3

Marriage of Opposites: Strategies for Public and Private Sectors Working Together in Land Tenure Reform Projects That Support SDGs

---

Daniel Paez

Centre for SDIs and Land Administration, The University of Melbourne, Australia

In the context of land tenure and SDGs, this chapter proposes strategies for practitioners to involve the private sector in land administration services while at the same time ensuring there is a contribution to the achievement of the SDGs.

3.1 Introduction

SDGs provide a framework for governments, multilateral organisations and donors to drive social investment on sustainable development. Among the 17 SDGs, SDG1 (No poverty) SDG2 (Zero hunger) and SDG5 (Gender equality) directly highlight the importance of land tenure systems as a mechanism to achieve sustainable development. These goals focus on encouraging investment in land tenure security (LTS) around socially vulnerable groups (particularly the poor), land productivity and gender imbalances.

For over 20 years governments in developing countries, with the support of organisations such as the World Bank, have invested worldwide on improving the certainty of rights, restrictions and responsibilities by implementing land tenure reform projects. Traditionally efforts have focused primarily on the land right registry and cadastre systems and - more recently - spatial planning and natural resources systems. Most of the investment has focused on large scale systematic registration activities aimed at improving coverage, building

information technology (IT) systems, reviewing and reforming institutions, technical capacity building and improving the regulatory framework.

There is an increasing trend across most developed and developing countries to involve the private sector in the delivery of land cadastre and registration services. This trend follows significant results in the infrastructure sector (in areas such as ports, roads and hospitals) where many countries have leveraged new investment by making the private sector an active partner that takes risks, invests resources and achieves social results.

Considering this current landscape for land reform projects, strategies proposed in this chapter are: (i) to target areas where the private sector can do a better job; (ii) find cross-services approaches within the land administration system; (iii) build the participation in a trusted private sector; (iv) revenue should be based on achieving tangible social results aligned with SDGs.

Strategies presented in this chapter are proposed to be used during the design and implementation of future land reform projects both in developed and developing countries. Some areas for further research including better mechanisms to strengthening gender equity and synergies between these proposed strategies and others focused on productivity.

3.2 Background: Land Administration and the Trend of Involving the Private Sector

Land administration in this chapter relates to the institutional systems (at a national or sub-national level) that regulate all activities that require the use of land. The core of a land administration system is the cadastre or inventory and description of all parcels in a jurisdiction. Most modern cadastre systems in developed countries have a digital geographic description of the parcels, and they cover the entire area of the country [42].

Depending on the system, the cadastre is contained or be linked to a land registry in where rights, restrictions and regulations are typically stored. In this, tenure rights are fundamental as they underpin the ability of a person or group to conduct economic activities and participate actively in a land market by buying, renting or selling land properties.

In addition to the cadastre and the land registry, land administration systems cover many other areas of a nation or region such as land taxation systems; development and building permits; mining rights; and water concession registries.

Considering the importance of land administration systems for all nations, and particularly a cadastre system with an appropriate land registry, many investment projects have been conducted to improve it. Commonly in the literature, these projects are described as land tenure reform projects as they focus on enhancing government systems related to land rights.

This chapter explores the evolution of these land reform projects and the new trend of involving the private sector as a critical participant in the developing and funding of these projects and more broadly the land administration system. In particular, the focus is on analysing experiences in where public-private partnerships (PPPs) or similar instruments have been used in land reform projects and draws. Lessons are drawn from selected cases studies to develop strategies for ensuring private sector participation in land projects support the implementation of sustainable development goals (SDGs). These strategies, which are the main contribution of this chapter, are applicable in both developed and developing countries and are proposed to be considered during the design of future projects where it is desired to transfer significant responsibilities to the private sector. Ideally, these strategies will support developed and developing countries when reviewing future land reform projects or considering unsolicited proposals submitted by the private sector. Additionally, proposed strategies for private sector involvement in LTS provide assessment parameters for donors and multilateral banks to understand better the contribution of the private sector in a land reform project.

The rest of this chapter is structured as follows: The next section presents an analysis of SDGs and its relation to LTS. Section 3.4 presents the current opportunities and challenges of land reform projects. After this, a critical review of a selected number of case studies where the private sector plays a significant role in the delivery of LTS is presented in Section 3.5 . Section 3.6 gives the main contribution of this chapter which are strategies for PPPs and other mechanisms for involving the private sector in land reform projects in a way that is aligned with SDGs. The chapter finalises with conclusions and general suggestions for further research and development in Section 3.7.

3.3 SDGs and Land Tenure Reform Projects

For over 25 years and since the first Earth Summit, organised by the United Nations (UN) in 1992 in Rio de Janeiro (Brazil), there has been a collective effort to promote a set of goals for all nations, particularly those experiencing poverty and social challenges. In 2016, SDGs replaced the Millennium Development Goals [26].

Although reviews are mixed on the level of achievement obtained by the world in relation to the MDGs [11, 13] there are significant benefits for nations, their development agencies, international donors and multi-lateral banks on having agreed and targeted common goals [4, 27]. Among others, the adoption of SDGs by over 170 nations:

- encourages coordination among different actors involved at the national and international development

TABLE 3.1

SDGs target and indicators directly related to LTS. Data from [19]

Goal	Target	Indicator	Relation to LTS
SDG1: No poverty	1.4	1.4.2	Indicator 1.4.2 directly mentions secure tenure rights in adults and vulnerable groups as a key element to achieve SDG1. This indicator covers both urban and rural land
SDG2: Zero hunger	2.3	n/a	Target 2.3 has a direct mentioned to equal access to land, a concept directly related to LTS. However, no indicator is proposed for measuring this access
SDG5: Gender Equality	5.a	5.a.1	This target and corresponding indicator tracks the participation of women in land ownership, measured based on the LTS
		5.a.2	This indicator assesses the legal framework of countries to determine the level of equality related to land for women

- facilitates the development of indicators and targets
- promotes standards for social responsibility actions by the private sector

SDGs are 17 goals that cover most of all human and natural activities on earth. In previous chapters of this book, many SDGs have been explored, particularly those related to land planning, geographic information systems and land productivity. This chapter will focus on SDGs that are directly related to land administration, mainly those goals where land tenure security improvements play a role in achieving it. Table 3.1 presents a summary of SDGs identified to have a direct relationship with LTS. The author acknowledges that other SDGs have an indirect relationship with LTS. This is the case of SDG11 and SDG15 where the use of land as a critical development resource is promoted. However, and considering the desired focus of this chapter of the practical application of results on land reform projects, only those goals, targets and indicators in where land tenure is directly mentioned and measured has been included in this analysis.

The development of the SDGs and its monitoring and reporting has not been free of controversy. This was the case for land tenure related indicators in where norm contestation, evolution and change occurred during the international consultation process conducted by the UN [36].

Additionally, Agarwal (2018) has questioned the efficacy of SDG5 to empower women as the emphasis of the indicator on LTS needs of women did not consider the other relevant economic factors for making lands productive such as access to credits and irrigation schemes [1]. Therefore, in many cases,

improvement of LTS for women (SDG5) and other vulnerable groups (SDG1) would need land reform and also other development projects, such as agricultural productivity, employment and better access to financial instruments.

In some cases, practitioners designing land reform projects in line with SDGs would have to expand beyond the three core LTS goals identified in this section as LTS plays a role in many nexus underpinning achieving the SDGs [41].

In summary, SDGs has provided an overarching objective to LTS to ensure land rights are correctly documented and protected by governments in a universal way. Additionally, and to contribute to SDGs, LTS implemented using land reform projects should address gender land gaps, which is a significant problem today [12]. In practical terms, SDGs dictates that gender equality is achieved in numbers (number of women owning land) and land regulatory frameworks that abolish discrimination.

3.4 Land Reform Projects: Achievements and Challenges

Proper land administration, where the cadastre and land registration information systems underpin significant activities related to land, is vital for sustainable development [42]. Without proper land management, policies and actions needed to address emerging challenges are jeopardized. In a well-developed land administration system, decisions by government bodies related to sustainability, such as the use of natural resources, construction and the implementation of environmental policies, are underpinned by information in national spatial data infrastructure (NSDI) capable of allowing information sharing and cross-referencing using coordinates [34].

The importance of investing in better land information systems in developing countries gained strength in the late 80s and 90s as countries realised proper land administration enables better investment by the public and private sectors while creating a platform for disadvantaged social groups, particularly the poor, to participate actively in market economies [31]. Land reform projects, directly related to improving LTS, have been the prime instrument for advancing land administration systems.

Today, there are significant opportunities for land reform projects including new technologies - such as drones and portable devices - for the collection of geographic information [24, 32]. There is also the digitalisation of data and operations of many government functions including those related to land administration [18]. Automation has also offered as an alternative to improve transaction times while reducing corruption and costs [40].

However, there are challenges today for the government, donors, multilateral organisations and other designing and funding land projects. Primarily,

there have been mixed results on the effectiveness of the investment [15] and the borrowing capacity of countries along with their ability to generate public funds has created a strong tendency to involve more actively the private sector as a financial partner of land reform projects. This trend is well expressed by the recent policy “maximising funding for development” from the World Bank [2] and follows the same pattern that has occurred already in other sectors - particularly infrastructure development sector such as port and roads - in where funding projects using public-private partnerships is common [28].

Additionally, there is an increased focus of land reform projects on urban areas due to the urbanisation pattern occurring in most countries in the world [35]. This brings new challenges to practitioners as areas with high population density generates additional social problems [43].

The focus on urbanisation is also an opportunity for future land reform project. Urban land reform projects are likely to be conducted in more economically active areas or where a land market is more feasible compared to rural zones. This allows increased possibilities for land administration system users to pay for the services, a situation that creates possible synergies between urban land reform and private participation in running the system under PPPs.

Multiple studies have reviewed approaches conducted by the World Bank and other multilateral organisations for land reform projects [22, 5, 10, 33]. However, after over 30 years of investment in developing countries land administration systems, it is difficult to identify approaches that are likely to work in all context.

In any case, there are some general views in the international community of crucial principles most land reform projects should follow to be successful and contribute to sustainable development.

Acknowledging this space is always changing; the following list presents some principles today for land reform projects that are considered to be in line with the private participation focus of this chapter:

- Fit-for-purpose: improve land tenure rights by fostering innovation in approaches and new technologies in land administration with the objective of optimising resources by investing in the collection and processing of land information in a way that best fits the specific conditions [9].
- Data and process standardisation: standardisation of data topology and processes within a particular jurisdiction to improve information sharing, optimising resources and reduce errors and duplication [20].
- Community mapping and crowdsourcing methodologies: the use of technologies and methods, particularly portable devices and open public participation, to collect information with the community as an active participating party with roles and responsibilities [6].
- Responsible private sector participation: ensuring the private sector (both

involved in the provision of land administration services and in the land market) have partnership participation in land reform projects that find common goals with public policies [22].

In summary, land reform projects are a fundamental investment for governments to achieve sustainable development. New technologies, automation and digitalisation of government services is facilitating the construction of better land administration systems. However, the government has limited resources and borrowing capacities to invest in this project are decreasing. The new trend in the land registration and cadastre sector, as it has happened extensively with infrastructure projects, is to generate new funds for land reform projects using PPPs. Although it is difficult to generalise, there are some high-level principles learnt from over 20 years of land reform projects that are important for considering the participation of the private sector in the implementation. These principles are fit for purpose; data and process standardisation; community mapping and responsible private sector participation.

The next chapter reviews land reform projects that have included a significant component of private sector participation and provides a summary of lessons learnt from these experiences.

3.5 Lessons Learnt From Involving the Private Sector in LTS

The private sector could be included in land reform projects in multiple ways. The World Bank and other international institutions. Grave (2015) explained this participation along with a definition of PPPs [14].

This section presents 5 case studies (Switzerland, Canada and Australia in developed countries and the Philippines and India in developing countries) from where proposed strategies were drawn. The presentation of the case studies focuses more on the lessons learnt applicable to future project design. The author acknowledges that these 5 cases studies do not cover all experiences relevant to LTS and the private sector. Other literature has covered more extensive those international experiences of land reform projects with a significant private sector component [39].

3.5.1 Switzerland

For many years, the Swiss cadastre has been recognised as probably one of the most developed systems in the world. However, only now that there is a trend to involve more the private sector in land administration systems, practitioners have started to recognise that one of the main characteristics

of the Swiss cadastre is that for many years it has had significant participation of private surveyors. Switzerland is a small country - both in size and population - compared to international standards. However, it has a complex, decentralised government system with 26 cantons (call states or departments in other jurisdictions) and almost 2600 municipalities in a country with four official languages [38].

This complex environment for the land administration systems required the development of methods and protocols that allowed proper communication between entities at all levels while providing an effective and efficient service to users.

To address this complex environment, the federal government developed a scandalised data model and exchange format for geographic information called Interlis. Initial development of the system started back in 1987, and a consolidated operational version for the cadastre began in operation in 1993 with its adoption by the Federal Government [37].

Today, based on Interlis, the Swiss cadastre has two models of private participation in the creation, running and development of the cadastre system. This participation is based on a strict certification process to surveyors, and the delegation is given to individuals. Based on [3], the models of private involvement in the cadastre system are:

- Delegation: On the German part of the country, an exclusivity arrangement for five years is agreed with a surveyor selected using a tender process. The private surveyor has fixed prices for all official land measurement jobs, and she/he is responsible for hosting and transmitting information.
- Competitive market: On French areas, there is an open market and individuals or companies requiring modifications to the cadastre can contract any surveyor on an open market. However, surveyors generally based their prices on a standard list called HO 33. In these areas the maintain of the cadastre could be done directly by the cantons or delegated to individual surveyors based on a competitive tender

The current scheme of data sharing and participation of the private sector in the Swiss cadastre has contributed significantly to Switzerland economic productivity, stability and well-developed land market [17]. Key lessons, perhaps adjustable to other cases, from the Swiss experiences with the private sector in land administration are:

- *The importance of Interoperability*: Interlis, the legally bounding data topology and format for geographic information, has been the enabling force to allow delegating multiple sections of the cadastre system to the private sector, mainly being the data custodian. Additionally, it enabled participation of the private surveyors at different levels and modified based on the needs of the cantons and municipalities

- *The creation of a trusted private sector:* Federal regulation demand strict education and examination of those intending to become private surveyors in Switzerland. This has created the ability of the government to trust surveyors with complex functions and participate actively in the land administration system

3.5.2 Canada

The literature on the privatisation of the land registration in the provinces of Ontario and Manitoba is extensive [30] as these case has been identified as a critical landmark in the privatisation of land registry services. The case of Ontario is analysed next.

In the 80s, the province of Ontario decided to privatised its land registry services with the objective of providing a better service and reducing running cost as the paper-based system in place could not coup properly with an increased demand in land transactions. The slow progress on government reform, something that has been a constant driver for many land system privatisations, created the appropriate political environment for a change for a PPP of the land registry system.

Based on an open request for proposals, the government offered 50% of the ownership of the land registry for an initial period of 15years. The province signed a contract with the preferred bidder that initially was a lease contract and evolved into a concession. The new entity, called Teranet, had the primary task of delivering significant modernisation of the system including the digitalisation of records and ability to process request online. Later in the process, the public share of the concession was sold, and the operation became 100% own by the private sector.

The primary financial arrangement of the concession was based on a “users pay approach” with a clear return for the private investor and revenue collection for the government. In 2010, after a significant financial and technical success of the first concession, Teranet paid \$1 billion for continuing the concession for an additional 50 years.

Key lessons learnt from privatisations of the land registry in Canada, which has been in operation for more than 30 years, are:

- The government managed to generate interest in the private sector in what was an unknown territory by offering to share risk from the beginning of the project. This created the possibilities during the first five years of stabilisation of the project, including reforming the law and adjusting the financial scheme to generate value for money to the government and profit opportunities for the private sector
- An explicit policy of the data ownership allowed for innovation by the private operator while maintaining certainty to the government. In Ontario,

Teranet has been able to develop additional income sources by using the land registry data beyond the traditional scope of LTS.

3.5.3 Australia

Australia is one of the most recent examples of privatisations of land registry. The government of New South Wales (NSW), Victoria and South Australia have completed PPPs of their land registries and are in their initial operation phases. The state of Western Australia is also in the process of completing its concession.

The main characteristic of PPPs in Australia is the focus of the government on selling an asset in the same way back in the 80s and 90s when across the developed world public infrastructure assets (such as ports, public transport and roads) where concession to private operators.

The process has been very similar in all jurisdictions in Australia. An initial scoping study is followed by a legal reform that then enables a tendering process where the asset is sold primarily to the higher bidder.

Even though the process has resulted in financial results that exceeded initial government estimates, the concession in Australia has not been free of controversy. Notably, there have been questioning from professional associations on the financial return focus, and the fact that the resources received have not been invested back on LTS.

In any case, there are significant lessons learnt in Australia that could be used in other jurisdictions. These are:

- The private operator is assuming substantial financial risk as its revenue depends on fees paid by those conducting transactions in the land market. This is expected to create the appropriate incentive to reduce costs and foster innovation, including automation of some transactions which has been proposed for the NSW operator and it is supposed to be included in the other two concessions
- Even though significant risks have been delegated to the private sector, the underpinning principle of a state guarantee for land transactions remains intact. In other words, in Australia today the ultimate responsibility for guaranteeing land transactions still is the government, creating that a vital principle of the torrent system is not being modified.

3.5.4 Philippines

Back in 2007, the land titling computerisation project (LTCP) was implemented in the Philippines [21]. This project was underpinned by two consecutively large-scale systematic registration projects conducted in the country

since 2001 [16]. LTCP has as objectives tackle high land registration costs, corruption, slow government reform and low level of taxation. LTCP was built under a PPP model of a build-Own-Operate model. To partly fund this concession, the international finance corporation (IFC) participated in the initial financial arrangement.

Eleazar et al. (2013) evaluated the results of this concession and highlighted some of the problems including high transaction costs that limit the ability of the community, particularly the poor, to access the land titling service [7]. In any case, there significant lessons that could be learnt from what is described as the first land registration PPP in a developing country:

- LTCP run in parallel with the second phase of the land titling project funded by the World Bank. This allowed the concessionaire to explore synergies from the public investment in LTS and, at the same time, generated a sense of sustainability of land reform projects, something fundamental for the country
- The design of the concession highlighted the need to define clear public objectives for a concession beside economic efficiencies and other public sector problems such as corruption. In particular, the Philippines LTCP project is an essential example of challenges to vulnerable groups when market-driven approach as implemented in land administration services

3.5.5 India

The case of Karnataka province in India demonstrates the application of PPP approaches to multiple land administration services at the same time. The project, called Bhoomi, was initially conceived as a pilot project and later evolved as a PPP. In this project three land administration services are a concession to a private operator [25]:

- Digitalisation of records, both new and existing
- Registration of crops so loans and other government services can be provided
- Online transactions

An important objective of the project was to reduce corruption as both LTS and crop registry generated significant economic activity in the region. The digitalisation approach aimed at simplifying the process and securing the data while improving data accessibility and building a robust database that allows cross-referencing with other data sources. Although the results are mixed [25] Bhoomi project is considered a significant experience for the participation of the private sector in LTS and other government functions. Key lessons, relevant to the focus of this chapter, include:

- The success of the Bhoomi project was attributed in many cases to the combination of LTS and crop registry services. These two services needed each other to exist as LTS define the land rights for agricultural activities and the crop registry a market motivation and financial resources for users to request LTS in their land
- There has been a significant in corruption from the project demonstrating that not only financial benefits but the protection of land rights to the most vulnerable, could be achieved using the appropriate mechanism to involve the private sector

---

3.6 Strategies to Align Private Participation in Land Tenure Reform Projects With SDGs

Although there is significant literature exploring the involvement of the private sector in LTS projects [25], there is limited academic or professional material analysing this private participation and its contribution to SDGs. Meadows, Fairlie et al. (2018) developed an analysis or pre-requisite for the development of PPPs in the land administration sector and Endo, Triveno et al. (2018) analysed the new roles the private sector is playing in land reform projects based on experiences in Latin-American [23, 8].

Based on [29] conceptual design for assessing the viability of PPPs in the land sector, a multi-criteria analysis was conducted to identify areas where strategies were developed. The following table 3.2 shows this multi-criteria analysis. In this table, the first column presents the identified characteristics required for a land PPP to be viable. The second column identifies the relationship with one of the LTS related SDGs discussed previously in this chapter. Finally, a relationship with lessons learnt from previous experience, explore in the previous sections, is included in the last column.

Based on the multi-criteria, gaps on needed strategies were identified, particularly the fact that gender equality has not been correctly addressing as a key condition for PPP viability. Based on these gaps and using the analyses from the previous sections, the following strategies are proposed for designers and implementers of projects where the involvement of the private sector is expected to be significant.

Strategy 1: Involve the private sector in the area where it can best perform

Based on the cases in Switzerland and Australia in where the private participation is segmented to where it best suits the local and national needs, land reform project designers should consider involving the private sector only in segments or areas where it can better help the government in achieving SDGs.

TABLE 3.2

Multi-criteria analysis to identify

Viability condition for a land PPP [29]	Related SDGs	Related case study lesson learnt (previous section)
State or another guarantee to transactions	SDG2	Australia
Clear definition of properties	SDG1, SDG2	Multiple
Legal delegation to the private sector	SDG2	Australia
The existence of a regulatory authority	SDG2	Australia
Avenues to resolve disputes	SDG1, SDG2	Canada
Process fees and responsibilities for all transactions are well defined	SDG2	India
The regulatory framework considers fit-for-purpose	SDG2	India
Secured and accessible land records and information about the land system	SDG1, SDG2	Switzerland
Mechanisms to handle complains	SDG2	India
Revenue from transactions is clear	SDG2	Philippines, India
There is a strong private sector operating PPPs in other sectors	SDG2	Philippines, Australia, Canada
Risks and reward for the private investor can be clearly defined	SDG1, SDG2	Switzerland
Funds are available to structure a land PPP	SDG1, SDG2	Australia

These areas of segmentation could be either geographical or institutional. In Switzerland, the roles of surveyors vary depending on the canton while in Australia (both in NSW and Victoria) the privatisation occurred on the land registry and not the cadastre.

When doing this segmentation, project designers could better identify if which of the LTS related SDGs could be better addressed. In many cases, there are opportunities to build packages of providing highly profitable areas with those that might not raise revenue but could table better gender equality (SDG5) and title for the poor (SDG1).

Strategy 2: Cross-service approaches

One of the most significant advantages of the Karnataka in India is the delegation of multiple land administration services into one PPP. Designing cross-service approaches in land PPP and other projects could better allow supporting the achievement of SDGs. In particular, joining the land tax collection service with land registry and cadastre services opens the opportunity for the private operator to invest in low-income areas (SDG1) with the prospectus of generating wealth in the long term and improve tax collection. Similarly, like in Karnataka, titling activities could be directly related to other fees such as crop registration, building and development permits and forest licenses, creating additional sources of income to expand LTS.

Strategy 3: Work with the trusted part of the private sector

Success in Switzerland of its delegation of cadastre services to the private sector is underpinned by the trust that exists on the surveyor's registration system. Similarly, privatisations in Australia are considering very successful from a financial point of view because the government has created mechanisms to trust private investment banks and pension funds as owners of land administration services. Both developed countries are currently achieving this trust in the private sector SDG1 and SDG2.

Therefore, as a mechanism to foster achieving SDG1 and SDG2, project designer should consider delegating the land administration services on those segments of the private sector that are well trusted by society. In some cases, it might be the financial sector, the insurance sector, certain professions (lawyers, surveyors) or private associations (such as the chambers of commerce).

Strategy 4: Result-based revenue

A key opportunity politicians have is to define the objective of a project they are willing to support which in most cases should be aligned to the SDGs. Therefore, project designers should ensure that revenue received by the private sector is achieved when these objectives are met. The case in the Philippine demonstrates a situation where this strategy was not used and cause the opposite effect: revenue conditions limit achieving better LTS.

Result-based revenue would be a particularly useful strategy for projects

focusing on SDG5 as gender equality is difficult to encourage to a private operator. However, for example, extra revenue could be negotiated with a private operator of a land system to those titling registration that includes women, encouraging this private operator to invest and prioritize equal land ownership in the areas covered by the project.

Other sectors, including water and education, have used this approach (Fritsche, Soeters et al. 2014) and is also referenced in the literature as results-based financing.

3.7 Conclusions

It is not hard to find agreement between researchers and practitioners in need for more investment in land reform project as a mechanism to foster the achievement of SDGs. Although SDGs could be seen as generic and covering all aspects of a nation, there are 3 SDGs (SDG1, SDG2 and SDG5) that directly address the need for better land administration services.

Land reform projects are facing both challenges and opportunities. To address the problem of financial resources and to build from the innovation opportunities, there is a current trend that suggests the involvement of the private sector could potentially foster the development of land reform projects.

Examples around the world where the private sector plays a significant role in running land administration systems have provided valuable lessons. Notably, all future projects need for government to have the right financial, administrative, legal and regulatory framework in place to ensure private participation under a partnership arrangement and not just transfer the problem.

Four strategies are proposed for practitioners and government officials involved in the design and implementation of land reform projects with significant private sector participation:

- Involve the private sector in the segment or geographic areas where it can best the SDGs
- Bundle land administration services with LTS to ensure there are more opportunities to invest in land rights
- Work with the trusted segment of the private sector
- Private sector revenue should be linked to the SDGs that are being addressed

Even though it is challenging to make the sector a decisive contributing factor of the SDGs for the provision of land administration services, there are lessons learnt and strategies that could make this happen. However, the four strategies presented in this chapter address timidly SDG5 (gender equality)

as there are limited experiences, particularly in the developing world, where the private sector participation has contributed to women rights. The need to develop strategies to better involve the private sector in gender equality is suggested as an area for further research.

Bibliography

- [1] Bina Agarwal. Gender equality, food security and the sustainable development goals. *Current opinion in environmental sustainability*, 34:26–32, 2018.
- [2] World Bank. Maximising finance for development, 2018.
- [3] Barbieri. The swiss case: 100 years of ppps., 2016.
- [4] Geeta Batra, Juha Ilari Uitto, and Lee Cando-Noordhuizen. From mdgs to sdgs: Evaluating global environmental benefits. *Evaluation Matters*, 1(3):16–23, 2015.
- [5] Keith Clifford Bell. Trends in land administration and management with particular reference to world bank support for projects in the east asia region. 2016.
- [6] Melissa DeJonckheere, Robin Lindquist-Grantz, Sinem Toraman, Kristen Haddad, and Lisa M Vaughn. Intersection of mixed methods and community-based participatory research: A methodological review. *Journal of Mixed Methods Research*, page 1558689818778469, 2018.
- [7] Floradema C Eleazar, Brian Garcia, Ernie Guiang, Annabelle Herrera, Lina D Isorena, Roel Ravanera, and Ernesto Serote. Improving land sector governance in the philippines, 2013.
- [8] L. Triveno Endo, V. and E. Pantoja. Contracting out services for land regularization. the new roles of the private sector in land administration, 2018.
- [9] S Enemark, KC Bell, Ch Lemmen, and R McLaren. Fit-for-purpose land administration. international federation of surveyors (fig), 2014.
- [10] Julio Faúndez. *Good government and law: Legal and institutional reform in developing countries*. Springer, 2016.
- [11] Maya Fehling, Brett D Nelson, and Sridhar Venkatapuram. Limitations of the millennium development goals: a literature review. *Global public health*, 8(10):1109–1122, 2013.

- [12] Brendan Fisher and Robin Naidoo. The geography of gender inequality. *PloS one*, 11(3):e0145778, 2016.
- [13] Sakiko Fukuda-Parr, Alicia Ely Yamin, and Joshua Greenstein. The power of numbers: a critical review of millennium development goal targets for human development and human rights. *Journal of Human Development and Capabilities*, 15(2-3):105–117, 2014.
- [14] Carsten Greve. International public-private partnership policies. convergence in themes from asean, the european union, imf, oecd, the un, and the world bank. In *Fourth International PPP symposium, New York, USA, September*, 2015.
- [15] Daniel Higgins, Tim Balint, Harold Liversage, and Paul Winters. Investigating the impacts of increased rural land tenure security: A systematic review of the evidence. *Journal of rural studies*, 61:34–62, 2018.
- [16] Philip Hirsch. Titling against grabbing? critiques and conundrums around land formalisation in southeast asia. In *International Conference on Global Land Grabbing*, volume 18. Citeseer, 2011.
- [17] Lorenz Jenni, LA Guarín, Stefan Ziegler, and BVM Pérez. Development and employment of a ladm implementing toolkit in colombia. In *Proceedings of the 2017 World Bank Conference on Land and Poverty: Responsible Land Governance—Towards an Evidence-Based Approach, The World Bank, Washington, DC, USA*, pages 20–24, 2017.
- [18] Georgios N Kouziokas. Geospatial based information system development in public administration for sustainable development and planning in urban environment. *European Journal of Sustainable Development*, 5(4):347–352, 2016.
- [19] LandPortal. Land and the sustainable development goals (sdgs), 2019.
- [20] Christiaan Lemmen, Peter Van Oosterom, and Rohan Bennett. The land administration domain model. *Land use policy*, 49:535–545, 2015.
- [21] Joanna Reyes Mankarios. Land registration and tenure structure in slum areas in the city of manila, philippines. Master’s thesis, Norwegian University of Life Sciences, Ås, 2015.
- [22] Philip McMichael. The land question in the food sovereignty project. *Globalizations*, 12(4):434–451, 2015.
- [23] K. Fairlie P. D Meadows, J. and B. T. An assessment of ppps in land administration: Development of a set of pre-requisites for effective ppp implementation, 2018.

- [24] Mihnea Mihailescu, Diana Irimia, Razvan Radulescu, and Razvan Simion. Could we cadaster faster in an integrated it system by using uavs with gis services in a cloud infrastructure. *US-China L. Rev.*, 14:377, 2017.
- [25] Prachee Mishra and Roopal Suhag. Land records and titles in india. *PRS Legislative Research*, 2017.
- [26] Nam. Transforming our world: The 2030 agenda for sustainable development, 2015.
- [27] Robert Newell, Ann Dale, and Mark Roseland. Climate action co-benefits and integrated community planning: Uncovering the synergies and trade-offs. *International Journal of Climate Change: Impacts & Responses*, 10(4), 2018.
- [28] Robert Osei-Kyei and Albert PC Chan. Review of studies on the critical success factors for public–private partnership (ppp) projects from 1990 to 2013. *International Journal of Project Management*, 33(6):1335–1346, 2015.
- [29] D. Paez and T. Burns. Conceptual design of a private investment score-card for land administration in developing countries, 2018.
- [30] Shiri Pasternak. How capitalism will save colonialism: The privatization of reserve lands in canada. *Antipode*, 47(1):179–196, 2015.
- [31] Geoffrey Payne. Urban land tenure policy options: Titles or rights? *Habitat international*, 25(3):415–429, 2001.
- [32] Shima Rahmatizadeh, Abbas Rajabifard, Mohsen Kalantari, and Serene Ho. A framework for selecting a fit-for-purpose data collection method in land administration. *Land Use Policy*, 70:162–171, 2018.
- [33] Laura Randall. *Reforming Mexico’s agrarian reform*. Routledge, 2016.
- [34] Greg Scott and Abbas Rajabifard. Sustainable development and geospatial information: a strategic framework for integrating a global policy agenda into national geospatial capabilities. *Geo-spatial Information Science*, 20(2):59–76, 2017.
- [35] Mozart Vitor Serra, David E Dowall, Diana Motta, and Michael Donovan. Urban land markets and urban land development: An examination of three brazilian cities: Brasília, curitiba and recife. 2015.
- [36] Noha Shawki. Norms and normative change in world politics: an analysis of land rights and the sustainable development goals. *Global Change, Peace & Security*, 28(3):249–269, 2016.
- [37] Daniel Steudler. Swiss cadastral core data model—experiences of the last 15 years. *Computers, environment and urban systems*, 30(5):600–613, 2006.

- [38] Daniel Steudler. El sistema suizo de administracion de tierras. *Revista de Ingeniería*, (46):16–23, 2018.
- [39] Rod Thomas, Lynden Griggs, and Rouhshi Low. Big data and privatisation of registers—recent developments and thoughts from a torrens perspective. 2018.
- [40] Rod Thomas, Rouhshi Low, and Lynden Griggs. Designing an automated torrens system—baseline criteria, risks and possible outcomes. *New Zealand Law Review*, 2015(3):425–453, 2015.
- [41] Joleen Timko, Philippe Le Billon, Hisham Zerriffi, Jordi Honey-Rosés, Ian de la Roche, Chris Gaston, Terry CH Sunderland, and Rob A Kozak. A policy nexus approach to forests and the sdgs: Tradeoffs and synergies. *Current opinion in environmental sustainability*, 34:7–12, 2018.
- [42] Ian Williamson, Stig Enemark, Jude Wallace, and Abbas Rajabifard. *Land administration for sustainable development*. Citeseer, 2010.
- [43] Jieming Zhu and Hendricus Andy Simarmata. Formal land rights versus informal land rights: Governance for sustainable urbanization in the jakarta metropolitan region, indonesia. *Land Use Policy*, 43:63–73, 2015.