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LARGE SCALE LAND ACQUISITIONS IN DEVELOPING COUNTRIES - OPPORTUNITIES, THREATS AND INSTITUTIONAL CHALLENGES FOR RURAL DEVELOPMENT AND FOOD SECURITY

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Abstract

Large scale land acquisitions for food and biofuel production by (mostly foreign) agro-industrial investors have surged as a substantial phenomenon in developing countries in the last 2-3 years. Already 30 million hectares or half of Europe's agricultural land are said to have been bought or leased, much of it in poor and poorly governed countries in Sub Sahara Africa.

Although food presently seems to dominate motivations for land acquisitions, in the end food and biofuel production are two sides of the same coin if it comes to large scale land acquisitions: They fundamentally change the access of local populations to natural resources, the way resources are used, and the way production and incomes are organised, owned and distributed, not to talk about the changes of ways of live of rural populations. In addition, often production and raw materials can be easily switched between different purposes.

Due to the size of these acquisitions there are justified fears that they can substantially harm rural development and food security in the affected countries. On the other hand, these investments bring desperately needed capital, innovation, market access and jobs into rural areas which are often not ideal worlds but marked by poverty, food insecurity and long-term soil mining and resource degradation.

The present article discusses whether large scale land acquisition can be expected to be a long term phenomenon, which opportunities and threats exist for different actors, and which institutional challenges have to be dealt with if such investments are to be development-friendly. It is based on a case study on bioenergy potential in Namibia and an analysis of the literature. Unfortunately, the latter is of limited value for the time being because details of land acquisition deals are generally not open to public scrutiny. Thus, the key conclusion is that more transparency in this kind of deals is indispensable. In addition, existing land and user rights as well as compensation mechanisms have to be carefully respected, food security clauses have to be integrated into international trade, investment agreements and investment contracts, land use management, environmental and biosafety rules must be respected, provisions for risk management, moderation and litigation should be formulated, and overall policy coordination is important to make large scale land investments development friendly.

The phenomenon on large scale investments in SSA – is it long-term?

Large scale land acquisitions for food and biofuel production have surged as an important phenomenon in developing countries in the last few years. Presently, 30 million hectares of agricultural land are said to have been bought or leased (Sharife 2010). The World Bank inventorised 389 land deals in 80 countries (GRAIN 2010b). The bulk (37%) of the so-called investment projects are meant to produce food (crops and livestock), while biofuels come in second place (35%). Half of the investments are in Subsahara Africa (SSA). Nearly one quarter (22%) of which are already being implemented

Several initiatives are under way to regulate the phenomenon, such as the “Minimum Human Rights Principles Applicable to Large-Scale Land Acquisitions or Leases” by Olivier de Schutter (2009), Special Rapporteur on the Right to Food, the 7 “Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources” by FAO, IFAD, UNCTAD and the World Bank (2010), the 6 “basic principles” on the “Purchase and Leasing of Large Areas of Land in Developing Countries” by Federal Ministry for Economic Cooperation and Development (2009), IFPRI’s 5 “key elements for a code of conduct for foreign land acquisition” (von Braun / Meinzen-Dick 2009), and the FAO-led “Voluntary Guidelines on Responsible Governance of Land and other Natural Resources” (Grover 2009, follow-up under way). Other groups, notably NGOs and peasant farmer organisations, fundamentally oppose any larger investment as opposing the right to food, set equal to the right to access to productive resources (La Via Campesina / FIAN / Land Research Action Network / GRAIN (2010).

Thus, large scale land acquisitions are a burning issue. They challenge fundamental human rights, but they also provide large opportunities if carefully handled. However, reliable information on the real extent of implementation of these investments is hard to get, Governments and investors keep secrets around these investments, many projects fail before or shortly after being announced. Therefore, it is worthwhile to first recall the drivers of this development since they provide indications whether this is a long-term trend or simply a short-term phenomenon which does need to be taken too seriously:

1. A first wave of large scale land investments targeted biofuel production (Cotula et al. 2008). This wave was animated by several factors:

- In the wake of the climate change debate and the need for clean energy, biofuels were promoted as a source of clean energy, not producing more Green House Gases (GHG) than they consumed for growth.
- Industrialised countries with high support for agriculture saw problems of continuing established subsidies for agricultural production from the Doha negotiations of the World Trade Organisation. In sight of very low prices for almost all bulk agricultural products, biofuels provided a way to convert agricultural surplus production into products that would not burden existing markets and provoke negative reactions from trade partners.
- During a period of (over) heated worldwide growth in the mid 2000s, crude oil and energy prices were soaring, reaching more than 130 USD/barrel in 2007. Projections were indicating even higher prices, so that a lot of alternative energy sources, including biofuels based on low price feedstocks, appeared to be viable in the long run.

Animated by these different streams of motivations, several industrialised and advanced developing countries established targets for biofuel use, mainly in the transport sector. In some cases, particularly in the European Union (EU), it is clear that local production would not be sufficient to satisfy these mandates (Al-Riffai et al. 2010). Thus, a demand was visible for which several developing countries had a potential supply capacity.

Some Subsahara Africa (SSA) countries are particularly interesting to produce biofuels for the EU since, apart from land reserves (Doornbosch / Steenblik 2007), they have duty-free quota-free market access to the EU, notably Least Developed Countries (LDC) under the Everything-but-Arms-Initiative since 2000 and all non-LDC which have signed an Economic Partnership Agreement (EPA) with the EU. This aspect is important because it is evident that the mix of motivations to promote biofuels is

heavily biased towards promoting European farmers, and therefore import taxes are very high for bio-ethanol (Koijima et al. 2007).

In SSA, it was mainly *Jatropha curcas* that inspired most biofuel investors, a shrub that produces high quality oil. There are several reasons for this concentration:

- *Jatropha* is growing under very diverse conditions from low to high rainfall (300-2000 mm). It can survive long draughts, and is not demanding with respect to soil fertility, except for extreme (high and low) values of acidity. Thus, it can be planted on marginal lands not (no longer) used for other crop production, with low value for local populations.
- Though originating in the Americas, in many SSA countries *Jatropha* is already growing in isolated stands or hedgerows for decades or centuries, mainly for ornamental or medicinal purposes. Thus, locally adapted varieties were available.
- Expectations for yield were up to 12 tons dry fruits per hectare, with an oil content of 20-40% this promised to be a very lucrative crop.
- In many cases, investors had few experiences with agriculture, but had their background in the conventional or alternative energy sector.
- Another reason for the concentration on *Jatropha* was that the traditional alternatives, sugar cane and oil palm, do not have very good track records in SSA. The continent had permanently lost market shares for both products, South America (sugarcane) and South East Asia (palm oil) proved to be much more dynamic. The reasons are manifold and include ecological, political, social and economic factors. Many are those which also hinder new investments and will be dealt with below. In any case, *Jatropha* seemed to show a way out of the dilemmas of the traditional crops.

Expectations proved to be unrealistic in many cases, particularly with regard to high yields of *Jatropha* on marginal lands (Achten et al. 2008). Other investments in biofuels were rare, since they take a lot of time and high investments (sugar in SSA often requires irrigation, palm oil takes more than 7 years to start fruition).

In addition, biofuels came to be heavily criticised during the food price crisis of 2007/08, when they were blamed for up to 70% of the price increases (Mitchell 2008). Also the environmental virtues of biofuels were increasingly doubted, with research showing that some biofuel production pathways release more GHG in production than they save by reducing oil consumption, particularly if direct and indirect land use change is taken into account (Doornbosch / Steenblik 2007). The credit and financial crisis in 2008/09 hit the liquidity of many investors, and let crude oil prices collapse. Problems with local populations and governments surged, for lack of markets, lack of payments and fear around food security. In South Africa, *Jatropha* plantation was restricted for alleged threat of invasiveness. Many of the early biofuel investments have failed already, other are continuing on a low level, plagued by lack of dynamic development.

In the meantime, the conditions for biofuel investments have changed again. The disputes around “food versus fuel” have diminished, since a bumper harvest in 2008 and the economic crisis let food prices collapse despite continuing biofuel consumption, although the issue remains valid: crude oil is projected to become more expensive (IEA 2010), climate change will accelerate, transport will experience high growth rates. The controversies around biofuels have pushed the emergence of standards and regulations that try to guarantee positive (or at least no negative) effects of biofuels on environment, on the GHG balance, and (some) on social standards in production. The feedstock diversifies, waste materials and second generation biofuels based on lignocelluloses (and probably capital intensive algae in industrialised countries) move towards competitiveness.

2. The second wave of investment into land started after the dual food and economic crisis. Again, there are various reasons for this which indicate the likely sustainability of this trend:

- The food crisis was a shock to many countries, particularly Net Food Importing Developing Countries, but also wealthier ones. Food security proved to be not only a problem of remote, politically marginal rural populations, but of politically key urban low and middle income groups who may doubt government legitimacy and are able to threaten state stability. These

countries and governments now try to increase their food basis through local production and/or imports.

- Some countries which have supported food production in the past by high subsidies and unsustainable methods (eg Saudi Arabia which was the 7th largest exporter of wheat by producing the crop with fossil water) recognised that this practise is not sustainable, neither ecologically nor financially.
- Food imports during the food crisis were critically undermined by (panic) reactions of government of (usually) exporting countries. This is particularly true for rice. This casted doubts on the reliability of food markets for assuring food security.
- The massive increase of crop production after the food crisis was almost exclusively recorded in industrialised countries (+12%), whereas developing countries hardly reacted or were able to react. This insinuates that aggregated supply elasticities in poor countries are low, at least not without massive support (it would be very useful to study how the massive support to farmers in developing countries after the food crisis has worked).
- Food prices are forecasted to remain higher than pre-crisis levels (OECD / FAO 2009), particularly if growth in emerging economies is continuing to dramatically change the nutrition habits of large populations in favour of animal products.
- Higher food prices lure investments into the sector. In addition, the financial crisis has created a strong demand for stable investments, even if of low return. Natural resource use (forests, agriculture) offers such perspectives, particularly if the price forecasts realise. Investors propagate engagements in natural resources.
- Climate change threatens to reduce food production in many countries and, even more cumbersome, increase yield variability due to increased weather variability, pest and diseases.

Taken together the above arguments, it is concluded that the phenomenon of large scale land investments will most likely continue. Researchers, investors, governments and most analysts believe that food and oil prices remain high and even increase. Trade restrictions will change – from tariffs to non-tariff barriers which favour large scale production. Small farmers may experience increased official support in the next years, but in certain value chains (including biofuels?) they face important constraints in meeting growing standards and regulations, traceability requirements and producing for mass markets. It seems unlikely that food and biofuels will be excluded from growing globalisation (though the possibility remains, due to the mentioned concerns about relying on international markets for food security and a trend to foster local food production). In addition, the massive amounts of funds needed to increase productivity (for research, irrigation, inputs, machinery, storage, processing, infrastructure, etc.) are hardly imaginable to be raised without the private sector stepping into production.

The distinction of food and biofuel oriented investments will eventually fade: some raw materials can be easily switched between different purposes, and this possibility will even increase with new technology generations; farmers typically prefer to have several options for marketing for reducing risks and dependencies; and biorefineries will increasingly use raw materials for different purposes – food, feed, bioenergy, industrial matters.

For the rural areas in developing countries, food and biofuels (and other uses of biomass) are just two sides of the same coin if it comes to large scale land acquisitions: They fundamentally change the access of local populations to natural resources, the way resources are used, and the way production and incomes are organised, owned and distributed, not to talk about the changes of ways of live of rural populations.

As mentioned, SSA is of particular interest for agro-investors: It has some of the largest untapped land reserves, land prices and rents are very low to non-existent, labour is relatively cheap, productivity of existing land use is very low compared to competitors, potential and best practice yields (thus having reserves for improvement), and trade barriers. On the other hand, handicaps are lack of stable policy frameworks, unreliable regulations, lack of clear land ownership and transaction rules, lack of rural infrastructure, high transportation costs, high costs of doing business and trade, and low supply

elasticity. The lack of good governance in many of these countries may be seen on the one hand as an advantage for investors to acquire lands from governments (who are the owners of most land in many countries) at a large scale and low prices, but on the other hand it is a serious long-term risk since these property rights are not reliable, for instance in case of change in government, or if rural populations sabotage the investments (eg. through bush fires). In the long run, this may push out even investors who do not care about their reputation or damage they create.

Thus, it is not yet clear if SSA will continue to attract large scale land investments, and it is not even sure whether this is good or bad news, given their important potential positive and negative effects. This leads to the second chapter, the challenges and risks of different actors in large scale land investments.

Opportunities and risks of large scale land investments for rural development and food security, differentiated by stakeholders

Rural development and food security are two central concepts within development theory. Both are broad, multi-dimensional concepts. Large scale land investments are deeply connected with these concepts and challenge several basic structures or rural areas and the way that poor people in developing countries typically (though often not well) secure their food security.

Rural development is understood as a systemic and normative concept of sustainability of rural areas incorporating different goals (competitive agricultural growth and diversification, nature conservation, poverty reduction, social development) that need to be balanced in order to enhance rural livelihoods. When analysing the rural development impacts of new productive activities with significant use of natural resources, various limitations and conflicting objectives have to be taken into account. Given that poverty largely remains a rural phenomenon in developing countries, the need for increasing competitive labour-intensive agricultural activities is widely acknowledged, particularly in poor, agriculture-based countries where rural off-farm activities and migration to urban areas are not (yet) providing sufficient alternatives (World Bank 2008). A key question for all agricultural and rural development is whether and how agricultural growth and nature conservation can be brought into balance (Vosti and Reardon 1997).

Food security is a key policy concern of most countries in Sub-Saharan Africa (including Namibia) and therefore of high importance when discussing bioenergy policies, particularly after the 2008 food price crisis. Food security is achieved when *“all people, at all times, have physical, social and economic access to sufficient amounts of safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”* (FAO 2009). Following this definition, four dimensions of food security can be distinguished, namely availability, access, stability and utilization (ibid.). The concept prevents from looking at food security only as a problem of food production when introducing a land-using activity, but forces to also elaborate on food markets, prices, purchasing power of households, government transfers etc. Typically, one has to regard at least two groups, food producers and food consumers. In rural areas, where most people and also most food insecure people live, most households are smallholder family farms and are both: producers and consumers of food. Often, they sell and purchase food, differentiated by type of food and season. In the context of large scale land investments, the effects can be expected to concentrate on food availability, access and stability (not use) through massive changes in access to productive resources of smallholder farmers.

In the following, the opportunities and risks of large scale land investments on rural development and food security are traced by looking at the different stakeholders involved, which opportunities and risks they face separately, and how these are linked to rural development and food security more generally.

Stakeholders of large scale land investments are many. There are such actors who are directly involved in the preparation and implementation, and people who are affected by their consequences.

These opportunities and risks of large scale land investments are of course only rough generalisations, they are certainly highly country, crop and site specific. It is obvious that there are some inherent and



many optional conflicting interests. In particular, a successful investment is not automatically a gain for food security and rural development, this depends in addition on the opportunity costs (which activities have to cede), how value added is distributed and on structural changes in the rural areas, in food markets and economic diversity. There are many “ifs” which acknowledge that the impacts depend on several characteristics of a given investment (internal factors) as well as on surrounding conditions (external factors) and the interactions of both.

Stakeholder	Opportunities		Risks	
	Stakeholder	Rural development and food security	Stakeholder	Rural development and food security
Investors	<ul style="list-style-type: none"> High potential profits due to available land, low land and labour costs, sometimes interesting investor incentive packages (tax reductions ect.). 	<ul style="list-style-type: none"> If food is produced commercially, increased food availability (potentially). Successful investments of profit-maximising investors may create <ol style="list-style-type: none"> additional jobs and income and food access in rural areas in investment itself and through second round growth effects in rural economies, or negative effects or risks (see other stakeholders), depending on further characteristics of the investment and the surrounding conditions (see below). 	<ul style="list-style-type: none"> In most developing countries, doing business is still more difficult than in advanced economies. High costs, but particularly high risks (red tape, lack of implementation of regulations, political and policy instability, lack of rule of law, corruption) threaten investment projects. Land acquisition projects seem to be particularly risky. Unrealistic promises and otherwise created over expectation of local population and governments lead to continuous requests. 	<ul style="list-style-type: none"> Failure of investment implementation reduces credibility of following investors vis-à-vis local population and governments, and credibility of governments promoting investments vis-à-vis local population. Lower than expected profitability jeopardises trickle down of positive effects to population, reduces capacity to implement accompanying measures (infrastructure, SCR) and to mitigate negative effects. Failed investment can threat livelihood of all those who have become dependent on it for their livelihood, more so the more structural change has happened. Continuous dispute about benefit sharing with other stakeholders.
Farmers (in contract farming arrangements)	<ul style="list-style-type: none"> Access to new markets through the investor increases income. Access to knowledge, information and technology as well as inputs and credits directly from investor or indirectly through better credit worthiness (spill-over) create higher output off contracts and thereby higher access. 	<ul style="list-style-type: none"> Specialisation benefits. Increased income from contract farming and thereby food access. Increased food production and availability possible in case of strong spill-overs. 	<ul style="list-style-type: none"> Dependency on single investor. Dependency on specific markets. Deterioration of diversification opportunities if large investment strangles other activities. <ul style="list-style-type: none"> <i>Negligence of subsistence production.^{a)}</i> <i>Negligence of diversification.^{a)}</i> 	<ul style="list-style-type: none"> Risk for stability of access. Structural vulnerability of small region. <i>Reduced food availability and of access in case of investment failure, non-payment or exclusion.</i>
Workers	<ul style="list-style-type: none"> Formal and informal jobs for local people. Formal and informal jobs for 	<ul style="list-style-type: none"> Increased income and thereby food access. More stable income and thereby 	<ul style="list-style-type: none"> Income dependency from single or few investors. Social service dependency from 	<ul style="list-style-type: none"> <i>Potential instability of food access in case of investment failure, non-payment or exclusion.</i>

	<p>migrants.</p> <ul style="list-style-type: none"> • Insurance. • Social services. 	<p>food stability.</p> <ul style="list-style-type: none"> • Reduced labour capacity in traditional activities, reduced food availability possible. • Higher non-food 	<p>single or few investors.</p> <ul style="list-style-type: none"> • Not all households can provide labourer. • Small region price hikes and inflation through affluence of migrants. • If investors opt for capital intensive, labour extensive technology, only few jobs are created, probably less than through smallholder farming. 	<ul style="list-style-type: none"> • <i>Stability of social services in case of investment failure or problems.</i> • Exploitation and low labour standards. • Inequality. • Social tensions between locals and with migrants.
Non-participating farmers, net food producers	<ul style="list-style-type: none"> • Higher demand for products (from workers, contract farmers or from second round effects, and if contract farmers reduce non-contract crop production). • Better infrastructure spill-over • Better input supply (if investor supplies or if out-of-investment markets develop dynamically) • Better credit supply. 	<ul style="list-style-type: none"> • Positive second round effects through more dynamic agricultural markets. 	<ul style="list-style-type: none"> • Higher competition (if contract farmers increase non-contract crop production) • Lower input supply (if investor monopolises market and/or if out-of-investment markets shrink) • Lower credit supply (if investor monopolises market) • Deterioration of opportunities if investment strangles regional rural development • Enclaves may build up, with little spill-over and second round effects. 	<ul style="list-style-type: none"> • Creation of net losers. Inequality. • Social tensions. •
National and local government	<ul style="list-style-type: none"> • Taxes or other forms of income (royalties, leases, concessions, etc.) • Foreign currency gains (if export crops) • Reduction of foreign currency expenditures (if import substitution). • Economic growth. • Creation of jobs and income. 	<ul style="list-style-type: none"> • More investment and expenditures in rural areas, social safety nets, and other development enhancing expenditures are possible. 	<ul style="list-style-type: none"> • Competition for subsidies, tax exemptions or lower standards with other developing countries (race to the bottom). • Long term contracts create path-dependency and limit flexibility to use land otherwise. • Political responsibility for investment failure or problems (see investor and other stakeholders). • Corruption of individuals. • Social tensions, particularly if inequality raises. • Dependency on single/few investors (local governments). 	<ul style="list-style-type: none"> • Negligence of public responsibilities. • Bias towards investors' interests and suppression of interests of workers and/or contract farmers and/or other farmers and/or larger rural population (see other stakeholders). • Sub-optimal conditions from investors. • Development traps.
Net food consumers	<ul style="list-style-type: none"> • Higher offer / lower prices if food markets imperfect and aggregate production higher (spill- 		<ul style="list-style-type: none"> • Lower offer / higher prices if food markets imperfect and aggregate production lower (spill-overs < land 	

	overs > land availability change) • In case of food crop production, higher productivity compared to existing smallholder farming through improved production technology creates improved availability		availability change) • Targeting large national, regional and international markets, local food production may not be available locally or nationally.	
Women	• Jobs, particularly for weeding, harvest, processing.	• Higher gender equality. • Higher food security through women's incomes. • Less time for household and child care activities, lower food security.	• Reduced access to natural resources. • Discrimination in access to jobs.	• Lower access and availability of food, less buffer capacity, less food security. • Gender discrimination.
Non-permanent livestock holders	• Increased availability of feed.	• Better animal health and meat production in specific conditions. • Higher food availability and access through income improvements.	• Reduced availability of pasture and forest fodder. • Reduced availability of unused crop residues. • Cut-off of daily and seasonal migration corridors.	• Lower access and availability of food, less buffer capacity, less food security. • Inequality. • Social tensions.
Providers	• More demand for products and services.		• Less demand for products and services	
Rural population in general	• Indirect positive effects on jobs, income, forward and backward linkages as well as second round effects.	• Improvement of rural livelihoods. • Higher food access. • More stable food availability through better connectedness.	• Reduced access to natural resources. • Investor may extract value added and not re-invest it. • Investor may gain monopoly position and unduly extract value added.	• Lower access and availability of food, less buffer capacity, less food security. • Increase in inequality. •
Agricultural traders	• More permanent demand for food crops from workers (and possibly contract farmers and other rural population).	• More regular trade of food, thereby lower food prices and more stability.	• Less trade in local non-investment crops <i>in case of</i> low spill-overs and reduced production.	• Concentration of agricultural trade, dependency, mono-structures.
Nature (no stakeholder, advocates may be government departments or NGOs)	• Reducing economic pressure for exploitative, unsustainable practices. • Better land use management if investment well integrated and previous land use system is less sustainable. • More money for nature conservation if public revenues are	• Biodiversity is a value in itself. • More potential for eco-tourism. • Improvement of some ecosystem services such as erosion control.	• More pressure on nature and biodiversity (from investment or off-investment dynamics). • Cut-off of wildlife corridors.	• Biodiversity is a value in itself. • Problems for eco-tourism. • Reduction of ecosystem services such as soil erosion control.

	generated and are used for that purpose.			
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a) threat in case of problem with investment project.

Some important characteristics of an investment which determine its opportunities and risks are the following:

- *Use of the area before investment:* In developing countries, there may be land and natural resources without owners, but rarely without users. Poverty drives people to use all natural resources such as land, water, feedstock, wildlife, timber, fuelwood, medicinal plants and other non-timber forest products, and only extreme conditions (lack of water, specific disease) may prevent them from doing so. In most cases, the access to natural resources is governed by local institutions, which are overlapped by modern (state-governed) institutions, in some cases also religious ones (e.g. heritage rules). It is not rare that these institutions contradict each other (e.g. hunting, fire, logging, etc.), and this creates institutional vacuum and risks, especially for the less powerful. Very often, it is women who use these resources most intensively, but also livestock herders often do not own the pastures they use but have unwritten entitlements. Often, use is only sporadic, seasonal according to natural vegetation rhythm, or in times of stress. Often, these users have no formal representations, and are not present in village or other formal committees.
- *Innovativeness, and thereby the twin consequences:* risk (of failure) and profitability. Particularly the risk side is important for rural development effects of large scale land investments. Failure is not only a problem of the investor, to the contrary it is basically a problem for local population, the more that structural changes have taken place such as land reallocation, abandonment of own farming or other jobs or migration. Whereas investors risk their fortunes only, for poor people the failure can mean serious threat to their livelihood. Obviously, the more innovative an investment is, the more risky it is. An obvious case in point is *Jatropha* production (see above). It was hardly known how the bush reacts in large scale plantation but only as individual or hedgerow. Cultivars had not been tested. There were no established uses for the by-products which constitute, however, the bulk of the dry mass.¹ Investors are in a dilemma when starting with unknown crops and technologies – during experimentation, they want to keep size of the investment area as small as necessary, but at the same time, they have to reserve large production sizes for the scale-up phase before other investors or farmers use his knowledge to occupy the land. Since technology is often very site specific, it cannot be transferred to other sites. This is the reason why many biofuel investors start to lease or buy large chunks of land before knowing whether they would have a viable and economically profitable production process.
- *Size of the investment (area):* In agricultural production, and particularly in processing, the optimal size of production often depends on economies of scale, but there are also diseconomies. Larger the size of a plantation, greater are maybe the opportunities but particularly the threats. However, an optimal investment size cannot only be decided on by assessing the risks and opportunities only, but on the profitability and competitiveness of the enterprise. Economies of scale can play an important role in this calculation, the optimal farm size depends on several factors:
 - Mechanisation of production: Some crops are easier to mechanise, other more difficult. Mechanisation has to consider various steps in the growth cycle, notably soil preparation, weeding and harvesting.
 - Shape of the landscape: sloppy terrain is obviously more difficult or even impossible to mechanise.
 - Supervision of labour: Farming involves many activities which are difficult to standardise and to supervise for quality. In addition, farm work is highly cyclical and irregular, with extreme labour peaks and longer slack periods. Both reasons are key for explaining that family farming in many instances is superior to capitalistic farming with hired labour, even under industrialised country conditions.

¹ Some very prominent crops have gained world importance because they allow double or triple purpose, such as soya or rape.

- Transport: The transport-worthiness of agricultural products vary greatly, from very bulky low-value crops like fodder or roots and tubers to high value crops like flowers. Economies of scale in transport also depend on easiness of packaging (in bulk, in containers or individual), on perishability and on fragility of the product. If products are easy to store and transport, they are more appropriate for small scale production than difficult ones, which for instance need cooling chains or special containers. On the other hand, some transport is only viable if sufficient quantities are there, such as containers or bulk shipment. To provide such quantities is easier for large entities.
- Processing: Processing is where economies of scale are probably most accentuated in agricultural value chains. Many process involving heating and energy exhibit high economies of scale.
- Timeliness and quality: A particular problem of small scale production is to provide standard quality in large quantities regularly or at a given point in time. One large entity is easier to standardise and coordinate than many small ones. For biofuels this is a topic if perishable feedstock is used such as sugar cane or beet. Smallholder production is possible as proven in Europe or India, but needs considerable logistic capacities.
- *Buffer capacity of the investor*: Buffer capacities to overcome periods of difficulty (markets, whether, prices, etc.), to reinvest or to change crops proved to be a problem during the economic crisis when many investors had to give up due to lack of funds and long term credit lines (see above).
- *Time horizon*: Agricultural investments are typically long term, less for annual crops but very long for perennials such as oil palms which only start to produce after 7 years. For poor farmers, in particular if they do not have land reserves, a long contract period without production and revenues can be impossible to accept. More generally, long time horizons for investments by both large investors and smallholders (as contract farmers) increase the riskiness, since longer term developments (costs and prices) are more uncertain. On the other hand, perennials are later on usually producing more stable than annuals.
- *Characteristics of the market(s)*: stability, competition. Agricultural markets and prices are inherently instable due to changing demand and, particularly, offer. Small, isolated markets are typically more volatile than large, open ones. Markets for irrigated crops may be more stable than rainfed ones, well distributed offer is more stable than concentrated one, existence of monopolies or oligopolies in offer or demand may affect stability. Speculation has been blamed for a good part of the last food price crisis. Public interventions such as import or export taxes, quotas or bans, often with the intention to stabilise national markets, crucially increase instability outside. This has strong effect on national markets, and also on international markets depending on the size of individual countries and its role in international trade. All these instabilities translate into risks for investments.
- *Model of production*: plantation, outgrower or combination.
 - In the plantation model, the investor is able to control most factors of delivery, but he also bears the risks and, a particular problem, has to supervise a large number of farm workers (see above).
 - In contract farming, there are fewer risks for investors from production, but higher risk of non-delivery and quality problems. A notorious problem of contract farming in developing countries is that farmers who have received credit and inputs from investors side-sell after harvest to third purchasers who do not deduct the value of credits from the product price and are therefore able to outcompete the investor. This will eliminate the farmer from next year participation, and the investor will have lost credit and the product. Since farmers are not able to get credit and input by their own, supply will quickly dry out, and farmers fall back to low productivity levels.
 - A compromise is the nucleus-outgrower model, where the investor assures a certain basic production by own plantation, but purchases a considerable share of the production from outgrowers.

- The higher the fixed costs of an investor, more willing he will be to enter into stronger contracts or even to produce himself. In addition, it will depend on economies of scale (see above), nature of product (perishability, fragility, storability), the nature of the land tenure system, aptitude for mechanisation, population density and costs and procedures of displacement, availability and volatility of product markets, security and enforceability of contracts, local customs, political risks, and many more.
- *Shareholder arrangements*: This can be a crucial part of an investment, since it can strongly determine the political support for the project, the way to deal with government and local structures, the transparency and trust of partners and thus the (ease of) negotiation of internal distribution of gains, losses and risks. Several participants of shareholder arrangements are possible: participation of smallholders, of local or national governments, of economic and local elites. Participation can be linked to volume, to gains, to capital shares or fixed rates.
- *Services provided*: seeds, inputs, credit, machinery, extension, and particularly if these are limited to the investment crop only, or if also other crops and speculations are included. The investor is usually only interested in the products he wants to process and/or trade, but he may be also interested in stabilising his outgrower economies by diversifying their production, wants to stabilise the rest of the local agriculture, or has accepted this as conditionality of the contract. These services may increase the economic riskiness of the business, on the other hand they may reduce the political and social risks and even create additional benefits if more stable revenues, cash flows or economies of scale in service delivery can be achieved.

The surrounding conditions are:

- Degree of competition and monopolisation (depends on size and competitors).
- Existence, quality and stability of alternative markets, traders and service providers, including by government.
- Existence and quality of roads, irrigation, transport, communication, and other existing rural infrastructure.
- National regulations governing the investment and the relations with stakeholders: labour, investment rules, biodiversity, water, environmental and land management rules.
- Membership in international trade and investment agreements (WTO, free trade agreements, specific investment treaties) and the type of regulations therein (trade in goods such as inputs and outputs, trade in services, access of staff, rules for local procurement, export restriction, litigation rules).
- Capacity to monitor and supervise investments.
- Rule and contract enforcement.

The partial conclusion of this chapter is that large scale land investments are extremely complex and are confronted with a lot of stakeholders with varying, sometimes opposing interests. Many may be invisible at first sight, now being owner but user of various natural resources attached to land. Numerous factors influence opportunities and threats for different stakeholders in rural development and food security in developing countries. In particular, opportunities and risks increase with the size of the investment. A successful investment in the eyes of the investor must not mean that it is developmentally friendly, this depends on distribution and risks which on their part depend on factors inherent to the investment and external factors. Important risks are associated with investment failure. Investors, host governments, local authorities and other stakeholders should try to shape policies, institutions, contracts

Institutional challenges and tentative ways to solving or mitigating the dilemmas around large scale land investments

a) Compensation for loss of access to natural resources

A first condition for a developmentally successful large scale investment in developing countries is that it should generate sufficient benefits that allow for an appropriate rate of return to investment

(certainly with a country risk premium) plus a compensation for the many partial losers of large investments, those who use natural resources for different purposes regularly or irregularly. Strictly economically, this compensation should be higher than the individual benefits the natural resources generate for the individual who use the natural resources. In difference to more developed countries, such commonly owned or used resources are much more frequent in poor countries where individualisation of resources has not advanced (yet).²

Large scale investments which do not care for those interests are not only threatening poverty, food security and rural development, but also risk to fail in the long run since whoever has granted the investor the right to use the land (central or local government, private land owners), most likely does not have the entire property and user rights over the land. This appreciation emanates from the many overlapping informal institutions that typically govern natural resources in rural areas of developing countries. The governments are usually not able to impose their rules, or if they temporarily can (authoritarian regime) this might change with the next regime change which is statistically frequent enough to hurt agricultural investments which are typically long-term. Developing countries particularly in SSA are full of agricultural investment ruins due to long-term legal disputes, sabotage or open destruction.

Of course, it is not possible to compensate every person individually, and compensation can have very different forms: Money, jobs, contracts for procurement, access to alternative resources such as fodder or alternative migration routes, water ponds, public infrastructure, health and education centres, research and extension etc. Often, it will be more important to demonstrate (symbolically) the willingness to respect traditional rights. In other cases, however, a first compensation might not be enough, since rural households are often not able to assess the importance or the value of the access they lose. When emergency arises, for instance during draughts, or when the imagined job in the city does not materialise, the sheer existence might be at stake, and support measures might be necessary to mitigate negative action against investment (agriculture and forest projects are susceptible against fire).

Since not all losers are represented in village councils, not to talk about (local) government, it is important to detect these groups pro-actively. Investors should not too much rely on governments or local authorities to do this, even traditional authorities often only represent a part of the population (say along ethnic or social-professional lines). Local NGOs might help in territorial screening. The amount of “compensation” must be negotiated with groups, but it should be taken care that group leaders actually communicate with constituencies. A “correct” value will often not be possible to determine, but it helps to analyse it roughly through socio-economic ex-ante impact studies. Again, even if this is not the direct task of the investor, it is often in his long-term interest.

b) Integrated land use management, environmental impact and bio-safety assessments

Large scale land acquisitions constitute massive interventions in the landscape, touching upon many property and natural resource use rights as well as environmental issues, for instance for wild life. This is not necessarily more damaging than a large number of small farmers and users who damage the environment uncoordinated, but potentially it is. Therefore, these investments should compulsorily undergo Environmental Impact Assessments (EIA) in order to elicit the critical point systematically, and propose prevention, mitigation or remediation. It should be open and independent enough to come to a negative conclusion about the investment. Mitigation can include corridors of natural vegetation, size of plots, landscape elements, individual trees, water and water shed management, remediation can include afforestation of degraded areas, payment for protected areas, water shed rehabilitation etc.

A typical problem are the EIAs are typically done on behalf and under contract of the investor. This biases outcomes. A remediation could be to let the host government or local authority propose the agency, or to give it influence otherwise.

² Ostrom (1990) even argues that such common property rights may be efficiency-superior to individual property rights in certain cases and may therefore even continue to exist independent of economic development.

Large, systemic risks cannot be answered by simple EIAs, they require more fundamental assessments (systemic EIAs or similar). A typical point in large scale land investments is the use of exogenous species which may become invasive. For instance, *Jatropha* has been declared invasive in several countries (Australia, South Africa). Large investors have much larger opportunities to use such species, since they are connected internationally. On the other hand, they are also capable to scientifically screen these species. Even more important is the case of Genetically Modified Organism (GMO) which are not yet allowed in most developing countries. However, increasingly legislation is established to deal with GMOs, and latecomers can profit from other pioneers such as Argentina, India or China. Investors should strictly adhere to these rules.

c) International trade, investment agreements and investment contracts – food security first

International trade and general investment agreements often provide general rules how to treat investments, investors, related services, procurement, trade in products and much more. Typically included are:

- National treatment, sometimes pre-establishment rights, sometimes exclusion of performance requirements.
- Most favoured nation treatment.
- Fair and equitable treatment (minimum international standards of treatment)
- Prohibition of expropriation without compensation.
- Safeguards.
- National security.
- Dispute settlement.

Contracts for individual large scale land investments (between investor and government or private land owners) can include many conditions: On price of land, participation of local owners, investments on and off site, use of infrastructure, corporate social responsibility projects, kind of relations with smallholder farmers, remuneration and taxation, local procurement and employment creation, technology transfer, water use and ecological conditionalities, evacuation of products, litigation, ending of contract, securities etc.

It is difficult to balance the expectations of an investment (for instance employment creation, use of local products and services) and their regulation with the freedom of investors which international agreements tend to propagate. It must be emphasised that regulations are not necessarily development friendly, particularly if they overly discourage investors, if they make business too expensive to produce competitively, if they foster patronage and nepotism, if they avoid healthy competition. Some conditions may reflect good intentions to shape the benefits and reduce the risks of an investment, but may constitute a risk in themselves if inadequately formulated. However, there is a rational behind many regulations that try to avoid that investments remain enclaves and that the maximum of spill-over, local dynamic and learning is achieved (compare Cotula 2010). Here again, a balance has to be struck, which will also depend on the negotiation basis of both sides: a giant market like China will be able to ask other conditions than a typical African country, and a situation with competitors with similar ecological or logistic characteristics will allow better bargaining than a very frequent site profile.

A particular situation that any developing country is likely to try to avoid that an investor exports food at the same time that people starve in the country for lack of availability. From a humanitarian point of view, the preference is clear. Politically, not many governments would survive such situation. However, many trade or investment agreements explicitly reduce the possibility to ban or tax exports. And many foreign land investors do so with the explicit intention to assure food security at home. Here, a safety clause should be possible: Food security first, for instance by giving the state a preference to buy the food at import parity prices, or to share it if in the home country similar food security risks prevail.

d) Risk management, moderation and litigation

The overview of opportunities and risks in Section 2 has shown that risks constitute an important aspect of large scale land investments. Thus, risk management, preparedness and mitigation should be important parts of policies guiding such investments, and the investments themselves.

One important element to reduce risks is good information. Particularly for novel crops such as *Jatropha* and processing, initial small scale production could have reduced the hype. Similarly, transformation processes and local electricity production merit better data. As argued, investors logically tend to start big, but governments, donors and research are in the position and conduct research on the crop and reduce risks, for instance in pilot schemes.

Other risks are due to characteristics of the investor, such as credibility, hidden agenda, buffer capacity, international linkages, past project performance and attitude etc.. Economic intelligence can provide such information. Local communities and farmers cannot gather such data, but governments, donors and some NGOs can.

In the mining sector, it is also good practice to require guarantees (deposits or bank guarantees) in order to be able to manage failure or for post-project phases – this could be a model for large land investments, too, including for assuring social and environmental mitigation and adaptation measures. Insurance could be another mechanism. Splitting concession in smaller pieces or providing pre-emptive rights, instead of selling or leasing all land at once, is a strategy to reduce risks and increase the value of land should investments prove profitable.

Many risks are, however, not foreseeable, particularly if investments are innovative, and too high insurance premiums or mechanisms will prevent investments altogether. Thus, moderation and litigation of disputes are important elements. Civil society organisations could act as moderators between investor, farmers, worker, other private actors and government entities, provided they have the trust of all sides. Litigation mechanisms of international trade and investment treaties are another way, but often much more elaborate and complex.

e) Policy coordination

The fact that large scale land investments affect various sectors makes policy coordination critical. Particularly bioenergy value chains are new in most developing countries and depend on many factors to become viable. Many ministries are supposed to play an active role, and leadership seems to be a crucial handicap in many developing countries. This increases the likelihood ‘power vacuum’ and of inactivity from side of the government, neither preventing nor actively shaping the investments and surrounding regulations, which is the worst of all cases.

The codes of conduct presently elaborated by various organisations should be important guidelines to consider when establishing national regulation. For investors, they are certainly useful to consider, given the long term risks involved, but private actors cannot be relied upon to assure welfare of a whole small region - it is mainly national governments which have to play this role.

f) Transparency

According to many investigations so far, it is the lack of transparency of land deals which is most worrisome (e.g. Mann / Smaller 2010). It creates impression that vested interests and corruption are leading the processes. It must be remembered that most concerned countries are badly governed. Contracts have to be openly discussed if all stakeholders are to be taken on board. Not doing so can harm large parts of the rural population, but as argued it also increases the risks of investors in the longer run, as well as governments and other stakeholders. Creating transparency of large scale land investments is the most pressing need.

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