

History and Prospects for African Land Governance: Institutions, Technology and ‘Land Rights for All’

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Abstract: Issues relating to land are specifically referred to in five of the United Nations’ (UN) 17 Sustainable Development Goals, and UN-Habitat’s Global Land Tools Network views access to land and tenure security as key to achieving sustainable, inclusive and efficient cities. The African continent is growing in importance, with climate change and population pressure on land. This review explores an interdisciplinary approach, and identifies recent advances in geo-spatial technology relevant to land governance in sub-Saharan Africa (SSA). It discusses historical legacies of colonialism that affect the culture of its land administration institutions, through three levels of governance: international/regional, national and sub-national. Short narratives on land law are discussed for four Anglophone former British colonies of SSA. A wide range of sources are drawn upon: academic research across disciplines, and official publications of various actors, including land professions (particularly surveyors, lawyers and planners), government and wider society. The findings are that African countries have carried forward colonial land governance structures into the post-independence political settlement, and that a gulf exists between the institutions, language and cultures of land governance, and the mass of its peoples struggling with basic issues of survival. This gulf may be addressed by recent approaches to land administration and technological advances in geo-spatial technology, and by new knowledge networks and interactions.



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1. Introduction and Approach

‘The land is the dearest thing that we have. Without the land there is no nation.’ (Armenian writer, Sero Khazdyan (1915–1998))

‘Land is the only thing in the world that amounts to anything.’ (Gerald O’Hara, fictional slave plantation owner in Georgia, USA, in Margaret Mitchell, *Gone with the Wind*)

The quotations above suggest the power that land can exert in society, a power that is being rediscovered in the 21st century. Five of the United Nations’ (UN) 17 Sustainable Development Goals (SDGs) for 2015–2030 refer specifically to land; the 2018–2030 strategy for UN-Habitat’s Global Land Tools Network (GLTN) has restated its pro-poor agenda with a strapline ‘A world in which everyone enjoys secure land rights’ [1,2].

Land administration needs at the start to be distinguished from land governance. Land administration comprises an extensive range of governmental systems, whose processes include: transferring rights from one party to another; regulating uses; gathering land-based public revenues; and resolving conflicts involving land. The concept of land governance is wider, and recognizes the importance of power and political relations, and multiple stake-holders and actors with their own cultures and specialist languages, for instance professions, academia, government and wider society.

The academic scholarship around governance explores processes of interaction and decision-making between the institutions by which authority is exercised, and is moving

towards a more radical and de-centred view of the state that takes account of cultural traditions and practices [3]. Various concepts and theories about land governance have been advanced, including the following. Historical institutionalism investigates the influence of social, political, and economic change over time upon institutional and political structures and outcomes [4]. Political settlement theory explores the effects of power relations upon institutions and patterns of development [5,6]. Path dependence theory argues that decisions we face are limited by past decisions, even when past circumstances may no longer be relevant; critical junctures occur when existing political structures fail, and new dynamics and institutions emerge [7,8]. Actor-network theory examines networks of causation that are both material (between people and things) and semiotic (between concepts) [9]. Credibility theory, used by insurers to assess risk from historic claims, is being applied to institutional change and land administration [10,11]. The main academic discipline dealing with land is geography, and the sub-discipline of critical legal geography investigates law's effect upon physical landscapes and spatial boundaries, one of its more esoteric manifestations being the 'nomosphere' [12–14]. The professions of law, surveying and planning also have their own academic disciplines, and influence land governance agendas at all levels, particularly through their professional associations. All these professions, disciplines and sub-disciplines have their own 'academic tribes' and 'silo mentalities' that may impede mutual understanding [15,16].

This review explores how institutional histories and cultures around land governance operate. It outlines some relevant developments in global geo-spatial technology and land administration, and investigates land governance in sub-Saharan Africa (SSA) at three levels: supranational institutions (specifically the World Bank, land professions, UN/Habitat/GLTN, and the African Union (AU)), national land law and institutions, focusing on four countries of Anglophone SSA, and sub-national activities of local authorities and civil society. The review draws from a range of sources: recent academic research and scholarship across disciplines, and official publications of agencies, governments and professional associations [17]. The conclusions are that African countries have largely carried forward colonial land governance structures since independence; this has created a gulf between the institutions, language and cultures of land governance on the one hand, and, on the other, the mass of its peoples struggling with basic issues of survival. Recent developments in citizen participation and community-based action offer better prospects for the future.

2. Surveyors in Land Governance: The Power of Technology

Among the professions involved with land, surveyors can claim the closest direct connection. The International Federation of Surveyors (FIG) has strongly influenced the evolving international approach to land administration and governance, and its publications offer a timeline of those changes, engaging with wider concepts of land governance, the recognition of a continuum of land tenure types, and more democratic geospatial technologies. FIG's Young Surveyors Network pursues a theme of rapid response to change by the surveyor of tomorrow, and has an African network applying new approaches through survey technologies.

National governments create and maintain land administration systems: surveying and mapping land ownership and rights, and providing information for users. One country may have deeds registration, another title registration; some systems are centralised, others decentralised; some are based on a general boundaries approach, others on fixed boundaries; some may prioritise state interests, others private interests. This is 'the institutional memory of the map and the archive' [18], which is increasingly being transferred to digital form through schemas for describing spatial characteristics, combining information from multiple sources. In 2011 the UN brought together member states' national mapping agencies in a Committee of Experts on Global Geospatial Information Management (UN-GGIM), which adopted a FIG proposal for the concept of Fit-for-Purpose Land Administration (FFPLA), from which evolved a Framework for Effective Land Administration

(FELA), as an enabling environment for developing policies and standards [19,20]. A more flexible approach suited to regions of the ‘global South’ now accepts the concept of a continuum or spectrum of land rights, from informal to formal, and applying general rather than fixed boundaries to land, aerial images rather than field surveys, accuracy related to purpose rather than technical standards, and continuous improvements.

An international standard on the Land Administration Domain Model (LADM) was adopted in 2012, and structures the LADM into conceptual packages [21,22]. The party package contains classes representing information about a person or organisation with a relationship to land; this could be an individual, company or other legal entity, or a group of parties. The administrative package records rights, restrictions, responsibilities and transactions associated with a spatial unit or group of units. Spatial units (or land parcels) are defined by geographical extent, and may be aggregated from sub-units or subdivisions (e.g., all land parcels within a local government administration), and legal spaces of buildings and utility networks. The surveying and representation package identifies the spatial sources, perhaps a registered survey plan or orthophotos, with point, line and surface representations of spatial units through terrestrial surveys, global positioning satellites or field sketches [23].

New technology for land administration is being embraced by surveyors, policy-makers, governments and communities. The technical terms and acronyms may be impenetrable to the uninitiated: GDAL (Geospatial Data Abstraction Library), OSGeo (Open Source Geospatial Foundation), QGIS (Free and Open Source Geographic Information System), GML (Geography Markup Language), REST-API (Representational State Transfer Application Programming Interface), LIDAR (Light Detection and Ranging). Such complex technical language may impede understanding by those making major decisions about adopting these technologies. Three examples illustrate the recent advances in geo-spatial technology and applications: drones (or unmanned aerial vehicles, UAVs), automatic feature extraction (AFE), and blockchain (or distributed ledger technology, DLT).

UAVs are supplementing or even replacing terrestrial survey methods in many situations, and remote sensing from drones can be more cost-effective than from satellites. They allow land surveyors to accomplish more in less time, especially in hazardous or physically hard-to-reach areas, offering centimetre-level accuracy with fewer control points. UAV uses high-resolution imagery with optical sensor data to delineate boundaries, and generate accurate, real-world 3D models from 2D imagery [24].

AFE uses machine learning, pattern recognition and image processing to derive values or features from a large data set, and can record land parcel boundaries, both visible and invisible. The morphology of cadastral boundaries can be complex; they may be defined socially, perhaps covered by thick vegetation canopy, and not visible through remote imagery. AFE can help in both initial data capture and updating/maintenance, with initial working-draft land records or updating a cadastral map. One such application is Smart Sketchmaps, a set of sub-tools to align sketched information with base-map data and existing geo-referenced datasets [25].

Blockchain/DLT in landed property developed together with crypto-currencies, and has been ambitiously claimed as ‘the next industrial revolution’. It can offer a decentralised, secure database in a transparent network which allows peer-to-peer transactions without an intermediary. It requires an architecture of overlaid technologies to support changes of data, confirm digital identity and privacy, ensure legal compliance and enforceability of smart contracts. Data can be updated without loss of historic data, through remote imagery and verified by smartphone. It has the potential to bring speed, certainty and clarity to property decisions, but its technical language can lead to confusion over key principles, misinterpretation by non-technical people, and inappropriate products, while the network may be vulnerable to systemic shock [26–28].

Such technological advances are challenging data collection by qualified and authorized survey professionals (‘top-down’) with more democratic approaches (‘bottom-up’). Users can now create open-source geo-spatial data with cost-effective measurement,

and combine data from multiple sensors and techniques, allowing local communities to become involved in data collection and management. The big survey companies like Leica and Trimble now offer easy-to-use field data collection tools, with scalable accuracy for initial registration and documentation of land rights, and potential for a ‘vertical’ spectrum of land administration services [29].

3. The African Dimension

These developments are ready for application in Africa, where land governance is increasingly seen as a major challenge. Africa is the largest continent by land area, and has the largest number of countries proportionate to land area, and human population of over a billion. The 2020 population estimates for the AU’s 55 member states range from the most numerous (Nigeria 206 million, Ethiopia 116 million) to some 20 with less than five million, and several off-shore island states [30]. Africa’s five-fold population growth in the last half-century has created a so-called ‘youth bulge’, which has been seen as a predictor for social unrest, leading to war and terrorism from stress factors of poverty, mass unemployment, unmanaged urban growth, food and water shortages, and disease; this youth bulge can also be seen as a strength in future, but requires education and livelihood opportunities for young people [31]. Hundreds of languages are spoken in Africa, and create communication problems between people and their governments. The legal systems of most African countries were imposed and imported by past European colonial powers, and the political settlement at independence brought to power new indigenous elites, while maintaining largely intact colonial laws and institutions that facilitated great inequalities in wealth and land ownership [32,33]. Former British colonies or protectorates in SSA cover a larger combined land area than any other former colonial power (see Table 1), and this article explores the land law histories of one country in each sub-region (South Africa, Nigeria, Kenya, and Zambia), drawing from the author’s research.

Table 1. Anglophone countries in sub-Saharan Africa (SSA, by region). Source: <https://www.worldometers.info/population/countries-in-africa-by-population/> (accessed on 10 December 2020).

Region	Countries	Population	p/km ²	Urban Pop %
West	Nigeria	206	226	52
	Ghana	33.1	103	43
	Sierra Leone	8	111	53
	Gambia	5.1	239	59
	Liberia	5.1	53	43
East	Kenya	53.8	94	28
	Uganda	45.7	225	26
	Tanzania	59.7	67	43
Central	Zambia	18.4	203	45
	Zimbabwe	14.9	25	38
	Malawi	19.1	38	18
South	South Africa	59.3	49	67
	Namibia	2.5	3	55
	Botswana	2.4	3	73
	Lesotho	2.1	71	45
	eSwatini	1.2	67	41

Policies of indirect rule and the dual mandate, associated with Lord Lugard, the influential sometime governor of Nigeria, were transferred to other British colonies and protectorates. He claimed with lofty superiority a hundred years ago that:

It is still a matter of indifference to the people whether Government takes up a few square miles, here for a township, or there for a railway, or elsewhere as leases to commercial, mining, agricultural or ranching companies. Even if occupiers are

expropriated in the neighbourhood of a large town, there is as a rule abundant land elsewhere in the great unoccupied spaces of this vast country. [34] (p. 29)

Population pressure on land has increased dramatically since then, challenging the systems of land tenure. Recent research with satellite mapping data has shown that cities of Anglophone colonial origin now have less intense land use than Francophone ones, more irregular layouts, and poorer electricity and piped water connections at the informal urban edge [35,36]. British colonial policy outside the towns and white settler farmlands designated ‘native reserves’ where customary tenure was maintained, but it allowed such land to be taken (or ‘set aside’) without compensation if required by the state for a ‘public interest’, such as for mining, forestry or township creation. African states still use such inherited laws to allow large-scale land-based investments (‘land grabbing’), and in 2000–2012 leased an estimated six million hectares of customary land for biofuel and food production, largely ignoring the needs for land and livelihoods of those displaced [37,38]. Survey findings on global tenure security suggest that about a fifth of households risk losing their homes within the next five years, uncertainty which holds back investment and sustainable development. The World Bank supports mass land titling, yet SSA land is mostly legally undocumented, and accounts for a third of global forced evictions. The political will to reduce insecure tenure is often not only lacking, but empowers the evictors [39,40].

The so-called ‘colonial masters’ favoured an evolutionary theory of land rights, under which customary or communal tenure would be extinguished over time by an inevitable progress towards individual property rights [41,42]. The GLTN’s land rights continuum now identifies a spectrum of rights, from customary, occupancy, anti-evictions, adverse possession, group tenure, and leases, ending with registered freehold. Private property is seen as the highest form of land right, guaranteed in the constitutions of post-independence African states, yet an estimated two-thirds of the continent’s usable land remains under communal or customary land tenure (the highest proportion in the world). British colonial officials opposed granting private property rights for Africans:

The Land Officer and myself are of the opinion that it would be a disaster to allow the African to slide into possession of what would, to all intents and purposes, be an absolute freehold over land which the African occupies under native law and custom. [43]

Theories of property have often been reluctant to recognize plural property relations, particularly ‘non-owner’ interests that may be collective or communal, yet such land relations can defend people and communities against the penetrative forces of globalisation and capitalism, fulfilling an important welfare function, and serving as a reservoir of cheap, un-serviced resource in peri-urban areas. This review next explores how SSA deals with tensions between private and customary land rights, distinguishing between three levels of land governance: supra-national, national and sub-national actors. States have sovereignty and control over their land laws and institutions, but the other two levels—above and below the nation state—also have power and influence [44].

3.1. Supranational, Regional and Human Rights Actors

This section considers the role in SSA land governance of the World Bank, UN-Habitat and GLTN, professional associations, and the AU. Each has a particular institutional narrative, and operates through its own institutions and actor networks, with differing degrees of power and influence.

The World Bank is the largest single lender for development in Africa, approving some \$20 billion in 2020. Its core mission has changed since its origins in the 1944 Bretton Woods conference, from post-war reconstruction to ending extreme poverty, and it has been involved in framing the SDGs, especially SDG1 (‘no poverty’) and SDG16 (‘peace, justice and strong institutions’). It embraces Hernando de Soto’s argument that a framework of secure, transparent and enforceable property rights is a critical precondition for reducing poverty, and its annual Land and Poverty conference presents research and good practice from

its many projects around the world. Its Worldwide Governance Index which ranked SSA lower than other regions in all six key variables: voice and accountability, political stability, regulatory quality, rule of law and control of corruption, and government effectiveness [45]. Its Land Governance Assessment Framework has been applied in 40 participating countries (seven in Africa, and four of those Anglophone), and identified 116 ‘dimensions’ in such areas as land tenure recognition, institutional arrangements, urban planning, and dispute resolution. The four Anglophone SSA countries scored poorly on such dimensions as dealing with longstanding land disputes, and transfer of land from public to private ownership; worst scoring was Sierra Leone (good on 22, bad on 45), and the best was Rwanda (good on 47, bad on 9) [46].

Within the UN system, rural land governance is mainly the preserve of the Food and Agriculture Organization (FAO), and urban land governance that of UN-Habitat with its mission of ‘a better quality of life for all in an urbanizing world’. UN-Habitat’s headquarters in Nairobi houses the GLTN (founded in 2006), which works through a ‘dynamic and multisectoral alliance of international partners committed to increasing access to land and tenure security for all, with a particular focus on the poor, women and youth’ [47]. The GLTN reviewed the international frameworks for land governance, and tracks tenure security through its Global Land Indicator Initiative. With the 2020s declared the ‘decade of action’ for the SDGs, the GLTN has enlisted 80 partner organizations in four cluster groups: international civil societies (both urban and rural), training/research institutions, and professional bodies. The UN-GGIM also promotes a partnership approach by establishing an Academic Network and a Private Sector Network. Another aspect of growing global and regional co-operation is the emergence of regular conferences and forums, with UN agencies as partners/participants [48,49]. The GLTN has some 20 land tools at different stages of development, among which are the Social Tenure Domain Model (STDM) and Participatory and Inclusive Land Readjustment (PiLaR). STDM provides a universal standard for representing people–land relationships independent of levels of formality, legality and technical accuracy [50]. PiLaR seeks to expand the existing land readjustment model by adding more inclusive negotiation processes, so that costs and benefits may be better shared among landowners and other stakeholders, in a less confrontational approach than compulsory expropriation [51,52].

Law, surveying and planning are three professions particularly involved with land governance. All were closely associated with past colonial power structures in SSA, and have continued that role in post-colonial political settlements. They are part of the system that Hernando de Soto compared to a laboratory bell jar, sealed off from the rest of society:

Inside the bell jar are elites who hold property using codified law borrowed from the West . . . The bell jar makes capitalism a private club, open only to a privileged few, and enrages the billions standing outside looking in. [53] (p. 66)

The late Patrick McAuslan, a pre-eminent land, law and development academic, entitled one of his books ‘Bringing the law back in’ to express his concern that development agendas gave insufficient attention to law and its institutions, allowing anti-poor policies from the colonial period to continue [54]. Lawyers’ work is mostly paper-based and typically happens in court-room or bureaucratic settings, while surveyors and planners are more likely to operate closer to the land and people [55]. Colonial surveyors facilitated land-taking from indigenous peoples, mapping boundaries by ‘systematic survey’ methods, and introducing government registration of title. In east, central and southern Africa they divided land into ‘sections’ (meaning a cutting) and transferred often huge tracts of land to white settlers and companies [56]. Town planning, claimed as an apolitical, technical and modern approach to colonial management, was responsible for applying on the ground racial segregation policies, and has continued to shape African urban landscapes [57–60].

The AU in 2015 (the same year that launched the SDGs) adopted its own Agenda 2063 as its ‘collective vision and roadmap’. This aspired to ‘people-centered development, gender equality and youth empowerment’, ‘access to affordable and decent housing to

all in sustainable human settlements', 'effective and territorial planning and land tenure, use and management systems' and 'improving the livelihoods of the great percentage of the people working and living in slums and informal settlements'. The SDGs claim to rest 'on a set of universal principles, values and standards, such as human rights, that are applicable in all countries, in all contexts and circumstances and at all times' [61,62], this approach can be in tension with that of the AU ('African solutions to African problems'), and the AU still depends upon external financial support from the European Union and other core donors for most of its budget [63,64]. Over half of its budget goes on 'peace support operations', with conflicts within and between states that are often related to competition for land and resources; these include displacements for foreign investments, ethnic antagonisms, urban evictions, clashes between farmers and pastoralists, resistance to natural resource exploitation, and tensions between indigenes and 'strangers' [65,66].

The AU adopted a Declaration on Land in 2009, and afterwards created an African Land Policy Centre as a joint programme of the AU Commission, the African Development Bank and the United Nations Economic Commission for Africa (UNECA) [67,68]. The centre has produced land policy guidelines, which recommends reducing the 'overwhelming presence of the state in land matters', but depends upon member states themselves being willing to apply them. The guidelines also assert equal legal status for customary and 'modern' property rights, and an AU Forum of African Traditional Authorities was created, but the two tenure types are often in competition [69,70].

The AU has also organized a Network of Excellence in Land Governance for Africa (NELGA) to build capacity in higher education because member states lack the human and institutional capacity required to implement sustainable land policies [71]. Linguistic legacies of colonialism, and the AU's origins in anti-colonial struggles, have contributed to the location of its regional 'nodes'. Kwame Nkrumah University of Science and Technology (KNUST) in Ghana for West Africa, Ardhi in Tanzania for East Africa, Namibia University of Science and Technology (NUST) and University of Western Cape (UWC) for Southern Africa, all are located in Anglophone countries with socialist backgrounds and significant levels of customary tenure, while Francophone countries have separate nodes in Dakar (West Africa), Cameroon (Central Africa) and Morocco (North Africa).

The AU's judicial organs, the African Commission and Court of Human and Peoples Rights, which are mandated to apply the Banjul Charter (1981), have considered several land and property cases, attracting significant attention. The charter, signed in a time of decolonization, frequently refers to the rights of 'peoples' (in the plural) to development, and to hold natural resources and property, but this commitment has been complicated by the UN Declaration on the Rights of Indigenous Peoples (2007). In three key cases affecting Kenya—two of them brought by indigenous peoples, the third by Nubian descendants of the colonial military—the African Court found for the appellants multiple breaches of their charter rights [72,73]. The Mbiankeu case confirmed that a valid land certificate was proof of property ownership guaranteed by the state, and required the Cameroonian government to annul a fraudulent title and compensate the victim. Banjul Charter rights have also been upheld in cases concerning peaceful enjoyment of property, family rights, and forced displacement without due process [74,75]. Such pro-poor judicial activism has, however, been met with a lack of implementation by African governments, and the AU's enforcement mechanisms are weak [76,77].

The tension between universal human rights and 'African solutions for African problems' is encountered in particular in the treatment of women, who are often disinherited and impoverished by patriarchal customary authorities. The proportion of female-headed households in Africa is growing because of male migration, male partner deaths from disease and conflicts, unpartnered adolescent fertility and family disruption. In a social landscape of many female-headed households, more women are establishing a home without men's involvement, as a 'domain of autonomy' where they can reproduce persons for whom they provide a home, and which they can let or sell. The 2020 pandemic is now leaving newly widowed women without family support, often denied inheritance

rights, facing social stigma as perceived carriers of the disease, and at risk of destitution, especially for older women without pensions or bank accounts. African women are increasingly pressing for recognition of their land rights, encouraged by the Maputo Protocol on the Rights of Women in Africa (2003), and by support for gender equality in SDG5, many national constitutions and GLTN's 'gendered land rights' [78–81]. In Zambia a draft national land policy proposed in 2002 to make 30% of the land available for women was rejected by traditional authorities, but a Supreme Court case granted a greater property share to the wife after divorce, after considering both customary law and principles of equity or fairness [82,83].

3.2. National Land Laws and Institutions: Colonial Legacies and New Technologies

African governments after independence have jealously protected their national sovereignty under the AU Constitutive Act and following the Westphalia state model. Boundaries between colonies, often created arbitrarily, became mostly fixed at independence under the *uti possidetis* principle (paraphrased as 'what you have you keep'). Notwithstanding the many international agendas, declarations and goals that they may sign up to, national governments decide their own land laws and policies under political settlements largely shaped around the time of independence.

The GLTN aspires to a 'world in which everyone enjoys secure land rights'. International law protects private property rights, but does not include an explicit right of access to land, although it does recognize rights to housing, private property and an adequate standard of living [84,85]. After independence many African governments reformed their land and planning laws in attempts to redress injustices from the colonial past, while keeping control in the hands of the state. Such reforms are complex and highly political, and have not always helped to achieve broad-based socio-economic development [86–89]. Systems of control and exclusion inherited from colonial rule have allowed powerful vested interests to benefit from an environment of insecure land rights, and the institutions of land administration and planning may appear to follow international norms, but often not function effectively [90–92]. Corrupt and fraudulent land allocations are common, but are becoming less acceptable: an AU anti-corruption convention exists (2003, ratified by 44 AU member states as at 2020), some lands ministers and officials have been convicted in recent years, and the African Land Policy Centre's third conference (2019) had the theme: 'Winning the fight against Corruption in the Land Sector: Sustainable Pathways for Africa's transformation' [93–95].

This review next discusses the colonial roots of SSA land laws and administration, which have contributed to the continued dominance of the state and of powerful vested interests in land. Four short narratives of land laws draw upon the author's research in former British colonies, one in each of the SSA regions: South Africa, Nigeria (west), Kenya (east) and Zambia (central). The section then explores attempts to introduce digital technologies in SSA land administration, especially blockchain/DLT.

South Africa was one of the oldest European colonies in Africa, settled by the Dutch and other immigrants in the 17th century, then under British colonial rule from the 1790s. The 1913 Natives Land Act (subsequently renamed the Bantu Land Act and the Black Land Act) was the cornerstone of *apartheid* until abolished in 1994. The majority Africans population had been excluded from land ownership, and their land reserves, called tribal homelands or Bantustans, comprised only 7% of the area of South Africa; whites and other racial groups had the rest and best. Customary land tenure in the reserves was maintained, but often misinterpreted and undermined by the judiciary, manipulated by administrators, and overlooked in legislation. As late as 1986 a South African judge (white of course) could state in his court that: 'Whites own land by law, whether they are industrious or not, while non-whites must demonstrate their worthiness to own land through their labor' [96]. The government since 1994 has ended legal racial segregation and made other land law reforms. Land redistribution offered those prejudiced under the old regime (the urban and rural poor, farm workers, labour tenants and emergent

farmers) to acquire land with state assistance, but only from willing sellers. The Communal Land Tenure Act (2004) allowed community ownership (community defined as a single juristic person, often a tribal authority), in a move intended to address the chaotic land administration in the former homelands. New land registration procedures allowed rights to be upgraded from 'initial ownership' under the 1995 Development Facilitation Act. In spite of such law reforms, progress has been limited in reducing racial inequalities in land ownership, or improving access to land and housing for the rapidly growing population. The South African government adopted a target in 1994 of transferring 30% of commercial farming land to 600,000 smallholders, but after a decade only 3% had been transferred, reflecting institutional weaknesses and the reluctance of owners to offer property voluntarily. The issue of land reform remains understandably highly contentious and complex [97–100].

West Africa had little white settlement and a different land governance story, as exemplified by Nigeria, now the most populous SSA country and a federation with many ethnic groups and languages [101]. When Southern Nigeria was created in 1900, the first act of the new administration was a Native Lands Acquisition Proclamation, which required the governor's permission for all state acquisitions, and the Northern Nigerian Land and Native Rights Proclamation (1910) conferred similar powers on its governor, a measure 'designed to define and secure the rights of the natives to the use of the land whilst providing opportunities for development on modern lines'. The British colonial authorities in West Africa had less power over land than in South Africa:

The alienation of tribal lands first to Europeans for mining purposes and later to stranger Africans for cocoa farming has been one of the major problems of the Gold Coast [now Ghana]. The Colonial Government attempted to deal with this problem by securing control over land generally in a manner similar to that now in operation in Northern Nigeria and Tanganyika. Native resistance to such a measure was so intense that it had to be dropped. Local native feeling has always been extremely sensitive on land matters and any suggestion of Government interference has been represented as an attempt to dispossess the people of their lands. [43,102]

After Nigerian independence in 1960, its Land Use Act (1978) ended any residual private ownership, and allocated land rights through certificates of occupancy (equivalent to 99-year leases); minerals remained a federal matter. These certificates, originating in previous colonial policy, were controlled by state governors (19 of them in 1976, by 1996 grown to 36, plus a Federal Capital Territory). Complex procedures and often corrupt bureaucracies mean that most land transactions by-pass official consent, and take place as private contracts between the parties; less than 3% of land is thought to be formally registered with federal, state or local authorities, which can take up to two years because of complex chains of title and poor documentation. Nigeria's transfer fees are among the most expensive in the world, yet land is still seen as a reliable store of value and best hedge against inflation. The 1978 Act has not been reformed, and is much criticised: 'politically undemocratic, economically unproductive, but also socially segregative, particularly in its urban and non-urban dichotomy' [103–107].

In East Africa a tiny white settler community dominated Kenyan land law in the colonial period, strongly influenced by South African experience and placing strict controls over African residence and movement. In the early days of the East African Protectorate (later Kenya), a Crown Lands Ordinance (1902) vested in the crown 'all public lands in the Protectorate . . . including all lands occupied by native tribes', and a subsequent ordinance (1915) further empowered the colonial administration to grant land on behalf of the crown to individuals (not Africans) on 999-year leases, or 99-year leases in township surveyed lots. A deeds registry system for these grants was introduced, following South African practice, and afterwards a Torrens-style official registry of titles, following the South Australian example. In 1921 the Kikuyu (the tribe most affected by white settler land acquisition) took their case to the High Court of the newly constituted Kenya colony, but the judge

determined that under the 1915 Ordinance all native title to the land disappeared, and their rights were confined to occupation, cultivation and grazing, in accordance with Privy Council case law at the time. A few years later the Chief Native Commissioner (a British official) was reporting ‘the acute anxiety on the part of natives of every tribe with regard to the present insecurity of their land tenure’ [108]. The Native Lands Trust Ordinance (1930) later empowered declared the governor to preside over a trust board to administer the native reserves that were created on the South African model, and he could ‘set aside’ (in effect confiscate without compensation) trust lands for ‘public interest’ purposes such as townships or mining. Later, in an attempt to counter the Mau-Mau insurgency by creating an African land-owning class, the Registered Lands Act (1963) provided for registration of African interests in trust land by a process of systematic adjudication, similar to that for enclosure claims in nineteenth-century Britain. President Kenyatta’s post-independence government did not fundamentally reform the legal framework, and created a network of powerful new beneficiaries through the establishment of private land-buying companies, often headed by prominent politicians, who took over white settler lands, subdivided them or sold on to public corporations at inflated values. The Trust Land Act (1970) transferred former tribal trust land to local authorities (called county councils), which could be converted into registered private land or ‘set apart’ for public purposes as under the colonial regime. Kenya’s new constitution (2010) vested all land in the people collectively as a nation, and provided for three separate land tenure systems of apparently equal status (public, private and community). The subsequent Community Land Act 2016 gave potentially extensive powers to communities, but without the political will to make such a tenure regime effective [109–111].

In the fourth case, Zambia (the former Northern Rhodesia) had been Britain’s richest African colony in the 1950s from its copper ore exports (excluding South Africa and diamond-producing Sierra Leone). After it transferred in 1924 from chartered company rule to become a protectorate of the British crown, new ordinances followed British colonial policy in East and South Africa. Upon independence in 1964, Zambia inherited four categories of land: state land (formerly crown land), freehold land, reserves and trust land. After it became a one-party state, legislation in 1975 vested all land in the President on behalf of the people: freehold land became leasehold, and all land transactions required the President’s consent. A subsequent Lands Act (1995), which is still in effect, allowed the Lands Commissioner to convert customary land to 99 year leases, thus restoring value to land. This reform worsened economic inequality by concentrating land titles in Zambian elites and foreigners, while existing occupiers could be deemed squatters and evicted [112,113].

The above brief land law histories of four SSA countries show the continuities of colonial systems with the political settlements after independence. The land administration systems have remained overwhelmingly paper-based, bureaucratic and vulnerable to exploitation and corruption, and now have to struggle with greatly increased populations and demand for land. International moves towards FFPLA, which include World Bank support for ‘accelerating digital transformation in Africa’, have meant experimentation with digital land titling and transactions, offering a potentially promising application for blockchain/DLT linked to the tokenization of property assets through crypto-currencies. DLT in real estate has been seen as an opportunity to replace paper-based public registers and prevent such abuses as double-selling, impersonation of buyers and sellers, and forged signatures. Instead computer authentication of users, time-stamped smart contracts, and tamper-proof records, even zero-visit online transactions, could support a transparent and publicly verifiable distributed ledger for property [114,115].

American corporations linked with crypto-currencies have experimented with blockchain/DLT projects in several SSA countries since 2018. Medici Land Governance, a subsidiary of a blockchain accelerator backed by controversial entrepreneur Patrick Byrne, partnered with three capital cities [116]. It made a memorandum of understanding with Zambia’s Lands Ministry and Lusaka city council to test digital land titling in regularizing informal settlements. In Liberia, a Medici project set out to record digital rights for

1000 residential plots around the capital Monrovia, using high-resolution imagery, a street address system, and community education and data collection. In Rwanda, whose political leadership initiated mass land titling and aspired to transform the capital Kigale through real estate redevelopment, Medici piloted digitization of the Land Registry; Rwanda now claims to be second in the world for speed of registering new property [117,118].

Other experimental DLT projects have occurred in Ghana and South Africa. Bitland, a non-profit subsidiary of American bitcoin corporation Ethereum, partnered with the Ghana Land Commission to record 5000 properties in the capital Accra through a new system of GPS coordinates, digital proof of identity, and transfer of funds via smart contracts [119]. In South Africa, the African National Congress (ANC) built some 3 million houses under its Reconstruction and Development Programme after 1994, but less than 2 million were registered on hand-over, and after more than 20 years original beneficiaries had died or moved away, or let to tenants. In 2018, the Centre for Affordable Housing Finance in Africa undertook a pilot project in Khayelitsha township outside Cape Town, surveying about 1000 properties and occupiers, cross-checking results against original subsidy data, and transferring documentation to a digital record [120].

These experimental DLT projects in SSA seem to have struggled with scaling up to national level because of basic infrastructure problems (power outages, poor internet connectivity, low computer ownership and computer literacy), and the technology may be poorly understood by over-eager politicians. The ‘placelessness’ of technologies that allow digital transactions and money transfers over the heads of the actual occupiers create risks of occupiers losing their homes for the lure of quick money, and predatory lenders forcing distress sales [121].

3.3. Below the State Level: Local Government, Public Awareness and Participation for Meeting Basic Needs

Land governance not only operates at national level, but also through sub-national institutions: local government, non-governmental and citizen-based organizations (NGOs, CBOs). This review now addresses past and current local governance arrangements, and new approaches that are changing the relations between citizens, communities and government.

Past colonial regimes in SSA ran local administration through centrally appointed (usually white) ‘district officers’, and local authorities were generally weak and under-resourced. Racially based master–servant legislation, requiring employers to house their workers, but not where suitable housing was available nearby, allowed for African housing to be neglected. Across much of SSA services for the African population were financed through the so-called ‘Durban system’, under which labourers paid a registration fee for their own policing and accommodation, and profits from a municipal monopoly over beer halls were paid into a ‘Native Revenue’ account, kept separate from other municipal finances to pay for community services. Africans soon recognized the injustice of the system: ‘How much beer must I drink before my children can drink water? Do other countries make poor people drink beer to collect money for water?’ [122,123]. Now, sub-national authorities are increasingly asserting themselves. The global umbrella organisation, United Cities and Local Governments, founded in 2004, is the main NGO promoting democratic, effective and innovative local government, encouraged by GLTN initiatives on land-based local finance. Structural reforms of local government powers and finances, however, move slowly, even more slowly than land law reform. Citizen perceptions of local government are generally negative, but city-to-city learning and mentorship programmes are improving the transfer of knowledge and best practice [124,125].

With rule of law measures supported by the World Bank and SDG16 (‘peace, justice and strong institutions’), ways are being developed to improve citizen awareness and access to law, including protection of land rights. Over 20 years ago pioneering American researchers Ewick and Silbey identified three common narratives that ordinary people tell about law: it is either magisterial and remote, or a game whose rules can be manipulated to one’s advantage, or an arbitrary power to be actively resisted [126]. SSA experience confirms these research findings, law being seen as arbitrary or remote from the realities of

people's daily lives, and as a tool manipulated by elites. The many linguistic and ethnic communities within African states create conditions of 'legal pluralism'—the existence of multiple sources of law within a single geographical area. Courts use official languages of European origin, which may be poorly understood by people who speak different languages in their every-day lives. Attempts to codify traditional land practices have largely come from foreign lawyers remote from the people [127,128]. Tackling legal problems is harder if there is a shortage of lawyers, whether practising or in universities; land and human rights lawyers are even fewer in number, although Pretoria University's Centre for Human Rights has been actively training them [129]. Externally-funded NGOs sometimes represent communities in court, but governments SSA accuse them of being 'busy bodies' or 'meddlesome interlopers', and in 2017 the Institute for Human Rights and Development in Africa petitioned the African Commission to express its 'concern and alarm at the shrinking of the civic society space' in many countries [130]. The media, social media and NGOs can help improve public awareness, but women in particular still seem unaware of their legal property rights, which allows patriarchal attitudes over land to continue [131].

Democratization through data-gathering and communication technologies is opening new possibilities to close the gap between policies at international and local level and practical implementation on the ground. In Liberia the Amplio Talking Book, a battery-powered audio device, is reaching people in remote communities with poor literacy levels and without electricity or the internet, who can now learn about recent land law reforms in their local language, and record their feedback [132–134]. In Cape Verde open-source technologies created a mobile geographic information system (GIS)-web mapping application for informal areas of the capital at high flood risk to collect and transmit data at household level for evaluation and action [135]. International charity MapAction works with Oxfam and civil society partners to map quickly from satellite imagery and improve food security, livelihoods, and access to water, sanitation and hygiene services. Participatory mapping, sometimes called 'counter-mapping' or 'cadastral politics', uses local oral history and traditions so that local communities can record land uses previously unrecognised by state institutions, as evidence to assert their occupancy claims and engage with land governance institutions [136–139].

Local surveying and mapping can also help with settlement upgrading. After decades of government evictions and demolition, going back to colonial slum clearance measures, communities are increasingly demanding greater accountability and transparency from government, and empowerment of their improvement efforts. The 'informal' areas may lack basic services, and be difficult to navigate physically, with inadequate street and property addressing, and poor road and path networks, and are still seen as inferior compared with 'formal' developments. New attitudes towards tenure security have softened official hostility to slums or squatter settlements, as governments recognize the political costs of eviction, and tenure regularisation can be linked to physical upgrading measures. Surveying and title registration may be complex and expensive, but upgrading can evolve gradually over time with local political leadership. Kenya (where UN-Habitat has its headquarters) has various community-based organizations that have resisted government evictions and promoted access to land, shelter and basic services for the urban poor, including free conversion of title deeds [140–143].

Recent research identified three stages in the development of one informal settlement (Mindolo North, Kitwe, Zambia). In the initial occupation stage, marginalised groups of society, mostly young and unemployed, occupied vacant land, and struggled against council hostility that demolished about 600 homes in 2014. The second or consolidation stage saw a rapid expansion of land coverage and buildings, as the undeterred settlers adapted through a mix of social norms and borrowed statutory rules. The settlement ultimately received official approval, and the third stage (maturity) saw intensified construction and house completions, an informal local governance structure, documentation of property rights, and the beginnings of health and other social facilities [144,145].

A shared sense of citizenship, trust and reciprocity creates social capital, with its own formal and informal rules. The local community can become the curator of collective memory as a basis for education and empowerment. Cape Town's District Six Museum, celebrating the multi-racial neighbourhood that racial segregation policy demolished, displays a large street map, embellished by handwritten notes from former residents showing where they lived before removal, to create a sense of neighbourhood community and instil a pride in heritage. In the Kalingalinga poor neighbourhood of Lusaka, Zambia, an exhibition of work by local photographers and visual artists which toured internationally, helped to empower the community [146–148]. Citizen frustration with basic infrastructure shortages of water, electricity and sanitation pushes them to learn tactics to negotiate improvements [149–153]. Networks of local community actors, for instance, are recycling waste materials into energy briquettes, as alternative cooking energy solutions using locally available technologies [154–156].

4. Conclusions

Africa's land governance challenges can seem daunting, even before the recent impact of the coronavirus disease 2019 (COVID-19) pandemic. This review has shown the complex technical languages of the different stakeholders, and the constraints upon resources. The problems are 'wicked' (in the sense of resisting solutions rather than evil), where their complexity means that efforts to solve one aspect may reveal or create other problems. The political settlement at independence for African countries, which often continued colonial land inequalities and governance structures, is being increasingly challenged half a century later by population pressures and climate change, while the expectations of the global community from the SDGs have grown. Dysfunctional national land laws and administration are increasingly seen as a major economic obstacle to African development. African land governance may now be at a critical juncture (in path-dependency terms), because the demographic youth bulge puts new demands upon the governing class, while existential threats grow [157,158].

There is no easy route to improve land administration and governance in SSA; political leadership, law reform and investment in systems and technologies are all needed. There are, however, reasons for optimism, and much has been achieved within a few years to better understand the problems. The traditional skills of the professions of land and built environment are being supplemented by more political skills of mediation, dispute resolution and local coalition-building, while academic scholarship is being enriched by interdisciplinary approaches. Theory and practice is being rethought to change negative colonial legacies by reform of laws and regulations, improve public space both physical and figurative, stimulate entrepreneurship and innovation, and build stronger civic society. New knowledge and actor networks—academic and professional, global and local—are developing new thinking and connections, such as FIG, the GLTN partner group, UN-GGIM, NELGA, and the Right to Development network. Advances in survey technology are adding more democratic data-capture techniques, championed by younger surveyors, and digital land administration offers the potential of better registration and protection of property rights. Land governance at a local everyday level means communities and neighbourhoods negotiating their own formal and informal rules, which seems to be occurring across SSA, and new legal structures for land management are developing, such as co-operatives or community land development trusts. Traditional authorities are returning as part of the modern political landscape, as much as any constitution, legislature or local council, and their resilience is contributing to better community participation in development efforts.

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