rights-post-covid-world/*

*Index Mundi (2021). Palm Oil Area Harvested by Country in 1000 HA - Country Rankings. https://www.indexmundi.com/agriculture/?commodity=palm-oil&graph=area-harvested*

*ILO (2020). Statistics on the working-age population and labour force. https://ilostat.ilo.org/topics/population-and-labour-force/*

*IPBES (2020). Workshop Report on Biodiversity and Pandemics of the Intergovernmental Platform on Biodiversity and Ecosystem Services. Daszak, P., Amuasi, J., das Neves, C. G., Hayman, D., Kuiken, T., Roche, B., Zambrana-Torrelio, C., Buss, P., Dundarova, H., Feferholtz, Y., Földvári, G., Igbinosa, E., Junglen, S., Liu, Q., Suzan, G., Uhart, M., Wannous, C., Woolaston, K., Mosig Reidl, P., O'Brien, K., Pascual, U., Stoett, P., Li, H., Ngo, H. T. IPBES secretariat.*

*Ittersum, M. K. van, Bussel, L. G. J. van, Wolf, J., Grassini, P., Wart, J. van, Guilpart, N., Claessens, L., Groot, H. de, Wiebe, K., Mason-D'Croz, D., Yang, H., Boogaard, H., Oort, P. A. J. van, Loon, M. P. van, Saito, K., Adimo, O., Adjei-Nsiah, S., Agali, A., Bala, A., … Cassman, K. G. (2016). Can sub-Saharan Africa feed itself? Proceedings of the National Academy of Sciences, 113(52), 14964–14969. https://doi.org/10.1073/pnas.1610359113*

*Janda, K., Kristoufek, L., & Zilberman, D. (2012). Biofuels: Policies and impacts. Agricultural Economics, 58(8), 372–386. https://doi.org/10.17221/124/2011-AGRICECON*

*Jayne, T. S., Chamberlin, J., Traub, L., Sitko, N., Muyanga, M., Yeboah, F. K., Anseeuw, W., Chapoto, A., Wineman, A., Nkonde, C., & Kachule, R. (2016). Africa's changing farm size distribution patterns: The rise of medium-scale farms. Agricultural Economics, 47(S1), 197–214. https://doi.org/10.1111/agec.12308*

*Jelsma, I., Schoneveld, G. C., Zoomers, A., & van Westen, A. C. M. (2017). Unpacking Indonesia's independent oil palm smallholders: An actor-disaggregated approach to identifying environmental and social performance challenges. Land Use Policy, 69, 281–297. https://doi.org/10.1016/j.landusepol.2017.08.012*

*Johansson, E. L., Fader, M., Seaquist, J. W., & Nicholas, K. A. (2016). Green and blue water demand from large-scale land acquisitions in Africa. Proceedings of the National Academy of Sciences, 113(41), 11471–11476. https://doi.org/10.1073/pnas.1524741113*

*Jones, B. A., Grace, D., Kock, R., Alonso, S., Rushton, J., Said, M. Y., McKeever, D., Mutua, F., Young, J., McDermott, J., & Pfeiffer, D. U. (2013). Zoonosis emergence linked to agricultural intensification and environmental change. Proceedings of the National Academy of Sciences, 110(21), 8399–8404. https://doi.org/10.1073/pnas.1208059110*

*Keesing, F., Belden, L. K., Daszak, P., Dobson, A., Harvell, C. D., Holt, R. D., Hudson, P., Jolles, A., Jones, K. E., Mitchell, C. E., Myers, S. S., Bogich, T., & Ostfeld, R. S. (2010). Impacts of biodiversity on the emergence and transmission of infectious diseases. Nature, 468(7324), 647–652. https://doi.org/10.1038/nature09575*

*Keesing, F., Holt, R. D., & Ostfeld, R. S. (2006). Effects of species diversity on disease risk. Ecology Letters, 9(4), 485–498. https://doi.org/10.1111/j.1461-0248.2006.00885.x*

*Kelly, A., Charles Bedford, Steven Lawry, Jessica Musengezi2, Lisa Naughton-Treves9, William Sunderlin, Peter Veit, Yuta J. Masuda, Kevin Barthel, Brian E. Robinson, & Malcolm Childress,5 Edward T Game2, Chloe Ginsburg. (2017). Mapping the Global Governance Context for Land Tenure Security. 2017 WORLD BANK CONFERENCE ON LAND AND POVERTY.*

*Kenney-Lazar, M. (2012). Plantation rubber, land grabbing and social-property transformation in southern Laos. Journal of Peasant Studies, 39(3/4), 1017–1037. https://doi.org/10.1080/03066150.2012.674942*

*Kenney-Lazar, M., Dwyer, M. B., & Hett, C. (2018). Turning Land into Capital: Assessing A Decade of Policy in Practice. Land Information Working Group (LIWG).*

*Keovilignavong, O., & Suhardiman, D. (2020). Linking land tenure security with food security: Unpacking farm households' perceptions and strategies in the rural uplands of Laos. Land Use Policy, 90, 104260. https://doi.org/10.1016/j.landusepol.2019.104260*

*Koppmair, S., Kassie, M., & Qaim, M. (2017). Farm production, market access and dietary diversity in Malawi. Public Health Nutrition, 20(2), 325–335. https://doi.org/10.1017/S1368980016002135*

*Korovkin, T. (2003). Cut-Flower Exports, Female Labor, and Community Participation in Highland Ecuador. Latin American Perspectives, 30(4), 18–42. https://doi.org/DOI: 10.1177/0094582X03254308*

*Krishna, V. V., Kubitza, C., Pascual, U., & Qaim, M. (2017). Land markets, Property rights, and Deforestation: Insights from Indonesia. World Development. https://doi.org/10.1016/j.worlddev.2017.05.018*

*Kubitza, C., Bou Dib, J., Kopp, T., Krishna, V. V., Nuryartono, N., Qaim, M., Romero, M., & Klasen, S. (2019). Labor savings in agriculture and inequality at different spatial scales: The expansion of oil palm in Indonesia. EFForTS Discussion Paper Series, 26. https://www.econstor.eu/handle/10419/195914*

*Kubitza, C., & Gehrke, E. (2018). Why does a labor-saving technology decrease fertility rates? Evidence from the oil palm boom in Indonesia. EFForTS Discussion Paper Series, 22. https://econpapers.repec.org/paper/zbwcrc990/22.htm*

*Land Matrix (2019). Land Matrix. Global Observatory. https://landmatrix.org/global/*

*Lay, J., & Nolte, K. (2018). Determinants of foreign land acquisitions in low- and middle-income countries. Journal of Economic Geography, 18(1), 59–86. https://doi.org/10.1093/jeg/lbx011*

*Lay, J., Nolte, K., & Sipangule, K. (2021). Large-scale farms in Zambia: Locational patterns and spillovers to smallholder agriculture. World Development, 140(105277).*

*Liao, C., Jung, S., Brown, D. G., & Agrawal, A. (2020). Spatial patterns of large-scale land transactions and their potential socio-environmental outcomes in Cambodia, Ethiopia, Liberia, and Peru. Land Degradation & Development, 31(10), 1241–1251. https://doi.org/10.1002/ldr.3544*

*Losch, B. (2016). Structural transformation to boost youth labour demand in sub-Saharan Africa: The role of agriculture, rural areas and territorial development (EMPLOYMENT Working Paper No. 204). International Labour Organization. https://agritrop.cirad.fr/582221/*

*Lund, C. (2008). Local Politics and the Dynamics of Property in Africa. Cambridge University Press.*
*Lund, C., & Boone, C. (2013). Introduction: Land Politics in Africa—Constituting Authority over Territory, Property and Persons. Africa, 83(01), 1–13.*

*Maertens, M., Colen, L., & Swinnen, J. F. M. (2011). Globalisation and poverty in Senegal: A worst case scenario? European Review of Agricultural Economics, 38(1), 31–54. https://doi.org/10.1093/erae/jbq053*

*Magliocca, N., Khuc, Q., Ellicott, E., & de Bremond, A. (2019). Archetypical pathways of direct and indirect land-use change caused by Cambodia's economic land concessions. Ecology and Society, 24(2). https://doi.org/10.5751/ES-10954-240225*

*Manoli, G., Meijide, A., Huth, N., Knohl, A., Kosugi, Y., Burlando, P., Ghazoul, J., & Fatichi, S. (2018). Ecohydrological changes after tropical forest conversion to oil palm. Environmental Research Letters, 13(6), 064035. https://doi.org/10.1088/1748-9326/aac54e*

*Marfurt, F., Käser, F., & Lustenberger, S. (2016). Local Perceptions and Vertical Perspectives of a Large Scale Land Acquisition Project in Northern Sierra Leone. Homo Oeconomicus, 33(3), 261–279. https://doi.org/10.1007/s41412-016-0020-5*

*Matondi, P. B., Havnevik, K., & Beyene, A. (2011). Biofuels, Land Grabbing and Food Security in Africa. Zed Books Ltd.*

*McCarthy, J. F., & Zen, Z. (2016). Agribusiness, Agrarian Change, and the Fate of Oil Palm Smallholders in Jambi. In R. Cramb & J. F. McCarthy (Eds.), The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia (pp. 109–154). NUS Press - National University of Singapore.*

*Mechiche-Alami, A., Yagoubi, J., & Nicholas, K. A. (2021). Agricultural land acquisitions unlikely to address the food security needs of African countries. World Development, 141, 105384. https://doi.org/10.1016/j.worlddev.2020.105384*

*Meemken, E.-M., & Bellemare, M. F. (2020). Smallholder farmers and contract farming in developing countries. Proceedings of the National Academy of Sciences, 117(1), 259–264. https://doi.org/10.1073/pnas.1909501116*

*Mercandalli, S., Burnod, P., Reys, A., Anseeuw, W., Giger, M., Kiteme, B., & Ravelo, A. (2021). Nuancing narratives on Large Agriculture Investments labor markets effects in sub-Saharan Africa: Evidence from Kenya, Mozambique and Madagascar. 2nd International Symposium on Work in Agriculture, Clermont Ferrand, France. https://symposium.inrae.fr/workinagriculture-iswa/*

*Merten, J., Röll, A., Guillaume, T., Meijide, A., Tarigan, S., Agusta, H., Dislich, C., Dittrich, C., Faust, H., Gunawan, D., Hein, J., Hendrayanto, Knohl, A., Kuzyakov, Y., Wiegand, K., & Hölscher, D. (2016). Water scarcity and oil palm expansion: Social views and environmental processes. Ecology and Society, 21(2). https://www.jstor.org/stable/26270363*

*Messerli, P., Giger, M., Dwyer, M. B., Breu, T., & Eckert, S. (2014). The geography of large-scale land acquisitions: Analysing socio-ecological patterns of target contexts in the global South. Applied Geography, 53, 449–459. https://doi.org/10.1016/j.apgeog.2014.07.005*

*Meyfroidt, P., Carlson, K. M., Fagan, M. E., Gutiérrez-Vélez, V. H., Macedo, M. N., Curran, L. M., DeFries, R. S., Dyer, G. A., Gibbs, H. K., Lambin, E., Morton, D. C., & Robiglio, V. (2014). Multiple pathways of expansion of commodity crops in tropical forest landscapes. Global Land Project Open Science Meeting 2014. https://dial.uclouvain.be/pr/boreal/object/boreal:155342*

*Ministry of Agriculture (2020). Basis Data Statistik Pertanian (BDSP). Tree Crop Esate Statistics of Indonesia 2017—2019. http://en.litbang.pertanian.go.id/*

*Müller, M. F., Penny, G., Niles, M. T., Ricciardi, V., Chiarelli, D. D., Davis, K. F., Dell'Angelo, J., D'Odorico, P., Rosa, L., Rulli, M. C., & Mueller, N. D. (2021). Impact of transnational land acquisitions on local food security and dietary diversity. Proceedings of the National Academy of Sciences, 118(4), e2020535118. https://doi.org/10.1073/pnas.2020535118*

*Muriithi, F. K., & Yu, D. (2015). Understanding the Impact of Intensive Horticulture Land-Use Practices on Surface Water Quality in Central Kenya. Environments, 2(4), 521–545. https://doi.org/10.3390/environments2040521*

*Nanhthavong, V., Epprecht, M., Hett, C., Zaehringer, J. G., & Messerli, P. (2020). Poverty trends in villages affected by land-based investments in rural Laos. Applied Geography, 124, 102298. https://doi.org/10.1016/j.apgeog.2020.102298*

*Nolte, K. (2014). Large-scale agricultural investments under poor land governance in Zambia. Land Use Policy. https://doi.org/10.1016/j.landusepol.2014.01.014*

*Nolte, K. (2020). Doomed to fail? Why some land-based investment projects fail. Applied Geography, 122, 102268. https://doi.org/10.1016/j.apgeog.2020.102268*

*Nolte, K., Chamberlain, W., & Giger, M. (2016). International Land Deals for Agriculture. Bern Open Publ. https://doi.org/10.7892/boris.85304*

*Nolte, K., & Ostermeier, M. (2017). Labour Market Effects of Large-Scale Agricultural Investment: Conceptual Considerations and Estimated Employment Effects. World Development, 98, 430–446. https://doi.org/10.1016/j.worlddev.2017.05.012*

*Nolte, K., & Väth, S. J. (2015). Interplay of land governance and large-scale agricultural investment: Evidence from Ghana and Kenya. The Journal of Modern African Studies, 53(01), 69–92. https://doi.org/10.1017/S0022278X14000688*

*Nolte, K., & Voget-Kleschin, L. (2014). Consultation in Large-Scale Land Acquisitions: An Evaluation of Three Cases in Mali. World Development, 64, 654–668. https://doi.org/10.1016/j.worlddev.2014.06.028*

*Oberlack, C., Giger, M., Anseeuw, W., Adelle, C., Bourblanc, M., Burnod, P., Eckert, S., Fitawek, W., Fouilleux, E., Hendriks, S., Kiteme, B., Masola, L., Mawoko, Z. D., Mercandalli, S., Reys, A., da Silva, M., van der Laan, M., Zaehringer, J., &*

*Messerli, P. (2021). Why do large-scale agricultural investments induce different socio-economic, food security, and environmental impacts? Evidence from Kenya, Madagascar, and Mozambique. Ecology and Society, Forthcoming.*

*Oberlack, C., Tejada, L., Messerli, P., Rist, S., & Giger, M. (2016). Sustainable livelihoods in the global land rush? Archetypes of livelihood vulnerability and sustainability potentials. Global Environmental Change, 41, 153–171. https://doi.org/10.1016/j.gloenvcha.2016.10.001*

*Obidzinski, K., Takahashi, I., Dermawan, A., Komarudin, H., & Andrianto, A. (2013). Can large scale land acquisition for agro-development in Indonesia be managed sustainably? Land Use Policy, 30(1), 952–965. https://doi.org/10.1016/j.landusepol.2012.06.018*

*Oldenburg, C., & Neef, A. (2014). Reversing Land Grabs or Aggravating Tenure Insecurity? Competing Perspectives on Economic Land Concessions and Land Titling in Cambodia. Law and Development Review, 7(1), 49–77. https://doi.org/10.1515/ldr-2014-0014*

*Ordway, E. M., Asner, G. P., & Lambin, E. F. (2017). Deforestation risk due to commodity crop expansion in sub-Saharan Africa. Environmental Research Letters, 12(4), 044015. https://doi.org/10.1088/1748-9326/aa6509*

*Ostrom, E. (1990). Governing the commons: The evolution of institutions for collective action. Cambridge University Press.*

*Otsuka, K., Place, F., & International Food Policy Research Institute (Eds.). (2001). Land tenure and natural resource management: A comparative study of agrarian communities in Asia and Africa. Johns Hopkins University Press.*

*Oya, C. (2013). The Land Rush and Classic Agrarian Questions of Capital and Labour: A systematic scoping review of the socioeconomic impact of land grabs in Africa. Third World Quarterly, 34(9), 1532–1557. https://doi.org/10.1080/01436597.2013.843855*

*Pendrill, F., Persson, U. M., Godar, J., & Kastner, T. (2019). Deforestation displaced: Trade in forest-risk commodities and the prospects for a global forest transition. Environmental Research Letters, 14(5), 055003. https://doi.org/10.1088/1748-9326/ab0d41*

*Perrings, C., Levin, S., & Daszak, P. (2018). The Economics of Infectious Disease, Trade and Pandemic Risk. EcoHealth, 15(2), 241–243. https://doi.org/10.1007/s10393-018-1347-0*

*Phalan, B., Green, R., & Balmford, A. (2014). Closing yield gaps: Perils and possibilities for biodiversity conservation. Philosophical Transactions of the Royal Society B: Biological Sciences, 369(1639), 20120285. https://doi.org/10.1098/rstb.2012.0285*

*Prindex (2020). Comparative Report. A global assessment of perceived tenure security from 140 countries. Overseas Development Institute. https://www.prindex.net/reports/prindex-comparative-report-july-2020/*

*Reboredo, F. H., Lidon, F. C., Ramalho, J. C., & Pessoa, M. F. (2017). The forgotten implications of low oil prices on biofuels. Biofuels, Bioproducts and Biorefining, 11(4), 625–632. https://doi.org/10.1002/bbb.1769*

*Richardson, B. (2010). Big Sugar in southern Africa: Rural development and the perverted potential of sugar/ethanol exports. The Journal of Peasant Studies, 37(4), 917–938. https://doi.org/10.1080/03066150.2010.512464*

*Rights and Resources Initiative (2020). Under the Cover of Covid: New Laws in Asia Favor Business at the Cost of Indigenous Peoples' and Local Communities' Land and Territorial Rights. RRI (Rights and Ressources Initiative). https://rightsandresources.org/wp-content/uploads/2020/11/English_Detrimental-Laws-Brief-20210112.pdf*

*Robinson, B. E., Holland, M. B., & Naughton-Treves, L. (2014). Does secure land tenure save forests? A meta-analysis of the relationship between land tenure and tropical deforestation. Global Environmental Change, 29, 281–293. https://doi.org/10.1016/j.gloenvcha.2013.05.012*

*RSPO (2017). RSPO Principles & Criteria Document.pdf. Roundtable on Sustainable Palm Oil. https://www.rspo.org/file/RSPO%20Principles%20&%20Criteria%20Document.pdf*

*Rulli, M. C., Casirati, S., Dell'Angelo, J., Davis, K. F., Passera, C., & D'Odorico, P. (2019). Interdependencies and telecoupling of oil palm expansion at the expense of Indonesian rainforest. Renewable and Sustainable Energy Reviews, 105, 499–512. https://doi.org/10.1016/j.rser.2018.12.050*

*Rulli, M. C., Saviori, A., & D'Odorico, P. (2013). Global land and water grabbing. Proceedings of the National Academy of Sciences, 110(3), 892–897. https://doi.org/10.1073/pnas.1213163110*

*Ruml, A., & Qaim, M. (2020). Effects of marketing contracts and resource-providing contracts in the African small farm sector: Insights from oil palm production in Ghana. World Development, 136, 105110. https://doi.org/10.1016/j.worlddev.2020.105110*

*Santika, T., Wilson, K. A., Budiharta, S., Law, E. A., Poh, T. M., Ancrenaz, M., Struebig, M. J., & Meijaard, E. (2019). Does oil palm agriculture help alleviate poverty? A multidimensional counterfactual assessment of oil palm development in Indonesia. World Development, 120, 105–117. https://doi.org/10.1016/j.worlddev.2019.04.012*

*Schielein, J., & Börner, J. (2018). Recent transformations of land-use and land-cover dynamics across different deforestation frontiers in the Brazilian Amazon. Land Use Policy, 76, 81–94. https://doi.org/10.1016/j.landusepol.2018.04.052*

*Sharma, A., Kumar, V., Shahzad, B., Tanveer, M., Sidhu, G. P. S., Handa, N., Kohli, S. K., Yadav, P., Bali, A. S., Parihar, R. D., Dar, O. I., Singh, K., Jasrotia, S., Bakshi, P., Ramakrishnan, M., Kumar, S., Bhardwaj, R., & Thukral, A. K. (2019). Worldwide pesticide usage and its impacts on ecosystem. SN Applied Sciences, 1(11), 1446. https://doi.org/10.1007/s42452-019-1485-1*

*Sibhatu, K. T., & Qaim, M. (2018). Review: Meta-analysis of the association between production diversity, diets, and nutrition in smallholder farm households. Food Policy, 77, 1–18. https://doi.org/10.1016/j.foodpol.2018.04.013*

*Singh, K., Singh, B., Verma, S. K., & Patra, D. D. (2014). Jatropha curcas: A ten year story from hope to despair. Renewable and Sustainable Energy Reviews, 35, 356–360. https://doi.org/10.1016/j.rser.2014.04.033*

*Singh, S., Jones, A. D., DeFries, R. S., & Jain, M. (2020). The association between crop and income diversity and farmer intra-household dietary diversity in India. Food Security, 12(2), 369–390. https://doi.org/10.1007/s12571-020-01012-3*

*Sjaastad, E., & Bromley, D. W. (2000). The Prejudices of Property Rights: On Individualism, Specificity, and Security in Property Regimes. Development Policy Review, 18(4), 365–389. https://doi.org/10.1111/1467-7679.00117*

*Special Rapporteur on the Rights of Indigenous Peoples (2020). Report on the impact of COVID-19 on the rights of indigenous peoples. OHCHR. https://www.ohchr.org/EN/Issues/IPeoples/SRIndigenousPeoples/Pages/Callforinput_COVID19.aspx*

*Suzuki, A., Mano, Y., & Abebe, G. (2018). Earnings, savings, and job satisfaction in a labor-intensive export sector: Evidence from the cut flower industry in Ethiopia. World Development, 110, 176–191. https://doi.org/10.1016/j.worlddev.2018.05.029*

*Tejada, L., & Rist, S. (2017). Seeing land deals through the lens of the 'land–water nexus': The case of biofuel production in Piura, Peru. The Journal of Peasant Studies, 45(7), 1247–1271. https://doi.org/10.1080/03066150.2016.1259220*

*Tian, X., & Yu, X. (2019). Crop yield gap and yield convergence in African countries. Food Security, 11(6), 1305–1319. https://doi.org/10.1007/s12571-019-00972-5*

*Tollefson, J. (2020). Why deforestation and extinctions make pandemics more likely. Nature, 584(7820), 175–176. https://doi.org/10.1038/d41586-020-02341-1*

*van den Broeck, G., Swinnen, J., & Maertens, M. (2017). Global value chains, large-scale farming, and poverty: Long-term effects in Senegal. Food Policy, 66, 97–107. https://doi.org/10.1016/j.foodpol.2016.12.003*

*Vedeld, P., Angelsen, A., Bojö, J., Sjaastad, E., & Kobugabe Berg, G. (2007). Forest environmental incomes and the rural poor. Forest Policy and Economics, 9(7), 869–879. https://doi.org/10.1016/j.forpol.2006.05.008*

*Vermeulen, S., & Cotula, L. (2010). Over the heads of local people: Consultation, consent and recompense in large-scale land deals for biofuels projects in Africa. Journal of Peasant Studies, 37(4), 899–916.*

*Vijay, V., Reid, C. D., Finer, M., Jenkins, C. N., & Pimm, S. L. (2018). Deforestation risks posed by oil palm expansion in the Peruvian Amazon*. Environmental Research Letters, 13(11), 114010. https://doi.org/10.1088/1748-9326/aae540*

*Villoria, N. (2019). Consequences of agricultural total factor productivity growth for the sustainability of global farming: Accounting for direct and indirect land use effects. Environmental Research Letters, 14(12), 125002. https://doi.org/10.1088/1748-9326/ab4f57*

*Von Maltitz, G., Gasparatos, A., & Fabricius, C. (2014). The Rise, Fall and Potential Resilience Benefits of Jatropha in Southern Africa. Sustainability, 6(6), 3615–3643. https://doi.org/10.3390/su6063615*

*Wallace, R. G. (2016). Big farms make big flu: Dispatches on infectious disease, agribusiness, and the nature of science. Monthly Review Press.*

*Wallace, R. G., Gilbert, M., Wallace, R., Pittiglio, C., Mattioli, R., & Kock, R. (2014). Did Ebola Emerge in West Africa by a Policy-Driven Phase Change in Agroecology? Ebola's Social Context. Environment and Planning A: Economy and Space, 46(11), 2533–2542. https://doi.org/10.1068/a4712com*

*World Bank (2008). World Development Report 2008: Agriculture for Development. World Bank. https://openknowledge.worldbank.org/bitstream/handle/10986/5990/WDR%202008%20-%20English.pdf?sequence=3&isAllowed=y*

*World Health Organization (WHO) & International Programme on Chemical Safety (IPCS) (2010). The WHO recommended classification of pesticides by hazard and guidelines to classification 2009. World Health Organization. https://apps.who.int/iris/handle/10665/44271*

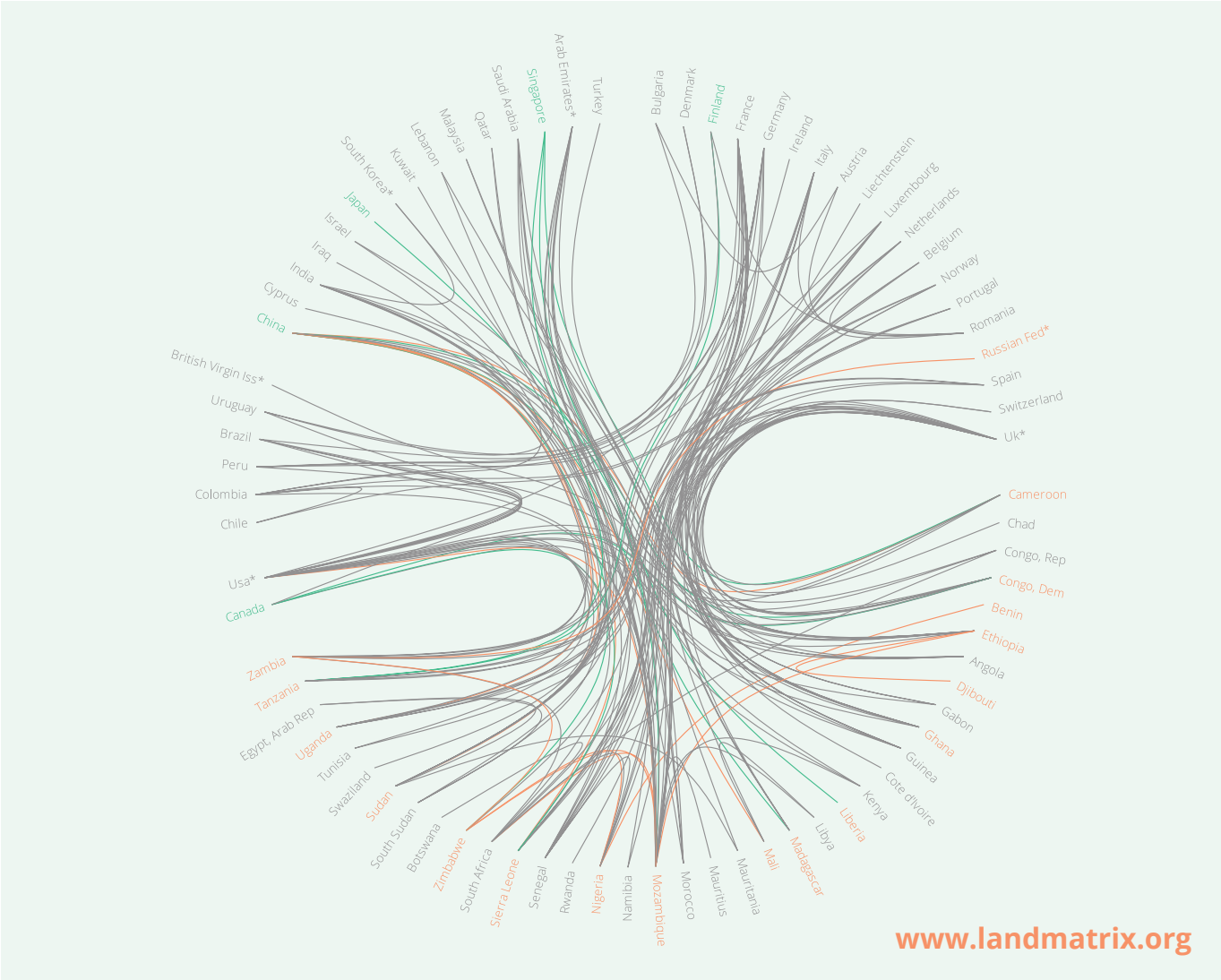
*Wright, A. L., & Wolford, W. (2003). To Inherit the Earth: The Landless Movement and the Struggle for a New Brazil. Food First Books.*

*Yengoh, G., & Armah, F. (2015). Effects of Large-Scale Acquisition on Food Insecurity in Sierra Leone. Sustainability, 7, 9505–9539. https://doi.org/10.3390/su7079505*

*Zaehringer, J. G., Atumane, A., Berger, S., & Eckert, S. (2018). Large-scale agricultural investments trigger direct and indirect land use change: New evidence from the Nacala corridor, Mozambique. Journal of Land Use Science, 13(3), 325–343. https://doi.org/10.1080/1747423X.2018.1519605*

*Zaehringer, J. G., Messerli, P., Giger, M., Kiteme, B., Atumane, A., da Silva, M., Raktotasumbola, L., & Eckert, S. (2021). Large-Scale Agricultural Investments in Eastern Africa: Consequences for Small-Scale Farmers and the Environment. Ecosystems and People, Forthcoming.*

*Zaehringer, J. G., Wambugu, G., Kiteme, B., & Eckert, S. (2018). How do large-scale agricultural investments affect land use and the environment on the western slopes of Mount Kenya? Empirical evidence based on small-scale farmers' perceptions and remote sensing. Journal of Environmental Management, 213, 79–89. https://doi.org/10.1016/j.jenvman.2018.02.019*

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