



ELSEVIER

Contents lists available at ScienceDirect

Geoforum

journal homepage: www.elsevier.com/locate/geoforum

Narratives of scarcity: Framing the global land rush

Ian Scoones^{a,*}, Rebecca Smalley^b, Ruth Hall^c, Dzodzi Tsikata^d

^a ESRC STEPS Centre, Institute of Development Studies, University of Sussex, Brighton BN19RE, UK

^b University of Reading, Whiteknights, PO Box 217, Reading RG6 6AH, UK

^c PLAAS, University of the Western Cape, Private Bag X17, Bellville 7535, South Africa

^d Institute of African Studies, University of Ghana, P.O. Box LG73, Legon, Ghana

ARTICLE INFO

Keywords:

Scarcity
Resources
Land rush
Africa
Narratives
Politics

ABSTRACT

Global resource scarcity has become a central policy concern, with predictions of rising populations, natural resource depletion and hunger. The narratives of scarcity that arise as a result justify actions to harness resources considered ‘underutilised’, leading to contestations over rights and entitlements and producing new scarcities. Yet scarcity is contingent, contextual, relational and above all political. We present an analysis of three framings – absolute, relative and political scarcity – associated with the intellectual traditions of Malthus, Ricardo and Marx, respectively. A review of 134 global and Africa-specific policy and related sources demonstrates how diverse framings of scarcity – what it is, its causes and what is to be done – are evident in competing narratives that animate debates about the future of food and farming in Africa and globally. We argue that current mainstream narratives emphasise absolute and relative scarcity, while ignoring political scarcity. Opening up this debate, with a more explicit focus on political scarcities is, we argue, important; emphasising how resources are distributed between different needs and uses, and so different people and social classes. For African settings, seen as both a source of abundant resources and a site where global scarcities may be resolved, as well as where local scarcities are being experienced most acutely, a political scarcity framing on the global land rush, and resource questions more broadly, is, we suggest, essential.

1. Introduction

Understandings of what has been called the ‘global land rush’ – the large-scale acquisition of land and other resources by governments, agribusiness companies and financiers often in overseas territories – have often been cast in terms of ‘scarcity’. A number of overlapping narratives are at play. Commodities, be they food, feed or fuel, are deemed scarce, and therefore sought in areas where land and water in particular are seen to be relatively abundant. Advocates argue that this involves taking advantage of global comparative advantages of demand and supply to realise a ‘win-win’ situation, in which commodities are supplied to those who need them, while those who have the resources to produce them profit as well (e.g. Bell et al., 2012). However, others argue that, as the world runs out of resources, increasing competition potentially leads to processes of exclusion and conflict (e.g. Le Billon, 2012). Some narratives also suggest that, if environmental limits are exceeded, dangers may arise, as we transgress some earth system boundaries (e.g. Rockström et al., 2009).

What does the deployment of the term ‘scarcity’ in these narratives

imply?¹ What are the theoretical underpinnings of different versions of scarcity? And are there any alternatives to mainstream versions? In this paper, we explore how scarcity is represented in policy debates, by whom and to what ends. Through a qualitative review of key documents and other sources, we interrogate the knowledge politics of the global land rush when investment activity and international concern were at their peak, during 2007–2013. We argue that notions of scarcity are presented as a deliberate political strategy, justifying resource control, appropriation, dispossession, population restrictions and the securing of exclusionary property rights (cf. McCarthy and Wolford, 2011; Hildyard, 2010; Mehta, 2010a, 2001; Hartmann, 2010; Xenos, 1989).

Pointing out the political nature of scarcity, however, is not a call to relativism – real, material scarcities clearly exist – but an acceptance that meanings and interpretations are co-constructed in particular policy settings, in arenas of power and contestation (Bakker and Bridge, 2006; Bridge, 2009). There are winners and losers from different policy narratives, as they have concrete effects, and shape outcomes of struggles over resources. Scarcity narratives do not merely describe, but

* Corresponding author.

E-mail address: ians@ids.ac.uk (I. Scoones).

¹ Related frames include ‘abundance’, ‘need’, ‘growth’ and ‘marginality’, for example. It is beyond the scope of this paper to address all these and their interconnections with ‘scarcity’ (although see: Yamamori, 2017; Exner et al., 2015; Obeng-Odoom, 2015a).

<https://doi.org/10.1016/j.geoforum.2018.06.006>

Received 11 November 2017; Received in revised form 18 April 2018; Accepted 2 June 2018

0016-7185/ © 2018 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

justify changes in access to and control over resources, in ways that reallocate scarcities across regions and populations. The policy and business narratives explored in this paper have fundamentally affected the direction and outcomes of land investments, and the wider governance responses, since the height of the global land rush. Narratives and their underlying framings therefore really matter, making a deeper look at the narratives being deployed in policy arenas around the global land rush vitally important.

The paper starts with an introduction to the global land rush in order to set the scene. We then discuss three theoretical framings of scarcity derived from classical political economy, contrasting absolute, relative and political scarcity. Next, we discuss our methodology and how we explored framings and narratives of scarcity across 135 reports and other sources focusing on land investments and agricultural development, particularly in Africa. The following section presents the results of our analysis, identifying four core themes of a dominant narrative of the global land rush. The narrative is based on an underlying framing of scarcity that combines absolute and relative interpretations to the almost total exclusion of the political. We discuss why and how politics are excluded. In the final section, we turn to an exploration of what an alternative political scarcity framing might look like, and its implications for the global land rush debate.

2. The global land rush

The recent land rush, sparked by the global financial, food and fuel crises of 2007–2008, is but the latest in a series of cycles of land acquisition in Africa – first in the colonial period when Africa was partitioned by global powers, and then in the 1980s with the far-reaching economic liberalisation (Moyo et al., 2012). Various models of large-scale commercial farming have been established (Hall et al., 2017; Smalley, 2013), intensifying land transactions and, generating tenure insecurity and land conflicts in many countries (White et al., 2012; Edelman et al., 2013). Economic liberalisation policy reforms resulted in the increased financialization of capital and an expansion of markets and speculative activities around land globally (Fairbairn, 2015). In addition, this period has seen a transformation of the world economic and political order with the rise of the BRICS (Brazil, Russia, India, China and South Africa), allowing them to become key players in an increasingly multi-polar world with wide engagements in land and agriculture in Africa (Scoones et al., 2016; Hall, 2011).

The food and fuel price spikes in 2007–2008 provoked global alarm. A long period of cheap resources seemed to be over. This hit consumers hard, with food riots occurring in a number of countries. The UK's former chief scientific adviser, John Beddington, captured the imagination by describing a coming together of forces – rising demand for food, water and fuel caused by population growth, urbanisation and consumption changes, increasing shortages of those resources and the challenges of climate change – that threaten to create a 'perfect storm' on a global scale (Beddington, 2009). References to resource scarcity became commonplace at this time. Announcing a new report in 2011, the UN's Food and Agriculture Organization (FAO) claimed:

"Widespread degradation and deepening scarcity of land and water resources have placed a number of key food production systems around the globe at risk, posing a profound challenge to the task of feeding a world population expected to reach 9 billion people by 2050" (FAO, 2011a, para. 1).

Over the past decade, investments in large-scale commercial farms – often linked to 'water grabs', to guarantee irrigated production – have accelerated (Borras et al., 2011; Mehta et al., 2012; Hall et al., 2015). As we show below, such investments have often been justified in terms of 'scarcity', with overseas investments focused on stable, secure and sustainable supplies of food and fuel. These investments have involved both food crop and biofuel production, and have occurred on a large scale, although their extent and performance is widely disputed (Oya,

2013; Scoones et al., 2013). A large proportion of these are in Africa, where the debate over the pros and cons has been intense (Deininger and Byerlee, 2012; Cotula et al., 2014; Pedersen and Buur, 2016), linked to wider discourses around investment, growth and Africa's rise (Obeng-Odoom, 2015a).

Globally, the policy debate intensified, with much discussion about the drivers and consequences of the rush for scarce resources. The European Commissions' Report on Development for 2011/12, *Confronting Scarcity: Managing Water, Energy and Land for Inclusive and Sustainable Growth*, commented:

"Projected scarcities of food, water and energy, and the search for investment opportunities to satisfy food security in an increasingly global market, have led to growing pressure on land worldwide ... Large-scale land acquisitions are just one manifestation of the increased pressure on land" (EU, 2012: 87).

Equally, the Washington-based International Food Policy Research Institute (IFPRI) observed:

"Increased pressures on natural resources, water scarcity, export restrictions imposed by major producers when food prices were high, and growing distrust in the functioning of regional and global markets have pushed countries short in land and water to find alternative means of producing food" (IFPRI, 2009: 1).

The food-fuel-financial crisis of the late 2000s thus galvanised a series of scarcity narratives justifying interventions around land and resources. What were the underlying framings that guided these narratives, and from where were they derived? The next section explores three frames for understanding scarcity, each suggesting very different implications.

3. Understanding scarcity: three frames

How scarcities are understood – where, at what scale, in what timeframe, for whom, in what context – is crucial for the conceptualisation of and response to the global land rush. Ideas about scarcity are of course fundamental to understandings of economics and politics. From Thomas Malthus' treatise on population first published in 1798 to Lionel Robbins' famous 1932 definition of economics – as the 'science which studies human behaviour as a relationship between ends and scarce means which have alternative uses' (Robbins, 1932: 15) – to the environmentalist arguments from the Club of Rome on the 'limits to growth' (Meadows et al., 1972) and the newer incarnations defining planetary boundaries (Rockström et al., 2009), commentators have repeatedly related our understanding of human progress to notions of abundance and plenty, contrasted with dearth and want.

In this section, we offer three contrasting framings of scarcity, derived from classic political economy: Thomas Malthus and conceptions of *absolute scarcity*; David Ricardo and ideas of *relative scarcity*; and Karl Marx and what we call *political scarcity*. It is these three frames, and their intersections, adaptations and reinterpretations, that in turn helped guide our analysis of sources on the global land rush.

3.1. Absolute scarcity

In the last major 'resource crisis' of the 1970s, arising from dramatic oil price shocks, thinking was heavily influenced by the birth of the environmental movement and the idea of there being 'limits to growth'. Elements of this thinking have regained popularity, with the idea of 'planetary boundaries' (Rockström et al., 2009; Steffen et al., 2015). A clear influence on this work is the intellectual legacy of Thomas Malthus, who is widely credited for introducing the conception of scarcity into economics (Gammon, 2010).

Malthus is associated with the concept of absolute scarcity, meaning an immutable physical limitedness of natural resources that are subject to increasing demands from human society. Despite his

acknowledgement of variable qualities of land, he claimed there were limited ‘inventions’ available to agriculture, so significant increases in production to offset the population crisis were unlikely. Rather, ‘the power of population is indefinitely greater than the power in the earth to produce subsistence for man’ (1970 [1798]: 71).

From the 1950s onwards, Malthusian ideas informed debates about population growth, especially in developing countries (Mamdani, 1981; Peacock, 1953), and perhaps particularly in populous India and Bangladesh (Paarlberg, 2010). Concerns were expressed that overpopulation could create social instability, with countries described as ‘population powder kegs’ (Michaelson, 1981). There were increasingly persuasive ideas about planetary biophysical limits, the interconnectedness of whole ecosystems (Odum, 1969) and the environmental impacts of human activity, such as pollution (Carson, 1962). Much of this work originated in the conservation movement and the maturing discipline of ecology (Ross, 1975). Academics and policymakers began to discuss the earth’s ‘carrying capacity’ (Seidl and Tisdell, 1999) and debate the optimal or maximum human population of the earth (Fraser, 1971). A Malthusian collapse of society seemed more likely than before: ‘The human race has expanded to a point of near saturation of its habitat (the earth)’ (Fraser, 1971: 4). Concerns over a declining availability of farmland were intensified by the incidence of famines and poverty in the midst of economic development (Sen, 1981).

In the Club of Rome’s *The Limits to Growth*, Donella Meadows and colleagues worried about widespread malnutrition and predicted ‘a rather sudden and uncontrollable decline in both population and industrial capacity’, based on the simulations of their systems model (Meadows et al., 1972: 23). They argued that, with exponential growth, ‘one can move within a very few years from a situation of great abundance to one of great scarcity’ (1972: 51) and that arable land was too scarce in absolute terms for productivity increases through intensification to be anything more than a temporary measure.

The ‘neo-Malthusian’ ecologists and economists came to be synonymous with catastrophic predictions and an emphasis on overpopulation and the finite nature of resources (Lipton, 1989). Such ideas are visible in Paul Ehrlich’s *The Population Bomb* (1968), in Garrett Hardin’s (1968) ‘tragedy of the commons’ thesis linking resources and property rights and in work on land degradation and links between resource scarcity and conflict (Homer-Dixon, 2010). Such neo-Malthusian ideas influenced welfare, population, conservation and development policies (McCarthy and Wolford, 2011; Hartmann, 2010); sometimes with extreme Malthusian positions arguing for population control and strong, centrist, state-led intervention to offset the crisis (e.g. Brown, 1995).

While somewhat more nuanced, contemporary discourses on population, resources and development continue to be framed by (neo-) Malthusian ideas. The idea of ‘planetary boundaries’, while eschewing a fixity in boundaries, still has at its core the idea of limits and absolute scarcity. For example, Johan Rockström and colleagues (2009: 48) warn that ‘humanity may be reaching a point where further agricultural land expansion at a global scale may seriously threaten biodiversity and undermine regulatory capacities of the Earth System’. Equally, as we show below, the scarcity narratives, so common in the debate about the global land rush, also have clear resonances with earlier debates, being premised on the notion that there is limited land and water for humanity to use.

3.2. Relative scarcity

Many who emphasise the limits to the earth’s capacity to support human activity do not adopt a simple Malthusian perspective, but argue for the potential for transformation, including through technological innovation. Scarcity is therefore relative to use, and so scarcity is economic, and relative rather than absolute. ‘Scarcity does not mean mere infrequency of occurrence,’ explains Robbins (1932: 45), ‘... it means

limitation in relation to demand.’

The neoclassical theory of scarcity, especially as it relates to natural resources, was influenced by earlier work by classical economists, and David Ricardo in particular. Writing in the early nineteenth century, Ricardo emphasised that farmland varies in quality. Furthermore, agricultural productivity is influenced not only by the quality of the land, but also by the amount of financial capital, and the ‘skill, ingenuity and instruments in agriculture’ applied (Ricardo, 1821). Thus, whereas for Malthus the great threat to society was population growth, Ricardo was more concerned about the progressive decline in the quantity and quality of farmland (Hussen, 2013).

A relative scarcity framing suggests that society responds to shortage, through price signals, with institutional and technological change. This may involve substitution of the scarce resource, whether staple foods, energy sources or labour; increased recycling of the resource and extraction of lower quality sources; or technological change to increase the efficiency of extraction (Neumayer, 2000). Stefan Baumgärtner and colleagues (2006: 489) explain how ‘In [neoclassical] economics, it is generally assumed that continuous substitution is always possible, at least on the margin’.

For much of the late nineteenth and twentieth centuries, this optimism appeared to be justified. This was a time of cheap natural commodities, technological leaps and discoveries of new oil and mineral reserves (Barbier, 2011). In agriculture, the Asian Green Revolution could be seen as the ultimate example of a technological response to scarcity (Hayami and Godo, 2005). Perhaps the high water-mark of this technological optimism was the 1963 publication of *Scarcity and Growth*, in which Harold Barnett and Chandler Morse (1963) argued that the absolute scarcity hypothesis should be rejected because the costs of extracted natural resources in the United States had declined since 1870.

However, few today would claim that resources are infinitely substitutable or that technological improvements will always offset resource limits. Instead, many commentators would argue for some acknowledgement of limits, while arguing for technological solutions. In the field of agriculture, the work of Esther Boserup on technological innovation (Boserup, 1993, 1981) and Yujiro Hayami, Vernon Ruttan and Hans Binswanger (Hayami and Ruttan, 1985; Binswanger and Ruttan, 1978) on labour intensification as a response to resource pressure have been especially influential, entrenching the iconic role the 1960s–1970s Asian Green Revolution has played in development thinking.

Michael Lipton (1989) suggests that Malthus’s scarcity narrative and neoclassical models of technological response to scarcity are part of the same approach. In his view, society can respond to a Malthusian situation of population growth putting pressure on land and food supplies through technological innovation to produce more food (Boserup, 1981) or increase labour productivity (Hayami and Ruttan, 1985; Binswanger and Ruttan, 1978). New institutional economics further suggests that changes in institutional arrangement through shifting transactions costs can result in changes in relative scarcity (Obeng-Odoom, 2016).

3.3. Political scarcity

None of these conceptualisations of scarcity – whether absolute or relative or some compromise between them – takes account of the political nature of scarcity: how scarcity is perceived and ‘manufactured’ to suit particular interests (Mehta, 2001); how narratives of scarcity are deployed in political contests over resources (Scoones, 2010); how historical inequalities due to colonialism, exploitation and elite control have affected patterns of resource access and control (Mehta, 2005); and how such patterns are distributed between different groups of people, with real winners and losers in resource struggles (Mehta, 2010a,b).

In this view, scarcity is not independent, but is constructed in

Table 1
Three framings of scarcity.

Framing	Key proponents	Understanding of scarcity	Understanding of the problem
<i>Absolute</i>	Ecological economists, resource ecologists, demographers	Scarcity is physical, real and inescapable	The problem is finite limits
<i>Relative</i>	Neoclassical, new institutional and agricultural economists	Scarcity is relative to demand. Physical limits can be mitigated through economic comparative advantage, science, technology and innovation	The problem is underproduction due to suboptimal allocation of resources
<i>Political</i>	Critical political economists and sociologists, political ecologists	Scarcity is defined relationally and can be manufactured, both politically and discursively	The problem is access, inequality and the historical relations of power

relation to historically-specific patterns and forces of production, distribution and consumption (Perelman, 1979). Resources are produced and they are relational; just as humans are part of nature, interlinked through complex metabolic relations (Moore, 2011). A relational perspective on scarcity, centred on its social and political dimensions, also challenges a ‘systems’ understanding of scarcity, where dialectical power relations are hidden from view (Harvey, 1974). When scarcity is seen as political, embedded in the functioning of capitalism, it follows that states of scarcity that define people’s material needs can be transcended following social transformation of relations of production and ownership (Xenos, 1989).

Enclosures, and appropriations of resources as individual, private property, for example, are the direct result of such capitalist processes, creating scarcities for some, but resource access for others, differentiated by class, gender, ethnicity and other social axes of difference. Under contemporary financialised, globalised capitalism, speculative surplus capital in search of secure investments can, it is argued, lead to ‘accumulation by dispossession’ (Harvey, 2003; Hall, 2013), as new enclosures are created through processes of private accumulation (White et al., 2012; Obeng-Odoom, 2015b).

Contributions from political ecologists, sociologists and anthropologists extend our understanding of political scarcity, focusing on knowledge politics and how scarcities are constructed discursively (Perreault et al., 2015; Mehta, 2010b; Peet and Watts, 1996). The political ‘manufacture’ of scarcity is seen to frame policy discourse and action, with questions raised over how claims about resource scarcity are made (Mehta, 2001). A focus on the micro-practices of resource use and management equally show how resource scarcity looks very different from the local level than when viewed with a global gaze (cf. Scoones, 2010; Mehta, 2005). Thus a focus on ‘global’ food security may do little to alleviate scarcities of food at a local level (Nally, 2015). Such contemporary critical social science analysis highlights the relational, social and political dimensions of scarcity in ways that go beyond the more structural, class analytics of earlier work, and look at how knowledge and practice, constructed across scales, intersect with structural dynamics.

Table 1 offers a highly simplified summary of these three framings of scarcity, indicating the type of themes we aimed to identify in our document analysis.

4. Exploring narratives of scarcity

Through a detailed analysis of a range of sources, we explored a set of narratives relating to the global land rush and interrogated how the narratives are framed, examining their construction, the actors involved, the interests implicated, and what silences and exclusions are created.

We define a narrative, following Roe (1994, 1991), as a storyline, one with a beginning (the definition of the problem), a middle (the elaboration of its implications) and an ending (the proposed solutions). The power of narratives is often in their simplicity, their invocation of metaphors and images, their sense of urgency, and thus their political appeal and their ability to enlist followers. Narratives are created in a social and a political milieu by coalitions of actors with interests and positions. Narrative analysis thus seeks to define some clear storylines

and compare them, tracing the actors who tell the stories and the interests that are associated with them (Keeley and Scoones, 2003).

Narratives are underpinned by framings, defined here as the conceptual constructs that inform and drive narratives (Druckman, 2011; Entman, 1993). In the previous section, we have identified three contrasting framings of scarcity – absolute, relative and political. Framings may draw on deeper cultural understandings, as well as debates in public and academic discourse (Benford and Snow, 2000).

Discursive analysis, alive to the use of narrative and framing, reveals that policy interventions are mutually constructed with social, technological, economic and political processes (Shackley and Wynne, 1995; Irwin and Wynne, 2003), with epistemic and socio-political orders intertwined through a process of co-production (Jasanoff, 2004). Such a constructivist perspective points to the knowledge politics inherent in defining policy positions, and the patterns of exclusion that play out. These processes of constructing policy inevitably involve practices that provide legitimation and authority for preferred narratives. In resource assessments that define scarcity for example, the use of models and other ‘calculative devices’ (Callon and Muniesa, 2005) has enormous power. Particular technologies, such as satellite imagery and Geographic Information Systems, may present data in particular ways, at certain scales; again, providing forms of evidence that define certain narratives (Bridge, 2015; Robbins, 2003).

Based on initial searches of material on the global land rush, we first identified five categories of organization publishing material on the land rush, and the main actors in each category²: (i) International organizations (e.g. World Bank, FAO, EU, IFPRI, UK Foresight); (ii) African regional organizations (e.g. African Development Bank, NEPAD, the Southern African Development Community); (iii) Investors and financiers (e.g. Chayton Capital, Rabobank, International Finance Corporation); (iv) Agribusinesses (e.g. Syngenta, Cargill, Illovo Sugar); and (v) NGOs and civil society organizations (e.g. Oxfam, ActionAid, GRAIN, African Biodiversity Network).

We identified the most frequently cited documents from organizations across our five actor categories covering the period from 2007 to 2013. This period covers the start of the food-fuel-financial crisis and the policy responses to it, as well as an intense time of actual and speculated land acquisition in Africa. Those core documents were then used as the starting point for snowball sampling of references to other sources. In this way the sense of overlapping ‘discourse coalitions’ (cf. Hajer and Versteeg, 2005) emerged around each of the actor groups. We complemented this with Google searches of keywords identified from our initial document analysis. Our sampling was not comprehensive, and was restricted to English language documents that were available online. The total of 135 was reached when the identification of new material had tailed off significantly for each actor group, suggesting we had reasonably good coverage. The sample for each group was not the same, but we believe is broadly representative of sources from each actor group for the study period. The total was distributed as follows: international organizations (N = 37); African policy (N = 18); investor (N = 31); agribusiness (N = 19) and NGO/

² Key terms for searches included ‘land grab(bing)’, ‘land rush’ and ‘land investment’. The main actors were identified in relation to numbers of publications produced and their citation by others.

civil society (N = 30). The full list of documents analysed is presented in the online [Supplementary Material](#) linked to this article.

The result was 135 documents and other sources that deal with the land rush and with agriculture and natural resources more generally, particularly in Africa. Most set forward either public policy or investment recommendations for the global or regional community. For each of the sources, we identified the narratives on land and its use, the actors involved and their associated interests. Looking at the sources of evidence presented, we examined how the narratives were generated, and what sources were used. And, digging deeper, we explored which of the three underlying scarcity framings (or combinations) were evident. To help understand the authors' underlying perspectives on scarcity, we looked for key words and phrases that signify particular positions, such as 'yield gap' or 'limits'. Through the document analysis, we examined how the three framings discussed above contributed to the construction of narrative storylines, and how these frames are in turn constructed through various narrative devices and sources of evidence.

Our analysis of each document was qualitative, and we did not undertake any quantitative assessment of frequency of use of terms and phrases, nor did we derive a quantitative assessment of the relative importance of different framings and narratives for different actor groups. We use exemplar quotes in our assessment below, derived from many possible alternatives, but believe these provide good illustrations of the narrative being discussed. Our assessment emerges from deep immersion in the many thousands of pages of material, and knowledge of the wider land rush debate in this period (e.g. [Hall et al., 2015](#); [White et al., 2012](#)).

5. Four narrative themes

Despite the broad range of actor groups represented in the material, our analysis revealed remarkable convergence by most of them (except civil society and NGOs) on a single overarching narrative, expressed through four dominant narrative themes. These themes broadly relate to the narrative structure, with a beginning that highlights the problem of limits and urgency; a middle, which presents a context of relative abundant and idle land; and an end, centred on solutions around investment and capturing comparative advantage. While the overall narrative storyline was common to all actor groups except civil society organizations and NGOs, different actors had different emphases, as discussed below. In our analysis, in relation to each theme, we ask what versions and combinations of the scarcity frames introduced above are evident; which are the dominant ones; how are they expressed; and what frames are excluded?

5.1. Limits and urgency

All five actor groups use the same narrative theme of crisis to open their position on the global land rush. The sense of limits, tipping points, irreversibility and boundaries being reached is repeatedly emphasised across the sources. These broadly draw on a (neo-)Malthusian framing, highlighting absolute scarcity.

The narrative often starts with 'the challenge', usually focused around the forecast need to feed 9 billion people by 2050. A confluence of factors is pointed to, which the actors argue will result in potential catastrophe unless urgent responses follow. For example: 'The global food system will experience an unprecedented confluence of pressures over the next 40 years....This is a unique time in history – decisions made now and over the next few decades will disproportionately influence the future' (UK [Foresight, 2011: 9, 13](#)). The FAO's 2011 review of *The State of the World's Land and Water Resources for Food and Agriculture* argued: 'In some ... areas, the accumulation of environmental impacts in key land and water systems has now reached the point where production and livelihoods are compromised' (FAO, 2011b: 4). The CEO of Unilever, Paul Polman, emphasised 'natural limits':

"Food security has to be seen as part of the wider question of how we can live sustainably within the natural limits of the planet ... We are already consuming natural resources at a rate faster than the planet's capacity to replenish them" (Polman, 2011).

Some offer distinctly Malthusian overtones. In a 2012 newsletter to investors, Jeremy Grantham, the co-founder of the investment management firm GMO, said:

"We are five years into a severe global food crisis that is very unlikely to go away. It will threaten poor countries with increased malnutrition and starvation and even collapse. Resource squabbles and waves of food-induced migration will threaten global stability and global growth. This threat is badly underestimated by almost everybody and all institutions with the possible exception of some military establishments ... We simply cannot have exponential growth on a finite planet" (Grantham, 2012: 2, 14).

The imperative for action, and the justification for their business contributions, is emphasised by large agribusiness. Two of the largest, Syngenta and Cargill, offered this on their websites:

"Over the next 20 years, we will need to feed another 1.8 billion people. Calorie demand will grow even faster, as diets in some countries increasingly shift to meat. In much of the world, agricultural land is limited and water scarce. So tomorrow's growers will have to produce much more food and animal feed with today's limited natural resources" (Syngenta, 2013, paras. 5–6).
 "By 2050, an anticipated 70 percent boost in global food production will be necessary to meet the world's growing demand for food. To protect the environment, most of the increase in food production will need to come from increased yields and productivity rather than from the use of additional land" (Cargill, 2011, para. 4).

Of the iconic figures that are repeated continuously in narratives on the global land rush, two stand out: the estimate of a human population of nine billion by 2050 and the need to double food production in the same period. These figures are repeatedly cited, although their origins remain obscure. For example:

"Every day sees 220,000 new mouths to feed, meaning 80 million additional people a year. Global population today is about 7 billion. By 2050, it will probably balloon up to 9.3 billion. According to FAO, 'the world must double food production by 2050'. But already in 2011, some 950 million people experienced hunger. During the same period, 5 million babies died from hunger. Can we produce enough food for all? Will we run out of land?" (SIFCA, 2012: 10)

Thus, with different emphases and intentions in mind, the sources across all actor groups highlighted how crises were imminent, storms were in the offing, boundaries were being transgressed and urgent action was required, supported by iconic facts and figures. For international organizations, investors and agri-businesses, this justified intervention and investment; for NGOs and civil society the urgency of approaching limits was deployed to spur social action and shifts in development paradigm. Sometimes, as in most of the commentaries from African regional policymakers, this urgent scenario of crisis was presented in more local or regional terms; for all other actors, it was presented as a more global challenge.

5.2. Abundance, emptiness and under-use

At this point in the story the actors diverge, and so too does the underlying framing. Most of the actor groups now go on to contrast the global scenario of absolute scarcity and impending crisis, with relative local abundance of a fundamental resource – land – in sub-Saharan Africa. In justifying the need to invest in land, particularly in large-scale land deals, particular representations of land and its use are offered. Relative to the growing shortage of land globally, land in target

investment areas was described in most sources as abundant, empty, idle and underutilised. Scarcity (global) and abundance (local, African) are thus juxtaposed as part of the narrative. This narrative theme is exemplified in the highly influential World Bank studies that argued for investments in areas where land is ‘available’ and has high ‘potential’. For example: ‘Areas [in sub-Saharan Africa] of low population density with good agricultural potential represent untapped reserves for continued expansion of area’ (World Bank, 2007: 231).

What is meant by ‘available’ and ‘potential’ is highly disputed (see below), yet the argument took hold. As regions and countries compete for investment, the idea of ‘untapped potential’ becomes significant. This is an argument put forward by African regional actors keen on attracting investment. The President of the Economic Community of West African States (ECOWAS) told audiences in China of well-watered arable land in West Africa, noting that ‘ECOWAS governments are willing to promote collaborations to unlock the huge untapped potentials and are hereby extending an invitation to Chinese private sector investors to invest in commercial farming and agro-processing’ (ECOWAS, 2011: 9).

Other African regional organizations agreed. The African Union’s Comprehensive African Agricultural Development Programme (CAADP) argued that ‘... there is substantial untapped potential for the development of the continent’s water and land resources for increasing agricultural production’ (NEPAD, 2003: 24) and the United Nations Economic Commission for Africa (UNECA) concurred: ‘The continent is endowed with many natural resources, including plentiful land and fertile soils, oil and minerals’ (UNECA, 2013: 8).

While abundance, emptiness and under-use was emphasised, again based on figures of often unknown origin, there are qualifications offered by some. Some African policymakers and analysts acknowledged water scarcity, soil degradation and declining per-capita land availability across the region. Meanwhile, aware of the wider debate about ‘land grabbing’, some international organizations, such as IFPRI (2009), FAO (2011b) and the World Bank (2011, 2009), were careful to note that some ‘available’ land might already be used by poor people or pastoralists, be degraded, or require massive investment to make productive. Such sensitivities were shown by private investors too. The CEO of Emergent Asset Management was, for example, quoted as saying: ‘We are not taking land away. We buy or lease operational farms that are undercapitalised, or we start projects on land that is fallow to produce food, which in itself creates many local jobs’ (Whitby, 2010: 44).

The narrative theme on abundance, emptiness and under-use was therefore selectively applied. It appears more prominently early on in our period of analysis, before media exposure of ‘land grabs’ heightened awareness of problems. For many African regional organizations and policymakers, making the case for investment remained high on the agenda, but for international organizations and investors/agribusinesses greater caution is shown, even if the basic argument for large-scale investment – taking advantage of under-used resources – was still deployed.

5.3. A technical and investment solution

After telling a story about global crisis and local abundance, most narratives end with a suggested technical and investment solution, arguing that there is a way out from the Malthusian bind. In this way, the underlying framing combines an element of absolute scarcity with the technological optimism of relative scarcity. Yet there is little room for politics in these commentaries. Some actors, such as the World Bank and the former head of the UN World Food Programme, acknowledged inequalities in food entitlements and purchasing power; however, while access, equity and distribution are (almost) universally acknowledged as important, the mainstream discourse does not separate these social concerns from an emphasis on increased food production as a solution.

Thus production is presented as the answer to poverty and food

insecurity both locally and globally, to be achieved largely through improvements in technology and greater investment. This narrative theme dominates the sources from international organizations, investors and agribusiness actors. They propose a reliance on technology to intensify agricultural production of food and animal feed, and thereby mitigate or escape the limits imposed by natural resource scarcity and keep ahead of population growth. For example: “With the closing of the land frontier across much of the developing world and continuing strong demographic pressures, gains in land productivity – and sustainable land management – will become fundamental” (World Bank, 2007: 227) or “If used in proper association with suitable technologies [land and water] have the capacity to enable global agricultural production to continue outpacing the growing demand despite the declining per capita availability” (NEPAD, 2003: 23).

A recurrent metaphor is the idea of a ‘gap’ between a potential level of agricultural production and the actual yields achieved by farmers. This yield gap is seen to be particularly large in Africa. The work of Günther Fischer, Mahendra Shah and colleagues at the International Institute of Applied Systems Analysis (IIASA) in Austria has been especially influential (Fischer and Shah, 2010). Quotes from the reviewed sources that illustrate the concern with solving Africa’s yield gap include: ‘If all current land and water were managed optimally, output could double in the regions where the yield gap is less than 50 percent’ (FAO, 2011b: 35), and ‘Many developing regions ... have large gaps relative to their potential. In sub-Saharan Africa, for example, crop yields reached only about 27 percent of their economic potential in 2005’ (FAO, 2012: 105).

Two economists from the International Finance Corporation called for ‘massive’ amounts of investment in agriculture to meet the scarcity challenge. They argued:

“You’ve probably already heard the Malthusian projections targeting our planet’s finite capacity to feed a growing population – projected to reach 9 billion by 2050 – in the face of dwindling resources of suitable land and water in productive climates ... by working together, the public and private sectors can help deliver abundant, affordable, and nutritious food for all” (Vegarra and Moses, 2012: 6).

The African Development Bank was equally assertive on the need for technical solutions:

“Clearly, raising agricultural productivity including that of smallholder farmers is a key component in reducing poverty and hunger in Africa ... In the long term, enhancing agricultural productivity together with mitigating and adapting to climate changes should be the primary focus of food security initiatives” (Salami et al., 2011: 3).

While broad narratives of scarcity framed the problem, the directions of future pathways of development were more open to debate, and reflected particular interests. Not surprisingly, agribusiness companies argued for their own technologies, while financial institutions emphasised investment. Many of the actors, such as the World Bank, went beyond mere technological optimism to call for an accompanying improvement in incentives, institutions and infrastructure, echoing the success of the Green Revolution in Asia. And many in the international agencies, under labels such as ‘sustainable intensification’, hedged their bets, and avoided the more political discussions about the direction of technological development and its distributional consequences. Yet nearly all actors saw the solution as a technical and institutional fix.

5.4. Comparative global opportunities

The same group of actors frequently presented the argument for intervention in terms of a ‘shared’, ‘global’ crisis, with solutions being forged through ‘partnerships’ and ‘inclusive’ approaches to development. Africa was singled out as a particularly promising investment

destination, and a source for ‘feeding the world’. The former head of the UN World Food Programme, Josette Sheeran, noted: ‘You can look at hunger as a Malthusian nightmare, or you can look at it as a tremendous opportunity because everyone has to eat’ (Hotter, 2012). Similarly, the landmark EU report commented:

“[C]ompeting claims [for land] place a high value on natural resources. This presents real opportunities for economic growth in countries endowed with vast natural resources, and in particular those with a large productivity gap – which is the case of many of the poorer countries, particularly in sub-Saharan Africa” (EU, 2012: 88).

One result of the ‘technical apparatus’ (Fine, 2010) of scarcity-centred economics is the idea of comparative advantage, and so the justification for intervention in a place (Africa), in favour of the globe, as part of ‘shared development’. This narrative theme is particularly appealing to global investors and agribusinesses who were keen to justify their interventions in Africa in particular. As in the narrative theme addressing land abundance, Africa’s potential was much hyped (Obeng-Odoom, 2015a), particularly in relation to land and water-constrained countries wishing to meet their food, feed or fuel requirements. Debates about the opportunities and dangers of land investments were enhanced by the mapping efforts of the Land Matrix group (Anseeuw et al., 2013; Rulli et al., 2013), with data from its public database frequently being quoted, despite many questions being raised about its veracity, at least initially (Scoones et al., 2013).

The argument goes that there is mutual advantage – and profit – to be gained. For example, a global investor commented: ‘We are positive about the role that Africa, with its vast agricultural potential and resources, could play in addressing the growing global demand for food’ (Mouton, in Zeder *Investments*, 2012: 6). Similarly, the EU argued: ‘While land deals give rise to concerns they also provide opportunities. Investors may introduce new technologies and skills, expedite the development of contextualised production systems with higher productivity, and spark innovation’ (EU, 2012: 5).

In finance and investment circles, land was projected as the ‘new gold’ (Brown, quoted in Buckholtz and Delay, 2012), and a safe and secure investment with good returns. For example:

“Agcapita believes farmland is a safe investment, that supply is shrinking and that unprecedented demand for ‘food, feed and fuel’ will continue to move crop prices higher over the long-term” (Agcapita, 2013) and “We expect strong investment performance to continue across the world as fundamentals of food production, security and [demand for] renewable energy all impact on the finite area of global farmland” (InvestAg Savills, 2011: 4).

Africa was singled out as a particularly promising investment destination, with land as an ‘asset class’ (Schaffnit-Chatterjee, 2012: 1). For example: ‘Africa has a tremendous future in terms of agriculture. Africa could feed much of the world’ (CEO of Aslan Global Management, quoted in Charles, 2012), and: ‘Looking at global agriculture from a long-term perspective it seems that Africa has a huge opportunity to feed both itself and the world in the coming decades’ (GreenWorld, 2013).

Some of the thinking behind these statements is revealed in a 2011 research report from Rabobank, a significant financier of international agricultural projects. This argued that corporations must rethink their commodity sourcing strategies in this new and unprecedented era of scarcity. Because the world’s farmers had become squeezed by low producer prices on one side and high input prices on the other, went the argument, they were unlikely to be able to respond to price rises by increasing production. Therefore, in order to secure supply of food and other agri-commodities, corporations turned to investing in land, working directly with farmers, setting up greenfield production and other operations along the supply chain. Actors involved in large-scale farmland acquisition ‘all recognise the over-arching rationale that

scarcity will become an increasingly regular feature of agricultural commodity markets in the future’ (Rabobank International, 2011: 18).

6. Constructing narratives, silencing politics

The previous section offered an overview of the dominant narrative themes seen consistently across four of our actor groups – international organizations, African regional organizations, investors/financiers and agribusinesses. These were underpinned with framings that combine absolute scarcity with economic ideas of relative scarcity and the importance of technological change and investment in addressing limits. This section asks: how were these narratives constructed, and what political effects did this have? What exclusions of alternative framings resulted? The section proceeds then to identify two marginal narratives identified during our analysis and associated with the NGO/civil society actor group. We explore how these offer hints of an alternative political scarcity framing, but also point to its limits.

6.1. Constructing narratives

A variety of approaches to constructing the dominant narrative themes is observed in the sources investigated. One example is the deployment of iconic figures, based on population projections, food balance estimates, assessments of land degradation extent, or assumed productivity and yield gaps. These are frequently repeated in the sources, yet their origins and basis of calculation are rarely addressed. They become iconic markers for a position, but their validity goes unquestioned, despite often large bodies of research that dispute their utility (cf. Leach and Mearns, 1996; Stott and Sullivan, 2000; Scoones, 2001; Keeley and Scoones, 2003). The power of global, aggregated assessments, and the scenario modelling often associated with these, is also enormously powerful, and becomes central to global discourses (Hulme et al., 2011; Scoones, 2009), including around the global land rush.

Figures and maps on land use and availability are particularly important in the evidence base for the dominant narratives identified. These are often generated at large scales, extrapolating from limited data inputs. Assessments of utilisation are based on factors visible from satellite imagery, and so may exclude uses such as mobile pastoralism or shifting agriculture. The models from IIASA and the Land Matrix became especially important in the construction of land policy narratives – from those favouring large-scale investments and from those opposing alike. Yet the limitations of such assessments, while widely discussed (cf. Scoones et al., 2013; Oya, 2013), was rarely acknowledged in the sources. Again, a simple figure or a startling map is sufficient to make the point, reinforcing a narrative position.

A similar problem arises from arguments around yield and productivity ‘gaps’. The assumption that a new type of investment, portrayed as efficient, modern and high-tech, can overcome such assumed gaps is often made. Yet the notion of a yield gap has been widely critiqued (Sumberg, 2012). Estimates are usually derived from comparing on-station agronomic conditions with the field settings of farmers. While in theory much higher productivity levels can be reached, this requires a whole series of technological, agroecological and economic conditions that may never be realistically achieved in field settings, no matter what the scale or level of capitalisation of the farm.

Modelling the availability of land only on the basis of what can be seen in satellite images is obviously prone to error. Equally, developing yield models based on potentials rather than likely levels, given differences in resource quality, infrastructure and technology attributes and so on, adds another level of uncertainty. Yet these models, particularly when they appear in multi-coloured maps or dramatic graphics, have enormous power, and the uncertainties and qualifications are buried in the footnotes. Models are of course only constructs that may or may not have some analytical utility in thinking about more complex phenomena. But when their assumptions are flawed – whether in terms

of the behaviour of individuals in perfect markets or the availability and potential of land – they become potentially dangerous and misleading, obscuring other insights. As the Committee on Food Security's High Level Panel report on land concluded: 'The satellite and aerial imagery used in bio-physical surveys is blind to the rights and institutions that govern how land is actually used on the ground' (HLPE, 2011: 9).

Parables of success in other places – in this instance most frequently the example of the Asian Green Revolution – are often paraded as part of the construction of narratives. These provide a counterpoint and illustration of an alternative that justifies the solution presented in the narrative. Success stories are usually problematic as comparators, as they emerge from very particular conditions; often ones that have much larger variation than is admitted (Sumberg et al., 2012). As a rhetorical technique they are important, but as sources of evidence they are often found wanting. The case of the Asian Green Revolution is a case in point. As decades of research has shown, there have been huge variation in outcomes, by location, groups of people and so on, with a whole array of 'green revolution' pathways evident across Asia (Harriss-White and Harriss, 2007; Hazell, 2009), with no justification for the use of a singular 'Asian' success story to contrast with, or advocate for, the African setting (Thompson and Scoones, 2009).

Thus a series of models, metrics and assessments are generated by certain socio-technical practices, including the use of satellite imagery, geographic-information-system models and yield assessments, which generate eye-catching and persuasive figures. These forms of data act as 'anchoring devices' (Van der Sluijs et al., 1998) in the boundary work that goes on between science and policy in the construction of knowledge for policy (Gieryn, 1999). Figures, maps and models are presented as objective and scientific, part of evidence-based policy. This process of 'mutual construction' (Shackley and Wynne, 1995) or 'co-production' (Jasanoff, 2004) generates a knowledge politics that creates particular types of 'biopolitical' knowledge, knowledge subjects and social and political orders. These forms of governmentality (cf. Foucault et al., 1991; Jessop, 2006) necessarily define the world – and in this case in relation to resource scarcity – in a way that excludes other versions and realities. In the period between 2007 and 2013, the dominant narrative, generated through a variety of mechanisms and promulgated by four major, and powerful, actor groups, justified an argument about the necessity of land investment in Africa. Deploying representations of scarcity in different ways, this provided the core discursive support for the global land rush at its peak.

6.2. Alternative, marginalised narratives

By identifying the dominant narrative and its underlying framing, a key question raised is: what is excluded? Across the sources demonstrating the key narrative themes, a 'political scarcity' framing was almost completely absent. Only the NGOs and civil society groups (9 sources) embraced a political understanding of scarcity within their framing of the global land rush. Two narratives were identified: one focused on 'food sovereignty' and local economic solutions; and the other on global inequalities of production and consumption.

The food sovereignty narrative tells a story of local scarcities, arguing that these can be addressed through local, indigenous economic development. It rejects a wider, global discourse of scarcity, presenting it as a political construction that results from the inequities of global capitalism. Such a position was articulated by AFSA (the Alliance for Food Sovereignty in Africa) (2011) and La Via Campesina (2012), for example, and Friends of the Earth Africa (2010:5), who argued: "Food is a natural right and agricultural products should not be treated as commodities whose ultimate purpose is the generation of business profits rather than meeting needs of the people. Family and small-scale farmers should be encouraged and strengthened".

The narrative concerned with global inequalities also highlights the importance of local farming solutions. Scarcities, it is argued, are created through over-consumption in some parts of the world, and are

imposed on others. The focus turns to demand-side changes, including a reduction in resource consumption in rich countries. For example, Oxfam (2011:4) argued: "Appalling inequities ... plague the food system from farm to fork", while the IF campaign launched in 2013 claimed that "...rigged rules and deep inequalities... allow a few to make billions while leaving hardworking poor farmers – especially women and their children – and vulnerable and ordinary people everywhere to face the highest prices in a generation" (Enough Food For Everyone IF, 2013: 12).

As noted earlier, in both cases the political discourse was combined with a premise of 'absolute scarcity' in terms of ecological or planetary limits, which must be addressed through local, often technical agro-ecological, solutions in the case of food sovereignty; or approaches to redistribution in the narratives focused on global inequalities. In both cases they focus on local-level solutions – creating new forms of local economy and food sovereignty or addressing over-consumption in particular locales – without necessarily attending to wider structural, political conditions (Bernstein, 2013). While they reject globalised versions of scarcity, their frames nevertheless often draw on arguments of limits, and their solutions focus on technological, investment and institutional options, even if these are alternative to the mainstream. Thus agroecology is advocated rather than high-tech, industrial agriculture, but the framing of the wider problem often remains technology-centred. Despite the NGO and civil society organization authors positioning themselves as in opposition to 'land grabs' and large-scale capitalist agriculture, the articulation of a political scarcity framing therefore remains underdeveloped.

7. Reframing scarcity: bringing politics back in

Across our sources a dominant set of narrative themes emerged, constructed through a range of mechanisms and promoted by a powerful group of actors, and underpinned by a framing that draws on theoretical concepts of absolute and relative scarcity. An alternative, often poorly articulated, challenge to this is found among sources produced by NGOs and civil society organizations. While containing elements of the dominant narrative themes, notably a diagnosis of problems centred on an absolute scarcity theme of ecological crisis and a commitment to technical solutions of different sorts, these narratives did contain a more political dimension, pointing to the consequences of inequality and the advantages of locally-driven development. But in relation to the framing of political scarcity introduced earlier, only certain elements were included. What then might an alternative narrative, informed by a more comprehensive political scarcity framing, entail, and how might this challenge the dominant powerful narratives of the global land rush?

To articulate a political framing of scarcity, and associated narratives for policy, means going beyond the empirical material, and returning to our earlier outline of what a political scarcity framing implies. At the centre of a political framing of scarcity is the contention that we must restructure the relationships between resources, the state and society. If scarcities are constitutive of social, political and economic relationships within society, a new relationship between nature, society and economy has to be negotiated. In a political view, as elaborated above, scarcity is constructed in relation to historically-specific patterns and forces of production, distribution and consumption. In this way, capitalism generates scarcities through processes of accumulation, but such scarcities have an impact on profits, and so subsequent differential patterns of accumulation across societies and between nations.

This way of framing scarcity requires paying attention to how resources and the associated flows of benefits are distributed. Scarcity for one person may be abundance for another, and scarcities are indeed constructed through unequal access, across all scales (Mehta, 2010a). Scarcity as a relational concept cannot be apprehended only by simple metrics or models that focus on absolute scarcities (resource availability, gaps, limits and so on). Such assessments need to be embedded

in a much deeper understanding of resource control (Peluso and Lund, 2011) and access (Ribot and Peluso, 2003). We must ask how resources are distributed across different groups within society, and across the globe, and through what social relations and institutions, in whose interests and with what material effects (Li, 2014).

Scarcities thus have class, gender and generational dimensions that have major consequences, suggesting a political ecology perspective that takes resource dynamics seriously, but locates these in wider social-political understandings (Peet and Watts, 1996; Rocheleau et al., 1996). Scarcities of course emerge historically, and in particular places. In Africa, present scarcities are rooted in colonialism and are perpetuated through unequal trade relationships, often reinforced by aid and development interventions that favour one resource use or user group over others (Moyo et al., 2012). Scarcities have therefore been created by such imbalances, through excess production and consumption in some parts of the world, and poverty and inequality in others, for example (Jackson, 2011).

Framings that accept a position of relative scarcity may argue for technological and market interventions to overcome absolute scarcities, but such interventions also may generate new social and political scarcities. Technologies and markets are never neutral, yet proponents neglect the inevitable favouring of certain actors and disadvantaging of others. The mantras of ‘sustainable intensification’ or ‘responsible innovation’, for example, carry politics and power with them, and can act to exclude as well as include (Loos et al., 2014; Stilgoe et al., 2013). Debating the directions of development and their distributional implications is a vital step (STEPS, 2010). We must always be clear about the political consequences of scarcity-driven interventions on the structural relations within a society, set within the wider political economy that defines these. Scarcity is not universal, given, fixed or determining, but context-specific, socially constructed, politically contested, variable and dynamic; and therefore, always subject to contestation, negotiation and contentious politics, as different groups mobilise around resource issues (Scoones, 2016).

A political scarcity lens therefore draws attention neither just to finite limits (which of course exist), nor just to the potential opportunities of transformation through markets and technologies (also important in some contexts), but also to the relational qualities of multiple scarcities, being constructed in particular ways by different actors with particular interests. Such an approach goes substantially beyond the narratives promoted by NGOs and civil society organizations during 2007–2013 towards a more comprehensive political scarcity framing at the heart of a critique of the global land rush and its dominant framings.

This has major implications for the debate on Africa’s land rush. A switch of focus from land availability or yield gap assessments, with the assumption that improved efficiency and production will arise from a certain style of investment, to a political scarcity framing would emphasise investing in the negotiating capacities of different actors, and most notably disempowered local communities, whose perspectives are currently excluded from the models, assessment and technical appraisals of most policy debates and investment initiatives. A technical understanding of absolute scarcity can feed in, to define limits, tipping points and trade-offs, but not dominate. Instead, a more open deliberation around how scarcities are understood by different actors would allow more focused debates on the direction of development (for example, is large-scale farm investment the most appropriate option in this setting?) and the distribution of benefits (who wins and loses from different investment models?).

Our analysis of the 135 sources showed the dominance of absolute and relative scarcity representations of Africa’s land rush, and an absence of nuanced political scarcity interpretations, even within alternative positions critical of land investments. Recognising that scarcity narratives are constructed does not mean that scarcities are not ‘real’; rather, we show that policy narratives are subject to processes of construction, and that a knowledge politics is at play, with very tangible, material effects. Framings and narratives matter in policy and

investment behaviour and, as we have seen, some have greater influence than others, with direct effects on how problems are understood and solutions designed and promoted – by governments, development agencies and private-sector actors. Opening up this debate, with a more explicit focus on political scarcities is, we argue, urgently required. For African settings – seen as both a source of abundant resources and a site where global scarcities may be resolved, as well as where local scarcities are being experienced most acutely – a political scarcity framing on the global land rush, and resource questions more broadly, is essential.

Acknowledgements

This research was conducted as part of the Land and Agricultural Commercialisation in Africa (LACA) project (<http://www.future-agricultures.org/laca>). This was supported by the UK Economic and Social Research Council, and was part of the Future Agricultures Consortium land theme (grant number ES/J01754X/1). Additional support came from the ESRC-funded STEPS Centre at the University of Sussex, UK (ES/I021620/1). The project was coordinated by the Institute for Poverty, Land and Agrarian Studies at the University of the Western Cape in South Africa. We would like to thank Lyla Mehta for providing helpful review comments on an earlier version of this paper, produced as a FAC Working Paper. We would also like to acknowledge inputs from participants at the LACA research workshop at University of Ghana at Legon in October 2013 and the STEPS Resource Politics conference at IDS, University of Sussex in September 2015. The paper was submitted to the special issue in February 2017. We are grateful to two reviewers for valuable comments.

Appendix A. Supplementary material

Supplementary material associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.geoforum.2018.06.006>.

References

- AFSA, 2011. Food Sovereignty Systems (accessed 13 February 2017). <www.africanbiodiversity.org/system/files/images/AFSA%20Document.pdf>.
- AgCapita, 2013. AgCapita website. <www.farmlandinvestmentpartnership.com/> (accessed 13 February 2017).
- Anseeuw, W., Lay, J., Messerli, P., Giger, M., Taylor, M., 2013. Creating a public tool to assess and promote transparency in global land deals: the experience of the Land Matrix. *J. Peas. Stud.* 40 (3), 521–530.
- Bakker, K., Bridge, G., 2006. Material worlds? Resource geographies and the matter of nature. *Prog. Hum. Geogr.* 30 (1), 5–27.
- Barbier, E.B., 2011. Scarcity and Frontiers. Cambridge University Press, Cambridge.
- Barnett, H.J., Morse, C., 1963. Scarcity and Growth: The Economics of Natural Resource Availability. The Johns Hopkins Press, Baltimore.
- Baumgärtner, S., Becker, C., Faber, M., Manstetten, R., 2006. Relative and absolute scarcity of nature: assessing the roles of economics and ecology for biodiversity conservation. *Ecol. Econ.* 59, 487–498.
- Beddington, J., 2009. Food, energy, water and the climate: a perfect storm of global events? <www.bis.gov.uk/assets/goscience/docs/p/perfect-storm-paper.pdf> (accessed 13 February 2017).
- Bell, J.E., Autry, C.W., Mollenkopf, D.A., Thornton, L.M., 2012. A natural resource scarcity typology: theoretical foundations and strategic implications for supply chain management. *J. Bus. Logist.* 33 (2), 158–166.
- Benford, R.D., Snow, D.A., 2000. Framing processes and social movements: an overview and assessment. *Annu. Rev. Sociol.* 611–639.
- Bernstein, H., 2013. Food sovereignty: a skeptical view. Paper presented at the Conference on Food Sovereignty: A Critical Dialogue, Yale University, 14–15 September 2013.
- Binswanger, H.P., Ruttan, V., 1978. *Induced Innovation: Technology, Institutions and Development*. Johns Hopkins University Press, Baltimore.
- Borras Jr, S.M., Hall, R., Scoones, I., White, B., Wolford, W., 2011. Towards a better understanding of global land grabbing: an editorial introduction. *J. Peas. Stud.* 38 (2), 209–216.
- Boserup, E., 1981. *Population and Technological Change: A Study of Long Term Trends*. University of Chicago Press, Chicago.
- Boserup, E., 1993. *The Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population Pressure*. Earthscan, London.
- Bridge, G., 2009. *Material worlds: natural resources, resource geography and the material*

- economy. *Geogr. Compass* 3 (3), 1217–1244.
- Bridge, G., 2015. Energy (in) security: world-making in an age of scarcity. *Geogr. J.* 181 (4), 328–339.
- Brown, L., 1995. Future supplies of land and water are fast approaching depletion. In: Islam, N. (Ed.), *Population and Food in the Early Twenty-First Century: Meeting Future Food Demands of an Increasing Population*. IFPRI, Washington, D.C., pp. 161–166.
- Buckholtz, A., Delay, J., 2012. The geopolitics of food scarcity: a discussion with Lester Brown. *Handshake* (IFC's quarterly journal on public–private partnerships), 5, 54–57.
- Callon, M., Muniesa, F., 2005. Peripheral vision: economic markets as calculative collective devices. *Org. Stud.* 26 (8), 1229–1250.
- Cargill, 2011. *Cargill Annual Report*. Cargill, Minneapolis.
- Carson, R., 1962. *Silent Spring*. Houghton Mifflin, Boston.
- Charles, D., 2012. 'Mozambique farmland is prize in land grab fever' [quote from private investors]. NPR, 14 June. Accessed at <<http://www.npr.org/2012/06/14/155036821/mozambique-farmland-is-prize-in-land-grab-fever>>.
- Cotula, L., Oya, C., Codjoe, E.A., Eid, A., Kakraba-Ampeh, M., Keeley, J., Kidewa, A.L., Makwarimba, M., Seide, W.M., Nasha, W.O., Asare, R.O., 2014. Testing claims about large land deals in Africa: findings from a multi-country study. *J. Develop. Stud.* 50 (7), 903–925.
- Deininger, K., Byerlee, D., 2012. The rise of large farms in land abundant countries: do they have a future? *World Dev.* 40 (4), 701–714.
- Druckman, J.N., 2011. What's it all about? Framing in political science. In: Keren, G. (Ed.), *Perspectives on Framing*. Routledge, London, pp. 279–302.
- ECOWAS, 2011. 'ECOWAS high level visit to Sichuan government, 22–23 June 2011. Statement of the President, ECOWAS Commission'. <www.ecowas.int/publications/en/speech/SICHUAN-MUNICIPAL-GOVERNMENT.pdf> (accessed 13 February 2017).
- Edelman, M., Oya, C., Borras Jr, S.M., 2013. Global Land Grabs: historical processes, theoretical and methodological implications and current trajectories. *Third World Quart.* 34 (9), 1517–1531.
- Ehrlich, P.R., 1968. *The Population Bomb*. Ballantine Books, New York.
- Enough Food for Everyone If, 2013. *Enough Food for Everyone If: Policy Report* (accessed 13 February 2017). <<http://enoughfoodif.org/issues/land>>.
- Entman, R.M., 1993. Framing: toward clarification of a fractured paradigm. *J. Commun.* 43 (4), 51–58.
- EU (European Union), 2012. *European Report on Development 2011/12. Confronting Scarcity: Managing Water, Energy and land for Inclusive and Sustainable Growth*. Belgium: EU. <www.erd-report.eu/erd/report_2011/index.html> (accessed 13 February 2017).
- Exner, A., Bartels, L.E., Windhaber, M., Fritz, S., See, L., Politti, E., Hochleithner, S., 2015. Constructing landscapes of value: capitalist investment for the acquisition of marginal or unused land. The case of Tanzania. *Land Use Policy* 42, 652–663.
- Fairbairn, M., 2015. Foreignization, financialization and land grab regulation. *J. Agr. Change* 15 (4), 581–591.
- FAO, 2011a. *The State of the World's Land and Water Resources for Food and Agriculture. Summary Report*. Earthscan and FAO, Abingdon and New York. <www.fao.org/docrep/015/i1688e/i1688e00.pdf> (accessed 13 February 2017).
- FAO, 2011b. *The State of the World's Land and Water Resources for Food and Agriculture. Earthscan and FAO, Abingdon and New York*. <www.fao.org/nr/solaw/solaw-home/en/> (accessed 13 February 2017).
- FAO, 2012. *The State of Food and Agriculture 2012: Investing in Agriculture for a Better Future*. Italy, Rome.
- Fine, B., 2010. Economics and scarcity: with Amartya Sen as point of departure. In: Mehta, L. (Ed.), *The Limits to Scarcity: Contesting the Politics of Allocation*. Earthscan, London, pp. 89–107.
- Fischer, G., Shah, M., 2010. *Farmland investments and food security. Report prepared under World Bank IIASA contract: Lessons for the large-scale acquisition of land from an agricultural land use analysis*. <<http://documents.worldbank.org/curated/en/884731468221080363/pdf/644450WP0publ00Security0BOX361537B.pdf>> (accessed 13 February 2017).
- Foucault, M., with Burchell, G., Gordon, C., Miller, P., 1991. *The Foucault Effect: Studies in Governmentality*. University of Chicago Press, Chicago.
- Fraser, D., 1971. *The People Problem*. Indiana University Press, Bloomington.
- Friends of the Earth Africa, 2010. *Africa: Up For Grabs*. FoE Europe and FoE Africa, London and Benin City.
- Gammon, E., 2010. Nature as adversary: the rise of modern conceptions of nature. *Econ. Soc.* 39 (2), 218–246.
- Gieryn, T.F., 1999. *Cultural Boundaries of Science: Credibility on the Line*. University of Chicago Press, Chicago.
- Grantham, J., 2012. Welcome to dystopia: entering a long-term and politically dangerous food crisis. *GMO quarterly letter to investors*, July 2012. *GMO LLC*. <www.gmo.com/Europe/Library/Letters/> (accessed 13 February 2017).
- GreenWorld, 2013. *GreenWorld website* (accessed 13 February 2017). <www.greenworldbvi.com/alternative-investments-options/agricultural-farmland/african/>.
- Hajer, M., Versteeg, W., 2005. A decade of discourse analysis of environmental politics: achievements, challenges, perspectives. *J. Environ. Policy Plan.* 7 (3), 175–184.
- Hall, D., 2013. Primitive accumulation, accumulation by dispossession and the global land grab. *Third World Quart.* 34 (9), 1582–1604.
- Hall, R., 2011. Land grabbing in Southern Africa: the many faces of the investor rush. *Rev. Afr. Polit. Econ.* 38 (128), 193–214.
- Hall, R., Scoones, I., Tsikata, D., 2017. Plantations, outgrowers and commercial farming in Africa: agricultural commercialisation and implications for agrarian change. *J. Peas. Stud.* 44 (3), 515–537.
- Hall, R., Scoones, I., Tsikata, D. (Eds.), 2015. *Africa's Land Rush: Rural Livelihoods and Agrarian Change*. James Currey, Woodbridge.
- Hardin, G., 1968. The tragedy of the commons. *Science* 162, 1243.
- Harriss-White, B., Harriss, J., 2007. *Green Revolution and After: The 'North Arcot Papers' and Long-term Studies of the Political Economy of Rural Development in South India*. QEH Working Papers, 146. University of Oxford, Queen Elizabeth House/Department of International Development.
- Hartmann, B., 2010. The ghosts of Malthus: narratives and mobilizations of scarcity in the US political context. In: Mehta, L. (Ed.), *The Limits to Scarcity: Contesting the Politics of Allocation*. Earthscan, London, pp. 49–66.
- Harvey, D., 2003. The new imperialism: accumulation by dispossession. *Social Register* 63–87.
- Harvey, D., 1974. Population, resources and the ideology of science. *Econ. Geogr.* 50 (3), 256–277.
- Hayami, Y., Godo, Y., 2005. *Development Economics: From the Poverty to the Wealth of Nations*, third ed. Oxford University Press, New York.
- Hayami, Y., Ruttan, V.W., 1985. *Agricultural Development: An International Perspective*. The Johns Hopkins Press, Baltimore.
- Hazell, P.B., 2009. *The Asian Green Revolution Issue Paper*, vol. 911 IFPRI, Washington, DC.
- Hildyard, N., 2010. 'Scarcity' as political strategy: reflections on three hanging children. In: Mehta, L. (Ed.), *The Limits to Scarcity: Contesting the Politics of Allocation*. Earthscan, London, pp. 149–164.
- HLPE (High Level Panel of Experts on Food Security and Nutrition), 2011. *Land Tenure and International Investments in Agriculture*. HLPE report 2, July 2011. Committee on World Food Security, Rome. <www.fao.org/cfs/cfs-hlpe/en/> (accessed 13 February 2017).
- Homer-Dixon, T.F., 2010. *Environment, Scarcity and Violence*. Princeton University Press, Princeton, N.J.
- Hotter, A., 2012. Could high food prices be a blessing in disguise? [quotes from Josette Sheeran of the World Food Programme]. *Wall Street Journal*, 27 January. <<http://blogs.wsj.com/davos/2012/01/27/could-high-food-prices-be-a-blessing-in-disguise-for-african-farmers/>> (accessed 13 February 2017).
- Hulme, M., Mahony, M., Beck, S., Görg, C., Hansjürgens, B., Hauck, J., Nesshöver, C., Paulsch, A., Vandewalle, M., Wittmer, H., Bösch, S., 2011. Science-policy interface: beyond assessments. *Science* 333 (6043), 697–698.
- Hussen, A.M., 2013. *Principles of Environmental Economics and Sustainability*, third ed. Routledge, London.
- IFPRI, 2009. *IFPRI's Strategy for Africa*. IFPRI, Washington, DC.
- InvestAg Savills, 2011. *International Farmland Market Bulletin* (accessed 13 February 2017). <www.investag.co.uk/Bulletin2011.pdf>.
- Irwin, A., Wynne, B., 2003. *Misunderstanding Science? The Public Reconstruction of Science and Technology*. Cambridge University Press, Cambridge.
- Jackson, T., 2011. *Prosperity without Growth: Economics for a Finite Planet*. Routledge, London.
- Jasanoff, S., 2004. 1 The idiom of co-production. *States of knowledge: the co-production of science and the social order*, 1.
- Jessop, B., 2006. From micro-powers to governmentality: Foucault's work on statehood, state formation, statecraft and state power. *Polit. Geogr.* 26 (1), 34–40.
- Keeley, J., Scoones, I., 2003. *Understanding Environmental Policy Processes*. Earthscan, London.
- La Via Campesina, 2012. 'Investments needed for small scale farming, not for agribusiness'. Press release, 11 October. <<http://viacampesina.org/en/index.php/main-issues-mainmenu-27/food-sovereignty-and-trade-mainmenu-38/1310-la-via-campesina-in-the-committee-on-world-foodsecurity-investments-needed-for-small-scale-farming-not-foragribusiness>> (accessed 13 February 2017).
- Leach, M., Mearns, R., 1996. *The Lie of the Land: Challenging Received Wisdom on the African Environment*. James Currey, Oxford.
- Le Billon, P., 2012. *Wars of Plunder: Conflicts, Profits and the Politics of Resources*. Columbia University Press, New York.
- Li, T.M., 2014. What is land? Assembling a resource for global investment. *Trans. Inst. Brit. Geogr.* 39 (4), 589–602.
- Lipton, M., 1989. Responses to rural population growth: Malthus and the moderns. *Popul. Develop. Rev.* 15 (Suppl.), 215–242.
- Loos, J., Abson, D.J., Chappell, M.J., Hanspach, J., Mikulcak, F., Tichit, M., Fischer, J., 2014. Putting meaning back into "sustainable intensification". *Front. Ecol. Environ.* 12 (6), 356–361.
- Malthus, T.R., 1970 [1798]. *An Essay on the Principle of Population*. Republished in: Malthus, T.R., 1970. *An Essay on the Principle of Population and A Summary View of the Principle of Population*. Edited by A. Flew. Harmondsworth: Penguin Books, pp. 61–217.
- Mamdani, M., 1981. The ideology of population control. In: Michaelson, K.L. (Ed.), *And the Poor Get Children: Radical Perspectives on Population Dynamics*. Monthly Review Press, New York, pp. 39–49.
- McCarthy, J., Wolford, W., 2011. *Land, energy, water: from scarcity to security. Final report for Oxfam America*. Unpublished report, 8 August 2011.
- Meadows, D.H., Meadows, D.L., Randers, J., Behrens, W.W., 1972. *The Limits to Growth. A report for the Club of Rome's project on the predicament of mankind*. Earth Island, London.
- Mehta, L., 2001. The manufacture of perceptions of scarcity: dams and water-related narratives in Gujarat, India. *World Develop.* 29 (12), 2025–2041.
- Mehta, L., 2005. *The Politics and Poetics of Water: Naturalising Scarcity in Western India*. Orient Longman, New Delhi.
- Mehta, L., 2010a. Introduction. In: Mehta, L. (Ed.), *The Limits to Scarcity: Contesting the Politics of Allocation*. Earthscan, London, pp. 1–8.
- Mehta, L., 2010b. The scare, naturalization and the politicization of scarcity. In: Mehta, L. (Ed.), *The Limits to Scarcity: Contesting the Politics of Allocation*. Earthscan, London,

- pp. 13–50.
- Mehta, L., Veldwisch, G.J., Franco, J., 2012. Introduction to the Special Issue: Water grabbing? Focus on the (re) appropriation of finite water resources. *Water Alternat.* 5(2), 193.
- Michaelson, K.L., 1981. *And the Poor Get Children: Radical Perspectives on Population Dynamics*. Monthly Review Press, New York.
- Moore, J.W., 2011. Transcending the metabolic rift: a theory of crises in the capitalist world-ecology. *J. Peas. Stud.* 38 (1), 1–46.
- Moyo, S., Yeros, P., Jha, P., 2012. Imperialism and primitive accumulation: notes on the new scramble for Africa. *Agrarian South: J. Polit. Econ.* 1 (2), 181–203.
- Nally, D., 2015. Governing precarious lives: land grabs, geopolitics, and 'food security'. *Geogr. J.* 181 (4), 340–349.
- NEPAD, 2003. *Comprehensive Africa Agriculture Development Programme*. NEPAD, Midrand.
- Neumayer, E., 2000. Scarce or abundant? The economics of natural resource availability. *J. Econ. Surv.* 14 (3), 307–335.
- Obeng-Odoom, F., 2016. Marketising the commons in Africa: the case of Ghana. *Rev. Soc. Econ.* 74 (4), 390–419.
- Obeng-Odoom, F., 2015a. Africa: on the rise, but to where? *Forum Soc. Econ.* 44 (3), 234–250.
- Obeng-Odoom, F., 2015b. Understanding land grabs in Africa: insights from Marxist and Georgist political economics. *Rev. Black Polit. Econ.* 42 (4), 337–354.
- Odum, E.P., 1969. The strategy of ecosystem development. *Science* 164 (3877), 262–270.
- Oxfam, 2011. *Growing a Better Future: Food Justice in a Resource-Constrained World*. Oxfam International, Oxford.
- Oya, C., 2013. Methodological reflections on 'land grab' databases and the 'land grab' literature 'rush'. *J. Peas. Stud.* 40 (3), 503–520.
- Paarlberg, R., 2010. *Food Politics: What Everyone Needs to Know*. Oxford University Press, Oxford.
- Peacock, A.T., 1953. Malthus in the twentieth century. In: Glass, D.V. (Ed.), *Introduction to Malthus*. Watts & Co, London, pp. 55–78.
- Pedersen, R., Buur, L., 2016. Beyond land grabbing. Old morals and new perspectives on contemporary investments. *Geoforum* 72, 77–81.
- Peet, R., Watts, M. (Eds.), 1996. *Liberation Ecologies: Environment, Development and Social Movements*. Routledge, London and New York.
- Peluso, N.L., Lund, C., 2011. New frontiers of land control: introduction. *J. Peas. Stud.* 38 (4), 667–681.
- Perelman, M., 1979. Marx, Malthus and the concept of natural resource scarcity. *Antipode* 11 (2), 80–90.
- Perreault, T., Bridge, G., McCarthy, J. (Eds.), 2015. *The Routledge Handbook of Political Ecology*. Routledge, London and New York.
- Polman, P. [CEO, Unilever], 2011. 'Food security in a changing climate'. Speech at the City Food Lecture, London, 18 January 2011.
- Rabobank International, 2011. *Rethinking the F&A Supply Chain*. Rabobank, Utrecht.
- Ribot, J., Peluso, N.L., 2003. A theory of access. *Rural Sociol.* 68 (2), 153–181.
- Ricardo, D., 1821. *On the Principles of Political Economy and Taxation*, third ed. John Murray, London.
- Robbins, L., 1932. *An Essay on the Nature and Significance of Economic Science*. Macmillan, London.
- Robbins, P., 2003. Beyond ground truth: GIS and the environmental knowledge of herders, professional foresters, and other traditional communities. *Hum. Ecol.* 31 (2), 233–253.
- Rocheleau, D., Thomas-Slayter, B., Wangari, E. (Eds.), 1996. *Feminist Political Ecology: Global Issues and Local Experience*. Routledge, London.
- Rockström, J., Steffen, W.L., Noone, K., Persson, Å., Chapin III, F.S., Lambin, E., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., De Wit, C.A., Hughes, T., van der Leeuw, S., Rodhe, Sörlin, S.P., Snyder, K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R.W., Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P., Foley, J., 2009. Planetary boundaries: exploring the safe operating space for humanity. *Ecol. Soc.* 14 (2), 32.
- Roe, E., 1994. *Narrative Policy Analysis: Theory and Practice*. Duke University Press, Durham.
- Roe, E.M., 1991. Development narratives, or making the best of blueprint development. *World Dev.* 19 (4), 287–300.
- Ross, J.R., 1975. Man over nature: origins of the conservation movement. *Am. Stud.* 16 (1), 49–62.
- Rulli, M.C., Savioli, A., D'Odorico, P., 2013. Global land and water grabbing. *Proc. Natl. Acad. Sci.* 110 (3), 892–897.
- Salami, A., Brixiyova, Z., Kandil, H., Mafusire, A., 2011. Towards food security in Africa: challenges, policies, and the role of the African Development Bank. *Africa Economic Brief* 2 (2). African Development Bank, Abidjan.
- Schaffnit-Chatterjee, C., 2012. 'Foreign investment in farmland: no low-hanging fruit'. DB Research Issues. Frankfurt: Deutsche Bank Research. <www.dbresearch.com> (accessed 13 February 2017).
- Scoones, I., 2016. The politics of sustainability and development. *Annu. Rev. Environ. Resour.* 41 (1).
- Scoones, I., 2010. Seeing scarcity: understanding soil fertility in Africa. In: Mehta, L. (Ed.), *The Limits to Scarcity: Contesting the Politics of Allocation*. Earthscan, London, pp. 165–178.
- Scoones, I., 2009. The politics of global assessments: the case of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD). *J. Peas. Stud.* 36 (3), 547–571.
- Scoones, I. (Ed.), 2001. *Dynamics and Diversity: soil fertility and farming livelihoods in Africa: Case Studies from Ethiopia, Mali, and Zimbabwe*. Earthscan, London.
- Scoones, I., Amanor, K., Favareto, A., Qi, G., 2016. A new politics of development co-operation? Chinese and Brazilian engagements in African agriculture. *World Dev.* 81, 1–12.
- Scoones, I., Hall, R., Borrás, J., Wolford, W., White, B., 2013. The politics of evidence: methodologies for understanding the global land rush. *J. Peas. Stud.* 40 (3).
- Seidl, I., Tisdell, C.A., 1999. Carrying capacity reconsidered: from Malthus' population theory to cultural carrying capacity. *Ecol. Econ.* 31, 395–408.
- Sen, A., 1981. *Poverty and Famines: An Essay on Entitlement and Deprivation*. OUP, Oxford.
- Shackley, S., Wynne, B., 1995. Global climate change: the mutual construction of an emergent science-policy domain. *Sci. Publ. Policy* 22 (4), 218–230.
- SIFCA, 2012. 'Palm world meets at POC 2012, Kuala Lumpur'. SIFCA News 9, 10. <www.groupesifca.com/pdf/sifcanews_9.pdf> (accessed 13 February 2017).
- Smalley, R., 2013. *Plantations, contract farming and commercial farming areas in Africa: a comparative review*. Future Agricultures Working Paper, 55. Future Agricultures Consortium, Brighton.
- Steffen, W., Richardson, K., Rockström, J., Cornell, S.E., Fetzer, I., Bennett, E.M., Biggs, R., Carpenter, S.R., de Vries, W., de Wit, C.A., Folke, C., 2015. Planetary boundaries: guiding human development on a changing planet. *Science* 347 (6223), 736–746.
- STEPS, 2010. *Innovation, Sustainability, Development: A New Manifesto*. STEPS Centre, Brighton.
- Stilgoe, J., Owen, R., MacNaghten, P., 2013. Developing a framework for responsible innovation. *Res. Policy* 42 (9), 1568–1580.
- Stott, P., Sullivan, S. (Eds.), 2000. *Political Ecology: Science, Myth and Power*. Arnold, London.
- Sumberg, J., 2012. Mind the (yield) gap (s). *Food Security* 4 (4), 509–518.
- Sumberg, J., Irving, R., Adams, E., Thompson, J., 2012. Success making and success stories: agronomic research in the spotlight. In: Sumberg, James, Thompson, John (Eds.), *Contested Agronomy: Agricultural Research in a Changing World*. Routledge, London.
- Syngenta, 2013. 'Helping growers meet global challenges'. <www.syngenta.com/country/za/en/syngenta/sustainableagriculture/Pages/SustainableAgriculture.aspx> (accessed 13 February 2017).
- Thompson, J., Scoones, I., 2009. Addressing the dynamics of agri-food systems: an emerging agenda for social science research. *Environ. Sci. Policy* 12 (4), 386–397.
- Foresight, U.K., 2011. *The Future of Food and Farming: Challenges and Choices for Global Sustainability*. Final Project Report. The Government Office for Science, London.
- UNECA, 2013. *Making the Most of Africa's Commodities: Industrializing for Growth, Jobs and Economic Transformation*. Economic Report on Africa 2013. Economic United Nations Economic Commission for Africa, Addis Ababa.
- Van der Sluijs, J., Van Eijndhoven, J., Shackley, S., Wynne, B., 1998. Anchoring devices in science for policy: the case of consensus around climate sensitivity. *Soc. Stud. Sci.* 28 (2), 291–323.
- Vegarra, G., Moses, G. [IFC], 2012. Feeding the future. *Handshake* 5, 6–8.
- Whitby, P., 2010. 'The great food fight' [quotes from Susan Payne of Emergent Asset Management]. BBC Focus on Africa October–December, pp. 44–46.
- White, B., Borrás, J., Hall, R., Scoones, I., Wolford, W., 2012. The new enclosures: critical perspectives on corporate land deals. *Special Issue. J. Peas. Stud.* 39(3–4), 619–647.
- World Bank, 2007. *World Development Report 2008: Agriculture for Development*. World Bank, Washington, D.C.
- World Bank, 2011. *Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?* World Bank, Washington, D.C.
- Xenos, N., 1989. *Scarcity and Modernity*. Routledge, London and New York.
- Yamamori, T., 2017. The concept of need in Adam Smith. *Camb. J. Econ.* 41 (2), 327–347.
- Zeder Investments, 2012. *Annual Report 2012*. Zeder Investments Ltd., Stellenbosch. <www.zeder.co.za/uploads/active/0/Zeder%20Investments%202012%20Annual%20report.pdf>.