

Large-scale Land Deals, Food Security and Local Livelihoods

Large-scale foreign land acquisitions - land grabs - are major and real concerns for African populations¹. Latest reports show at least 56 million hectares globally assigned in land deals or under negotiation by international investors – around 70 percent of this is in Africa. Investments by domestic investors are at least as important in many countries. Land is in high demand for food as well as for biofuels, timber and minerals.

The consequences of land deals are highly significant for local populations and the environment. Some see economic opportunities for local communities through employment and income generated from leasing or selling land. Others see land alienation as a major threat to local livelihoods, food security and the environment. The question is whether 'win-win' models exist - benefitting local people as well as providing an economic return to investors.

Governments play a central role in managing and negotiating land deals. They are key in setting the terms and conditions to balance the interests of local land users and investors, and in enforcing contractual agreements. This policy brief draws on latest research by Future Agricultures^{III}. It asks:

- What are the drivers behind large-scale land deals in Africa and who are the main players?
- What is the impact of land deals on livelihoods and food security of existing land users?
- What can governments do to protect smallholder livelihoods?

What is driving land deals?

The huge increase in land deals across Africa stems from three main drivers – food, fuel and finance: the '**triple-F** crisis'. The 2008 world food crisis – when food prices reached record levels, rising over 80 percent in 18 months – is the setting for the current land grab. Land-poor states (such as the Middle East) and those with large and growing populations (for example South Korea) are investing in the one thing they don't have: land for agricultural production.

The **fuel crisis** – high and fluctuating oil prices, especially 2007-09 – catalysed a'biofuels revolution'. Biofuels are seen as a route to alternative energy which ameliorates environmental concerns without affecting

economic growth. This 'win-win' narrative is behind the setting of US corn ethanol targets (35 billion gallons) with huge subsidies to agribusiness, and EU targets on the biofuels mix in transport fuels. With a shortage of farmland in the North, corporations and financiers are investing massively in biofuel production in the South – jatropha, palm oil, maize and soya for biodiesel, and sugarcane for bioethanol^w.

The 2009 **financial crisis** and subsequent recession have led investors to seek less risky tangible assets. With rising demand for food and fuel, farmland is an attractive option. While some investors may have long-term investment plans, others are clearly speculators looking for shortterm gains. Private equity groups have established 'farmland' funds, buying up leases cheaply in numerous countries with the expectation of selling these on at a profit.

Carbon markets are emerging as a fourth driver. The UN Collaborative Programme on Reducing Emissions from Deforestation and Degradation (REDD) offers incentives for developing countries to protect forested land – which includes most of Africa's savannahs. Creation of a financial value on natural forests drives investors to acquire land to earn carbon credits^v.

Who is behind the deals?

Proponents claim there are tens of millions of hectares of 'unused' land in countries across Africa^{vi}. This land is seen as the answer to meeting the food needs of current and future populations. New market opportunities are extolled as bringing employment to rural people and livelihoods for smallholder farmers through contract farming. Critics argue that the benefits from such investments are over-hyped, frequently taking resources from other users such as smallholder farmers and pastoralists, with devastating effects on livelihoods^{vii}. Many deals involve renewable leases of 25, 50 or 99 years in return for low payments to national, provincial or local government. Little or no compensation is paid to existing users holding customary land or grazing rights. Promises of jobs and infrastructure are proving difficult to enforce once the land is acquired.

An array of investors is involved in the scramble for land. Foreign investors are multinational companies, sovereign wealth funds and private equity funds from Europe, North America, Gulf States and the BRICS^{viii}. Many land deals involve local investors – private companies, sometimes in partnership with government investment bodies or foreign companies and financiers – brokered by national and local authorities and traditional leaders.

More important than the identity of the investors is the nature of the deals and the types of changes they bring in land use and the structure of rural economies. Who wins and who loses from land deals, and what does this mean for poor people and rural economies?^{ix}

Ethiopian land policy and impacts of land deals^x

Ethiopia has pursued a smallholder-focused Agricultural Development-Led Industrialisation (ADLI) strategy for the past two decades, but this has been unable to deliver significant improvements in agricultural productivity. Meanwhile, the ending of land redistribution in the 1990s, together with rapid population growth, has created land shortages and increased reliance on share-cropping, renting



Large-scale land deals with foreign and local investors are underway across Africa

and labouring. Over 7 million chronically food insecure people now depend on the Productive Safety Net Programme (PSNP). This has prompted a government push for large-scale investment in agriculture.

3.7 million ha of 'unused' or 'uncultivated' land has been identified by government as suitable for investment. Most are lowland areas with low population densities. Many of the investment hotspots are near major rivers with potential for irrigation. However, some densely-populated highland wereda (districts) in Amhara are also included. In addition to identifying 'available' land, government provides investment incentives to establish projects in remote areas.

Table 1: Typology of changing land use as a result of large-scale investment

To: From:	Investor plantation	Outgrower scheme
'Unused' land	Creates employment, threatens pastoral livelihoods (Case A)	Combines investment with resettlement, threatens pastoralists
Communal land	Loss of communal resources, some employment gains (Case C)	Loss of communal resources (for all), gain of land (for a few)
State farms	State employees to private employees (flower farms)	Transformation of wage labourers into smallholders
Individual holdings	Transformation of smallholders to wage labourers (flower farms)	Smallholders inserted into monetary economy (Cases A, B)

Adapted from: Lavers (2011)

Impacts of the land deals are uneven across the country. Options for changes in land use for different land categories are shown in Table 1, with cases of investments from Oromiya region^{xi}.

Case A is one of the largest investments in Ethiopia - 140,000 ha of castor for biofuel. In 2007 the company leased 8,000 ha in East Hararghe classified as 'unused' on the basis of satellite images. When the investors arrived, however, they found most under cultivation by smallholders and the rest used by pastoralists. On the pastoral land, the investors farmed directly with machinery and some wage labourers; on the cultivated land, outgrower schemes using labour-intensive techniques were negotiated with local elders. With finance from European investment funds and support from the government - who viewed outgrower schemes as a means of avoiding displacement and offering graduation from PSNP - the project expanded to 72,000ha. The 100,000 outgrowers were required to switch half of their land from cereals to castor and were supplied with seeds and fertiliser on credit. The company also built a biodiesel processing factory.

The project quickly ran into problems. Castor yields were massively overestimated as seed had not been tested under local conditions. Sorghum prices tripled whilst castor prices were fixed so farmers focused on their food crops. Thus production was a mere 5 percent of that forecasted. The project collapsed leaving massive debts and no money to pay wages or buy the remaining castor from outgrowers. Having switched from food crops, farmers lost up to half their annual production and many had to sell cattle to buy food or rely on PSNP.

The investment company (under new management) is restarting castor production but has abandoned outgrower schemes. Instead,

mechanised farming - using relatively little hired labour – is planned in West Hararghe on land used by pastoralists to graze camels and cattle but classified as 'unused'. The only concession is that the farm is not allowed to extend to the river, in recognition of pastoralists' reliance on this in the dry season.

Case B is the state Ethiopian Sugar Development Agency (ESDA) programme to expand production using outgrowers in Wonji-Shoa, in response to increased demand for sugar from the domestic market, local bio-ethanol production, and a preferential EU trade agreement. The first phase of the expansion involves 600 ha in East Shewa and a new factory and 2,600 ha in Arssi, the latter classified as food insecure and receiving PSNP. The project is a 'dividend scheme' - a type of outgrower arrangement with land managed as a block by the investor and smallholders formed into cooperatives and paid as wage labourers. The cooperatives are required to repay the production costs and receive a price negotiated by their farmers' union, fixed for three years.

Initial results have been negative. The first sugarcane harvest, sold at the agreed price, did not cover production costs and the cooperatives were paid nothing. Members are unable to extricate themselves from the scheme as the cooperatives are tied to an indefinite agreement to supply sugar exclusively to Wonji-Shoa. Land is registered to the cooperatives, so leaving the cooperative would mean losing their original land without compensation.

The impact of the plantation on local people differs by class, generation and gender. Only landholders are members of the cooperatives and receive priority access to day labour. Land shortage means that older men tend to be the landowners, while young people are landless and seek wage labour. Although Ethiopian land registration certificates are issued to both husband and wife, the formation of cooperatives pre-dated registration and so the very few female members are widows of former members. Women tend to be allocated low status and poorly paid jobs.

Case C is in a food insecure area in Arssi where plots of up to 30 hectares of communal grazing land with irrigation potential are being leased to small-scale investors. Previous irrigation programmes by local government, NGOs and local people largely failed due to shocks such as pump failures, fuel prices and market price fluctuations. In the early 2000s, the wereda land administration decided to lease communal grazing land adjacent to these schemes to investors growing tomatoes, onions and chillies for markets in Addis Ababa. The community received no monetary compensation for the grazing land since communal land is classed as a government rather than community resource. Instead, the investors promised to contribute by building infrastructure: so far only one investor has kept their promise.

The main impact on the local community has been providing wage labour, especially during harvest, which supplements the incomes of local people – particularly youth and landless people. To date there have been few negative impacts of the investment as grazing land remains relatively plentiful. Rather, access to irrigable land and financial resources to maintain irrigated production are the critical differentiating factors. Under ADLI, the solution would have been to distribute communal land to local landless people along similar lines to the NGO irrigation schemes. Now the wereda appears convinced that investors implementing 'modern' large-scale agriculture offer better prospects of increasing productivity.

Impacts on livelihoods and rural economy

In Ethiopia, the smallholder sector remains key in government decision-making and the government has gone to considerable lengths to avoid their displacement. Investors have been allowed to access smallholder areas where they have convinced government they can achieve major increases in productivity, by developing irrigation or high value crop production such as castor and flowers. Outgrower schemes are seen as a 'win-win' situation, but for outgrowers to benefit there must be balanced negotiating power between investors and smallholders: outgrowers need to be able to decline an agreement or negotiate improved terms if it's not in their interest. This requires support from government.

In contrast, pastoralism and shifting cultivation are not considered efficient land uses by government, which has begun leasing vast tracts of land in lowland areas to investors. Other options - such as supporting pastoralists to increase productivity, which may be a more sustainable option^{xii}, and outgrower schemes in the lowlands – are not being considered.

Malawi's Green Belt: squeezing smallholder farmers?^{xiii}

Since the introduction of the Farm Input Subsidy Programme (FISP) in 2005/6, Malawi has been successful in achieving food selfsufficiency and exporting maize. However, there are serious questions over the long-term sustainability of the FISP. The Green Belt Initiative (GBI) aims to sustain an agricultural revolution and spur economic growth and development through developing small and large scale irrigation. The government has committed to offer local and international investors land along the country's three lakes and rivers amounting to 1 million hectares for irrigated agriculture.

According to the GBI Concept paper:

The large growers need vast acres of land for large scale production. Land has to be identified for them along the GBI. Large growers will have to engage in discussions with local assemblies to relocate villages for intensified farming using heavy machinery. Irrigation schemes [will] be owned by largescale commercial farmers and corporate companies [who]....will be responsible for developing and operating them. These will lease the land for a specified period of time as per the current land policy and thereafter determine their priority crops to produce and production strategies^{xiv}.

This raises serious concerns that the GBI is facilitating local and foreign land grabs from smallholder farmers whose land is designated for the GBI. It is reported that the government has already signed off 55,000 ha of irrigable land to Djibouti, in exchange for support for construction of an inland port.

Land ownership and distribution in Malawi is highly unequal. While about 2 million smallholder farmers cultivate on less than 1ha, 30,000 private estates cultivate on 100-500 ha.

The GBI is being implemented against a backdrop of stalled land reforms. A new land policy was developed and endorsed in 2002, but legislation to implement it does not yet exist and a special Law Commission to facilitate enactment wound up its work more than 7 years ago. Observers attribute the impasse to

politicians and bureaucrats who acquired large tracts of land after independence under earlier reforms and are now unwilling to give up land, even though much of it is idle^{xvi}. Paradoxically, the GBI targets not these private lands but customary land held by smallholder farmers which, in the absence of new legislation, is treated as state-owned.

Unlike land grabs initiated by foreign companies and government, the GBI is the brainchild of the Malawi government. In this case, the government does have in place a regulatory framework and capacity to administer the land deals consistent with principles for responsible agro-investment^{xvii}:

- Land transfers recognize and respect existing rights to land and natural resources.
- Land transfers need to be voluntary and welfare-enhancing for communities that give up their land rights to a corporate investor.
- Policy processes and transactions are transparent, impartial, cost-effective and ensure good governance.
- Investment in the land strengthens or ensures rather than threatens food security for the host country.

However, there is a lack of clarity of rules, procedures and processes for land transfers, constraining transparency and accountability in the private sector's rush for land. The process of identifying parcels of land for the GBI has essentially been top-down by government. Although the question of resettlement of affected communities has been highlighted in the GBI Concept Paper, there are no institutional arrangements to give affected communities genuine voice^{xviii}.

As a result the GBI could undermine instead of enhance food security. Commercial farmers

will have to develop land and grow commercial crops primarily for export markets. Moreover, seasonal land collectivization under GBI among smallholder farmers is forcing them to shift from intercropping to monocropping and follow a uniform farming calendar, threatening diversification of local livelihoods.

Political, policy, technical and financial dilemmas threaten the sustainability of the GBI. For example, in the Lower Shire, the Ministry of Irrigation and Water Development has endorsed construction of canals for irrigation, whilst the Ministry of Tourism is demanding another feasibility study on ecosystems around Majete Game Reserve. The Ministry of Natural Resources, Energy and Environment is also demanding a feasibility study on the implications for power generation at Kapichira Falls. Conflicts of interest among government ministries, keen to capture resources associated with the GBI, have greatly slowed its progress.

Lessons from the Green Belt Initiative

There is often a mismatch between the apparently good intentions and actual outcomes of large-scale land deals. This calls for careful scrutiny of the interests of stakeholders involved and the extent to which they genuinely prioritize win-win scenarios. Experiences of the Green Belt Initiative in Malawi indicate that the smallholder farmer is invariably the loser. This raises doubt as to whether international voluntary initiatives^{xix} can make a significant difference to the outcomes of large-scale land deals.

For responsible agro-investment, processes of designing and implementing land deals have to be transparent and accountable, with genuine consultation with local communities. This includes agreeing on: community decisionmaking processes for giving up land to investors; rights and obligations of investors, government

Challenges for African countries associated with land dealsⁱ

- Benefits to the host country are mainly investor commitments on investment levels, employment creation and infrastructure development, though these commitments tend to lack teeth in the contracts and bilateral investment treaties that underpin land deals.
- Some countries have progressive laws and procedures that seek to increase local voice and benefits, but big gaps exist between statute books and reality on the ground, resulting in major costs being externalised to local people, and also in difficulties for investor companies.
- Many countries do not have legal or procedural mechanisms to protect local rights and take into account local interests, livelihoods and welfare. Even where legal requirements for community consultation are in place, processes to negotiate land access with communities remain unsatisfactory.
- Lack of transparency and checks and balances in contract negotiations create a breeding ground for corruption and deals that do not maximise the public interest.
- Commonly cited problems are insecure use rights on state-owned land, inaccessible registration procedures, vaguely defined productive use requirements, legislative gaps, and compensation limited to loss of improvements like crops and trees.

and communities in land transactions; and land use for investors, in order to achieve a balance between food and non-food crops and food exports, especially in times of scarcity.

Voluntary Guidelines on Governance of Tenure^{xx}

Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security have been negotiated by FAO, based on a lengthy process to bring about consensus among governments, civil society organisations and the private sector. The Guidelines promote secure and equitable natural resource access by men and women as a means of eradicating hunger and poverty, supporting sustainable development and enhancing the environment.

The Guidelines serve as a reference and set out principles and internationally accepted standards for practices for the responsible governance of tenure. They provide a framework that States can use when developing their own policies, legislation and strategies. They allow government, civil society, the private sector and citizens to judge whether their proposed actions and the actions of others constitute acceptable practices.



Governments must ensure livelihoods and food security are protected under land deals

In accordance with the general principles, States should:

- **Recognise and respect** all legitimate tenure rights and people who hold them
- **Safeguard** legitimate tenure rights against threats
- **Promote and facilitate** the enjoyment of legitimate tenure rights
- **Provide access** to justice when tenure rights are infringed upon
- **Prevent** tenure disputes, violent conflicts and opportunities for corruption.

Non-state actors (including business enterprises) have a responsibility to respect human rights and legitimate tenure rights.

African States are recognising the importance of the Guidelines^{xxi}. Rwanda stresses the need for strong participation in the implementation and monitoring of the Guidelines in each country, showcasing its comprehensive land reform and progressive issuance of leasehold titles. Zambia is committed to transparent discussions and inclusion of land issues in the writing of its new constitution.

Challenges to implementing the Voluntary Guidelines are that they are soft laws and don't override States' existing laws and policies; they need to be integrated into existing plans such as the AU/AfDB/UNECA Framework and Guidelines on Land Policy in Africa; awareness raising, implementation and monitoring of the Guidelines depends on funding and personnel. Nevertheless the Guidelines are a vital tool for African policy-makers in their on-going and future activities on tenure governance^{xxii}.

Key issues for policymakers

- Large scale land deals with foreign and domestic investors are underway, brokered by governments, local authorities and traditional leaders, and fuelled by global food, fuel and financial crises.
- Outgrower schemes have potential to boost productivity but for smallholders to benefit they must have increased bargaining power with respect to investors - which may require government support.
- Small farmers, fishers and pastoralists need to have a proper say in the future of their agriculture systems and the terms of investment – in line with the FAO Voluntary Guidelines and AU Land Policy Guidelines – and with the necessary legal, financial and technical support.

How can governments ensure local people don't lose out?

Many of the problems surrounding international investments can be dealt with by ensuring communities have a proper say in the future of their agriculture system and the terms of investments, and by effective enforcement of policy and legislation. Governments (and international organisations) need to strengthen the rights of small farmers and pastoralists through:

1. Reform land tenure regimes to ensure that rights to land, including for those not permanently on the land (pastoralists, shifting cultivators etc.) are secure. A multiform approach to land tenure is clearly required, mixing different legal and administrative modalities.

- 2. Recognise citizens' rights to free, prior and informed consent in relation to the land and natural resources they use for their livelihoods. This means strengthening land rights for smallholder farmers, improving access to land for women, and easing barriers to land transactions. Systems for grievance and redress are needed at national and regional levels.
- 3. Provide effective legal advice on leases/ contracts, both for countries accepting land investments and for communities negotiating with investors/their own governments.
- 4. Promote alternative investment models which are based on smallholder production, with external investment to support increases in production, more effective marketing and infrastructure. Prioritising investments in the small farm sector and alternative food systems that are socially just and environmentally sustainable (using robust Environmental and Social Impact Assessment processes). Where large-scale investments are underway, encourage collaboration with local farmers and generation of employment opportunities^{xxiiii}.

End Notes

CAADP (2009) Sustainable Land and Water Management: The CAADP Pillar I Framework, NEPAD http://www. caadp.net/pdf/CAADP%20Pillar%201%20Framework. pdf. Pan-African Parliament Sixth Ordinary Session Recommendations and Resolutions 16-20 January 2012, Addis Ababa. AUC-ECA-AfDB (2010) AU Framework and Guidelines on Land Policy in Africa. AUC-ECA-AdDB, Addis Ababa

http://www.afdb.org/fileadmin/uploads/afdb/ Documents/Policy-Documents/35-EN-%20Land%20 Policy%20Report_ENG%20181010pdf.pdf . HLPE (2011) Land tenure and international investments in agriculture Committee on World Food Security, Rome: FAO. Anseeuw, W., Boche, M., Breu T., Giger, M., Lay J., Messerli, P and Nolte, K (2012) Transnational land deals for agriculture in the global South: Analytical report based on the Land Matrix Database. CDE/CIRAD/GIGA http://landportal.info/ landmatrix. Deininger, K. and D. Byerlee, with Lindsay, L., Norton A., Selod, H. and Sticker M (2011) Rising global interest in farmland: can it yield sustainable and equitable benefits? Washington DC: World Bank. Hall, R (2011) Land grabbing in Africa and the new politics of food FAC Policy Brief 041

http://www.future-agricultures.org/component/docman/ doc_details/1427-land-grabbing-in-africa-and-the-newpolitics-of-food

- International Conference on Global Land Grabbing, 6-8 April 2011, IDS www.future-agricultures.org/papers-and-presentations. Global Land Grabbing II 17-19 October 2012, Cornellhttp:// www.cornell-landproject.org
- Borras, S; McMichael, P and Scoones, I (2010) 'The politics of biofuels, land and agrarian change: Editors' introduction' Journal of Peasant Studies 37: 4 http://www.tandfonline. com/toc/fjps20/37/4
- Fairhead, J., Leach, M. and Scoones I (2012)'Green grabbing: A new appropriation of nature' Journal of Peasant Studies Special issue 39(2)237-261 http://www.tandfonline.com/doi/pdf/10.1080/0306615 0.2012.671770
- vi See: World Bank (2009) Awakening Africa's sleeping giant: Prospects for Commercial Agriculture, WashingtonDChttp://siteresources.worldbank.org/ INTARD/Resources/sleeping_giant.pdf
- vii Richardson, B (2010) 'Big sugar in southern Africa: rural development and the perverted potential of sugar/ethanol exports' Journal of Peasant Studies 37: 4
- viii Emerging economies Brazil, Russia, India, China and South Africa
- ^{ix} White, B., Borras, S., Hall R., Scoones, I and Wolford, W (2012) 'The new enclosures: critical perspectives on corporate land deals' Journal of Peasant Studies Special Issue 39(3-4)619-47
- ^x Lavers, T. (2011) The role of foreign investment in Ethiopia's smallholder-focussed agricultural development strategy' Working Paper 2, Land Deal Politics Initiative Idpi@iss.nl. Lavers, T. (2012) 'Patterns of agrarian transformation in Ethiopia: State-mediated commercialisation and the land grab' Journal of Peasant Studies 39(3-4)795-822

- ^{xi} No cases were found of investments where uncultivated land, communal land or state farms have been leased to investors using outgrowers (Types 5, 6, 7 in Table 1).
- X^{III} Catley, A., Lind, J., and Scoones, I (2012) Pastoralism and Development in Africa: Dynamic change at the margins London:Routledge.Wellard, K (2012) Pastoralism in the Horn of Africa: diverse livelihood pathways FAC CAADP Policy Brief 06 IDS, Brighton http://www.future-agricultures.org/ policy-engagement/caadp/7680-new-caadp-policy-briefs
- xiii Chinsinga, B and Chasukwa, M (2012) The Green Belt Initiative and land grabs in Malawi Future Agricultures Policy Brief 055 http://www.future-agricultures.org/ component/docman/doc_details/1593-the-green-beltinitiative-and-land-grabs-in-malawi
- xiv Government of Malawi (2009) The Green Belt Initiative: Concept Paper Ministry of Agriculture and Food Security, Lilongwe.
- ^{xv} Chinsinga, B (2011) 'The politics of land reform in Malawi: A case study of the Community Based Rural Land Development Programme'Journal of International Development 23:1-14
- ^{xvi} Peters, P and Kambewa, D (2007) 'Whose security: Deepening social conflict over customary land in the shadow of land tenure reform in Malawi' Journal of Modern African Studies 45 (3)447-472

- ^{xvii} World Bank (2010) Rising global interest in farmland: Can it yield sustainable and equitable benefits? Washington
- xviiiChingaipe, H., Chasukwa M., Chinsinga, B and Chirwa B (2011) The political economy of land alienation: Exploring land grabs in the Green Belt Initiative in Malawi Research Report, FAC-PLAAS Country Study, University of Western Cape, CapeTown
- X^{tx} World Bank/FAO/IFAD/UNCTAD (2010) Principles for responsible agricultural investment. AU-ECA-AfDB (2010) Framework and guidelines on land policy in Africa.
- FAO (2012) Voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security, Rome
- FAOTechnical Awareness Raising Workshop on Voluntary Guidelines for Responsible Governance of Land, Forests and Fisheries in the Context of National Food Security, Kigale 12-14 February 2013
- xxii Sulle,E(2013)'FAOVoluntary guidelines:and opportunity ora challenge for states?'PLAAS http://www.plaas.org.za/blog/ fao-voluntary-guidelines-opportunity-or-challenge-states
- xxiii Legal advice could be provided by the FAO Land Tenure Service.

Acknowledgements:

This Policy Brief was written by Kate Wellard Dyer for the Future Agricultures Consortium. The series editors are Beatrice Ouma and Mike Davison. Further information about this series of Policy Briefs at: www.future-agricultures.org

The Future Agricultures Consortium aims to encourage critical debate and policy dialogue on the future of agriculture in Africa. The Consortium is a partnership between research-based organisations across Africa and in the UK. Future Agricultures Consortium Secretariat at the University of Sussex, Brighton BN1 9RE UK T +44 (0) 1273 915670 **E** info@future-agricultures.org

Readers are encouraged to quote or reproduce material from Future Agricultures Briefings in their own publications. In return, the Future Agricultures Consortium requests due acknowledgement and a copy of the publication.



The views expressed do not necessarily reflect the UK Government's official policies.