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Sustainability of Land Groups in Papua New Guinea

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Abstract: This paper consists of a review of existing literature relating to Incorporated Land Groups in Papua New Guinea (PNG), followed by a case study of two urban incorporated land groups (ILGs) in the city of Lae. The paper is an attempt at assessing the sustainability of ILGs in the country. The challenges facing the ILGs have heightened public fears that the land groups may not be sustainable. Based on the argument in previous studies that the ILGs are not sustainable, the paper used primary data from two separate questionnaire surveys of randomly selected ILG landowners (including legal settlers) and ILG stakeholders to investigate the problem. The combined sample size of 129 respondents (32.7%) was representative of the total ILG population, while a total of 25 indicators were used to test the respondents' perceptions regarding ILG sustainability. Findings reveal that only one of the indicators received the positive support of the stakeholders, while no indicator was supported by the landowners. This suggests that the ILGs in PNG are not sustainable legal entities. This dilemma is a consequence of the challenges facing the ILGs, including the issues of corruption in the Lands Department, illiteracy among landowners, poor publicity given to ILGs' functions, and the dysfunctional ILG legal framework.

Keywords: Incorporated Land Groups (ILGs); sustainability; indicators; sustainability reporting; customary land tenure; Papua New Guinea

1. Introduction

This paper consists of a review of existing literature relating to the subject of land group incorporation in Papua New Guinea (PNG), followed by a study of two urban incorporated land groups (ILGs) in Lae, Morobe Province, Papua New Guinea, aimed at assessing how sustainable they are. The country operates a dual land tenure system (LTS), comprising Alienated Land Tenure (ALT), which is land owned and controlled by the State (3%) under specific legislation, and Customary Land Tenure (CLT) accounting for 97% of all land in the country. Customary land (CL) is held by tribes, clans and land groups and its ownership is dictated by local customs and traditional values and beliefs [1,2]. Customary land tenure system had existed well before the advent of the early colonizers in the early 1800s [3]. In 1884, Germany declared a Protectorate over north-east New Guinea, where Lae is situated. In 1914 Germany surrendered its colony of New Guinea to the Commonwealth Troops, a colony that was administered by a British Military Administrator until 1921 when Australia took over [4]. It was the Australian administration that tried to protect customary land from alienation.

During the transition periods, customary land tenure continued uninterrupted [4]. However, the country today is faced with many land issues, especially the management of customary land that is problematic [5]. These issues range from legal, administrative, social, environmental and economic factors to good governance [6,7]. Given the strong association between customary land and

the indigenous people of PNG (whose livelihoods depend on land, particularly in the rural areas [8]), land to the people means 'life' [2]. Whereas in the western society land is deemed to be a marketable commodity that may be sold and bought freely in the open market [1], it is a different ball game in PNG where land is seen as a sacred resource that links the past with the present and future generations.

Thus, customary land in Papua New Guinea is inalienable [2,9]. This inalienability, according to Filer [10] in his work on "The Double Movement of Immovable Property Rights in Papua New Guinea", makes land an important part of the local communities in the country resulting in customary land being isolated from mainstream economic development. Land is an "asset with little or no value in the property market", as the owners or holders of customary land are deemed to hold land in trust for future generations [11]. Over several decades, Papua New Guinean Government has introduced some legislation associated with land reforms, such as the ILG Act 1974, with the hope of reforming and transforming customary land (CL) into mainstream economic development [1]. The reforms have had their successes and failures, but not all the reforms were welcomed by the traditional landowners [12]. In order for these reforms to succeed, the Government came up with some mechanisms including the Incorporated Land Groups (ILGs), designed to promote economic development on customary land. The ILG mechanism is empowered by its own enabling legislation, which is the Incorporated Land Groups Act 1974. The Act, under Section 13, empowers the landowners through their ILGs to enter into development agreements with relevant stakeholders and explore maximum benefits from the land without any fear of a hidden risk of forfeiture of such land.

The revised Incorporated Land Groups (ILG) Registration System and the new Voluntary Customary Land Registration (VCLR) system are attempts at creating a positive land reform instrument for PNG [11]. As Kwapena argues, they "are a step forward towards empowering customary landowners in the development of their land by allowing landowners to participate in development projects, formalizing the existing natural corporations of tribes and clans into formal and legally recognized ILGs and providing an opportunity to customary landowners to bring their land into economic efficiency." These two legal instruments, it is hoped, will transform customary land and add economic value to a previously 'dead capital asset' and create property rights for the land-owning groups [11]. Therefore, the ILGs are legal entities created to drive sustainable economic, social and environmental development on customary land as empowered by the ILGA 1974. However, the progress and sustainability of ILGs have always remained questionable due to challenges faced by them over many past decades [13–15]. These challenges have fostered more problems on the ILGs, casting serious doubts on their effective performance as legal entities and on their sustainability in a challenging environment. In this regard, ILG and customary land fragmentations are critical problems that are yet to be resolved [14]. Fragmentation of ILGs into smaller units is a result of actions taken by dissatisfied landowners who do not benefit or receive very little benefit from the main ILGs to form alternative land groups, such as Land Associations and Land Corporations [15,16]. However, Land Corporations and Land Associations have more commercial-oriented goals than merely holding and managing customary land on behalf of the landowners. In some cases, these other groups were formed due to the absence of local ILGs such as those found on Woodlark Island in Milne Bay Province and in the Autonomous Region of Bougainville [17].

In view of the above, the purpose of this study is to investigate the validity of the criticisms that have been levelled against ILGs in Papua New Guinea as regards their doubtful capacity to be a sustainable land reform mechanism. For purposes of empirical analysis, the paper adopts 25 sustainability indicators linked to the four popular sustainability dimensions—good governance, economic sustainability, social sustainability and environmental sustainability—to analyze field observations and the perceptions of selected customary landowners and stakeholders about ILG sustainability. The work is divided into six sections. Following the introduction, the second section examines the research problem, research questions and contributions to knowledge. The third section presents the conceptual framework and literature review, while section four presents the research method adopted. In section five, the research findings are presented in a manner that answers the

research questions, which are discussed in turn. The conclusion in the last section outlines the major implications of the findings.

2. Nature of the Problem, Research Questions and Contributions to Knowledge

The challenges facing the ILGs in PNG have heightened public fears that they may not be sustainable after all. Although the 2009 amendments to the ILG Act 1974 introduced strict requirements for the incorporation of land groups, the question still remains whether those amendments can really bring out the much desired outcomes [15]. Most landowners are uneducated and live in the rural areas that have limited access to information [18]. The government and other stakeholders are criticized for not doing enough to support the landowners through training, monitoring and financial assistance to enhance ILGs' legal status and meet their obligations as modern organizations. This has resulted in ILGs becoming vulnerable to misuse or disputes [2,13,14,18]. Thus, ILGs are still seen mainly as entities for cash distribution and this erodes their commitment to sustainability [12,14]. We argue that the sustainability of ILGs can be better measured using suitable sustainable development indicators, which would indicate areas where the links between the economy, environment and society can be strengthened [19].

Furthermore, there are no proper land use guidelines for customary land in PNG because it is governed by customary law [2,20]. These issues arise as a result of the weak land administration system in the country [6,21]. In addition to a weak land administration system, it has been argued by Lakau [7] that there are too many land-related Acts, most of which are outdated, reflecting colonial development strategies that cannot accommodate traditional customs. Customary law is extremely diverse and dynamic, limiting its compatibility with present government legislation and hence its effectiveness [2,7]. Moreover, lack of management capabilities on the part of landowners has led to the emergence of other land groups such as Land Corporations and Land Associations in an attempt to simplify the process of benefit–sharing by landowners [15,16]. However, even with the formation of the new land groups, many land owners still complain of unfair distribution of ownership benefits and mismanagement of ILG affairs [16]. In some other cases, there is lack of awareness by land owners where no local ILG exists, of steps to be taken to properly choose between Land Corporation and Land Association and enter into business partnerships with land developers [17].

While many previous studies [18,20–29] on ILGs have examined most of the challenges facing the ILGs, there is a dearth of studies focusing particularly on the 'sustainability assessment' of incorporated land groups based on proven sustainability indicators that can make s*ustainability* actionable for maximum performance under effective company leadership [30,31]. Furthermore, we are not aware of any previous study focusing on ILG *sustainability reporting* at the grassroots level. The present study is considered compelling and overdue in order to bridge two particular gaps identified in the literature. First, it seeks to undertake a sustainability assessment of incorporated land groups using appropriate indicators. Second, it attempts to set the stage for standard 'sustainability reporting' of incorporated land groups' performance on a periodic basis. It is argued that, by so doing, the present study will contribute significantly to the knowledge base and also encourage more researches of a similar nature to be replicated in other countries where customary land tenure is practiced. This paper is important because the findings and recommendations can help ILG stakeholders, including the government, in implementing better land policies, procedures and development strategies to promote ILG sustainability. Towards this end, the paper is designed to answer the following two research questions:

(i) What are the indicators of sustainability that can be applied in assessing the performance of ILGs in PNG?
(ii) Are the ILGs in PNG sustainable?

3. Conceptual Framework

The conceptual framework adopted for this paper is *Sustainability*, which embraces the four dimensions of sustainability, namely: good governance, economic sustainability, social sustainability and environmental sustainability. Indicators used to measure the four sustainability dimensions, with respect to ILGs, are operationalized later in this section.

3.1. Concept of "Sustainability"

Sustainability is a discourse—a cultural framework or approach to the world—in the 21st century and it includes sustainable building, design, operations, and the collection of policies and strategies employed by companies to minimize their adverse economic, social and environmental impacts on future generations [32]. Sustainability ensures that ecological concerns, such as the environmental impacts of pollutants, are balanced with socio-economic concerns such as minimizing the consumption of limited natural resources (e.g., landed property) to maintain their availability in the future [33,34]. Using this concept of sustainability (Figure 1), the performance of the ILGs can be assessed based on an adapted "Triple-Bottom Line" model of sustainability [35], to embrace the environmental, economic, social and good governance dimensions of sustainability [36]. As argued by Weber [36], good governance entails processes, decisions and outcomes that sustain natural resources, alleviate poverty and improve quality of life.

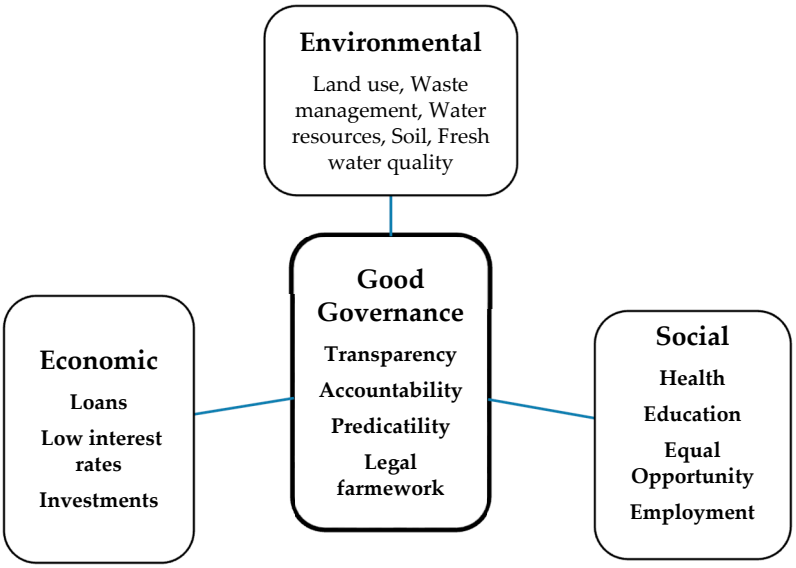


Figure 1. The Conceptual Framework: Sustainability. Source: Adapted from several sources, e.g., [33].

However, there are criticisms that this model of sustainability has difficulty in measuring the social and ecological impacts of business [37]. Hence, Drexhage and Murphy [37] have put forward an argument: "Nowhere does one find advocates of measuring, calculating and reporting on the social bottom line who nevertheless maintains that the financial bottom line, or shareholder value, is the only thing that really counts." Along this line, Petrosyan [38] also developed the idea of measuring social sustainability and environmental sustainability using remote sensing data and Fragstat software, combined with the concept of biodiversity within specific time periods. Therefore, regardless of the setbacks this model may have suffered [37], it is contended that the principles of *sustainability* can be adapted to assess the sustainability of ILGs, which are legal entities focusing on holding and managing customary land. The ILGs, among other responsibilities, are expected to receive and distribute benefits (e.g., royalties and compensations) to members and enter into business through

the landowner companies that are registered through the Investment Promotion Authority of PNG. The question then is: Are the ILGs living up to these expectations?

3.2. Operationalisation of Four Dimensions of Sustainability

(i) Good governance

Good governance is a complex variable that cannot be easily measured because it includes the state's institutions and structures, decision-making processes, the capacity to implement projects and the relationship between government officials and the public [36,39]. Moreover, good governance within any legal entity will promote accountability and transparency [36], and it has both political and technical undertones. It relates to a nation's political system and how this functions in relation to public administration. At the same time, it involves the efficiency and effectiveness of public management. The key to improving the performance level of governance is to find rules and norms that create incentives for state agencies, officials and civil society to act in the collective interest at the least cost to society [39]. According to Manasan, *et al.* [40], it is the *quality* of governance and not the *type* of political regime that has made the difference in the economic performance of Asian countries. Project evaluations conducted by the Asian Development Bank and the World Bank show that the project performance of many Asian countries is largely determined by the overall capacity for administration or implementation [39,40]. In the context of this paper, the ILGs are the legal entities recognized by law to hold, manage, acquire land, receive and distribute land benefits to ILG members, and negotiate for business opportunities on behalf of the landowner company [13]. According to Yala [13], ILG members (as a whole) with good leadership (governance) provided by the executives of the ILGs and the directors of the landowner companies can reduce the vulnerability of ILGs to corruption. Therefore, good governance sets the foundation to protect the land tenure system and the rights of landowners, exposes deficiencies and unethical conducts among members of the ILGs, sets clear guidelines for efficient management of land and its resources, monitors land dealings (e.g., land transfers) and promotes the best interests of the landowners in land development projects [1].

(ii) Economic sustainability

Economic sustainability is a term used to identify various strategies that make it possible to use available resources to their best advantage [37]. The idea is to promote the use of those resources in a way that is both efficient and responsible, and likely to provide long-term benefits. In the case of a business operation, it calls for using resources in a way that the business is able to continue to function profitably in the long term [41]. In most scenarios, the measure of economic sustainability is presented in monetary terms, while the worth of assets and resources in dollar figures, using valuation techniques, is a common practice, as is identifying the amount of return generated by the efficient use of those resources [41].

The idea is to assist in identifying areas of an operation in which resources are not being utilized in the most efficient manner and take necessary actions to correct the problem. At the same time, any proposed changes to the operation are considered in terms of their overall effect on the production flow, making it possible to address any potential difficulties later in the process before the changes are actually implemented. Doing so means engaging in a strategy known as cross-sectoral coordination, which involves identifying the impact that changes in one area of the operation may have on subsequent phases of the production process [41]. True economic sustainability encourages the responsible use of resources, which involves not only making sure that the business is making a profit, but that the operation is not creating environmental concerns that could cause harm to the balance of the local ecology [41]. By being mindful of such negative impacts, the business is able to choose raw materials that are more environment-friendly and design a waste disposal strategy that does not cause damage to the community. In the long run, attention to these details has the potential to enhance the community's continued operation of the business and maximize its chances of remaining a viable operation for a long period of time [41].

(iii) Environmental sustainability

Environmental sustainability involves making decisions and taking actions that are in the best interest of protecting the natural world, with particular emphasis on preserving the capability of the natural environment to support human life without undue interference [42]. The biggest social activism movement related to social development includes programs such as *Fair Trade* and the *Rainforest Alliance* that encourage good farming practices, while ensuring that farmers who produce luxury goods, such as coffee and cocoa on customary land, would receive a decent living wage in return. Activists and sustainability professionals hope to remove trade barriers in future so that they may benefit everyone, contribute positively to the economic and social development cores of sustainability, and promote good environmental practices [43]. Sustainable environment and natural resource management are at the heart of the World Bank's efforts to end poverty and boost shared prosperity in member nations [44].

Biodiversity and natural resources often constitute the social safety net of the poor, representing a food bank and often their only source of livelihood. Furthermore, environmental sustainability is about addressing climate change as an urgent priority for the world [45]. Without a bold action now, the warming planet threatens to put prosperity out of the reach of millions of people and roll back decades of development. For that reason, climate risk is now considered in all country assistance and partnership strategies for the poorest countries around the world [45]. About 85% of projects considered by the World Bank Group consider disaster risk while all country strategies increasingly incorporate climate- and disaster-resilient planning and interventions such as "climate smart" agriculture and measures to boost food security and water efficiency [44]. In this context, the ILGs are the legal organizational entities empowered by the ILG Act 1974 to manage resources on customary land sustainably on behalf of the owners. Effective management mechanisms should be put in place to enable the ILGS to utilize their environment positively by embracing global best sustainable environmental practices such as sustainable agriculture and forestry [43].

(iv) Social sustainability

The sustainability of human society is inherently a social process. According to the FAO/UNEP [42], the natural, built, and cultural environment in which humans live and thrive is the outcome of generations of human interactions with the environment. For example, norms that are used by any group of people to assign relative values to technological change, scientific inquiry, economic activity including profits and costs, risk, the natural world, and human and nonhuman life, dramatically affect the decisions taken by those groups and hence the opportunities they release to future generations. Social sustainability occurs when the formal and informal processes, systems, structures, and relationships actively support the capacity of current and future generations to create healthy and livable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life [46]. Furthermore, social sustainability considers how individuals, communities and societies live with each other. It also synergizes societal provisions and expectations for individual autonomy and realization of personal potentials, participation in governance and rule making, citizenship and service to others, justice, the propagation of knowledge, and resource distribution that affect the ability of that society to flourish over time [46]. Socially sustainable communities are equitable, diverse, connected and democratic and they enhance the quality of life of people. Therefore, ILGs should embrace the concept of social sustainability in the interest of their host communities.

4. Literature Review

4.1. Sustainability Indicators and Sustainability Reporting

Sustainability indicators and sustainability reporting are two complimentary inputs that are required to make s*ustainability* actionable for maximum performance management under effective

company leadership [30]. This is because maximizing performance management and identifying the metrics that matter require effective leadership and engaged functional teams that are armed with the right information and insights to make the appropriate impacts as part of their roles in their business enterprises [47]. Healthy assets are the foundation of a healthy business, and no enterprise can expect to achieve peak performance unless the physical assets they use to produce the goods and services they deliver to the market are operating reliably and performing at the optimum level [48]. According to the web site: "Insresearch.com" [48], *Operational Excellence* has proven elusive for organizations that fail to adopt modern *Asset Performance Management (APM)* strategies. These APM strategies allow organizations to not just fix things as they break, but to take the actions necessary to preclude those items from failing in the first place (Figure 2).

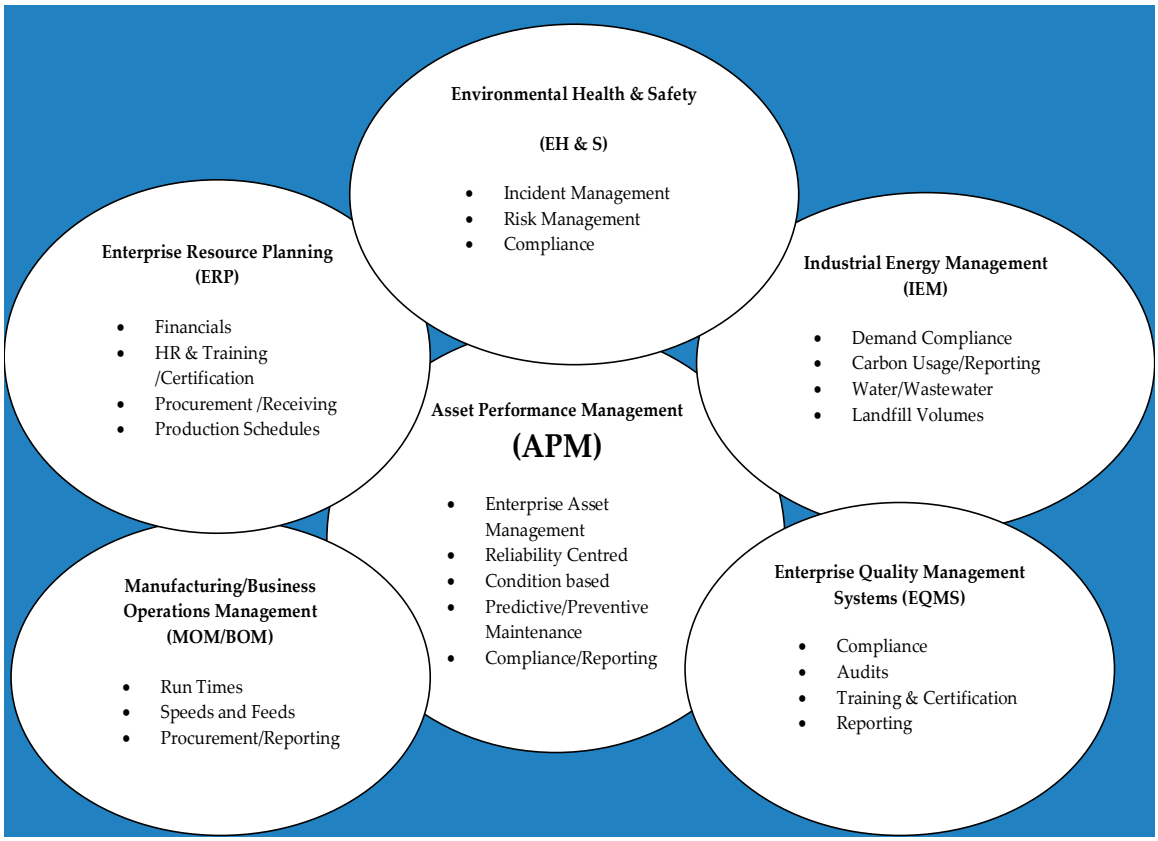


Figure 2. Asset Performance Management (APM). Source: [48].

In addition, it has been observed that failure to adopt APM strategies may lead to unhealthy and poorly performing assets, which could adversely impact not only productivity through increased downtime but also energy and other utility consumption, emissions, safety, and worker health. Therefore, one of the prime contributors to poor service or product quality is process instability, most frequently caused by degrading asset health [48]. Invariably, APM practice provides insight into how organizations are leveraging existing and emerging technologies to enable the enterprise apply processes that ensure that *Operational Excellence* is not road-blocked by assets that perform below their level of capability. Sustainability indicators can also assist legal entities in protecting the biosphere, by fostering the sustainable use of natural resources, as well as by the reduction of wastes by efficient disposal [49], energy conservation, and risk reduction in terms of environmental, health and lower safety risks to employees and the communities. These actions can be enhanced through safe technologies, facilities and operating procedures, and by being prepared for emergencies. Other indicators may include safe products and services, environmental restoration, informing

the public, Management commitment, and annual self-evaluation through financial audits and reports [31,48]. Based on the principles embedded in these best practices, we have adopted 25 indicators to assess the sustainability of ILGs in Papua New Guinea.

Sustainability Reporting has become a popular technique used by firms for two purposes. First, according to Leavoy [50], there is a difference between simply producing sustainability reports to stakeholders and third parties. Second, producing sustainability reports helps companies to align their operations closely with key guidelines set out by official third-party reporting bodies [50]. Whether such reports are internally guided or are more aligned with established external frameworks like *PNG Vision 2050* or, in some cases, regulatory requirements, there is an under-acknowledged gulf when it comes to how such reports are conceived. Furthermore, Leavoy [50] argues, an organization might produce a glossy report describing its sustainability accomplishments on its own terms, while sometimes it may produce a similar report that meets standard "certification" or third-party guidelines. However, in general, these reports tend to describe an organization's account of its own supposed sustainability successes, as opposed to delineating, from a metrics-based perspective, how it is actually achieving progress from a sustainability standpoint [50].

According to Leavoy [50], some of the most commonly cited reasons behind producing sustainability reports include: (i) accountability/transparency to stakeholders (ii) improving public perception and brand image (iii) improving processes, culture and sustainability technology (iv) achieving competitive advantage, and (v) staying abreast of best practices and benchmarking in sustainability performance. While boosting accountability, improving perception, and staying competitive are sound objectives, improving sustainability-related processes, culture, and technology as well as benchmarking against competitors are arguably more important goals in terms of achieving *Operational Excellence* and holistic sustainability. Therefore, each company ought to devise a strategy on how its performance and progress can loop back into continuous Environmental Health and Safety (EHS), Corporate Social Responsibility (CSR), and sustainability performance [50].

4.2. Theories of Real Property Rights

In this section, the focus of the paper is to indicate the relevance of the theories of property rights to the sustainability of incorporated land groups in PNG. However, although several theories exist in the literature this paper focuses attention on the highly influential Ostrom's theory of property rights [51]. Ostrom's theory highlights a high degree of sensitivity to contextual and institutional details that may impact the feasibility and sustainability of resource arrangements. A property right is an enforceable authority to undertake particular actions in a specific domain [51]. Ostrom listed five property rights including access, withdrawal, management, exclusion and alienation as relevant rights (Table 1), which he and other researchers subsequently classified into two categories: administration rights such as transfer rights, transmission rights, inclusion/exclusion rights and internal management rights on the one hand, and operational rights such as investments rights, cropping rights and withdrawal rights, on the other hand. According to Ostrom [51], these property rights may be held by individuals or groups, but they may not necessarily include all the five property rights. One may have lesser rights in a piece of land than other people have over the same piece of land. Therefore, these legal rights are not exclusive and in some countries like PNG, these rights are indeed subject to the laws of the State (Table 1), such as the Physical Planning Act of PNG, 1989, that is used to control developments over alienated and customary lands in the country.

Table 1. Bundles of Rights Associated with Land Ownership. Source: [51].

Bundles of Rights	Full Owner	Proprietor	Authorized Claimant	Authorized Entrant
Access	X	X	X	X
Withdrawal	X	X	X	
Management	X	X		
Exclusion	X			
Alienation	X			

The main features of a bundle of legal rights (Table 2) in 'landed property "are complex and dynamic" [52]. In many countries, including PNG, the largest and best recognized collection of privately held rights, according to the Federal Geodetic Control Committee, USA [52], are those associated with fee-simple-absolute-in-possession, also called fee simple or just fee, which most people think of as private land ownership rights. One person may own the rights to use the land surface, another the minerals underneath the surface, another lease, and another mortgage. Overriding these interests are public interests, such as the right to tax, the right to navigate, the right of eminent domain, and the right to limit the use of land (executive or zoning power) in order to protect the common health, safety, and welfare of the community (public good) [53].

Table 2. Bundles of Property Rights. Source: Adapted for PNG from [53].

Title Owner	Public Use	Government	Third Party
Possession (Right to use and occupy)	Railroad	Collect Property Tax	Possession—Right to use and occupy as tenant
Legal Title	Public Works	Enforce Lien	
Mortgage	Electric Power Transmission lines	Protect Endangered Species	Freedom to Roam
Lease	Air Rights	Protect Water lands	Home Owners Associations
Sell	Riparian Water Rights	Zoning	Historic Preservations
Subdivide the Property	Mineral Rights	Eminent Domain	Conservation Easement
Create a Covenant with the Land		Prohibit Noxious or Nuisance Use	Adverse Possession

4.3. The Defining Issues Facing ILGs in PNG

Papua New Guinea (PNG) has been experiencing some serious problems concerning the management of customary land and how benefits from the land held by the ILGs are shared [54]. For example, according to Filer [54], PNG experienced a land grab of some sort between July 2003 and April 2011, during which period more than five million hectares of customary land (11 percent of PNG's total land area) passed into the hands of national and foreign corporate entities through a legal mechanism of partial alienation of customary land known as the 'lease-leaseback scheme'. This peculiar scheme, according to Filer [54], was originally devised in 1979, four years after PNG achieved its independence from Australia, as a stop-gap measure to compensate for the absence of any effective legal mechanism for the registration of customary land titles. It was later incorporated into PNG's Land Act in the form of specific provisions that enable the state to lease customary land from the customary landowners and then lease it back to these same landowners, or to other persons or organizations of which they approve, for periods of up to 99 years. It is contended by some that this arrangement does not work in favor of customary land owners. There is also the problem of mining and petroleum companies using ILGs as a means of identifying landowners and paying royalties for the use of land and the extraction of minerals in ways that are neither fair nor sustainable. For example, according to Gilberthorpe [20], the Fasu region of Papua New Guinea's fringe highlands has experienced a situation whereby the oil extraction industry has imposed development values and the identification

of corporate groups as beneficiary landowners. In response, Fasu males have tightened the boundaries of their agnatic descent groups to become exclusive patriunits [20]. Cash royalties are incorporated into socio-political exchange, so the formation of exclusive kin groups allows males to expand social networks to other regions, 'whilst ensuring continuing wealth for future generations'. Consequently, males are becoming isolated from pre-oil exchange networks, and females are becoming isolated within villages. Practices of this nature are a serious perversion of the original aims of ILGs.

Another serious problem facing the ILGs in PNG is that many of them have been overridden by a Special Agricultural and Business Lease (SABL) that may be revoked soon by the government [55], while the ILG members concerned have no knowledge of what has happened. The SABLs are directly relevant to the problems of ILGs in that while the ILGs were originally devised to help customary land owners loan their land for commercial purposes, the SABLs were devised to allow outside interests to gain legal control over customary lands for up to 99 years at a time. It is argued this development will have the effect of making thousands of customary landowners landless. Under the Land Act 1996, Section 11 says that an instrument of lease in the approved form, executed by or on behalf of the customary landowners, is conclusive evidence that the State has a good title to the lease and that all customary rights in the land, except those which are specifically reserved in the lease, are suspended for the period of the lease to the State. However, in May 2011, following mass protests in the country, the Acting Prime Minister of Papua New Guinea, Sam Abal, announced a moratorium on the granting of Special Agricultural and Business Leases (SABLs) and the suspension of all Forest Clearing Authorities (FCAs) associated with such leases pending the conduct of a commission of inquiry into the process by which these forms of property had been created in recent years [19]. According to Filer [19], in the eight years preceding the Acting Prime Minister's announcement, about five million hectares of land (almost 11% of PNG's total land area) were removed from customary ownership through the grant of SABLs to private companies, most of which were so-called landowner companies. Most of these leases, according to Filer [19], covered large areas of more than 10,000 hectares, while some covered very large areas of more than 100,000 hectares. In the process, Filer [19] continued, about 80% of the land alienated in this way was leased out between the start of 2009 and the time of Abal's announcement, and it was this dramatic acceleration in the rate of conversion that aroused the chorus of protest to which the Acting Prime Minister responded. These are some of the serious issues militating against the sustainability of ILGs in PNG.

A further serious problem militating against the ILGs' sustainability is their inability to meet the requirements that the legislation places on them. In March 2009, PNG's national parliament finally passed a series of amendments to the Land Registration Act and the Land Groups Incorporation Act that promised to complete the second and third steps in the process of land reform recommended by the 1973 commission of inquiry [21]. As observed by Moore [21], it was then anticipated that these amendments could make the lease–leaseback scheme redundant, since customary landowners should be able to register their own titles to their customary land without granting any sort of title to the state. However, the amendments required that all existing land groups be reincorporated within a five-year period, and their reincorporation entails the reporting of far more information about their membership [21]. The long list of requirements, more than ever before, includes: their assets, the assumption that an individual can only belong to one clan; a list of all members including those who are absent, certified birth certificate of all members; a map of the land concerned; a list of all property the ILG owns; annual updates of members including all deaths and births; and the reporting to the Lands Department of the minutes of annual meetings; and their internal deliberations [19,21]. Another issue is the fact that the majority of members of many ILGs who are largely illiterate customary landowners living many hours' walk from a road and many hours' travel from a Lands Office, will possibly not meet these conditions. At the same time, the PNG Lands Department charged with the responsibility of managing the registration of ILGs, has been criticized by the Minister of Lands as the most corrupt public service department in PNG [56]. These are serious indictments that work against ILG sustainability in the country.

Other stringent requirements include: (i) Prudent and controlled administrative processes to register ILGs which involve wards, local level governments, districts, provinces and the central government through the representation of the Department of Lands and Physical Planning to avoid future conflicts arising from ownership and use of the land; (ii) A proper code of conduct of ILG executives and a breach of the code warrants severe penalties, such as 6 years' imprisonment or a PGK5,000 fine for violations; and (iii) All ILGs must submit annual returns to the ILG Office and failure to adhere to this requirement will result in dissolution of the ILG as provided in the Land Groups Incorporation Act (Amendment), 2009.

Koyama's [57] own account of ILGs' problems, which have arisen in the petroleum sector through the use of ILGs as a mechanism for the distribution of royalties and other benefits, have resulted in leadership struggles that are very worrisome. These problems include, unlawful and unfair sharing of benefits, complaints about leaders misusing ILG funds and lack of representation and responsibility of ILG leaders. Other problems, according to Koyama, include a lack of accountability and transparency, inability of ILGs to solve their problems internally, political alliances as a means of facilitating rent-seeking, bribery and corruption within ILGs, and failed landowner business enterprises.

Therefore, given the veracity of allegations against the ILGs it is difficult to imagine how successfully the Lands Department can administer all of the hundreds of ILGs that have sprung up around the country. If land groups fail the test of reincorporation, their standing as parties to the grant of Special Agricultural Business Leases will be called into question, while proponents of the lease–leaseback scheme could still claim that they have managed to mobilize large areas of customary land with a lot less trouble [19]. The import of these and many other problems facing the ILGs is that the ILGs have been weakened and rendered incapable of fulfilling their original objectives, which invariably would invalidate any claim to sustainability. An attempt is made in the next few sections of this paper to use primary data derived from the perceptions of landowners and ILG stakeholders to assess ILG sustainability. Although such an empirical assessment on its own merit cannot be conclusive, it is contended that it can, at least, add some value to the preponderance of evidence gleaned from previous studies confirming that ILGs are indeed unsustainable legal entities.

5. Research Method

The key variable that was measured by the study is the 'sustainability of ILGs', using data based on 25 indicators of four dimensions of sustainability (listed below) as earlier conceptualized in this paper. The indicators (Tables 4 and 5) were derived from literature review, physical field observations and the perceptions of 116 landowners and 13 stakeholders (Table 3). To quantify these indicators, the two questionnaires used for the two questionnaire surveys that were conducted contained questions tracking the perceptions of the respondents about specific attributes of their ILG. Specifically, the respondents were asked to indicate their highest preference by ticking the best indicator they supported under each of the four dimensions of sustainability from their own viewpoint. Landowners were asked to answer the first set of questions involving indicators that were grouped as follows:

(i) *Good governance*: Better land policies, Corruption Level, and Legal framework for ILGs
(ii) *Economic sustainability of ILGs*: Profit-making, Cost saving measures and Benefit sharing
(iii) *Social sustainability of ILGs*: Education/training opportunities, Illegal settlements, and Equal participation by men and women
(iv) *Environmental sustainability of ILGs*: Land Use, Clean (portable) water

Stakeholders were also asked to provide answers from their own viewpoint to questions raised on four dimensions of sustainability as follows:

(v) *Good governance*: Better land policies, Transparency, Accountability
(vi) *Economic sustainability of ILGs*: Profit-making ventures, Interest rates, Cost savings,

(vii) Loans
(viii) *Social sustainability of ILGs*: Education/training facilities, Gender equality, Equal
(ix) participation by men and women, Respect for Melanesian culture
(x) *Environmental sustainability of ILGs*: Land resources, Waste management, Environmental
(xi) planning

The total support obtained by each indicator was then abstracted from the collated data by adding up the individual positive responses, which yielded the data in Tables 4 and 5. Meanwhile, a sustainable ILG, in the context of this study, is defined as one that receives the most favorable rating from site inspections and from the respondents' ratings with regards to the above-listed ILG attributes, although we would admit that lack of a database of ILG members was a limitation faced by the study. To overcome this limitation, however, the authors had to rely on their many years of field experience to quantify and aggregate some of the attributes into usable indicators (e.g., profit, interest rates, cost savings, loans), while other attributes were better left to open description and interpretive analysis (e.g., level of corruption, land policies, education/training opportunities, adequacy of legal framework, environmental quality due to illegal settlements, gender equality, land resources, *etc.*). While the valuation of 'environmental attributes' and 'public goods' is generally acknowledged in the field of 'environmental economics' to be problematic, we strongly believe that the quantification of indicators is a topical issue that may well be an interesting research area for future studies.

Table 3. Summary of the Sample Population Groups (Landowners and Stakeholders).

Sampling Frame					
Sample Population	**Population Sample**	**Target**	**Percentage**	**Returned**	**Percentage**
Landowners (Household Surveys)	500 Households	150	30	116	23.2
Stakeholders (Govt. Depts., Developers and Banks	20 Offices	20	100	13	65
Total	520	170	32.7	129	24.8

Table 4. Indicators of ILG Sustainability: Perceptions of landowners who thought that each indicator (parameter) was the most important.

Landowners' Perceptions (Percent)							
Good Governance		**Economic Dimension**		**Social Dimension**		**Environmental Dimension**	
Better Land Policies	26.7	ProfitAcceptable	38.8	Education/Training	19.8	Good Land use32.8 Planning	
Corruption High	(51.7)	Cost Saving is Good	16.4	Cultural Relevance	47.4	Clean Water	37.9
Legal Framework isGood	21.6	Equal Benefit Sharing	44.8	Equal Participation	32.8	Solid Waste29.3 Management	
Total	**100%**		**100%**		**100%**		**100%**

The two ILG sites used as case studies are located in Ahi local community, Lae City, Morobe Province, Papua New Guinea. Survey respondents were residents of the local communities who are either original owners of customary land or legal settlers who are living on their own customary lands that are controlled by the two ILGs. The legal settlers had bought customary land from the original landowners through private treaty. The study adopted random sampling because the respondents are a homogeneous group of Papua New Guineans, even if they come from different provinces. However, random samples were taken separately of landowners and stakeholders for questionnaire surveys because the two groups differ in their goals and objectives. In addition, the questionnaire survey method was preferred to any other method because the landowners live in a community where they have no access to the Internet for e-mails or post office box numbers for the receipt of letters.

Table 5. Indicators of ILG Sustainability: Perceptions of ILG stakeholders who thought that each indicator (parameter) was the most important.

Stakeholders' Perceptions (Percent)							
Good Governance		**Economic Dimension**		**Social Dimension**		**Environmental Dimension**	
Better Land Policies	40	Profit Acceptable	30	Education/Training	15	Land Resources53.7	
Transparency	15	Interest Rate Good	15	Illegal Settlements	35	Environmental Planning	15.5
Accountability	20	Cost Saving Good	35	Equal Participation Guaranteed	18	Solid Waste Management30.8	
Corruption	25	Loans Available	20	Cultural Relevance	32		
Total	**100%**		**100%**		**100%**		**100%**

Access to the landowners was achieved through the assistance of some officials of the two ILGs' who volunteered to lead field assistants to the respondents' residences. A questionnaire was administered randomly with one adult representative of each of the 116 households (23.2%), while a different questionnaire was administered with each of the 13 (65%) stakeholder-managers who were also selected randomly from the 20 stakeholder-institutions operating in the study area. The two questionnaire surveys yielded a sample size of 129 respondents or 24.8% of the entire population of households (made up of landowners and settlers) and stakeholders in the study area (Table 3). Over the years, some households in the two ILG villages have been formed by marriages between legal settlers and original customary landowners, but it is valid to say that the population remains largely homogeneous. The ILGs are land associations made up of both original landowners and legal settler-households who often come together for government recognition and protection under the ILG Act 1974. In terms of succession at customary law in this part of Papua New Guinea, official sources confirmed that the two ILG case studies are traditionally patrilineal, in which case membership is by agnatic descent and that ownership is transferred through the hereditary chiefs who are naturally the heads of clans [4].

Indigenous tribes and their sub-groups play a primary role in the use, transfer, and defense of customary land in PNG [2]. Any landowner, whether original or settler, can be a member of any ILG that is in operation in his/her local area, but members cannot include customary landowners or settlers who live elsewhere. The introduction of the ILGs is just an enhancement and consolidation of those groups in the legal sense for business opportunities and security of tenure. In this study, the ILG stakeholders were involved in a separate questionnaire survey because all decisions pertaining to the engagement of landowner-households in customary land development, including the decision to apply for bank loans using customary land as collateral, can only be approved by the management authorities of the stakeholder-institutions. Nevertheless, the real estate developments upon which loans are secured as collaterals are fraught with foreclosure risks and other conflicts [25]. Details of the two groups of survey respondents are as follows:

5.1. Customary Landowners

Through their ILG secretariats—Wapicguhu ILG and Wapigehu ILG—a total of 116 (32.2%) customary landowner-households, including legal settler-households, who own land and reside in the study area, and 13 ILG stakeholders, responded to our survey questionnaires (Table 3). Based on PNG national statistical records [58], households in the study area were assumed to have an average size of 5 persons per household and one adult member in each household was successfully interviewed. Both adult male and female landowners and settlers were randomly involved in the questionnaire survey. The two urban ILGs adopted as case studies were chosen to represent the landowners as a result of their involvement with customary land development projects through partnership arrangements and considering their years of experience since the time they were incorporated.

Wapigehu ILG was selected because the ILG was incorporated 20 years ago, based on guidelines in the ILG Act 1974. The researchers selected the second ILG (Wapicguhu ILG), which was incorporated 3 years after the Act was amended in 2009, so that it would be possible to include the effect, if any, of time difference on the behavior of both ILGs. The experiences of both ILGs with regards to landownership, land rights and equity distribution were compared and contrasted, with particular regard to Wapigehu ILG (an old ILG) and Wapicguhu ILG (a much younger ILG). In this way, it was possible to identify their differences relative to the 2009 amendments to the ILG Act 1974 [13,14]. Therefore, Wapicguhu ILG is used in this research as another landowner group representing the ILGs that were incorporated using the amended ILG Act of 2009. It was particularly selected following its relatively recent incorporation under the amended ILG Act 1974 because the amendments gave more powers to the landowners, while women were given more recognition in their social groups for purposes of owning and developing land. It is contended that this arrangement was better than what was previously the case because under the original ILG Act 1974 women's rights were not recognized [15]. However, the problems facing both ILGs are broadly similar to those of other urban ILGs in other parts of the country. Figure 3 indicates the modified ILG incorporation and customary land registration process following the ILG Act amendments of 2009.

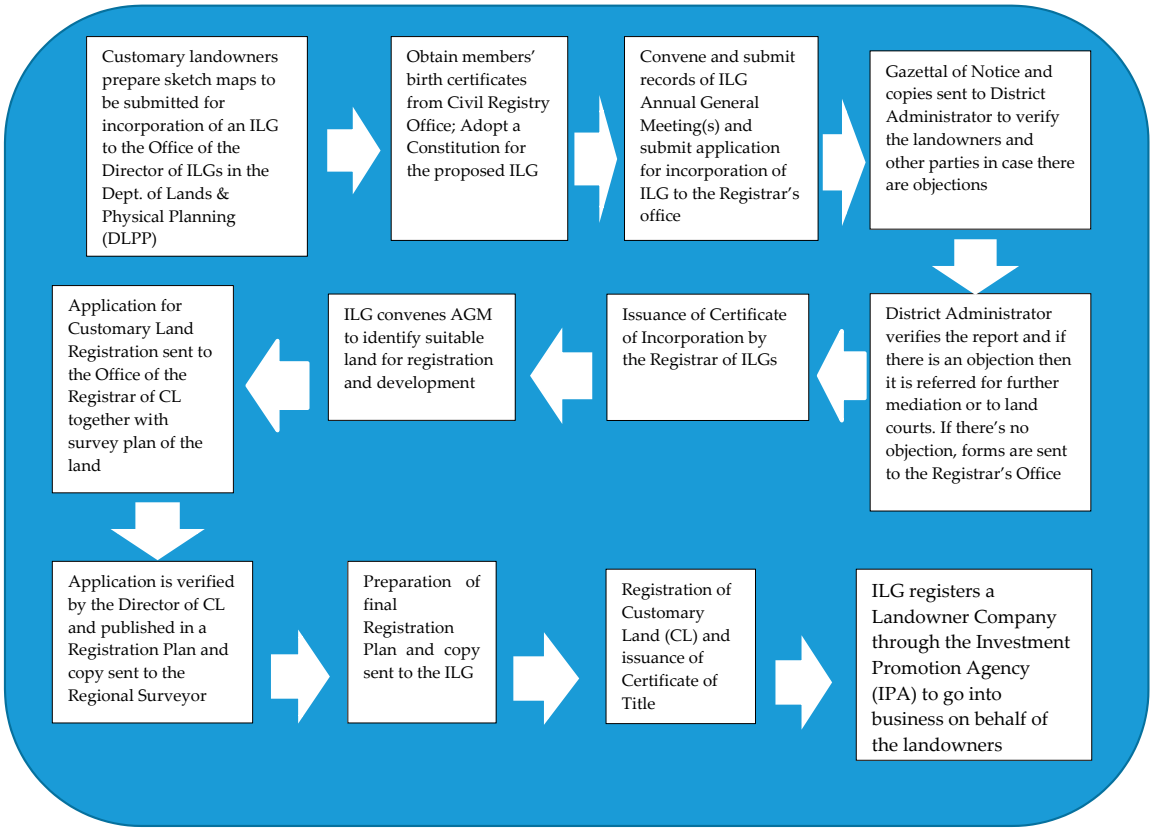


Figure 3. A Modified Incorporated Land Group (ILG) Incorporation and Customary Land Registration Process. Source: After [11].

Furthermore, the two urban ILGs were selected based on the current level of urban development that is taking place within Lae City, even though the two ILGs are not very representative of other PNG ILGs that are rural in nature. Yet, it is contended that all ILGs, whether urban or rural, are subject to the same legal framework that is rooted in the ILG Act 1974 and the amendments of 2009. Furthermore, the two ILGs are situated within the jurisdiction of the proposed Physical Planning Area earmarked for the future expansion of Lae City. Development activities are on the rise on customary land in

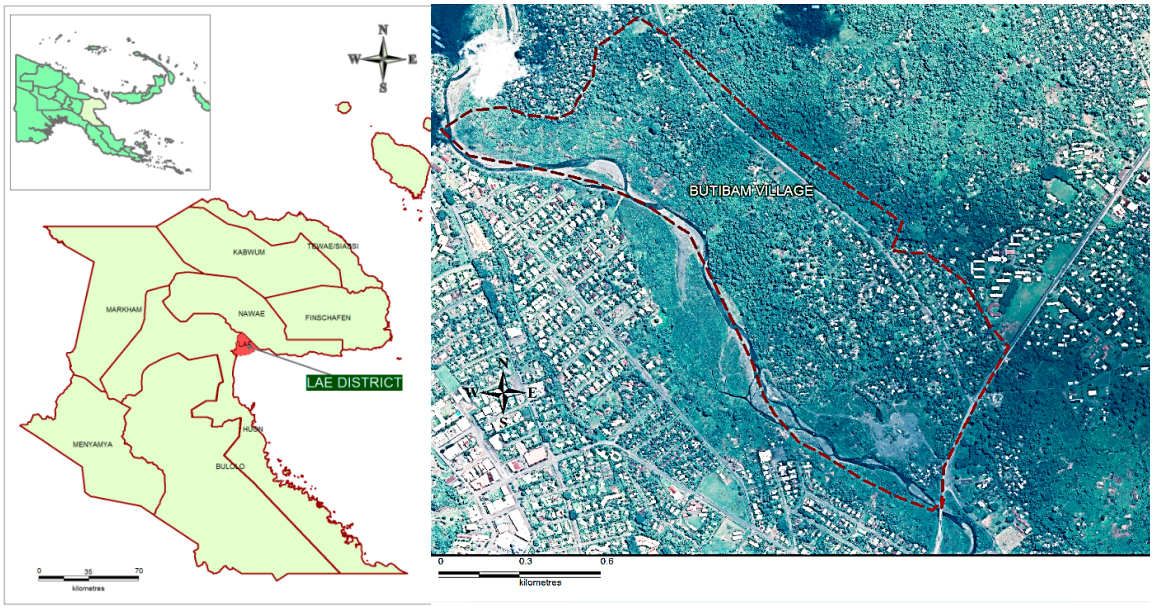
Lae City and these two ILGs are actively involved in these expansion trends. Some of the important landmarks in close proximity to the study area are Lae Nadzab Airport, the proposed Airport Highway (a four-lane road project under construction) and Lae Port Tidal Basin, among others.

5.2. Stakeholders

A total of 13 managers (65%) of various stakeholder-institutions operating in the two ILG areas were also randomly selected from a list of 20 organizations/institutions in PNG that have some particular interest in the customary land owned by the landowner households and settlers. These stakeholder-organizations deal with policy making and implementation, customary land development and project financing in PNG. They include the State (e.g., government departments and agencies dealing with customary land), developers (e.g., East-West Transport Ltd.) and the commercial banks dealing with project loan financing, such as the Bank of South Pacific (BSP) Ltd., Westpac Bank Ltd. and Australia-New Zealand Bank (ANZ) Ltd. The stakeholders play a vital role in developing customary land in PNG, but they are not the landowners and their views regarding ILGs are not seen as the views of the landowners. Each stakeholder was selected for the questionnaire survey on the basis of its past and present engagements with landowners, as well as its performance regarding customary land development in the country. A separate questionnaire survey was administered with the 13 stakeholders because it is at the management level that important decisions concerning customary land development are made.

5.3. The Study Area

The case study for this paper is the Butibum Village in Lae City. This village together with Kamkumung, Yanga, Hengali and Wagang constitute the Ahi Villages of Lae City. The residents are some of the original landowners of Lae City. The study area is about 130 hectares. No formal survey was done to obtain the total land area and coordinates of the area, but the land area was calculated using Map Info techniques by two senior staff of the Department of Surveying and Land Studies, Papua New Guinea University of Technology in 2015. Much of the land within the study area is still being surveyed and it falls within the proposed Development Area (DA) under the Lae City Physical Planning Area (LCPPA). Some parts of the land are being alienated while others remain under the control of customary laws (Figure 4a,b). The case study area is located along the Bumbu River, and bounded on the north by Kamkumung Corner; on the east by Busu Road; and on the west by China Town Bridge. It is approximately a kilometer away from the Central Business District (CBD) of Lae City. The satellite image dotted with red lines (Figure 4b) illustrates the study area. The area is in close proximity to the Taraka Campus of the PNG University of Technology, China Town Shopping Centre and Balob Teachers' College. Other major landmarks in close proximity to the study area include Nestle (PNG) Ltd., Malahang Industrial Centre (MIC), International Food Corporation (IFC) and Paradise Foods and Beverages Ltd. The Nadzab Airport is about 41.2 kilometers away, while Lae City Port is easily accessible from the site. All of these landmarks make the study area a potentially viable investment location, which normally should enhance the sustainability of the ILGs in the area.



(**a**) (**b**)

Figure 4. (**a**) Map of Lae District in Morobe Province (**b**) Study Area Delineated with Dotted Red Lines.

6. Findings and Discussion

It is worth noting that the analysis in this section of the paper is based on a combination of three sets of data: (i) the attributes of the indicators adopted in assessing ILG sustainability; (ii) the perceptions of the survey respondents—customary landowners and ILG stakeholders who manage the ILGs' resources on behalf of the landowners; and (iii) data obtained from site inspections conducted by the researchers. This integrated approach is adopted because the findings would not be realistic if the study had to rely only on the perceptions of the landowners and stakeholders. Given this background, the purpose of this section is to present answers to the two research questions raised earlier in the paper.

6.1. Database for ILG Sustainability and Legality

Tables 4 and 5 present the sustainability indicators used in assessing the two ILGs selected as case studies for this study. Table 4 contains a total of 12 sustainability indicators that are applied in reporting the landowners' point of view of ILG sustainability. The second stage of the analysis is devoted to the shareholders' perceptions of sustainability as recorded in Table 5 using a total of 13 sustainability indicators. Altogether, the 25 indicators are arranged in four groups that are in tandem with the four dimensions of sustainability, namely: good governance, economic sustainability, social sustainability and environmental sustainability.

As revealed in Table 4, none of the 12indicators received up to 50% positive support by the landowners. The support of 51.7% for the high level of corruption in the ILG system is unworthy of reckoning as corruption is a negative characteristic in the normal sense, although one person's corruption is another's helping a relative to condone corruption.

In the case of the stakeholders (Table 5), only one indicator (land resources, with 53.7%) received positive support, while all the other indicators received less than 50% positive support. Furthermore, the perceptions of both the landowners and stakeholders, with regards to the concept and purposes of ILGs in PNG, are indicated in Figure 5. More than half of the landowners indicated that they have heard about the concept of ILGs in Papua New Guinea, but have no knowledge about their purposes even though the concept had been introduced before PNG attained independence in 1975. When asked further to explain why they had no knowledge about ILG purposes and functions, some

of the landowners admitted that they were illiterates who could neither read nor write. Secondly, it was obvious that this group of landowners was merely suffering from the poor publicity given to ILGs by the government and the Lands Department. However, in this respect, the findings indicate that the stakeholders understood clearly the concept and purposes of ILGs in the country.

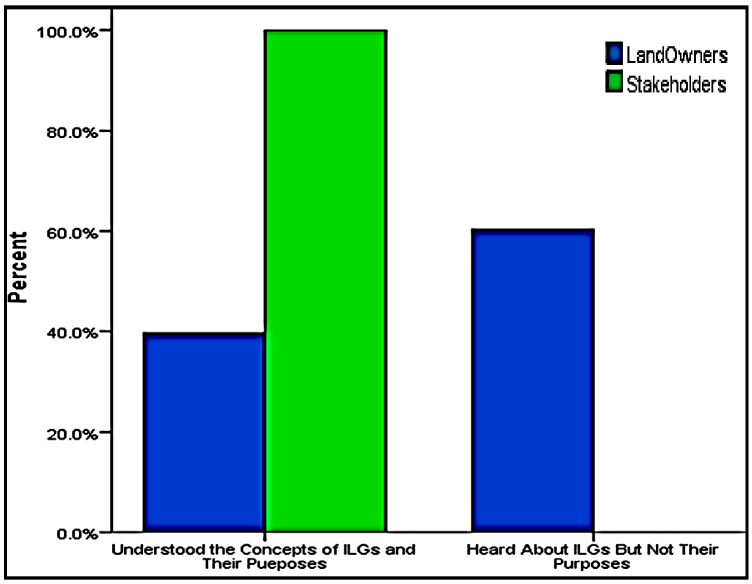


Figure 5. Respondents' Awareness of ILGs' Functions in Papua New Guinea.

Out of the 116 landowner respondents, only 10.3 % indicated that ILGs are legally recognized entities that are protecting landowner rights in the country (Table 6). Surprisingly, 89.7% of the respondents claimed that the legal framework is flawed and not adequately protecting landowner rights. In contrast, 61.5% of the stakeholders claimed that the legal framework for ILGs is adequately protecting landowner rights, while only 38.5% indicated that the legal system for ILGs in the country is flawed.

Table 6. Landowners' and Stakeholders' Perceptions of Legality of ILGs and their Legal Framework.

Responses	Landowners		Stakeholders	
	Frequency	Percent	Frequency	Percent
ILGs are Legal Entities and the Legal Framework is Protecting Landowner Rights	12	10.3	8	61.5
ILGs are Legal Entities but the Legal Framework is Flawed in Protecting Landowner Rights	104	89.7	5	38.5
Total	**116**	**100.0**	**13**	**100.0**

It is contended that these findings may imply that there may not have been adequate publicity given by the government and other stakeholders concerning the benefits of ILGs' functions and purposes in Papua New Guinea. Invariably, it can be argued that the low level of awareness about ILGs is a setback that is attributable to the landowners' lack of knowledge about the system. The results also show that there is a lack of landowners' awareness regarding government's recent amendments to the legislation aimed at sealing the loopholes in the original ILG Act 1974 that had been widely criticized for not fully protecting landowner rights. Once the questions about ILG legality are resolved, the next question that naturally begs an answer is that of ILG sustainability.

6.2. Research Question 1: What Are the Indicators of Sustainability That Can Be Used to Assess ILGs in PNG?

An attempt has been made to answer the first research question by paying special attention to related previous studies on the ILGs, the outcome of our site inspections, and the perceptions of the landowners and stakeholders involved in the questionnaire surveys. However, before we proceed, it is necessary at this juncture to state some assumptions behind our data analysis. We do concur with the possible impression of readers of this article that it may not be a logically sound idea to try and measure the performance or sustainability of ILGs using a test of sustainability that has been applied to some of the world's largest companies (e.g., BMW, Ceres) and applying it to PNG's ILGs which are not corporations but are tiny groups of economically poor landowners. Yet, the reasoning is that at some point in the life span of the ILGs, someone has to come up with an idea as to how we can begin to measure their sustainability as legal entities. For example, as an analogy, the UNDP started in 1990 to use the Human Development Index (HDI) to rank countries at the macro-level, as upper, middle and low income countries. As far back as 2003, it was proposed by the Fraser Institute, Public Policy Sources (Number 36, Undated), in Morse [59], that the same global HDI methodology can, in fact, be applied to geographical entities at the micro- or grassroots- level. Morse's proposal [59] was based on the possible reasoning that at such a micro-level of development, the HDI will become a fair and equitable indicator of sustainable development. This same idea was intended to be incorporated in the broad goal of the Brundtland Report (1987) [60] following the Rio Earth Summit, and the subsequent efforts of the United Nations aimed at ensuring a highly sustainable world. Therefore, in this paper, we argue that it is high time that customary land researchers began to explore strategies that promote possible assessment of ILG sustainability at the grassroots level and this paper is an attempt in that direction.

In the present study, lack of proper record-keeping by the ILGs prevents us from undertaking a holistic sustainability assessment of PNG's ILGs. Instead, we have assessed the sustainability of ILGs using descriptive statistics based on available data on landowners' and stakeholders' perceptions in Tables 4 and 5 as opposed to using inferential statistics (e.g., multiple regression and factor analysis) that may wittingly or unwittingly reduce the more serious issue of ILG sustainability assessment to mere statistical window dressing that has no link with reality.

The findings from this study reveal that the selected 25 indicators (Tables 4 and 5) could be used to assess ILG sustainability, although this number is not sacrosanct as it all depends on the ILG location(s). However, with the exception of "land resources" (53.7%)—an environmental indicator in the stakeholders category—none of the remaining 23 indicators, after excluding the negative indicator of "corruption level" (51.7%) from the landowners category, received a perception rating of above 50% in either category of respondents. This significant finding indicates that, in addition to the evidence gleaned from previous studies painting a gloomy picture of ILG sustainability in PNG, the majority of the interviewed landowners and stakeholders also have a damning verdict for the ILGs. In effect, it is contended that the only positive indicator of ILG sustainability revealed in this study is "land resources" availability, which is too little. Of course, this appears to make sense because most of the ILGs in PNG are blessed with abundant land resources, particularly in the rural areas. Even then, many of the ILGs are deprived of the full benefits that they could normally derive from their lands had it not been for the challenges they are facing, including their turbulent relationship with the SABLs [19,21].

6.3. Research Question 2: Are the ILGs in PNG Sustainable?

As a sequel to the answer to the first research question, the answer to the second research question is not far-fetched: The majority of the ILGs in PNG are unsustainable! The preponderance of evidence from many previous studies that are replete with concrete evidence indicating that ILGs are not sustainable is very crucial in this regard [18,20–29]. What then is the way forward? The concluding section sheds some light on this question.

7. Conclusions

This paper has examined some issues militating against the sustainability of land groups charged with the responsibility of giving leadership in governance to customary landowners, using two urban Incorporated Land Groups (ILGs) in Papua New Guinea as case studies. The major findings and recommendations of the study are as follows:

(i) There is not enough publicity being given by the PNG government and other stakeholders concerning the purposes of ILGs and the benefits that landowners and the entire communities stand to gain from the sustainability of these legal entities. More than half of the landowners interviewed indicated that they have heard about the concept of ILGs in the country, but they have no knowledge about their purposes or functions. This lack of awareness has been accentuated by the fact that many ILG landowners are illiterates.

(ii) There is an increasing concern that corruption is endemic in the Department of Lands, an indictment that has also been supported by the Minister of Lands who described the department as the most corrupt public service department in PNG [56]. This is the department charged with administering the registration of customary lands and the ILGs in the country. Corruption is akin to a cancerous disease that has rendered many ILGs unsustainable, and the government must derive innovative strategies to stamp out all forms of corruption in the department.

(iii) In line with the proposal of the Minister of Lands and Physical Planning [56] to repeal the section of the Land Act 1996 that allows the Minister to lease customary land for the purpose of granting a special agricultural and business lease (SABL), we recommend that Section 11 and other relevant sections of the Act focusing on SABLs be reviewed or repealed. If not reviewed or cancelled, the SABLs have the potential to create a large number of landless people in PNG who (if they cannot grow subsistence food on their customary land) will have no other option but to move into towns and cities to survive, thereby aggravating the country's rural-urban migration crisis.

(iv) Out of the 116 landowners interviewed, only 10.3 % indicated that ILGs are legally recognized entities that are protecting landowner rights in the country, while 89.7% of the landowners claimed that the legal framework is flawed and is not adequately protecting landowner rights (Table 6). In contrast, 61.5% of the stakeholders claimed that the legal framework for ILGs is adequately protecting landowner rights, while only 38.5% indicated that the legal framework for ILGs in the country is flawed. These findings imply that the ILGs are not sustainable legal entities. The ILG legal framework requires an urgent overhaul in order to pave way for ILG landowners' freedom from land grabs and other forms of extortion.

(v) A total of 25 sustainability indicators were applied in assessing ILG sustainability in Papua New Guinea. This number comprises a set of 12 indicators used in assessing the landowners' perceptions of ILG sustainability (Table 4), while another set of 13 indicators was employed in assessing the stakeholders' perceptions (Table 5). However, only one indicator out of the 25 indicators used—*i.e.*, land resources (53.7%), an environmental indicator in the stakeholders' category—was positively rated as being a true reflection of ILG sustainability. Effectively, all the other indicators used fell within a range of 15%–47.4% levels of disapproval by both the landowners and stakeholders. We recommend that further research in the area of ILG sustainability be encouraged and financed by the various arms of government in PNG, the National Research Institute (NRI), the National Agricultural and Forestry Research Institutes, the private sector, and the universities, amongst others. Such research endeavors targeting the ILGs would need to be aligned with the goal and objectives of *PNG Vision 2050* for purposes of cost-effective land policy formulation and implementation.

Finally, the study provides a foundation for the sustainability assessment and sustainability reporting of land groups not only in Papua New Guinea, but in all parts of the world where customary land tenure system is practiced. Once a suitable sustainability assessment strategy becomes entrenched into land policies, it should be possible for the land groups to start producing sustainability reports

in accordance with the guidelines that may be issued by appropriate third-party regulatory bodies. There are many resources that can show stakeholders of ILGs how to learn from best practices [30,31] in an incremental fashion that, if followed consistently, can yield long-term benefits for both them and PNG as a whole.

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Abbreviations

The following abbreviations are used in this manuscript, but they have been explained in the text:

ALT	Alienated Land Tenure
ANZ	Australia New Zealand
BSP	Bank South Pacific
CBD	Central Business District
CL	Customary Land
CLT	Customary Land Tenure
LTS	Land Tenure System
ILGs	Incorporated Land Groups
LCPPA	Lae City Physical Planning Area
MIC	Malahang Industrial Centre
MLSC	Melanesian Land Studies Centre
PNG	Papua New Guinea
Unitech	University of Technology
VCLR	Voluntary Customary Land Registration
CSR	Corporate Social Responsibility
EHS	Environmental Health and Safety
APM	Asset Performance Management
LRA	Land Registration Act
FOLA	Focus on Land in Africa
GRI	Global Reporting Initiative

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