

How Land Administration can Contribute to Food Security

Paul VAN DER MOLEN, The Netherlands

Key words: land tenure, food security, land administration

SUMMARY

Land is a scarce resource. Its management is required to contribute to solving of the severe problems the world population faces today. The persistent existence of these problems indicates that land is not managed well or at worst is not managed at all. This is confirmed by many research reports and policy documents. This paper aims at collecting the facts and policies concerning one of these problems, namely food security. Land administrators can contribute to solutions, the paper argues, however, policy documents push for innovations: new land administration and land management instruments and processes are needed. The building blocks for such an innovative approach are available today.

How Land Administration can Contribute to Food Security

Paul VAN DER MOLEN (the Netherlands)

1. INTRODUCTION

Land is a scarce resource; the total land mass is estimated at 13,295 million ha, of which 1,559 (12%) is cultivated land, 4,672 (36%) is grass- and woodland, 3,736 (28%) is forest land, 2,999 (22%) is bare land, 152 (1.1%) is settlement and infrastructure, and 244 (1.9%) is inland water (FAO, 2011a). Its management is required to contribute to solving the severe problems the world population faces (Williamson et al, 2010). The persistent existence of these problems indicates that land is not managed well or at worst is not managed at all. This is confirmed by many research reports and policy documents. This paper aims at collecting the facts and policies on one of these problems, namely food security. Land administrators can contribute to solutions by offering innovative land administration and land management instruments.

2. POVERTY AND FOOD SECURITY

2.1. Poverty and hunger overlap.

The correlation between poverty and hunger is high, although the overlap is not perfect. In 2004, the 'hotspots' of poverty in the world are: South Asia (446 million, 47%), South East Asia and the Pacific (169 million, 17%), and Sub-Saharan Africa (298 million, 31%). This regards people living of <1 \$ a day. When it comes to the ultra-poor (162 million people <0.5 \$ a day), 121 million (76%) live in Sub-Saharan Africa, in 2004 (IFPRI, 2007).

The global trend is a decreasing poverty in Asia (in 2004: 33 million less than in 1990), and increasing in Africa (in 2004: 50 million more than in 1990) (IFPRI, 2007). This trend is maintained (UN, 2012). Despite a global trend of poverty shifting towards urban areas, the incidence of poverty is still higher in rural areas, up to 2.4 - 4 times (IFPRI 2007). So, the situation in Africa is most persistent: despite annual food aid of 3 billion \$ and food import of 33 billion \$ still about 265 of the 915 million undernourished people live in Africa, confirms (ECA, 2010).

Worldwide about 868 million people are undernourished (12.5% of the world's population), of which 852 in the developing world. Sub Saharan Africa suffers most: 26.8% of the population (numbering up to 234 million) people suffer from hunger. Economic growth should provide higher per capita income which helps to reduce hunger (FAO, 2012b).

2.2 Rural and urban poverty

Poverty remains -as said- largely a rural problem. Currently 1,289 million people have an income of less than 1.25\$/day; most of them live in Sub Saharan Africa (47%), and South Asia (36%); while looking at less than 2 \$/day it concerns 2,471 million people, of which 69% in Sub Saharan Africa and 70% in South Asia (UN, 2012). Concerning the population living on less than 1.25\$/day, 70% is rural; only in the regions East Asia, Middle & North Africa, Latin America and the Caribbean this figure decreases to about 30-60% of the population, while in the rest of the world the figure is 75-80%, with South Asia having the highest figure of 82% (IFAD, 2011). The poorest people live in South Asia and Sub Saharan Africa, where 80% of the people live of all those living on less than 0.75\$/day: in absolute terms about 700 million people (IFPRI, 2007). Most of them are rural (IFAD, 2011). Urban poverty in 2002 counts for 291 million (<1\$/day), 752 million (<2\$/day), resulting in a share of 24.6% resp. 26.6% of the poor population; the lower share of the urban poor will remain for the next decades, while a shift is expected in 2040 (Baker, 2008). With increasing urbanization, the number of urban poor will thus rise.

2.3. Feeding the growing population

The UN estimates that by 2050, the world population will increase from 6 to 9.5 billion people, most of which live in South Asia and Sub-Saharan Africa (UN, 2011). Food security for 9.5 billion people requires a 70% increase of the global food production and up to 100% more in developing countries (HLEF, 2009; FAO 2011b). This is –annually- a billion tons of cereals and 200 million tons of meat additional to the production of 2005 (Bruinsma, 2009). This production growth can be realized for 80% from higher yields and increased cropping intensity and for the rest, 20%, coming from land expansion: globally it is estimated that in general 4.2 billion ha is suitable for agriculture, of which 1.6 billion hectares already is cultivated (FAO/GAEZ, 2002). Africa holds 60% of the area of uncultivated lands (McKinsey, 2010). Analysis shows that an increase of cultivated land is needed of 120 million ha, in Latin America (52 million ha) and Africa (64 million ha); 32 million ha should be irrigated (Bruinsma, 2009). Total yield increase is then possible of 68% (Africa), 89% (East/North Africa), 53% (Latin America), 86% (South Asia) and 81% (East Asia) (FAO, 2009).

2.4. Africa's agricultural growth potential

Africa faces the biggest challenge, as the agricultural production growth is dramatically low compared with the rest of the world. Statistics show that for example the production of cereals globally grew from 2 tons/ha in 1960 to 6 tons in 2007, in China from 0.5 to 5 tons, in India from 0.4 to 2.2 tons, but in Africa only from 0.4 to 0.5 tons/ha (APP, 2010).

While food production in Asia grew from 100 million tons cereals to 300-500 million tons in 2006, agricultural production in Africa remained about 5 million tons both in 1961 and 2006 (Langyintuo, 2011). The African Union calculates that per capita other developing countries grew from index 100 in 1961 to 170 in 2003, the World as a whole and also Asia from 100 to 130, and Africa from 100 to 90 value added output of agriculture (African Union/Nepad, 2006). Agricultural growth increased from 2.3 % in 1990 to 3.8 % in 2005, however mostly based on expanding land use; productivity hardly increased: if productivity does not boost, African food import will rise from 30-50 billion \$ now to 150 billion \$ in 2030 (Okeyere, 2012).

A study for Central and West Africa reveals that when applying better agricultural technology (high yield crop varieties, fertilizer, machinery, water) yields in any case can be improved for example 1.9 times for rice, 2.7 times for maize, 4.7 times for potatoes, 4.5 for bananas (IFAD, 2011).

Another study estimates that the value of African agricultural production can grow from 280 billion \$ in 2010 to 880 billion \$ in 2030, generated by 225 billion \$ by cultivating new lands, 235 billion \$ by higher yields, and for 140 billion \$ by a shift towards high value crops (McKinsey, 2010).

Yet another study estimates that African agriculture produces 15% of its potential, Latin America 45%, and Asia 30-50%; Europe produces 63% of its potential (van Vollenhoven van, 2012).

2.5. Land as a fundamental asset in the rural economy

In general, higher incomes through economic growth should reduce the proportion of people who suffer from hunger. One important aspect is that economic growth does not (always) reach the poor (ECA, 2012). (FAO, 2012b) stipulates that -amongst other aspects- this has to do with the unequal distribution of assets such as land and capital; realizing that hunger and poverty are concentrated in rural areas, agricultural growth more directly affects the poor, than other types of growth.

Land remains a fundamental asset in the rural economy (IFPRI 2007). Smallholders dominate the farming system (ECA, 2004; Nagayets, 2005; Moyo, 2008; HLEF, 2009). Farming on small plots is widespread, mainly for subsistence purposes (McKinsey, 2010).

Of the 525 million farms worldwide, 446 million have a size of < 2 ha. These farms can be found in Asia (388 million, of which in China 193 million; India 100 million, Indonesia 17 million), and Africa (33 million, 80% of all farms at the continent). Latin America's holds only about 4 million small farms. The average farm size here is 67 ha, understood as a sign of the unequal distribution of land, while Asia and Africa both have average farm sizes of 1.6 ha (Nagayets, 2005). In Tanzania, the average size is 2 ha

(IAASTD, 2009); farms in Africa are normally between 0.4 and 6 ha, however in -for example- densely populated Rwanda <0.5 ha (ECA 2004).

In general farm size is declining: land fragmentation occurs because of selling plots, inheritance systems, degradation of lands, conflicts and land grabbing (Mwijage, 2011; ECA 2004; World Bank, 2009; FAO, 2011b; HLPE, 2011). However, smallholders will need to play a key role meeting the requirements, if not for other reason than the sheer magnitude of their production in developing countries, according to (FAO, 2012b): they need to overcome considerable constraints, such as changing market-channels, food processing, knowledge intensive technologies and accessing credit.

Landlessness is also persistent, especially in Asia: studies into the characteristics of the poorest and hungry reveal that the poorest in Asia are those who are landless (of all people living of < 1 \$/day in South Asia 60-80 % is landless, compared with Africa 4-60%). In Africa the poorest thus might possess land, but not enough to survive; land remains a fundamental asset in the rural economy, but the poor lack access to markets, and other key resources such as credit and agricultural inputs (IFPRI, 2007). This is in line with (FAO, 2011b) which argues that there is a strong link between poverty and lack of access to land and water resources.

3. NEED FOR INSTITUTIONAL AND TECHNICAL CHANGE

3.1. Technical changes

To boost agricultural production two kinds of measures are considered to be necessary, namely (a) change of institutions and policies and (b) change of technical approaches (FAO, 2011b).

The *technical* approach assumes the availability of improved crop varieties, better use of water (irrigation: only 4% of arable land in the SSA region is irrigated compared to 35% in Asia and 15% in Latin America (IAASTD, 2009), more use of fertilizers (in Africa with 11 kg/ha about 10% of the world's average, FAO, 2011c), better control of pests and diseases, improve low mechanisation (in Africa 14 tractors/100km² while in high income OECD countries 433/100km²), better roads (in Africa 9-17% of all roads paved while in OECD 90%) better electricity supply (Okyere, 2012), improve the currently very limited technology transfer and adoption (FAO 2011c).

A major problem is land degradation, which is major constraint to productivity growth and only can be reversed by appropriate use of chemical and manure amendments (IAASTD, 2009). IFAD estimates that around 36 billion ha worldwide has become desert, while annually 12 million ha is added, which by the way increases (IFAD, 2011).

3.2. Institutional changes

From an *institutional* point of view, the bottom line is that FAO observes that land and water institutions have not kept pace with the growing intensity of river basin development and the increasing interdependency and competition over land and water resources. The lack of adequate institutions for land regulation and administration has been a major constraint to the implementation of new land policies (ECA, 2004). The needed intensification of existing land use: the cultivation of another 120 million ha and the irrigation of an extra 32 million ha, require widespread adoption of sustainable land management practices (FAO, 2011b). Now the issue of land tenure comes on the screen: aligned with the technical changes, institutional conditions should remove constraints and barriers in the field of (1) incentive structure, (2) *land tenure and access to water resources*, (3) *collaboration between land and water institutions*, (4) efficient support services including knowledge exchange, research, and finance, and (5) better and secured access to markets (FAO 2011b). Especially the access to and management of land and water needs to improve markedly; the lack of clear and stable land and water rights and the weak regulations and enforcement has contributed to conflict over land access and competition for water use: in particular the inclusion of customary and traditional use rights in national legislation is urgently needed; land and water institutions can be strengthened and common property systems should be protected to provide for secure land tenure (FAO, 2011b).

3.3. Security of land tenure

These statements of the FAO in its flagship report are confirmed widely.

The expansion of land to be cultivated is problematic, because the ownership of these lands lies within the States, which are unable to distribute use rights in a transparent way and which appears to be unable to enforce property claims (FAO, 2011c).

Inadequate land tenure structures are a major obstacle; long term investments have been found to be correlated to security of tenure and short term investments to insecure tenure, although land reform has not be a solution for this, as project evaluations demonstrate that land reform projects often benefitted the elites and better-off, at the expense of the poor (IAASTD, 2009).

Customary systems of land tenure and land use are often not legally recognised, which makes them vulnerable for grabbing by governments and local elites (Mwijage, 2011; ECA, 2004; IFRPI, 2007; World Bank, 2003, 2009; FAO, 2011a,b,c; IAASTD 2009), reason why it is necessary to develop systems where these local rights can be secured (FAO, 2011b, ECA, 2004; World Bank 2003).

This is in line with the McKinsey report, confirming that the barriers of raising production in Africa include lack of advanced seeds and other inputs suitable to the continent's ecological conditions, inadequate infrastructure to bring crops to the market, perverse trade barriers and tax incentives, unclear land rights, and lack of technical assistance (McKinsey, 2010).

However, indeed, some local farming systems have proven to be inefficient, prone to grabbing of common land by local elites which is fatal to farming systems where the exploitation of individually held residential and land properties is dependent of the use of common land for perennial crops, grazing, manure and mulch (Mwijage, 2011). Women's land rights are neglected (IAASTD, 2009). 'Land tenure systems in Africa whether founded on customary systems or regulation or in statutory formal systems remain unequal and discriminatory in power structure and procedures; these allocate land unequally on the basis of class, gender, ethnicity and other forms or social hierarchy', Moyo says (Moyo, 2008): 'the failed agrarian transition reflects both the narrow spread of agricultural capitalism as well as the regulation of the majority of the African population to dependence on petty agricultural production for their survival'.

Brazil and Thailand are examples where land reform led to increased land tenure security, which together with other measures, were important drivers for commercial agriculture (Feder, 1987; World Bank, 2009). Such an agricultural transition worked also well in Asia: India, Thailand, and Vietnam which were rice importers earlier, are now the top rice exporters in the world (Bloomberg, 2012; Nielsen, 2002)

3.4. ECA-Food Security Analytical Model of land tenure

The Economic Commission for Africa developed a model for food security and land tenure (ECA, 2004). This model maps the dimensions and implications of five problematic dimensions of land policy, namely (1) land distribution, (2) land utilization, (3) land tenure, (4) land administration (in the sense of administration of land: 'land management'), and (5) land adjudication (in the sense of 'conflict and dispute resolution').

'Land distribution' concerns the unequal access to land according to race, gender, class and ethnic distinctions, as the role of large foreign investors and the State itself as large land holders. Equity and efficiency aspects of unequal land distribution undermine food security and agricultural development, while the current discussion is too much on technical aspects of productivity.

When it comes to 'land utilization', existing land regulations (often still originating from colonial times) favour large scale farming, in the assumption that these are highly efficient in terms of yields, while meanwhile even the World Bank adopted the view that smallholders are more efficient. Still regulations are not free from discrimination at this point.

Regarding 'land tenure' the main question is how secure tenure systems are and whether there is equity or not. The 'bundle or rights' determine farming systems and the control over natural resources.

'Land administration' institutions are weak and lack capacity to provide management and control over rural lands.

'Land adjudication' means solving land disputes, which consist frequently in situations of multi tenure regimes. The courts remain elitist: the poor seem always to lose.

4. RELATED ASPECTS

4.1. Women and secure access to land.

The role of women is of paramount importance as in Africa 70% of the agricultural workers are women and 80% of the food producers (IAASTD, 2009); 31% of the households are female-headed, and yet women own less than 2% of the land (ECA, 2004). Still they are not reached by land reform programmes; forced break up of customary land holdings mostly led to the exclusive transfer of land rights to the males; women are ignored by government services and cooperatives; new legislation aiming at correcting local inheritance rules often apply to urban areas and not to rural areas (ECA, 2004). Women's access to land remains in many cases an unresolved issue (IAASTD, 2009; McAuslan, P., 2010).

4.2. Commercial farming and indigenous land rights.

In the situation of increased commercial farming the two main questions are how land rights for the local population can be secured, to avoid eviction and marginalization, and how can (foreign) investors be provided with access to land already claimed and used by indigenous peoples (World Bank, 2009). The increased investments in large scale agriculture constitute a risk for neglecting those local land rights, while meanwhile about 50-80 million ha is already transferred to large investor's worldwide (HLPE, 2011).

This has also to do with the African Union's Comprehensive African Agricultural Development Programme (CAADP) of 2003, urging African States to invest 10% of government expenditure to agriculture and increasing the amount of irrigated lands, for which governments seek private investors (African Union, 2006). Since local land rights often are not documented, registered or secured, and the government still considers itself as the underlying owner of land, forest, water and mineral rights, local people using these resources can be easily displaced with little or no compensation (although: having formal state recognized rights is also not a full guarantee against dispossession) (HLPE, 2011)

'Registration of land and natural resource rights is critical to providing security to rural people and to enabling them to negotiate from a better position with both investors and government. However, levels of rights registration are very low in many parts of the world, especially in Africa. At current rates of operation, such systems will take decades to cover the territory of many countries. A more immediate means to provide secure rights for smallholders would be through community land registration, whereby land is mapped and registered at the level of a village as a whole, rather than plot by plot. This allows for a far more speedy process of coverage, and under certain conditions would offer some protection from land seizure. However, this may also be vulnerable to capture by local elites given the fact that most local communities are highly differentiated along

wealth, gender and ethnic lines. Thus the security of land rights is dependent on a range of factors (beside their formulation) that bear on the governance of rights such as low-cost, easily accessible and prompt mechanisms of conflict resolution, fair and reliable enforcement, as well as the equitable distribution of benefits' (HLPE, 2011).

4.3. Forced eviction.

According to the data recorded in Global Survey 11 a total of 4,312,161 people were affected by threatened and implemented forced evictions in 2007 and 2008. Implemented forced evictions count for 1,590,168 people, of which in Africa 270,660, Latin America 433,296 and Asia and the Pacific 872,926.

Almost 42 per cent of all recorded forced evictions have been urban. In Asia, the proportion of urban forced evictions averages at 61 per cent while in Africa the average percentage of urban forced evictions for 2007 and 2008 is 55 per cent (COHRE, 2009). In the period 2003-2006 5,646,571 people were evicted, of which 2,004,171 in Africa, 174,180 in Latin America, 3,452,093 in Asia and the Pacific, and 16,127 in Europe (COHRE, 2006).

The most common reasons for eviction are tenure insecurity/absence of formal tenure rights, authoritarian top-down planning, development and infrastructure projects, large international events, such as major sporting events, conferences, urban redevelopment and 'beautification' initiative, property market forces and 'gentrification', absence of State support for the poor, political conflict, ethnic cleansing, and war (COHRE, 2009).

Security of tenure is considered as the most important cornerstone for improving the rights to adequate housing, and therefore COHRE calls for ensuring legal security of tenure for all people and households who currently lack such protection, ensuring that any housing rights violations by "third parties", such as landlords or property developers, are prevented, protecting residents, by legislation and other measures, from discrimination, harassment, withdrawal of services or other threats, ensuring that housing-related costs for individuals, families and households are commensurate with income levels, establishing a system of housing subsidies for people unable to afford adequate housing, and to protect tenants against unreasonable or sporadic rent increases (website COHRE 11-10-2012).

A paradox is that insecure tenure might also prevent informal dwellers from market forces, as evidence shows that as soon as properties are titled, richer people queue up to buy, many slum dwellers resist the temptation to make some money, continuing their lives again in informality. Onsite upgrading therefore is recommended, including protection from predatory land speculators (Habitat, 2011b).

4.4. Economies of scale and land consolidation.

Despite the small average farm size, however, economies of scale matter (Okyere, 2012). Higher productivity might result over time in the increase of farm size, land consolidation and increased commercialization (HLEF, 2009). More secure land tenure might give farmers opportunity to consolidate land holdings, through buying and selling, hereby increasing their land farm size (IAASTD, 2009). However, assembling larger parcels is still difficult because of the administrative hurdles and the lack of clear land rights (McKinsey, 2010). One aspect is that consolidation might increase rural unemployment and give way to further rural-urban migration unless growing commercialization leads to more agribusiness providing opportunities for non-farm employment (Okyere, 2012).

4.5. Investment climate and access to credit.

Another institutional improvement should be found in the current lack of investments. Increase of agricultural production relates to the lack of a favorable investment climate (HLEF, 2009) which causes market failures because producers cannot have access to credit, to insurance and by consequence to necessary input.

Also it hampers availability of equipment, which is reason that many farmers still work with hoe and cutlass (FAO, 2011c). More government investments are needed (McKinsey, 2010) and the success of the subsidy policy of many Asian countries can be followed, taking care however that subsidies are well targeted and do not only benefit the rich farmers (APP, 2010). Such a favorable investment climate calls for well-functioning financial institutions that objectively allocate, protect property rights, promote trading, reduce risks and facilitate collective action (HLEF, 2009).

4.6. Political will.

Many document urge for political will (FAO, 2011b; McKinsey, 2010; World Bank, 2009; FAO, 2012b). African leaders neglected agriculture in the past, Asian leaders did not: this explains according to (Henley, 2011) that agriculture in Africa is underproductive and undercapitalized. (Moyo, 2008) says that actually the African agricultural transition never took place. In the past, marketing boards were set up to keep domestic prices low, in order to protect the urban population, at the expense of the rural population (FAO, 2011c). However, there is now a renewed commitment based on the Comprehensive Africa Agricultural Development Program (CAADP) (APP, 2010).

5. WHAT IS THE CONTRIBUTION OF LAND ADMINISTRATION?

Many factors contribute to increased food production and food productivity and one of those factors concerns secure and equal access to land and water resources. As the ECA model shows, dimensions of land distribution, land use, land tenure, land administration

and land adjudication are at stake, within a context of unequal access along lines of gender, class or ethnicity, power struggles between elites and the poor, unequal targeted land policies, insufficient access to credit, lack of investments and vulnerability of less powerful groups against foreign and elite commercial farmers.

Yet, the challenge to intensify agricultural output on existing cultivated lands and the cultivation of another 120 million ha of land to be cultivated should be met, to feeding the world's estimated population of 9.5 billion in 2050. Recognizing that many institutional and technical factors play a role, this paper maintains that when the 'land question' is not brought to a solution, problems around land and water rights will severely obstruct progress in food security, whether it concerns property claims on existing cultivated lands or lands where agricultural production is to be expanded.

Within the domain of food security, the contribution of land administrators shall be found in their expertise to design land information systems that efficiently and effectively address secure access to land and water resources within their own context and meet the urgent demands as expressed in the sections 3 and 4.

This includes technical aspects such as data acquisition technology, database technology, data modeling, process design and data distribution technology, in an overall system design approach, taking into account infrastructural (SDI's), organizational (who maintains) and financial aspects (costs).

This also comprises institutional aspects, as the performance of land information system should meet its purpose, namely to support the implementation of land management policies (ECE 1996, 2005).

Understanding land policies includes understanding high level policy objectives (e.g. sustainable agriculture, poverty alleviation), government interventions (land tenure, land distribution, land taxation, land use regulation, land reform, land market, credit markets, investment and subsidies, management of State land, conservation of natural resources), and understanding which tools can support these government interventions (land registration, cadastral systems, non-cadastral land information systems, valuation mechanisms, land use inventories) (GTZ, 1998). These government interventions relate to the principles of good governance and the rule of law (Williamson, 2010).

In addition to the well-appreciated development of land tools by GLTN, land administrators might benefit from helpful publications, such as about which principles can apply for such innovative systems (Zevenbergen et al, 2012), and about a supporting emphatic land administration domain model (Lemmen, 2012). The building blocks are there, no need to re-invent the wheel!

6. GLOBAL AND HELPFUL GUIDANCE AND MONITORING

6.1. Millennium Development Goal No. 1 Target 1.1: Poverty.

This target reads that by 2015 the proportion of people whose income is less than 1.25 \$ per day, is halved compared with 1990 (UN, 2000). Most recent progress report reveals that worldwide this poverty rate fell from 47% in 1990 to 24% in 2010. However, because the world's population grows, the amounts are from 1818 million to 900 million. Regional differences occur: Southern Asia from 57% to 34% (in 2008), South East Asia from 45% to 17% (in 2008), China from 61% to 13% (in 2008), and Sub Saharan Africa from 66% to 47% (in 2008) (UN, 2012a).

6.2 Millennium Development Goal No. 1 Target 2: Hunger

This target reads that between 1990 and 2015 the proportion of people who suffer from hunger is halved (UN, 2000). Most recent progress report shows in the developing regions a decrease of the proportion from 19.8% in 1990, to 15.5% in 2008. Because of the growing population the absolute numbers are still around 850 million people (UN, 2012a).

6.3. Millennium Development Goal No. 7 Target 1.1: Slum Dwellers.

MDG Goal 7 Target 1.1 reads that by the year 2020 a significant improvement in the life of 100 million slum dwellers should be achieved (UN, 2000). In fact, when the target was set in 2000, experts underestimated the number of people living in slums; when in 2003 better data became available, the target of 100 million appeared to comprise only 10% of the dwellers population (UN, 2010). The target was simply set too low. The target, originally aimed at 2020, already was achieved around 2010 (UN, 2011a). Between 2000 and 2010 227 million slum dwellers moved out of slum conditions: 172 million in Asia (of which 125 million in China and India, the rest in Vietnam, Turkey and Indonesia), 30 million in Latin America, 24 million in Africa (of which 9 million in North Africa, the rest in Sub Saharan Africa (UN, 2010; UN, 2011a; UN, 2012a). Taking into account that in absolute numbers the amount of slum dwellers increases and that the target of 100 million already is achieved ten years ahead of schedule, the UN called for new realistic national and local targets (UN, 2011a). This was done through a resolution of the 23rd Habitat Governing Council in April 2011, stating that member states also should target access to land and security of tenure by slum dwellers to be improved significantly by 2020 (Habitat, 2011a). Security of tenure was included as an indicator (no. 32) in the target in 2000, but because of the lack of comparable data on tenure security it was not utilized (UN, 2012a). The development of the Urban Inequities Surveys by UN/Habitat now makes it possible to present such data, as was done for the first time in the MDG Progress Report 2012 (GLTN, 2011; Sietchiping, 2012).

6.4 FAO Voluntary Guidelines

The Voluntary Guidelines for responsible governance of tenure, as endorsed in 2012 by the UN Commission on Food Security in its 38th session (FAO, 2012a) provide important guidance for land surveyors (and others, of course) on how to respond to national food security goals. As a goal for land surveyors' work the Guidelines stipulate that (a) legitimate tenure right holders and their rights are recognized, (b) these rights are safeguarded, (c) can be enjoyed, (d) when rights are infringed access to justice is provided, and (d) not only the State has a role but also non-state actors. More precise, the Guidelines ask us to provide systems to record individual and collective tenure rights, including those held by the State (in e.g. systems of registration, cadastre and licenses), to make such systems that they are appropriate for local circumstances, and to adopt simplified procedures, locally suitable technology to reduce costs and time.

7. CONCLUSIONS

Achieving food security requires full commitment of the land administration community. Land surveyors in 'general practice' can find innovations in the process of data acquisition, data processing and data dissemination regarding information on ownership, value and use of land (the 'conventional functions of a land administration system; ECE, 1996/2005). But also non-parcel information can be useful, as shown by the potential of street addressing (World Bank, 2005) and enumerations (Habitat, 2010). Land surveyors in the land management domain can find ways for application of land management instruments, such as land use planning, land reform, land taxation, land consolidation and readjustment. The FAO-Voluntary Guidelines and the WB-Land Governance Assessment Framework are clear about the goals to be achieved; FIG publications provide professional policy direction, while scientific publications both at FIG conferences as in ISI journals provide precise strategy and technology.

REFERENCES

1. African Union, 2006, Framework for African Agricultural Productivity, Accra
2. APP, 2010, African Progress Panel on Raising Agricultural Production in Africa, Geneva
3. Baker, J.L., 2008, Urban Poverty: a global view, World Bank Urban Paper 5 (2008)
4. Bruinsma, J., 2009, The Resource Outlook for 2050, for FAO Rome
5. Bloomberg, 2012, India to dethrone Thailand and Vietnam as top rice exporters, 9 May
6. COHRE, 2006, Global Survey on Forced Evictions 2003-2006, Geneva
7. COHRE, 2009, Global Survey on Forced Evictions 2007-2008, Geneva
8. ECA, 2004, Land Tenure Systems and their Impacts on Food Security and Sustainable Development, UN Addis Ababa
9. ECA, 2010, UN Press Release 11/2010
10. ECA, 2012, Economic Report on Africa, Addis Ababa
11. ECE, 1996/2005, Land Administration Guidelines, Geneva/New York
12. FAO, 2009, Food Security and Agricultural Mitigation in Developing Countries, Rome
13. FAO/GAEZ, 2009, Global Agro-ecological Assessment for Agriculture in the 21st Century (GAEZ v 2.0), FAO UN Rome
14. FAO, 2011a, Scarcity and Abundance of land resources, SOLAW Thematic Report TR02, UN Rome
15. FAO, 2011b, The State of the world's Land and Water resources for Food and Agriculture (SOLAW), FAO flagship publication, UN Rome
16. FAO, 2011c, Why Africa has become a net food importer, UN Rome
17. FAO, 2012a, Voluntary Guidelines on responsible governance of tenure, UN Rome
18. FAO, 2012b, The state of food insecurity in the world, Rome
19. Feder, G., 1987, Land Registration and titling from an economist's perspective: a case study in rural Thailand, Survey Review 29(226) (October 1987)
20. GLTN, 2011, Monitoring Security of Tenure in Cities: People, Land and Policies, UN Nairobi
21. GTZ, 1998, Land Tenure in Development Cooperation, Eschborn
22. Habitat, 2010, Count me in, UN Nairobi
23. Habitat, 2011a, Resolution HSP/GC/23/CRP.10, UN Nairobi
24. Habitat, 2011b, Quick Guide (Eviction) No. 4 Nairobi
25. Henley, D.E.F., 2011, Divergence of economic performance between South East Asia and Sub Saharan Africa, inaugural address Leiden University
26. HLEF, 2009, How to feed the world in 2050, FAO Rome
27. HLPE, 2011, Land tenure and international investments in agriculture, FAO Rome

28. IAASTD, 2009, Agriculture at a crossroads (SSA sub report), Washington
29. IFAD, 2011, Rural Poverty Report, Rome
30. IFPRI, 2007, The World's Most Deprived: Characteristics and causes of extreme Poverty and Hunger, Washington
31. Langyintuo, A., 2011, African agriculture and productivity, AGRA Nairobi
32. Lemmen, C.H.J., 2012, A Domain Model for Land Administration, PhD Dissertation Delft
33. McAuslan, P., 2010, Personal reflections on drafting laws to improve women's access to land: is there a magic wand?, Journal East African Studies Vol. 4 No. 1
34. McKinsey, 2010, Lions on the move, McKinsey Global Institute New York
35. Moyo, S., 2008, The African Land Question, CODESRIA Senegal.
36. Mwijage, A., et al, 2011, Impact of land tenure change on subsistence agriculture, Journal of African Studies and Development, Vol 3(3) March 2011
37. Nagayets, O., 2005, Small farms: current status and trends, IFPRI Washington
38. Nielsen, C.P., 2002, Vietnam in the international rice market, Copenhagen
39. Okyere, K.A., 2012, Productivity Boost, IFPRI D+C 2012/03
40. Sietchiping, R., Aubrey, D., Bazuglo, N., Augustinus, C., Mboup, G., 2012, Monitoring Tenure Security within the Continuum of Land Rights, World Bank Land Conference 2012 Washington
41. UN, 2000, United Nations Millennium Declaration Resolution 55/2 18 September 2000, New York
42. UN, 2010, The Millennium Development Goals Report 2010, New York.
43. UN, 2011, World Population Prospects: The 2010 Revision, New York
44. UN, 2011a, The Millennium Development Goals Report 2011, New York
45. UN, 2012, World Development Indicators 2012, New York
46. UN, 2012a, The Millennium Development Goals Report 2012, New York
47. Williamson, I. P. et al, 2010, Land Administration for Sustainable Development, ESRI Press
48. World Bank, 2003, Land Policy for Growth and Poverty Reduction, Washington
49. World Bank, 2005, Street Addressing and the management of cities, Washington
50. World Bank, 2009, Awakening Africa's Sleeping Giant, Washington
51. Vollenhoven, J. van, 2012, De waarde van voedsel (*The value of food*), SAFE 2012/03
- 52. Zevenbergen, J., Augustinus, C., Antonio, D., Bennett, R., 2013, Pro-poor land administration: principles for recording land rights of the underrepresented, Land Use Policy 31(2013).**