
LEGEND

*Land: Enhancing Governance
for Economic Development*



Land, population and agricultural investment in Africa

Changing dynamics and approaches to
agricultural investment and land governance

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**Evidence
update 1**

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Evidence updates, produced by LEGEND's Core Land Support Team, provide a series of short briefs, summarising emerging bodies of evidence from different sources on key themes related to land governance or particular country issues. They offer technical advisers, policy-makers and researchers a way of keeping abreast of research to provide a source of quick evidence-based pointers on what to do and what to avoid in land-related policy and programming. Source material comes principally from peer-reviewed publications, in line with DFID Guidelines, offering evidence that is large in scale, consistent and contextually relevant. All Evidence Updates are peer-reviewed.

This Evidence update draws primarily on evidence presented in Food Policy (vol. 48) based on farm surveys, satellite image analysis and economic modelling, and on earlier economic analysis of agricultural development processes.

This work draws heavily on background research undertaken by Ian Scoones (Institute of Development Studies), and was compiled by Anna Locke (Overseas Development Institute) and Julian Quan (Natural Resources Institute, University of Greenwich) for LEGEND

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Highlights

Africa has long been thought to have an abundance of unutilised land, with ample opportunities for new agricultural investment. The land rush that began in the mid-2000s ignored the risks of negative consequences for existing land users, and policy-makers and analysts have assumed that land availability would not constrain agricultural development.

However, the evidence summarised here indicates that available arable land is concentrated in a few African countries. It also shows that rural populations, markets and infrastructure tend to be concentrated within particular areas. Land and agricultural policies need to take these circumstances into account for all sub-Saharan countries, even in those considered to be land-abundant.

In policy discussions of land and agricultural investment, large-scale commercial farming and smallholder agricultural intensification have often been considered as two alternative models for agricultural development in Africa. But evidence suggests that patterns of farm investment in Africa go far beyond these two models. Medium-scale farms are more prevalent than larger ones, and there are large numbers of small, sometimes fragmented plots, where intensified production and increased market output are not always feasible.

Evidence also challenges the idea that increasing population density will lead automatically to the intensification of farm input use and production per unit of land area. It suggests that in land-constrained areas there may be a population density threshold beyond which farmers can no longer intensify production without the significant reorganisation of land holdings.

The evidence on rural population dynamics indicates that population growth in already densely populated rural areas leads to increasing rural–urban youth migration. Rural, non-farm employment is growing only slowly and alternative urban employment and livelihood options are not keeping pace with rural population growth. This implies that opportunities to access land will remain important to absorb youth into gainful employment for some time to come.

There may be opportunities for large-scale land investment for commercial production in some sites and for some crops. However, the up-front costs and business risks of establishing such enterprises are now recognised to be quite high, especially in the context of variable commodity prices.

Speed Read

New data on Africa's land holdings and population dynamics challenge many existing assumptions on land availability, production models and opportunities in the rural, non-farm economy for job creation and growth.

Agricultural and wider land investment policy and practice need to change to work with these dynamics and prevent both state and private investments from failing, harm from being done, and the continent and world from being food insecure.

As opportunities for alternatives to farming will not absorb all of Africa's youth bulge in the near future, ensuring access to rural land will remain important to absorb youth into gainful employment for some time to come, a crucial focus for African governments and related donors.

Key findings

Land and population: what land is available?

Land-abundant versus land-constrained countries. Based on national statistics and recent satellite data, a broad distinction between ‘land-abundant’ and ‘land-constrained’ settings is observed (Jayne et al., 2014). Around 40 African countries can be classified as ‘land-constrained’, while only six to eight are ‘land-abundant’, where as much as 90% of potential arable land is located.

Population densities and distribution. Within countries, population density determines land availability in different areas. Rural populations are often clustered in particular places for historical, geographic, ecological, social and economic reasons. Across Africa, 82% of rural populations live in just 20% of the rural areas. In East/Central Africa, 40% of the rural population lives in just 5% of rural areas, and in these areas population densities average 264 persons per square kilometre (ibid.).

Population trends and migration. Populations are likely to continue to grow, including in these rural clusters, with the population in rural Africa expected to be 48% higher than present in 2050 (ibid.). Africa’s demographic transition has been slow, and the share of young people in the total population will be unusually high for the next several decades. This means that the demand for jobs and livelihoods in rural areas will grow, as will the incentives for rural–urban migration. However, even in the best-case scenarios, non-farm sectors will not be able to generate enough jobs to absorb this surplus. Farming will need to provide gainful employment for at least a third of Africa’s young labour force (Losch, 2012). This will need to be underpinned by access to farm technologies that are significantly more productive and profitable than those used at present. Access to new land will also be important as intergenerational subdivision of land will limit the options of rural youth entering the labour force, and can result in intergenerational and inter-sibling conflicts over land (Jayne et al., 2014).

Understanding the extent of potentially available arable land. The land balance assessments on which many policy statements rely have been widely criticised and statistics on potential arable land are highly dependent on the assumptions made (Chamberlin et al., 2014). They routinely underestimate smallholder land use and other non-arable land uses, as well as physical, economic and social constraints to converting land to agricultural use (Josephson et al., 2014; Tiffen et al., 1994). New evidence shows how estimates of agricultural potential are highly

sensitive to land cover estimates (despite improvements in satellite imagery); potential yield estimates; spatial variation in output prices; and production and land conversion costs. Other constraints to land expansion include conflict/insecurity, endemic disease incidence, and rainfall/climate uncertainties (Chamberlin et al., 2014).

Land investment: moving beyond large versus small scale

The debate on models and scales of farming tends to focus on smallholder versus large-scale farming. Both large-scale agricultural investment and smallholder intensification may be possible in some places, under certain conditions. But due to shifts in population–land dynamics, both of these potential pathways are constrained, and others are evident – including the emergence of medium-scale farming, alongside the expansion of very small farms – as farm size structure becomes more unequal. Each pathway has implications for the nature of land investment, as well as who wins and who loses.

Smallholder intensification in land-constrained settings

In the debate on models and scales of farming, agricultural intensification in smallholder areas is often the model proposed for land-constrained areas. Investments in agricultural intensification in smallholder areas can occur through the use of more labour and technology, including mechanisation, water control, and the improved use of fertilisers, as well as through conservation farming approaches and agroforestry. Such investments can be facilitated by external interventions targeting small farmers (as they were in South Asia in the ‘Green Revolution’ of the 1970s and 1980s) or they may emerge through ‘induced innovation’, whereby locally driven technical and management innovations occur as a response to population pressure, a process well described historically for various cases in Africa (Boserup, 1965; Hayami and Ruttan, 1971; Ruthenberg, 1980).

Earlier research made little use of available empirical datasets in order to test whether farm households are likely to intensify agricultural production as population density increases. This can be explained by the difficulty of combining data on localised agro-ecological conditions with survey data on how farmers respond to changing conditions over time (panel data). However, research using recently

available, spatial data does show agricultural intensification increasing with population density in Ethiopia (Headey et al., 2014; Josephson et al., 2014), Malawi (Ricker-Gilbert et al., 2014) and Kenya (Muyanga and Jayne, 2014), although not in Ghana (Nin-Pratt and McBride, 2014).

This suggests a process of induced innovation in some places, although combined with external interventions. Nevertheless, indicators of intensification are much lower for Africa than for Asia, with less fertiliser applied, less irrigation area developed and fewer improved technologies deployed. There are however well documented exceptions, including the Machakos area in Kenya (Tiffen et al., 1994) and the Kano Closed-Settled Zone in Nigeria (Adams and Mortimore, 1997), where particular conditions apply, usually involving links of these areas to profitable markets.

However, there are limits to smallholder intensification. As shown by research in Kenya and Malawi, in areas where population density exceeds 600 people per square kilometre, intensification responses decline, as people have very small, and often fragmented, plots (Muyanga and Jayne, 2014; Ricker-Gilbert et al., 2014; Pender et al., 2006). Continuous cropping without intensification measures can also lead to soil depletion, and a gradual undermining of productive potential (Zaal and Oostendorp, 2002).

The growth of medium-scale farms – the impact of rising inequalities in land holdings

The evidence reviewed indicates that the idea of a homogenous farm structure ‘within Africa’s indigenous farming population has become outdated’ (Jayne et al., 2014: 10). Inequalities in land holdings are very high in some countries, including Nigeria (Gini coefficient,¹ 0.70) and Kenya (Gini coefficient, 0.55) (Jayne et al., 2014: 7, 9). Such inequalities are growing, and numbers of farms of small sizes are increasing. Farms below one hectare increased from 45% to 74% between 1994 and 2006, while at the same time medium-scale farms above eight hectares increased by 230%, indicating a major shift in farm size structure (Jayne et al., 2015).

As land holdings become more unequal, opportunities for smallholder intensification become available to fewer people. Africa’s farm structure is changing, with the emergence of medium-scale farming operations, ranging from five to 100 hectares. These are often supported by external income sources, and are frequently run by male, urban-based professionals or retirees, who may also have good business-political connections (helpful in acquiring larger sized holdings) or family connections with customary land rights in the areas they farm. In Ghana and Zambia, such medium-scale farms now account for more land area than small-scale (under five hectare) farms (Jayne et al., 2015; Sitko and Jayne, 2014). These processes of land concentration involving new ownership and land tenure

arrangements tend to occur through two routes. They result either from the gradual accumulation of land by successful farmers through local, often informal, land markets, or from the acquisition of land by ‘outsiders’ utilising political and other connections (Jayne et al., 2014).

Realising the benefits of large-scale investment

While there may be some opportunities for large-scale land investment for commercial production in some sites and for some crops, the up-front costs and business risks of establishing such enterprises remain high, especially in the context of variable commodity prices (Jayne et al., 2014).

Even in areas with relatively abundant land, the evidence confirms that prospects for large-scale land investments are constrained (Chamberlin et al., 2014) by various factors. These include:

- the lack of available water, and the cost of irrigation infrastructure;
- the absence of a labour pool, as populations are clustered and distant;
- the lack of transport infrastructure and markets, increasing the costs of inputs and product marketing;
- uncertainty over land tenure, especially in ‘common property’ systems; and
- the value of alternative land uses, including forests for environmental services.

Land investment in a wider context

As recent population distribution data show, most people live in land-constrained areas with increasingly unequal land holdings. The evidence reviewed shows that there are often severe limits to agricultural intensification in such settings, and large-scale investments are not an option. For this reason, wider perspectives on land and rural development are relevant to policy. The body of evidence analysed here indicates that efforts to promote inclusive and responsible large-scale agricultural investments and to achieve smallholder agricultural intensification need to be combined with the following:

- **Development of a rural non-farm economy** that can absorb surplus farm labour and link agricultural to non-farm economic activity. But in the last 20 years, African rural off-farm employment has not taken off in the way that it did in Asia from the 1970s, and so creation of rural employment has been limited (Jayne et al., 2014).
- **Complementary urban economic development**, which can assist urban migration and reduce rural land pressures. However, the growth of unemployment in urban Africa means that there is only limited ‘pull’ to urban areas for gainful employment, in contrast to what occurred in Asia (Gollin et al., 2014; Headey and Jayne,

¹ A measure of the deviation of the distribution from a perfectly equal distribution - 0.

2014). Economic growth in urban Africa may have been overestimated (Potts, 2013), suggesting continued difficulties in the absorption of surplus rural labour, and a continued reliance on rural economies.

- **Rural–rural migration** to less land-scarce rural areas. This can be facilitated by programmes that promote land access and resettlement, as has been attempted in Ethiopia and Zimbabwe. However, there are many challenges: rural–rural migration is limited due to an absence of formal land markets, combined with difficulties in negotiating access to land for settlement in areas under customary control. Rural resettlement in Africa has not had the impact that it had in, for example, Indonesia, Malaysia or Thailand (Headey and Jayne, 2014). Opening up new territories for settlement in less land-constrained areas through new infrastructure,

including roads, may be important, but there are likely to be trade-offs with existing land uses and with the conservation of natural ecosystems and environmental services (Chamberlin et al., 2014).

- **Shifts in fertility rates**, due to reproductive choices made by women, resulting in declining family sizes. However, demographic data from rural Africa suggest a demographic shift is not occurring, with few cases of major declines in fertility rates (Jayne et al., 2014). The assumption remains that African rural populations will continue to grow.

Policy development to combine these strategies successfully will be important, and will need to be attuned to particular demographic and land use contexts and socioeconomic and cultural settings.

Summary and recommendations

The described evidence and trends indicate several learning points:

1. **Policy-makers and development partners** cannot assume that there is enough land for everyone. Some rural areas are very land-constrained, and this will worsen with increasing population density in rural areas. National policy-makers and development partners need to support good quality information on land occupation and availability at a more granular level, including improved spatial data and geographical understanding of land occupation and availability in specific parts of each country. **Civil society organisations** could support such actions by using grassroots organisations to verify data.
2. **National policy-makers and development partners** can still view smallholder intensification as a credible policy response to increasing population density and land constraints. Africa as a whole has yet to reach the levels of intensification achieved in Asia, indicating that this could still be a fruitful path for policy-makers. There is a limit however: when population becomes very dense (more than 600 persons per square kilometre) and landholdings are very small, productivity may start to decline. Policy-makers need to be aware of these limits. They need to ensure that intensification policies are sufficiently differentiated, and that policy-making addresses declines in soil fertility that contribute to the tapering off of productivity.
3. At the same time, **policy-makers** need to look beyond a simple choice between intensified smallholder and large-scale investment models in relation to land availability. Changing farm size structure involves the growth of medium-scale farms under new ownership arrangements, with greater inequality in landholdings.
4. **Policy-makers** need to view agriculture as only one factor in overall development policy. The evidence confirms that the non-farm sector is vital in providing opportunities for responding to land pressures. This is particularly true for Africa's bulging young population, and out-migration from land-constrained areas plays an important role.
5. For those youth continuing to rely on agriculture for their livelihoods, access to new land will be important, as will finding ways to mediate intergenerational land disputes. **National policy-makers and related development partners** could support land rental markets – which are developing rapidly in more densely populated areas – as these may be an important tool for facilitating access. The emerging body of evidence indicates that they generally improve both efficiency and equity by transferring land from less productive users with relatively large landholdings to more efficient and land-constrained farmers.
6. **National policy-makers and supporting development partners** need to develop land tenure and land governance arrangements alongside agricultural development pathways and investments of all kinds, drawing on international guidelines, such as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT). These arrangements should address the need for intensification for many small farmers in specific areas, and provide tenure security for less productive, land-poor farmers. Such arrangements also need to be developed in a way that will enable land transactions and transfers to occur in conflict-free ways to assist growing small and medium-scale farmers, and larger investments that offer good returns and linkages with local economies.

Sources

- Adams, W. and Mortimore, M. (1997) 'Agricultural intensification and flexibility in the Nigerian Sahel', *Geographical Journal* 150–160.
- Boserup, E. (1965) *The conditions of agricultural growth. The economics of agrarian change under population pressure*. Chicago: Aldine Publications.
- Chamberlin J., Jayne, T., and Headey, D. (2014) 'Scarcity amidst abundance? Reassessing the potential for cropland expansion in Africa', *Food Policy* 48: 51–65.
- Gollin, D., Jedwab, R., and Vollrath, D. (2014) 'Urbanization with and without Industrialization'. Unpublished manuscript, Oxford University Department of International Development.
- Hayami, Y., and Ruttan, V.W. (1971) *Agricultural development: an international perspective*. Baltimore: The Johns Hopkins Press.
- Headey, D. and Jayne, T. (2014). 'Adaptation to land constraints: Is Africa different?' *Food Policy* 48: 18–33.
- Headey, D., Dereje, M., and Taffesse, A.S. (2014) 'Land constraints and agricultural intensification in Ethiopia: A village-level analysis of high-potential areas', *Food Policy* 48: 129–141.
- Holden, S.T. and Otsuka, K. (2014) 'The roles of land tenure reforms and land markets in the context of population growth and land use intensification in Africa', *Food Policy* 48: 88–97.
- Jayne, T., Chamberlin, J., Traub, L., Sitko, N., Muyanga, M., Yeboah, K., Nkonde, C., Anseeuw, W., Chapoto, A. and Kachule, R. (2015) 'Africa's Changing Farmland Ownership: Causes and Consequences'. Paper presented at the 2015 AAEA & WAEA Joint Annual Meeting, 26–28 July, 2015, San Francisco, CA.
- Jayne, T., Chamberlin, J. and Headey, D. (2014) 'Land pressures, the evolution of farming systems, and development strategies in Africa: A synthesis', *Food Policy* 48: 1–17.
- Josephson, A., Ricker-Gilbert, J. and Florax, R. (2014) 'How does population density influence agricultural intensification and productivity? Evidence from Ethiopia', *Food Policy* 48; 142–152.
- Lambin, E., Holly, K., Gibbs, L., Grau, R., Mayaux, P. Meyfroidt, P., Morton, D., Rudel, T. Gasparri, I. and Munger, J. (2013) 'Estimating the World's Potentially Available Cropland Using a Bottom-up Approach', *Global Environmental Change* 892–901.
- Losch, B. (2012) *Agriculture: The Key to the Employment Challenge, Perspective #19*. CIRAD, Montpellier, France.
- Morris, M.L., Binswanger-Mikhize, H.P., and Byerlee, D. (2009) *Awakening Africa's sleeping giant: prospects for commercial agriculture in the Guinea Savannah Zone and beyond*. Washington, DC: World Bank Publications.
- Muyanga, M. and Jayne, T. (2014) 'Effects of rising rural population density on smallholder agriculture in Kenya', *Food Policy* 48: 98–113.
- Nin-Pratt, A. and McBride, L. (2014) 'Agricultural intensification in Ghana: evaluating the optimist's case for a Green Revolution', *Food Policy* 48: 153–67.
- Pender, J., Place, F. and Ehui, S. (eds) (2006) *Strategies for sustainable land management in the East African highlands*. Washington, DC: IFPRI.
- Potts, D. (2013) 'Urban livelihoods and urbanization trends in Africa: winners and losers?' EPD Occasional Paper Series, King's College London..
- Ricker-Gilbert, J., Jumbe, C., and Chamberlin, J. (2014) 'How does population density influence agricultural intensification and productivity? Evidence from Malawi', *Food Policy* 48: 114–128.
- Ruthenberg, H. (1980) *Farming systems in the tropics*. Oxford: Oxford University Press.
- Sitko, N. and Jayne, T. (2014) 'Structural transformation or elite land capture? The growth of "emergent" farmers in Zambia', *Food Policy* 48: 194–202.
- Tiffen, M., Mortimore, M. and Gichuki, F. (1994) *More people, less erosion: environmental recovery in Kenya*. Chichester: John Wiley & Sons Ltd.
- Tittonell, P and Giller, K. (2013) 'When yield gaps are poverty traps: the paradigm of ecological intensification in African smallholder agriculture', *Field Crops Research* 143: 76–90.
- Young, A. (1999) 'Is there really spare land? A critique of estimates of available cultivable land in developing countries', *Environment, Development and Sustainability* 1(1): 3–18.
- Zaal, F. and Oostendorp, R. (2002) 'Explaining a miracle: Intensification and the transition towards sustainable small-scale agriculture in dryland Machakos and Kitui Districts, Kenya', *World Development* 30(7): 1271–87.

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