

Land Administration for Housing Production: Drivers, Concepts, and Analytical Tools

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Key words: land administration, housing production, analytical framework, integration

SUMMARY

Housing production involves the processes and methods employed to construct or transform inputs like land, labour, capital, physical infrastructure, policies, ideas and information into dwellings. However, land as a major input is currently not well managed to facilitate housing production at scale due to lack of integration across land administration functions: land tenure, land value, land use and land development. The study on which this paper is based argues that the existing poor level of integration (in the context of policies, sub-functions, processes and spatial data services) across the four land administration functions and between levels of government impedes land delivery for housing production. This paper uses the organisation of housing production as the context to develop an analytical tool for understanding the integration across the land administration functions. The methodology is underpinned by the land management paradigm. Through the preliminary results from the case studies, an analytical framework is developed as a tool to develop a national integration assessment framework. This will provide an enabling platform to explore and improve the integration across the four land administration functions and between the different levels of government. Further studies are required to empirically test and validate the framework.

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1. INTRODUCTION

Housing is recognised worldwide as the second most important basic need of humankind after food. Housing production involves the processes and methods employed to construct or transform inputs like land, labour, capital, physical infrastructure, policies, ideas and information into dwelling units. However, production of housing is constantly challenged by varieties of natural, economic, technical, social, administrative, political and institutional issues.

Land, as one of the major production factors, is indispensable and its administration is thus crucial for adequate housing production. However, land is currently not well managed to facilitate housing production at scale due to lack of integration across land administration functions: land tenure, land value, land use and land development. Government agencies responsible for each land administration function most times initiate and formulate policies based on their internal norms and functions (Williamson et al, 2010). The land administration functions and corresponding policies are supposed to interact effectively to facilitate delivery of developable land for housing production but operate much of the time on silo bases which manifest in varying degree of contradictory policy objectives (Egbu et al, 2007; Goodman et al, 2010).

As a consequence of these, the development of housing in most countries (developed and developing countries) is impeded (Burns and Dalrymple, 2008; Goodman et al, 2010). The effect of this is manifested in lack of coherent framework to enable effective and efficient utilisation of resources to facilitate housing production. The inefficiency and ineffectiveness increases the cost of housing which makes it largely unaffordable in some contexts (Gurran, 2008). The process of land delivery is central to housing affordability and environmental sustainability (Newton, 2008).

The desire to achieve environmental sustainability led to international call for compact cities and smart growth development initiatives. This and other factors have necessitated restructuring of most major cities. Metropolitan planning for major cities now includes targets for more housing developments in the established areas through infill development. As revealed from past studies on Australia (DAF, 2009; National Housing Supply Council, 2010), one of the major barriers to realising this target is the planning approval and development assessment processes. The question then is; why are strategic planning principles designed to control land use inconsistent with the established statutory requirements that are designed to implement them?

In the developing countries, especially sub Sahara Africa, land administration agencies responsible for land registration struggle to cope with more than 70 percent unregistered titles (Augustinus, 2010). Lack of cadastral maps to a large degree present a major challenge to effective land use and land development. In these unstructured circumstances, agencies for land

use and land development mostly act independently of other agencies. In addition, the agencies have limited time and resources to effectively interact with other agencies. The result is reactive planning (Oyesiku, 1996). Specifically, in these jurisdictions land tenure, land value, land use, land development components of land administration are largely disjointed (Oyesiku, 1993).

The underlying motive of this study is to develop tools to integrate the disparate land administration functions between different levels of governments, especially in the federated nations, to facilitate housing production. In other words, the focus involves two layers of integration: across land administration functions and between different levels of government. This paper starts with a discussion on past efforts at highlighting the importance of integration across land administration functions. It then discusses the conceptual link between housing and land administration; the needs for integration across land administration functions and between different levels of government to facilitate housing production. It also explores the different theoretical understanding of various perspectives developed by each of the related fields of political economy, housing studies and land administration. These different viewpoints are utilised to conceptualise how the variables of housing production are related and identifies areas of convergence or overlaps to provide context for the analytical framework. It concludes by suggesting strategies to articulate the analytical framework for development of a national integration assessment framework.

2. BACKGROUND

International agencies, respective national governments, corporate and individual investors or developers have all attempted to overcome the challenges of land delivery for housing production, although from different perspectives. Among the major global initiatives are the ones by UN-HABITAT, Global Land Tool Network, International Land Coalition and Urban LandMark. National initiatives, for example in Australia, include the Development Assessment Forum (DAF) and research institutes like Australia Housing and Urban Research Institute (AHURI). Despite these efforts land administration for housing production remains largely ad hoc and unsystematic. Past research efforts have shown that the majority of land administration systems in most national jurisdictions focus on each of the land administration functions and the underlying policy on stand alone bases. In the United Kingdom and Australia for example, the functions are ‘...stand alone systems, utilising three ‘generals’: the Surveyor-General, Valuer-General and Registrar of Titles... the legislative framework did not require any agency to work with the others nor was cooperation facilitated’ (Enemark, et al, 2005).

The historic institutional silos present a major land administration challenge to most jurisdictions and need to be examined. Existing knowledge centres on different aspects of land administration silos and the inter-agency interactions. For example, Kalantari (2008) focused on SDI and the interoperability of spatial data. According to Kalantari ‘the silo based system of managing interests in land hinders proper communication, data exchange and interoperability of land administration systems’. Rajabifard (2007) forwards this discussion into the concept of spatial enablement. Bennett (2007) emphasised on a better management of property rights, restrictions and responsibilities. However, while these are significantly important, they do not sufficiently consider the direct implications of the phenomenon on housing production.

Conversely, related research works on land and housing reveal the considerable efforts of scholars on cadastre, tenure and ownership right (Kaufmann, 1999; Williamson, 2008; De Soto, 1993, 1996, 2000). Additionally, some knowledge exists in some countries about the relationship between land value and housing (De Soto, 2000). There is also extensive literature on the role of statutory planning (development assessment) in providing affordable housing (Williams, 2005; Whitehead, et al, 2005; Yates and Milligan 2007, Gurrán et al, 2008, 2009; Goodman et al, 2010). Despite these efforts, there is insufficient knowledge about how these various functions of land administration might be integrated *theoretically, conceptually, and analytically* in a way that will guarantee housing production at scale in respective jurisdictions. The present effort focuses on the components of these variables in developing analytical frameworks for understanding integration across land administration functions and between housing production.

2.1 Fundamentals of Housing

The dynamics of human development from the pre historic age to modern civilisation have significantly transformed the content, context and concept of housing. The initial view of housing as shelter has given way to a more robust perspective which includes environmental dimensions in its generic form to encapsulate all systemic environment that influence housing (Olatubara, 2007). From this perspective, housing includes the physical structure (shelter), legislation, infrastructure, community facilities, and data services which are necessary for human wellbeing. In this expanded view, housing is both a process and a product (Agbola, 2005).

As a process it involves bringing different participants together to produce housing. Different theories and concepts are developed by different fields of study to understand this complex interaction. Among these are, the political economy approaches and the development of production theories. Others are land administration and the development of the modern land administration paradigm to explain the dynamic nature of human-to-land relations, and the emerging field of housing studies.

The next consideration are the discussions of theoretical views and conceptual issues that underpin housing production that are directly linked to land administration functions. This involves general discussions on the political economy, institutional theory, theory of production, and land administration paradigm. The focus is to understand an overall frame within which a coherent and interrelated body of theory might develop. The frame will need to adequately address the development of an analytical framework to analyse the integration of land administration functions for housing production.

2.2 Land administration for housing production: conceptual and theoretical issues

Researchers have used different approaches to classify housing production processes. Okpala and Aniekwu (1988), classified housing processes as project conception, project design (including land preparation), and project construction. These classifications are particularly relevant to the developing countries where the majority of dwellings are self built and owner occupied. In a more developed countries, it could include marketing and sale because of the significance. The processes of producing housing can thus be categorised into four phases: conception and design, land preparation, construction and marketing (Figure 1). The focus here

is on land preparation. Land preparation includes: land acquisition and the procurement of development approval (determination of ownership and use rights). The responsibility to facilitate this is laid on the land administration authorities within the context of how housing production is organised. Thus, while land administration is imperative for housing production, it is impacted by how housing production is organised in a particular jurisdiction. Figure 1 illustrates the two directional links between land administration and housing production.

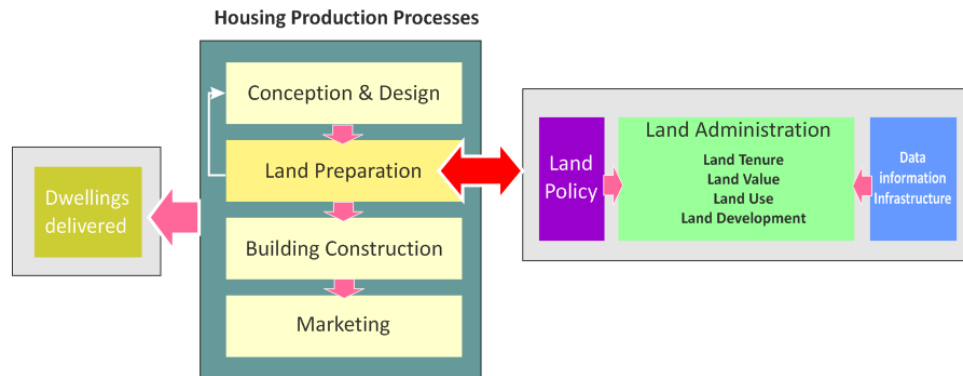


Figure 1: Land administration for housing production: a conceptual link

A broader perspective of this link is conceptually situated within the theoretical platforms developed by different but interrelated fields of political economy, land administration and housing studies.

2.2.1 Land Administration Theory

Synchronising land market efficiency with land development effectiveness for sustainable housing production remains a daunting challenge (Williamson et al, 2010). Within this context are the challenges of responding effectively to the range of land administration functions in an integrated manner to ensure proper management of the rights, restrictions and responsibilities of people. These functions include land tenure, land value, land use and land development. The way the functions are mediated by land policy framework and land information infrastructure (Figure 2) is referred to as land management paradigm (Enemark et al, 2005).

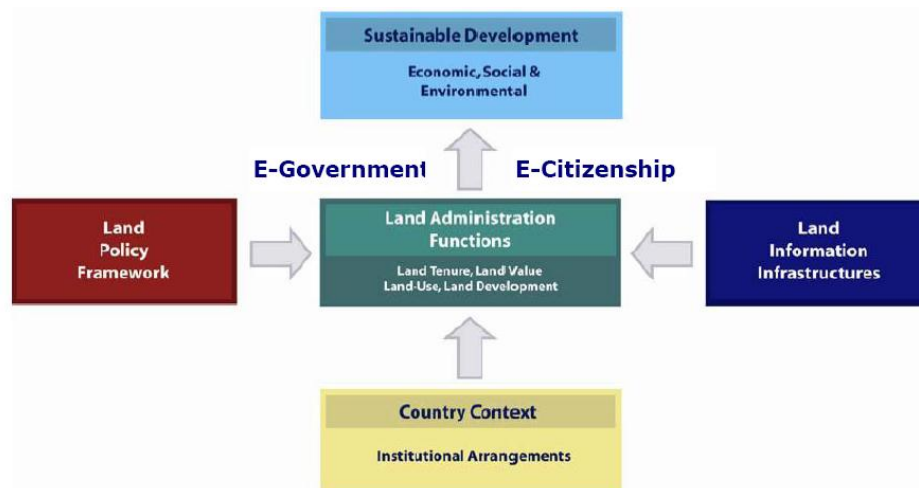


Figure 2: Land Management Paradigm (Enemark et al, 2005)

This paradigm provides a good structure for this research. From this perspective, land administration as used is focused on understanding the operational component of land management paradigm, expressed in the range of land administration functions of: land tenure (registration and title), value (property development, and the collection of revenues on land by government through sales, leasing and taxation, grand rent and stamp duty), use (regulations, zoning and control), and development (implementing land use through the development of infrastructure). The main focus is to assess how the interactions within and between these functions mediate effective production of housing. From this perspective, the traditional but narrow focus of land administration centring on cadastral activities in relation to land tenure and land information management is found not to be adequate and thus not consistent with the modern realities of land management.

The land administration paradigm is a global perspective of modern land administration and provides a useful structure to establish the link between land administration functions and housing production. The structure is utilised by linking the role of each of the land administration functions within the context of the land management paradigm to determine how land is delivered and how it impacts the scale and quality of housing output.

3. METHODOLOGY

To develop an analytical framework for analysing the integration across land administration and between different levels of government in facilitating housing production, a three-stage research method was developed. The design was based on the concept of triangulation (Barbour, 1998; Healy and Perry, 2000; Golafshani, 2003, Bryman, 2004). This allows the articulation of issues and concept from a number of independent but interrelated perspectives. It was a qualitative study and involved comparing the existing viewpoints, empirical issues and theories. The fundamental principles of the theories provided bases for developing context for the development of the analytical framework.

The first step is the recognition of housing production processes as being multidimensional and that it requires a multi-disciplinary approach. This leads to the review and triangulation (Denzin, 1970; Bryman, 2004) of theoretical issues around political economy, land administration and housing studies to guide the structuring and the development of conceptual framework.

The different viewpoints are used to conceptualise how the variables of housing production are related and identifies areas of convergence or overlaps between respective concepts and theories. The role of land administration in facilitating housing production is thus viewed from this perspective as shown in Figure 1. Augustinus (2010) notes that:

... 'it is not possible to create a robust analytical framework for urban land and shelter delivery without taking into consideration other activities that are integrally linked to and often in the critical path of, the supply of land and shelter. These include....political economy...planning....governance ...'

This approach enables the research to keep in mind the issues central to facilitate housing production. These are discussed above in the background section.

The second step involved developing context for the integration across different levels of government. In this regard, case studies were selected to reflect federated systems of government that operate at different levels (federal or national, states or territories and local or counties).

The case study approach is used to establish enough grounds and provide context for the development of the analytical framework and the subsequent proposals for the future development of a national integration assessment framework. Case studies were selected from different contexts to differentiate across different levels of government and between national jurisdictions.

Australia (Melbourne, Victoria) and Nigeria (Lagos Mega city, Lagos State) were selected out of the approximately 25 federations globally. Most nations have unitary governments that allow issues to be managed by a single national government. The case studies were purposely selected so that the analytical framework will be a reflection of the situation within the context of a mixed political economy system (Lagos, Nigeria) and free market economic systems (Melbourne, Australia). These economic systems are a combination of government interventions and private ownership which involves participation at different scales and levels. The basic principle of the framework is thus considered to be applicable in most national federated jurisdictions.

The third step is the synthesis of the first two stages to frame the integration across land administration functions and between different levels of government within the wider land management paradigm. This is to provide structure for the examination of the integration across the land administration functions and at the same time provide a context for the analysis.

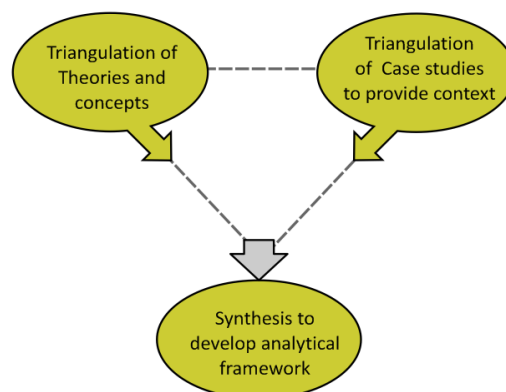


Figure 3: Research design

The research design (Figure 3) provided conceptual linkages between land administration functions and the organisation of housing production. It also provided an enabling platform to explore the linkages between land administration infrastructures needed to support integration in facilitating housing development. The major issues are now discussed.

4. RESULTS FROM CASE STUDIES

In many jurisdictions, the link between land administration and housing provision is not particularly clear. Also not clear is the link across each of the land administration functions particularly concerning policies, agencies, sub-functions, processes and the spatial data services. The situation is compounded where land administration is the responsibility of state or provincial governments. National agencies and businesses struggle in their efforts to understand and respond to the problem of land delivery to facilitate adequate housing provision.

4.1 Case of Melbourne in Victoria - Australia

Australia is made up of a commonwealth - federal government, six states and two territories and 750 local governments. It is thus not surprising that in many cases, two or more levels of governments have regulations governing the same activity.

At present, there is no written national land policy in Australia; land policy could only be inferred from existing legislations or some other documents. National and international issues like, global warming, sea level rise are policy triggers. In responding to these triggers, the federal government articulates policies to realising the central principles underpinning these triggers. Of particular significance to this study are issues around strategic planning of Australian capital cities articulated by Council of Australian Governments (COAG). Also of importance is the social housing policy (reference?) that has a close link with economic stimulus packages instigated during the 2008 global financial crisis. To implement these policies, targets are set for the states and territories. Meeting these targets, have resulted in cases where the states set aside conventional consultation procedures and requirements in allocating development rights.

For examples, in the state of Victoria, there is a specific State Physical Planning Framework (SPPF) and Local Physical Planning Framework (LPPF). These are meant to guide the orderly growth of development and management of land use in the State. However, polices designed to guide these frameworks are most often not consistent across the land administration agencies and between the different levels of government. The local governments in the State of Victoria alone have combined local planning policies in planning schemes of eight hundred and fifty one (851). These are designed to meet specific requirements of each local council. The implications of these on businesses and development industry, (including government agencies) that are engaged in land preparation for housing production are enormous. It means more forms, several duplications of processes and more cost.

The now superseded 'Melbourne 2030' strategic plan for greater Melbourne included targets for 56% of housing developments to be in established areas through infill development by 2030. One of the major barriers to realising this target is the planning approval and development assessment processes (DAF, 2009; National Housing Supply Council, 2010).

A specific example of the integration problem in Victoria is the development of a mixed residential and retail village in the inner northern suburb of East Coburg. The development will comprise of 199 units on the equivalent of 8 standard urban parcels at 12-20 Nicholson St. The project is to be funded by the federal government as part of strategy to finance social housing under the stimulus packages. The condition for the release of the funds stirred series of events.

The proposal was opposed by sections of the local community. A planning scheme amendment was also partly opposed by the Moreland planning council. Residents cited inconsistencies with the local planning framework as the basis for their objections. This is a clear indication of lack of coherent policies between the different levels of government. As a result, there are many inconsistencies across agencies, the functions of the agencies, the processes for implementing policies, and the underlying data services used to assist the decisions. This case demonstrates the imperative for developing tools for investigating the integration of evidence based policies and their implementation.

4.2 Case of Lagos Mega city in Lagos State - Nigeria

Nigeria is made up of a federal government, 36 States, a federal capital territory and 774 local governments. Land management in Nigeria is complicated because of the overlap between cultural and political structures. It is further compounded by its colonial and military histories. As it stands presently, a major issue is security of tenure. Like its contemporaries in sub Sahara Africa, Nigeria still grapples with more than 70 percent unregistered titles. Although, there is a national land policy premised on the provision of the Land Use Act 1978, access to land for any developmental purposes is seriously challenged with the overlaps between customary practices and the imposed political structure governed by the Land Use Act.

Lagos is one of the 36 States. Access to land for housing production, in Lagos at present, is available through two sources, formal (government) and informal (traditional land owners and their representatives). For any transaction on land to be legal, and to provide some degree of confidence in its development by the prospective developers, it has to receive the validation of the governor (premier) either in the form of a grant of the Certificate of Occupancy (*CofO*), for a new title, or the Governor Consent if it is being transferred from one title holder to another. This is premised on the provision of the Land Use Act 1978 through which land in all the States of Nigeria is vested in the governor of each respective State.

In reality, because of the strong and dominant traditional land ownership structure, government can not physically lay claim to the appropriated land through the Land Use Act. The realisation of not having sufficient control of land by the Lagos State government led the State to devise some other means. In this regard, parcels of land are acquired, as opposed to the appropriation through the 1978 Act. The arrangements for land delivery from government thus includes: compulsory acquisition of broad acre land, revocation of rights in land, village excision, ratification or regularisation and site and services schemes.

The current situation presents a very challenging institutional arrangement for land delivery between deferent agencies that manage the different functions of land administration. First, two parallel land market systems operate (formal and informal). Second, there is multiplicity and duplication of roles between agencies and parastatals. Third, determining land value is another problem for government either for the purpose of tax or for determining compensation for compulsory land acquisition. Fourth, the strategic planning of controlling land use is ad hoc with serious implications for the types of developer that could engage in housing development and the effects on the overall housing output.

Based on the preliminary findings in both case studies, the initial linear interactions across the

land administration functions seems not capable of understanding the current integration across land administration and between different levels of government. The preliminary design of an analytical tool to address this is now discussed.

5. DISCUSSIONS: THE DEVELOPMENT OF AN ANALYTICAL FRAMEWORK

The proposed analytical framework is based on the premise that the integration of land administration functions is essential to facilitate housing production. As such, the framework is structured within the land management paradigm (Figure 4). The analytical framework is organised into three parts: context, processes, and outcome.

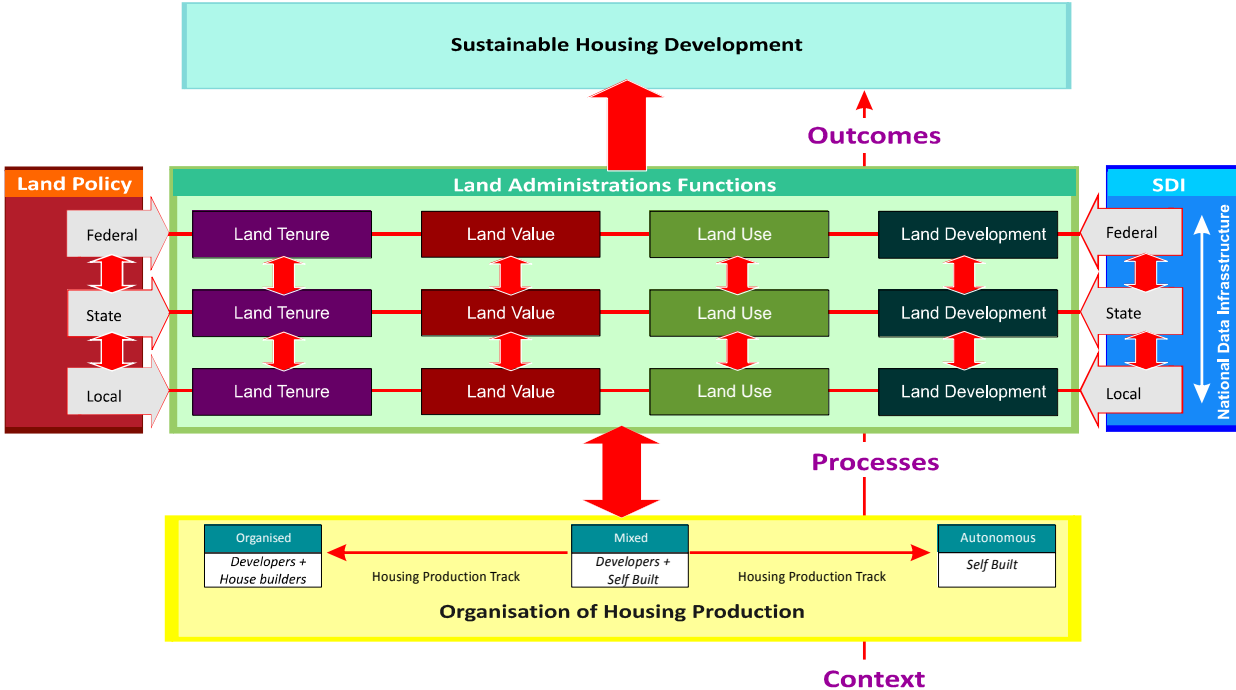


Figure 4: Schematic diagram of an analytical framework structured within the land management paradigm (adapted from Enemark et al, 2005).

5.1 Context

The starting point is to recognise that there are various means (tracks) by which individuals within a particular jurisdiction can pursue their strategy to produce housing. This is dependent on the prevailing land delivery process, mediated by the political, economic systems, level of technological and economic developments of the society. This also reflects the institutional and cultural structures of a jurisdiction. Literature and findings from the case studies have shown two major production tracks: organised and autonomous. In between these are variations that range from extreme organised to extreme autonomous or self built tracks. The specific level of development and particular circumstances of each level of national jurisdiction provide sufficient context.

Each jurisdiction can decide to adjust policy, depending on their circumstances in terms of the

desire for efficient land markets and effective land use development. The ability to do this, however, would be determined by the effectiveness of governments' responses as measured by the quality of governance which reflects the adequacy of public participation, inclusiveness, capacity building, technology and sustainability objectives. The processes of achieving this are discussed next.

5.2 Processes

The process of understanding housing production and the implications for housing output includes in-depth exploration and analysis of how land administration facilitates land delivery for housing production. As discussed in section 4, it is currently observed that there is limited integration between the land administration functions.

The inefficient integration as revealed through the case studies could be organised into key themes: policies, agencies, sub-functions, processes and spatial data services. These also closely align with the land management paradigm. Following from this, the central focus is that if a respective theme (policies, sub-functions, data services and processes of land administration functions) are harmonised within state and between state jurisdictions, it will facilitate delivery of land for housing production.

The main thrust of the analytical framework is the use of the key themes observed, through the preliminary result, to assess the level of integration. This will allow development of evidence based land infrastructure design to improve integration necessary across land administration functions and between different levels of government. The procedure for accomplishing this involves selecting specific land policies at each level of government and checking this against the internal norms and processes across the land administration functions to determine the effectiveness of the interactions.

5.3 Outcomes

Global influences on development projects involve requirements to satisfy the triple bottom sustainable development. As discussed earlier, these are policy triggers and have significant impacts on government policies. Achieving sustainable housing development is thus a function of the country context and land administration processes.

6. FUTURE DIRECTION: OPERATIONISING THE ANALYTICAL FRAMEWORK

The ultimate aim is to develop national integration assessment framework. There is a need to articulate the analytical framework to progress this. As discussed in section 5, the analytical framework is a tool to assess the level of integration across land administration functions and between different levels of government. Empirical tests will provide opportunity to document the level of integration. It will also provide context for determining how important, the level of integration across land administration functions will promote good land governance and facilitate land delivery for housing production.

The Land Governance Assessment Framework (2010) developed indicators (Land Governance Indicators -LGI) to determine good practices in land governance. It also developed dimensions for evaluation. The analytical framework as developed here, provides opportunity to specifically set parameters regarding how relevant dimensions could be measured. The work of

Glasby (2008) on depth and breadth matrix of integration underpin strategies to implement the analytical framework in this regard. The composite matrix (across land administration and between different levels of government) provides opportunity to measure the horizontal, vertical and diagonal integrations (Figure 5).

(Integration Areas)		Tenure			Value			Use			Dev		
Policies, Agencies (sub-functions, processes), spatial data services													
Width of Integration ↓	Depth of Integration →	Federal	State	Local	Federal	State	Local	Federal	State	Local	Federal	State	Local
		Federal	Tenure										
Value													
Use													
Development													
State	Tenure												
	Value												
	Use												
	Development												
Local	Tenure												
	Value												
	Use												
	Development												

Figure 5: Composite matrix to measure the level of integration across land administration functions and between different levels of government

Drawing from Glasby (2008), the broad classifications for measuring integration in the matrix are cooperation, coordination and collaboration, while the numerical scale runs from 0 to 6 (Figure 6). These numeric values could be inserted in the corresponding cells in figure 6 to measure the level of integration.

0	=	No known Integration	
1	=	Sharing information	→Cooperation
2	=	Consulting each other	
3	=	Coordinating activities	→Coordination
4	=	Joint management	
5	=	Partnership organisation	→Collaboration
6	=	Formal merger	

Figure 6: Integration assessment scale (adapted from Glasby, 2008)

As it would appear from this perspective, sharing information between agencies is the least in

hierarchy of integration. Efficient and effective integration will require progression from cooperation to collaboration.

7. CONCLUSION

This study discussed the underlying problems of lack of integration across land administration functions. It also identified and established the conceptual link between housing production and land administration. Lack of integration is considered a major impediment to facilitate adequate housing production.

To effectively analyse these issues within respective jurisdictions, the paper developed an analytical framework with a view to ensuring adequate housing production relative to the needs of the population.

The importance of this framework is that land delivery for housing production could be understood at the level of:

- i) the interactions across the land administration functions: land tenure, land value, land use and land development.
- ii) the interaction between different levels of government.

By understanding the individual, corporate and government strategies, it will be easier to identify policy most amenable to change in order to guarantee improved integration across functions and between agencies to facilitate housing production. An analytical framework as developed is thus essential. The utilisation of this analytical framework to propose an integration assessment framework in measuring the level of integration across land administration functions is equally desirable.

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REFERENCES

- Agbola, T. (2005). The Housing Debacle; Inaugural Lecture Delivered at the University of Ibadan, Ibadan.
- Augustinus, C. (2010). Improving Access to Land And Shelter. In: Deininger, K., Augustinus, C., Enemark, S., Munro-Faure, I. (2010). Innovations in Land Rights Recognition, Administration, and Governance
<http://siteresources.worldbank.org/INTARD/Resources/335807-1174581646324/InnovLandRightsRecog.pdf>
- Barbour, R.S. (1998). Mixing qualitative methods: Quality assurance or qualitative quagmire? *Qualitative Health Research*, 8(3), 352-361.
- Bennett, R. (2007). Property rights, restrictions and responsibilities: their nature, design and management. A thesis submitted to The University of Melbourne.
http://www.csdila.unimelb.edu.au/publication/thesis/Rohan_Bennett_PhD_Thesis.pdf.

- [Accessed: 19 September, 2010]
- Bryman, A. (2004). *Social Research Methods*. Oxford University Press.
- Burns, T. and Dalrymple, K. (2008). Conceptual Framework for Governance in Land Administration. International Federation of Surveyors. Article of the month, August 2008. www.fig.net/pub/monthly_articles/august_2008/august_2008_burns_dalrymple.html [Accessed 20 July, 2010.]
- DAF (2009). DAF Benchmarking Program – June 2009. http://www.daf.gov.au/reports_documents/pdf/DAF_benchmarking_report_15_June_09.pdf [accessed 04 September, 2010]
- De Soto, H. (1993). The Missing Ingredient. *The Future Surveyed in The Economist*, September 11-17th 1993, pp. 8-10.
- De Soto, H. (1996). 'Securing Property Rights'. *Economic Reform Today Property Rights and Democracy*. In *Securing Property Rights: The Foundation of Markets Economic Reform Today*. No 1, http://www.cipe.org/publications/ert/e19/E19_02.pdf [Accessed: September, 2010]
- De Soto, H. (2000). *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. ISBN 0465016146, September, 276 p. New York
- Denzin, N. K. (1970). *The Research Act in Sociology*. Chicago: Aldine
- Egbu, A. U, Omolaiye, P., Gameson, R. (2007). A quantitative model for assessing the impact of land use planning on urban housing development in Nigeria, *International Development Planning Review*, 29(2), pp. 215-139.
- Enemark, S. (2004). Building Land Information Policies. *Proceedings of Special Forum on Building Land Information Policies in the Americas*. Aguascalientes, Mexico, 26-27 October 2004. http://www.fig.net/pub/mexico/papers_eng/ts2_enemark_eng.pdf [Accessed: March 2010]
- Enemark, S., Williamson, I.P., and Wallace, J. (2005). Building modern land markets in developed economies, *Journal of Spatial Sciences*, Vol. 50, No. 2, 51-68.
- Glasby, J. (2008). *Understanding Health and Social Care*. Bristol: The Policy Press.
- Golahshani, N., (2003). Understanding Reliability and Validity in Qualitative Research, *The Qualitative Report Volume 8, Number 4, December*, 597-607.
- Goodman, R., Buxton, M., Chhetri, P., Schuerer, J., Taylor, E., Wood, G. (2010). Planning reforms, Land Release and Supply of Housing. RMIT Research Centre. AHURI, Positioning Paper No 128.
- Gurran, N., Milligan, V., Baker, D., Bugg, L. (2008). *International Practice in Planning for Affordable Housing: Lessons for Australia*. AHURI Sydney and Queensland Research
- Kalantari, S. M. (2008). *Cadastral Data Modelling - A Tool for e-Land Administration*. A thesis submitted to The University of Melbourne. http://www.csdila.unimelb.edu.au/publication/thesis/Mohsen_Kalantari_PhD_Thesis.pdf: [Accessed 12 September, 2010]
- Gurran, N., Ruming, K., Randolph, B., (2009). *Counting the Costs: Planning Requirements, Infrastructure Contributions and Residential Development in Australia*. AHURI, Sydney Research Centre. Final Report No. 140.
- Healy, M., and Perry, C., (2000). Comprehensive criteria to judge validity and reliability of qualitative research within the realism paradigm, *Qualitative Market Research*, 3(3), 118- 126.
- Kaufmann, J. (1999). *Future Cadastres: Implications for future land administration systems -*

bringing the world together? Presented at the UN-FIG Conference on Land Tenure and Cadastral Infrastructures for Sustainable Development, Melbourne, Australia 25-27 October 1999.

- Maki, U. (1993). *Economics with Institutions*. London: Routledge.
- National Housing Supply Council (2010) National Housing Supply Council 2nd State of Supply Report: http://www.fahcsia.gov.au/sa/housing/pubs/housing/national_housing_supply/Documents/StateofSupplyReport_2010.pdf
- Newton, P. W. (2010). *Beyond Greenfield and Brownfields: The Challenge of Regenerating Australia's Greyfield Suburbs*. Built Environment Volume 36
- Okpala, D. C. and Aniekwu, A. N. (1988). Causes of High Costs of Construction in Nigeria. *Journal of Construction Engineering*: Volume 114, Issue 2, pp. 233-244
- Olatubara, C. O. (2007), *Fundamentals of Housing*, in; Agbola et al (2007) *Housing Development and Management: A book of Reading*. Department of Urban and Regional Planning University of Ibadan, Malijoe Softprint, Ibadan.
- Oyesiku, O. O. (1993), *Issues in Developmental Project Planning and Implementation*. In *Development Project Planning and implementation in Nigeria- The Local Perspective*. eds. Odugemi, O, Oyesiku, O and Badejo, B. A Chapter 2 pp 13-26 Lagos: Maokus Publisers.
- Oyesiku, K. (1998), *Modern Urban and Regional Planning Law and Administration in Nigeria*. Ibadan. Kraft Books Limited.
- Rajabifard, A. (2007), 'Towards a Spatially Enabled Society', Edited book, Rajabifard (Ed), The University of Melbourne, ISBN 978-0-7325-1620-8, pp. 400.
- Samuels, W. J. (1995). The Present State of Institutional Economics. *Cambridge Journal of Economics* , 19, 569-590.
- Williams, P. (2005). 'Statutory Planning Approaches For Affordable and Social Housing Provision: A Comparison of Recent Australian and Irish Experience'. *Environmental Planning Law Journal*, 22(7), pp. 7-19.
- Williamson, I. (2008). *Using Cadastres to Support Sustainable Development Paper presented at Spanish IX National Congress of Surveying Engineers TOP-CART 2008 in Valencia, Spain 18-21 February 2008*.
- Williamson, I., Enemark, S., Wallace, J., Rajabifard, A. (2010), *Land Administration for Sustainable Development*. ESRI Press, California. USA.
- Whitehead, C., Monk, S., Lister, D., Short, C. (2005). 'The Value for Money of Delivering affordable Housing through Section 106'. Cambridge Centre for Housing and Planning Research, Town and Regional Planning Department, Office of the Deputy Prime Minister, London.
- Yates, J., Milligan, V. (2007). *Housing Affordability: a 21st Century Problem, Final Report, National Research Venture 3 (NRV3): Housing Affordability for Lower Income Australians*, AHURI, Melbourne.

BIOGRAPHICAL NOTES

TS05B - Developments in Land Administration

15/16

Muyiwa Elijah AGUNBIADE, Abbas RAJABIFARD, Rohan BENNETT

Land Administration for Housing Production: Drivers, Concepts, and Analytical Tools

FIG Working Week 2011

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Marrakech, Morocco, 18-22 May 2011

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