



## Ostrom's Design Principles in Residential Public Open Space Governance: Conceptual Framework and Literature Review

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### ABSTRACT

Various measures were undertaken to internalize the state-owned common pool resource (CPR) based public open space's (POS) externalities which arisen from the perennial commons' dilemmas, yet, to date, not a single adaptive governance strategy has been discovered. Thus, a review of trans-disciplinary analytic perspectives is required, which thereof, highlights the objective of the paper i.e., to propose Ostrom's common-property-based self-organizing eight design principles by examining how can they be adaptably applied in governing the residential commons, POS (particularly landed property) in the Malaysian context. Two study areas: states of Sabah and Selangor, of different institutional POS governance, were a priori fleshed out. Succinctly, Ostrom's principles are basic, insightful, well-defined, organized, and widely-applicable, which have enabled us to consent that there is certainly a void for both states to adapt her oeuvre as a dynamic panacea in POS governance. This paper infers that Ostrom's principles are a means to improve the status quo of POS' quality (as POS rejuvenation) which postulates stakeholders to reckon it as a new paradigm in the urban design and planning perspective.

## 1. Introduction

Contemporary public open space (POS) is no longer fixed as a square terminology, instead it now connotes in a wide-spectrum of definitions, features, significances and functions which are colligated with sustainable development and quality of life (Chiesura, 2004; Ling et al., 2014a). Despite the panoptic researches that emphasize on both significances and conservation measures of the common-pool-resources-based (CPR) POS, rampant governance (management/ provision and consumption) issues that involve various predicaments and negative externalities which subsequently induce meagre POS quality, are still ensuing to date (Webster, 2007; Foster, 2011). Thence, this phenomenon has created an impetus to many scholars that continuous studies pertaining to POS rejuvenation and quality improvement are still necessitated to bridge the lacuna, especially in applying the common-property regime theory in POS governance, of which yielded many successful outcomes yet remarkably few researches were done (see, Colding et al., 2013; Ho & Gao, 2013), via institutional mechanism (property-rights analytic perspectives) complemented with contractual arrangement. This heuristic paper, thus, highlights an objective based on two present study areas in Malaysia (i.e., states of Sabah and Selangor as depicted in figures 1 and 2 below), especially on the state-owned (local government)

governance in neighborhood residential public open space (focusing solely on landed-property, exclusive of the gated/ gated and guarded properties): to illuminate insight of Ostrom's collective action by purporting her common-property-based self-organizing eight design principles in governing such residential commons, POS (conceptual framework construction). However, before initiating such attempt, we provided a brief discourse on the two-state's current institutions issues in POS governance which thereby delivering a firm and valid basis why such Ostrom's work that requires institutional change is necessary. Therefore, through this study, it elucidates several main doubts as follows; (i) what are Ostrom's eight design principles and (ii) how should her oeuvre employ and execute in local POS environment.

## 2. Contemporary Urban Commons resources, POS Concepts and CPR Issues

Throughout the plethora of studies on idiosyncratically multidimensional open spaces, it can diversely be interpreted contingent upon the circumstances. However, in general, open spaces are necessarily set apart as areas reserved for the public as public purpose to carry out their recreational activities and as places to meet and socialize, in which such definition is considerably abiding by the two study areas' laws/

<sup>1</sup>This research has not insofar been implemented in any part of Malaysia although it was scantily mentioned (See, Chan, 2008; Ling et al., 2014b); thus, this study can be earmarked as references or benchmarks not only in new commons but also in other environments like fisheries, agriculture and forestry which are also endangered.

guidelines i.e., Town and Country Planning Act (Amendment) 1995, (TCPA), Open Space and Recreation Guidelines (OSRG), National Physical Planning Council (NPPC) standards on open spaces hierarchy, sizes, and usages etc. Consequently, this satisfies the research ambit of POS' spatial dimension i.e., served as small-scale public place: non-stratified residential community park, playgrounds (0.5-1.5 acres, 300-1000 people) or playing fields (1.5-5.0 acres, 1000-3000 people) that are meant for recreational purposes ("local public good" or civic good).

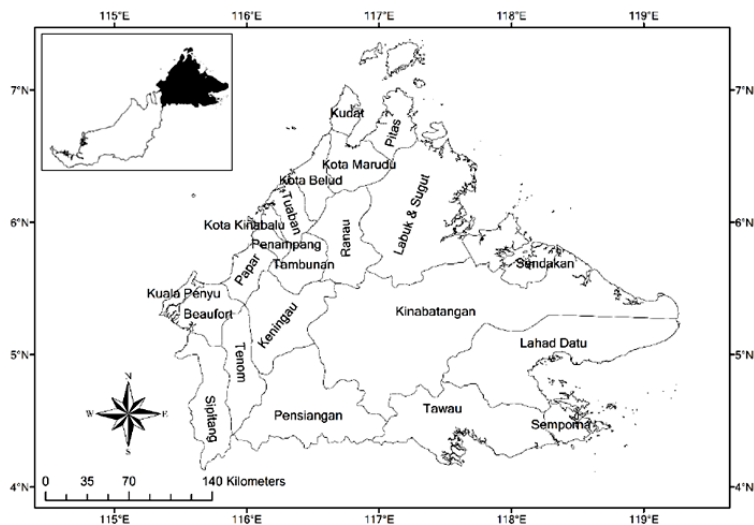


Figure 1: Map showing the location of Sabah, Malaysia

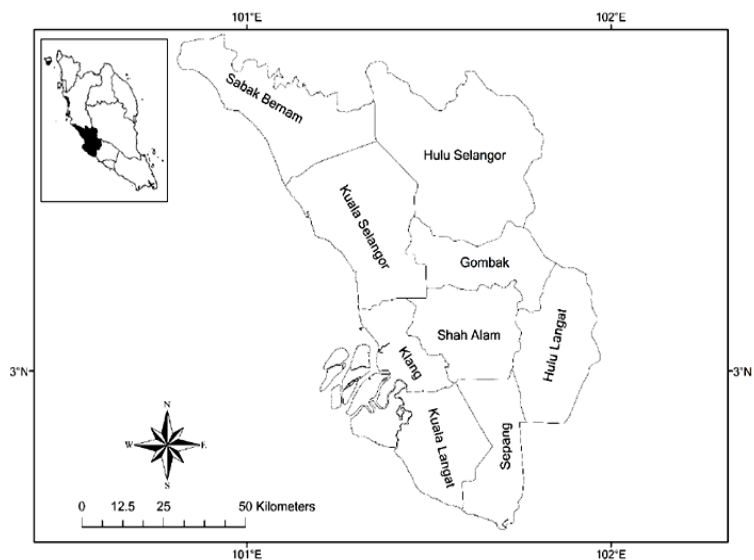


Figure 2: Map showing the location of Selangor, Malaysia

Furthermore, such "publicness" of space is generally conceived of shared resources: urban commons (Colding et al., 2013). Insofar as POS is de jure "commonized", economically, it is deemed a typical example of CPR (un-excludable and highly rivalrous). Such CPR-based POS is highly susceptible to endemic social dilemmas/social trap. It faces mal-

utilization i.e., when the users consume the POS, in a way that, they may devolve or degrade its condition, and under-provision issue: users' mismanagement or underinvestment on the POS preservation which both of them unquestionably generate negative externalities or as resource waste (Ostrom et al., 1994; Ling et al., 2014a). In fact, such POS market failures are not merely rested theoretically or beyond the local context, rather they are de facto burgeoning and evident in both study areas.

### 3. POS Planning System: Status quo of Property-Rights Structure of Sabah and Selangor in relation to POS Governance

Malaysia with a total population of approximately 29 million people based on the 2010 census, is a unique and multifarious (multiracial, multilingual, multicultural, multi-religion and multi-institution) nation. Geographically, it consists of two regions i.e., East Malaysia comprises states of Sabah and Sarawak while in Peninsular Malaysia (West Malaysia), it comprises altogether eleven states that governed by three different sets of planning, local government and land law systems (institutions), respectively. I.e., under the Malaysian Supreme law: Federal Constitution, East Malaysia, states of Sabah and Sarawak, both are governed by two different laws whereas the states of Peninsular Malaysia are uniformly governed by several primary laws (diversity of institutions that causes uniqueness is observed). So far, in this paper, besides the aforementioned gap in footnote 1 above, due to current data availability and limitations, we only selected two states i.e., Selangor and Sabah that governed by different institutions. Besides, both states are also having diverse backgrounds in terms of socioeconomics, ethnics, cultural, religions, languages, norms etc. (e.g., the most salient difference is the composition of ethnic in year 2010 i.e., in Selangor, Malay is the majority, followed by Chinese, Indian etc. whilst in Sabah, the non-Malaysian citizen (Indonesian and Filipino) is the majority, followed by *Bumiputra*/native, Malay, Chinese etc. (Department of Statistics, 2010). Our intention is necessarily to demonstrate that, despite both states' heterogeneity (as a general comparison) in terms of institutions (political rules), attributes of community/ users, and somewhat different biophysical conditions that may lead to numerous POS issues, Ostrom's work is certainly and adaptably demanded. It may not only be beneficial to them rather, it can also trigger other states to adopt such work at least in institutional as well as spatial senses. It institutionally suffices to serve as a quintessence to other states especially in the case of Selangor, it may be espoused by other states e.g., Pahang or Johor since they are basically governed by the same institutions. Such general and brief antecedent description on two-state's background may be helpful in later part of Ostrom's principles conceptualization.

We commence by taking the idea that the urban planning framework pertaining to POS governance system that affirmed by multifaceted institutions (laws and rules), is like a contract (Webster et al., 2013). This entails that the state's planning and land constitution is akin to property-rights and duties ascription (exchange) i.e., institutions & property-rights connection forms a "contract" on the resource system and thereby influences the social-ecological (human-ecosystem) interaction, especially on POS' utilization and provision behavior

<sup>2</sup>Open to all: anyone from any part of the world can use the space including the outsiders/ non-citizen, it is as a public domain- unassigned property (consumption) rights on the resources. This is crucial to be defined because both study areas are de jure deemed public domain- not just a simple term of public or shared resources which it can be very deceptive (see, Webster, 2002; Colding et al., 2013 for more clarification on the 'publicness' issue).

<sup>3</sup>A situation wherein a conflict between personal and common interests occurs (normally individual behaves opportunistically/self-interestedly which infringes collective interest). Following are some instances of social dilemmas; over-exploitation, misuse, shirking, moral hazard, free-rider, and the classical Hardinian's model (Hardin, 1968) which can be illustrated in the game theory i.e., Prisoners Dilemma (PD) model.

(Musole, 2009). Based on the analogy above, we contextualize the notion into the local POS governance setting i.e., the two study areas. Sabah's planning and land system is primarily governed by district and local plans under Town and Country Planning Ordinance Cap 141, TCPO i.e., mandatory provision of 10% POS if the subdivision of land is more than one acre. Whilst, Local Government Ordinance (LGO) is concerning local government's duty on POS maintenance and management. Lastly, Sabah Land Ordinance Cap 68, SLO is pertaining to granting a title deed and without title on the Country Lease (CL)/ Town Lease (TL) POS and Native Title (NT) POS, respectively of which the former is adhered to owners' terms & covenants i.e., transfer it to local government after the fulfilment of development & 18-month maintenance duty. The alignment of separable property-rights particularly on POS consumption and provision are summarized and tabulated as follows in which only the landownership and management regime that held under the state property (local government) is hitherto emphasized in this paper (refer to Table 1 below).

However, as for the present state of Selangor's POS planning governance, it is institutionally contrasting from Sabah. The most discrete difference is that the POS, after surrendered to state government for land development (subdivision), will not be granted any ownership/ title i.e., remained as State-owned land and gazetted as POS in which the rights of management and maintenance shall be vested in local authority. For a more comprehensive view of property-rights distribution on Selangor's POS governance (refer to Table 2).

**Table 1:** *A de jure overview of diverse property rights and regimes positions of Sabah's POS governance.*

Types of POS	CL & TL POS	CL & TL POS (Prior to title issuance)(As interim)	CL & TL POS	Surrendered NT POS (Without Title)
POS Status	Un-transferred Title	Un-transferred Title	Transferred Title	Needless Title Transfer
	Un-handed over Site  Still under the temporary owner's covenant: minimum 18 months)	Handed over Site: standards are fulfilled & local government is satisfied ("Bare" Trustee)	Handed over Site	Needless site Handing Over
Land ownership	Private/Common property: developer/ owners	State property: Local government	State property: Local government	State property: State land (State Authority)
Management regime (including monitoring, maintaining etc.)	Private /Common Property: (Developer/ Co-landowner(s))	State property: Local Government/ Local government + Common property-residents (registered)*	State property: Local Government/Local government + Common property- residents (registered)*	State property: Local government (vested in)
Positions Bundle of rights:	Claimant	Claimant	Claimant	Claimant
Access	X	X	X	X
Withdrawal/Using	X	X	X	X
Management	X	X	X	X
Alienation and Exclusion	None	None	None	None
Public access right	Yes	Yes	Yes	Yes

*\*Only certain districts adopt such regime on some POS (optional). The residents who volunteer to form a committee via registration to assist the local council's in POS management i.e., to monitor and ensure good safety, security, cleanliness, physical conditions of the POS surroundings. E.g., in the district of Kota Kinabalu, Sabah, approximately, fifty committees were formed to oversee more than 100 over tamans or POS which most of them remain inactive (see, Ling et al., 2014b).*

Source: Adapted from Schlager & Ostrom (1996), and Ling et al., (2014b).

<sup>4</sup>Development plans (e.g., local plans) and 10% POS provision under the TCPA, National Land Code (NLC): surrender and re-alienation or "serah balik dan berimilik semula", gazettement purpose, Local Government Act (LGA)1976: local council's duties and rights on POS etc.

**Table 2: A de jure overview of property rights and regimes positions of Selangor's POS governance.**

Property-rights structure	Surrendered POS
Land ownership	State property: State land
Management regime (including monitoring, maintaining etc)	State property: Local government (vested in)
Positions	Claimant
Bundle of rights:	
Access	X
Withdrawal/ using	X
Management	X
Alienation and Exclusion	None
Public access and withdrawal rights	Yes

Source: Adapted from Schlager & Ostrom (1996) and Colding et al., (2013).

Based on the tables 1 and 2 above, there is at least one similarity between both states, i.e., the POS is ultimately held under state government and governed by the local government that afterward viewed as state-property in property-rights regimes context (see, Hanna et al., 1996). Thereof, a centralized POS planning governance i.e., government-owned park, is still preferred as the “only” way to preserve such green public infrastructure, but ironically, such perception is turned out fictitious and unsustainable (Ostrom, 2008) as myriad POS dilemmas e.g., overexploitation or Hardinian’s classic tragedy and shirking (under-provision/ mismanagement) have sprung up. Therefore, it entails that the current state-property regime is indeed inefficient then reasonably perceived as property-rights tragedy/ failure: misallocation of rights (Musole, 2009), or more precisely, as maladaptive state regime<sup>5</sup>.

Albeit both Selangor’s and Sabah’s rights issues differ, still they have triggered stakeholders (developers, local government, landowners and users) to behave opportunistically or self-interestedly that lead to generally identical POS plights. Following are some arisen externalities/ nuisances that inclusive of Hardinian’s trap, illegal usage conversion (misuse/ overuse): car-park, squatters’ dwelling, storage for containers, house building (condominium), commercial purpose: shop lots, cleanliness, safety and security issues, poor landscape, poor maintenance (bad condition and aesthetic), and vandalism/graffiti: poor quality of play facilities & amenities, underused, disused: desolated/idle park (unmanaged like a *no-man’s-land*), dangerous park: loitering and crimes issues, etc. (See the papers by Ling et al., 2014b about Sabah’s property rights structure on POS governance associated with social dilemmas; See also Marzukhi & Abdul Karim, 2012). Thus, irrespective of the minuscule institutional variances of both states, individual state-governed property-rights structure failures and similar POS dilemmas have evidently emerged. This likewise conceives that the current POS’ planning institutions are questionable; henceforth, there is a need to call

<sup>5</sup>De jure state regime is de facto turned into open-access (unmanaged/ ungoverned) resource regime (e.g., paper park) which becomes “classic sites for tragedy” or prone to quality/ quantity degradation due to positive transaction costs in rights enforcement and surveillance as it is ‘open’ to bribing, rent-seeking (political lobbying) environmental insensitive: emphasizing on economic rather than social environmental aspects, fiscal crises: insufficient resources/ budgets that leads underinvestment or shirking, and red tape issues (Musole, 2009).

<sup>6</sup>The terminology of collective-action: action taken by a group in pursuit of members’, perceived shared interests and common property: an identifiable community is vested in rights or de facto formed to own and manage the resource (Ostrom, 1990). Many leading scholars from diverse areas, in different types of commons, strongly affirm that this is a more viable, efficient, robust, stable, equitable and resilient initiative in solving governance issue (provision and appropriation) comparatively to the state and market solutions. Via this regime, it also alters the goods typology from CPR to entrepreneurial club good theory (non-rivalrous & excludable) (See, Buchanan, 1965) which it is evidentially more efficiently long-lasting or better quality (Webster, 2007).

<sup>7</sup>Such thoroughness and successfulness of massive case studies (see the book of “Governing the Commons”) which made her became the first Nobel Laureate woman ever in Economic and most vitally, her work is plausibly relevant in our setting, we hence choose this long-familiar Ostrom’s extensive craft.

for a diversification in planning system. *Planning with property-rights* as a solution (Webster, 2007) via institutional design: property rights re-engineering (Webster, 2005) are thence required. Therefore, a seminal underpinning which too needs institutional change, by Nobel Laureate Ostrom on common-property-based governing the commons (Ostrom, 1990) is employed and discoursed in the next section.

#### 4. Common-property-based Self-Organization: Ostrom’s Eight Design Principles

Formerly, two conventional approaches were advocated i.e., coercive state (socialism/centralization) or market (privatization) to mitigate or deter the CPR’s dilemmas (Sarker & Itoh, 2001). Nonetheless, none of them is considered sustainable i.e., many failures (e.g., subject to corruption, enforcement and holdout problems) and with only some successes, till Ostrom’s groundbreaking institutional decentralization, (more precisely, devolution) metaphor (self-governance) that based on collective-action concept under common-property regime<sup>6</sup> (bottom-up approach) as a third alternative surfaces (See, Ostrom, 1990). In her view, the former solutions (state/ ‘top down’ & market) do more harm than good especially in resource governance, but this does not inevitably contend the latter is an “optimal”/ “one-size-fits-all” cure-all for coping with all types of social dilemmas in lieu; she stresses on adaptive governance/ diagnostic approach that no single institution can forever be successful. There is no automatic association between types of regimes and successful resource preservation as each regime has its respective problems and limitations, or put it differently, it is indispensable for the institutions and enforcement mechanism to adapt and evolve over time especially in diverse and rapidly-changing social ecological system (SES). E.g., especially in terms of heterogeneity of users’ or biophysical characteristics, Dietz et al., (2003) posited that, “no single type of property regime works efficiently, fairly and sustainably in relation to all CPR (common-pool resource)”, but it is possible to “identify design principles associated with robust institutions that have successfully governed CPR for generations.” Clearly, Ostrom did not, however, impel her work as a prescriptive blueprint or model, instead; it is merely a general checklist or framework that her humble intention was not to extrapolate to other commons usages especially the larger (global/ knowledge) commons albeit in some recent studies, it proved some successes in it. Prior to the underlying eight design principles (characteristics/conditions) formation (Ostrom, 1990, see figure 3 below) which embedded with interconnected three-level working rules (constitutional-choice, collective-choice and operational rules on resource provisioning and utilization), a large number of studies were performed on the homogeneous (traditional) CPR governance. These roughly involved thousands of empirical cases on local or regional small-scale commons: irrigations, fisheries, pasture, forestry etc. which were mostly based in developing countries i.e., Africa, China, Philippines etc<sup>7</sup>. Such vast number of empirical endeavors had consequently sparked Ostrom to discover that by conforming to these core criteria/ “critical/common success factors”, the self-organizing system is likely to be successful as the resources will be durable (Wilson et al., 2013; even statistically-proven as well by Cox et al., 2010).

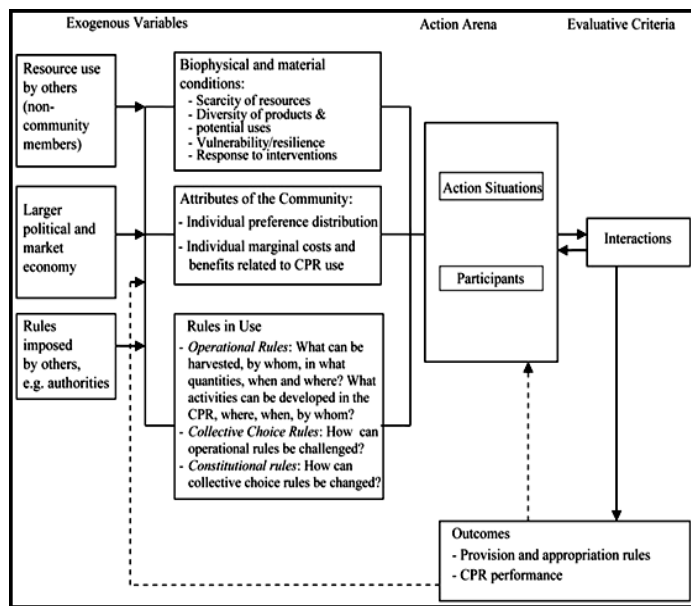
1. Clearly defined boundaries  
Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundaries of the CPR itself.
  2. Congruence between appropriation and provision rules and local conditions  
Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labor, material, and/or money.
  3. Collective-choice arrangements  
Most individuals affected by the operational rules can participate in modifying the operational rules.
  4. Monitoring  
Monitors, who actively audit CPR conditions and appropriator behavior, are accountable to the appropriators or are the appropriators.
  5. Graduated sanctions  
Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offense) by other appropriators, by officials accountable to these appropriators, or by both.
  6. Conflict-resolution mechanisms  
Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.
  7. Minimal recognition of rights to organize  
The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.
- For CPRs that are parts of larger systems:*
8. Nested enterprises  
Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.

**Figure 3:** Design principles illustrated by long-enduring CPR institutions (Ostrom, 1990); See also Ostrom, 1999 for a detailed discussion on each principle).

In spite of the rigorous methodology in the principles establishment, they are, however, criticized for being incomplete, too simplistic/general e.g., imprecision or hiatus in terms of community and resource properties descriptions: size and heterogeneity. Thus, this may be a contributing reason resulting in resources deterioration or failures of collective action<sup>8</sup> which thereby calls for some adaptations and improvements (Cox et al., 2010). These can be hinged on some leading scholars' works on design principles i.e., by admitting/adapting other germane variables in determining successfulness of self-organization (See, Wade, 1988; Stevenson, 1991; Pinkerton and Weistein, 1995; Baland and Plateau, 1996; Mckean, 2000; See also, Agrawal, 2001). There are several key variables that shall hence be taken into consideration in order to evaluate the self-organization/governance structure outcome not only its feasibility but also successfulness (see its social performance measures e.g., efficiency and equity, ecological performance measures: overharvested, resilience, sustainability, and externalities to other SESs, see, Ostrom, 2007). It is in fact a form of costs and benefits analysis. Before one enforces such self-governance system or the set of principles in that particular case, several exogenous factors must be examined i.e., to ascertain whether the current situation with the complexity of sets of intervening factors allow the collective action to be executed successfully. This can be performed by adopting a widely-applied framework (multitier conceptual map) named institutional analysis and development (IAD) (refer to Figure 4) which lays out a platform to systematically coordinate a "diagnostic and prescriptive inquiry" (Ostrom, 2005). It first distinguishes explanatory variables that may affect on individuals' incentives and behavior in a particular collective action; it then analyses the effects by contemplating how the variables (*factors*) determine individuals' own available choices/behavior and their interactions (*actions/interactions situations*) in the collective action (*outcome*) (see, Ho & Gao, 2013; Van Laerhoven & Barnes, 2014). In next paragraph, besides describing the determinants, we provide some brief explanations on how exactly or potentially they may advantageously and vice versa influence the outcome of the self-

governance system which is useful in later part of principles conceptualization.

Firstly, the **attributes of community** e.g., *group size*- transaction costs increase with group size in which it is difficult/unlikely to achieve an agreement due to communication/monitoring barriers, so some of them may free-ride (Olson, 1965). This also negatively affects the trust and reciprocity of community (less cooperation) but this condition sometimes, received positive feedback such as yielding additional resources (financially) (Ho & Gao, 2013). However, conversely, a small size community is not necessarily better. *Heterogeneity of community*- e.g., issue of cultural belief system, information/knowledge and experience (asymmetric issues), the more heterogeneous the groups, the less likelihood of them to form the system, so, homogeneity facilitates collaborations i.e., lesser conflict. However, some posited heterogeneity is not influential while some responded otherwise i.e., beneficial effect such as more endowment contributed and unpredictable results that may also contribute an urge to collaborate. *Mutual trust and leadership of community*- generally, both of these elements that involve trust/social capital/social ties as well as leaders who act as hubs to organize and lead their people, should exist as they positively ease cooperation among the community. **Resource's characteristics:** smaller size, spatial distribution (low mobility, location, shape), high predictability of production (location & quantity), clear boundary definition, high dependency on resource affect positively the collective action i.e., higher likelihood of self-governance initiation as lower cost of monitoring and maintaining. In other words, it has higher incentive/benefits and interest to monitor and manage such resource.



**Figure 4:** Basic (first-tier) version of IAD framework within an SES (Ostrom, 2005).

**Governance/rules features:** institutions and property-rights (tenure) system that shape the *clarity (definition)/completeness, suitability, security/legality, complexity, heterogeneity* of the three working rules should be clearly, suitably devised i.e., it should be feasible/practical, simple and clear as well as securely/legally recognized. This is important as they in turn affect community's incentive and (transaction) costs in

<sup>8</sup>Threats of collective action can be arisen in varied forms and one of the them is blueprint thinking (See Ostrom, 1999 for more threat explanation).

(rights/duties) enforcement e.g., complex (unclear) and mal-adaptive institution induces community to have higher tendency to behave opportunistically by underinvesting and overusing the resources. Next, another issue of whether or not to give an autonomy to community in which two-result are expected i.e., external/government intervention can corrode the local initiatives values but simultaneously, it is favorable in terms of rendering supportive services/assistance that can lower or share the costs/burden of community e.g., sanctioning, monitoring and conflict solution mechanism. Other than these variables, there are in fact, other relevant variables that may be imperative in some studies (see, Ostrom, 1999; Agrawal, 2001; Ostrom, 2007; Van Laerhoven, 2010 for more details and elaborated explanations). (See figures 4 and 5 for *basic* and *complex* versions of an overview interrelationship between the categories of exogenous factors, interactions, and outcomes via the IAD framework within SESs).

taking relevant factors together with the understanding of IAD framework/concept into account, in particular towards quality preservation of POS in two institutionally different states, namely Selangor and Sabah. A brief and general comparison in terms of application strategies is also presented.

## 5. Contextualization of Ostrom's Common-property regime: Eight Self-governing design-principles in Sabah's and Selangor's Residential Commons, POS

### 5.1 First Principle: 'Well-defined boundaries'

*What is governed, and who should govern it? What rights should they have? (This is the "rule of the game" (as a first step) that can only be implemented after the institutional change- property-rights re-distribution (from state to community) (Requires the assistance (recognition) of governments-see principle 7<sup>th</sup>).*

In Sabah, regardless of CL, TL or surrendered NT POS, as for the physical (spatial) boundary definition, ideally, it is clear and less challenging as it is tangible and immovable property where its usage, location, size/area, shape are precisely predetermined during the land subdivision process unlike some invisible or high mobility commons, they have undetermined boundary e.g., fisheries, air, irrigation, water etc. For example, a playground with an area of 1.2 acre and located within, say, Eden park. Generally for both CL and NT POS, the residents who live within the park or "Taman" should be granted the rights to govern the spaces. Normally, one "Taman" consists of one or two POS or sometimes more than this. Many POS may lead to more committees as it can ease the burden by sharing the management duty (nested enterprise). Among the residents, via voting or other mechanisms, a contract forms in which it clearly lists out each of their full rights and duties in appropriation and provisions. Note that, it should be clear, as complete as possible, legal and easily understood otherwise it stymies the enforcement. From here, some of residents will be elected as committee members (as leaders) on behalf of other residents in order to run the management (maintenance) and exclusion rights (proprietorship is formed, see Schlager & Ostrom, 1996 and for more committee/association formation, see Homeowners Association, HOA concept and its formation procedures under Nelson's HOA model) (Nelson, 2002). The committee must promptly render management while the users are informed to follow the instructions of using the POS as well as the penalty if the rules were broken. As for the ownership right, Ostrom did not mention who must own the POS, we propose a hybrid regime i.e., ownership is preferably held under the state or lands and surveys department while the management is in the hand of the residents. This regime can also render successful POS as the exclusion and management are the keys in governing the park (Colding et al., 2013) (see Table 3 below that depicts how the proposed property-rights structure in Sabah state should be).

Regardless of Sabah's property-rights structure diversity whether the temporary 18 months of private (developer) or local government management, the idea of this paper is to transform the current pure private and local government-managed POS to residents (common-property) regime only or with the assistance and intervention of government. However, we still prefer the latter because it needs some probation since such implementation is considered new if it is taken place. In other words, people must be given some trial period in order to be more "familiar" and comfortable with it. If the result is desirable then probably, government can consider to slowly relinquish upon its

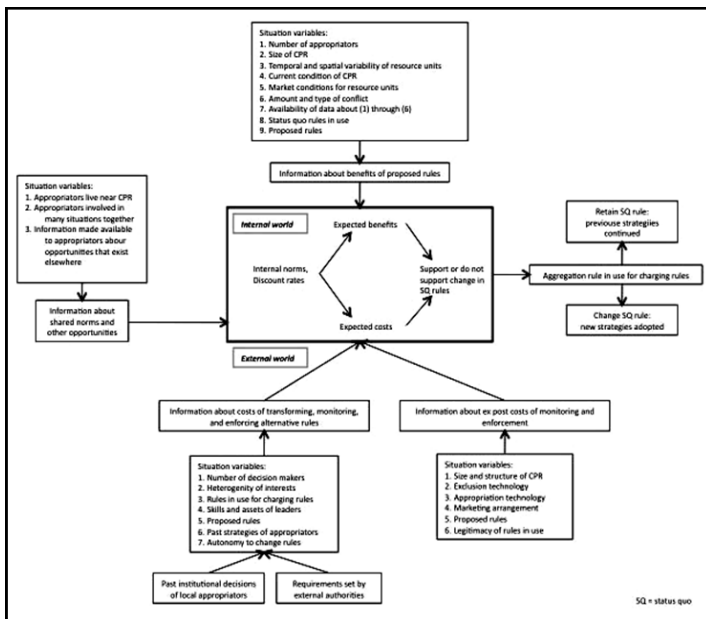


Figure 5: Complex (multiple tiers) version of IAD framework within an SES (Ostrom, 2007).

In short, despite the well-grounded critiques on the theoretical rigidity and "too general" or simplistic issues, these do not render them trivial, neither preclude the scholars from research nor diminish the number of studies with respect to the design principles; instead, this has driven more studies to be pursued in a posterior for addressing the gap and scrutinizing the relevancy of, especially scantily-researched, new (urban) commons resources (Foster, 2011; Wilson et al., 2013). By virtue of that, we are optimistic with the preceding Ostrom's core principles application issues. Firstly, it is understood easily as it is rather clear and well-aligned, and secondly, the generality issue causes them to be more generalizable. In our opinion, it thereof facilitates us to adapt others' scholarly works to complete it especially after understanding on how can other pertinent variables/principles be adapted into Ostrom's current work with the aid of IAD framework above. Thirdly, it is considered a fundamental paradigm and due to its generality issue, it broadens its applications i.e. we believe it is more flexible as it can be applicable to other types of commons (from conventional to contemporary commons). We, therefore, believe that, it suffices to serve as a worthwhile cornerstone which complemented with some adaptations, especially in this preliminary paper. In the following section, we examine how can Ostrom's eight core principles be equitably and sustainably adapted in current residential commons governance by

duty to the committee. Also, both the POS of CL and NT must be gazetted under the SLO so that the space will remain as such. In some cases, under the present institution whereby the POS or *taman* are already/currently co-managed by the registered residents (see table 1 above), so, in order to contextualize Ostrom's principles, perhaps a re-definition of members in the committee is required (depending on the circumstances since the duty and right will not be the same as the former).

However, the requisite procedure is similar to the above explanation in which some rights and duties modifications (additions) should be imposed on them like exclusion right and more management duties should be assigned to the committee. Based on the current institution, since a rather similar concept of self-organization has been practiced in some *tamans* where in Kota Kinabalu district alone, about 50 committees were registered to co-manage the 100 over *taman* or POS, so, it may not hypothetically sound too difficult/rigid compared to Selangor state for the officials to agree further or adapt some necessary modifications. However, having the above criteria does not equivalent to higher successfulness of self-organization as this still needs further affirmation from the governments: Lands and Surveys Department and local government and community as well especially with respect to their acceptability level. On the issue of types of good, by employing such approach, instead of CPR in public domain, it turns into a 'club' or toll good in club (community) realm which is proven more efficient.

In short, a contract (cooperation) should be formed between the government and committee (see interdependency theory whereby governments may involve/assist in the 4<sup>th</sup>, 5<sup>th</sup> & 6<sup>th</sup> principles since the 7<sup>th</sup> & 8<sup>th</sup> principles empower them) i.e., subject to sanction if there is breach of terms and conditions. While in Selangor, same explanation of Sabah applies here, except the types of institutions and organizations parts. The ownership is retained as a state property by the Director General of Department of Lands and Mines (DDGLM)/district land office which must be gazetted as well under the NLC. A contract between the government and local residents is also needed to be formed. Same explanation and analogy of property rights structure of Sabah apply here i.e., since Selangor's institution is not as diverse as Sabah's, where it has only one situation, more straightforward i.e., all the surrendered POS are gazetted state-owned and managed by council (vested in), so, the management regime should be shifted to residents (common-property) regime in which two key points emphasized (i) exclusion on the non-members/outsider is necessary and (ii) the management right must either be held by the residents alone or with some intervention of governments in some parts of their duties (See, table 3 below). From the institution and political point of view, such institutional change attempt may presumably be more difficult compared to Sabah but it still can be executed for the sake of betterment.

## 5.2 *Second Principle: 'Congruence with the local condition and proportional equivalence between benefits and costs'*

*With little addition: Appropriate rules in local POS context (considers also the heterogeneity of communities and spatial distribution) as well as the cost and benefits of rules must be proportionate.*

In Sabah, each POS has its own different characteristics i.e., even between the '*Taman*' or within the '*Taman*' or between the districts' '*taman*'. Kota Kinabalu's POS operational rules cannot be 100% adopted in Tawau district, especially the spatial and community differences in each POS. Instead, if possible, the rules must adaptably devised, e.g.,

NT POS (normally used as a passive park- bird watching or jogging), the rules must differ from the CL POS (active or semi-active use-playground & basketball court). Size of POS is ranging from at least 0.1-1.5 or 2 acres (relatively small) which it should be easier to be managed but some of the POS are not properly located e.g., on the hill slope/hidden place and scattered and irregularly shaped so, incentive to manage will be low. As for group size, it varies whereby some are large and small depending on the size of the provided POS. Another issue is heterogeneity, it is indeed heterogeneous pertaining to race, trust, and background (mostly are *bumiputra*, foreigners, Malay and Chinese) and knowledge (some are experience and knowledgeable in the collective system due to current Sabah's institution-asymmetry issues) which can be difficult for collaboration.

However, like in some Sabah's areas, family or ancestral/ '*kampong*' land (mostly NT and few CL lands) are noticed. Normally the residents are siblings or relatives so, homogeneity is spotted which is good for mutual trust building. In addition, as for "*kampong*" area, leader/ '*ketua kampong*' is normally elected (leadership factor can be seen and may be preferable). Anyhow, the above discussion only shows the basic or prima facie information, so more studies are needed especially on the status quo of heterogeneous local community and spatial dimensions, knowing that some issues here in fact hamper the system. So, probably economics theory is postulated i.e., giving incentives-based means (tax rebate) to encourage collaboration whilst penalty and coercion-based mechanism on rule breakers. Centralization of POS distribution is also underlined so that it is more economical for community to use and manage it. This part is important as it determines later parts of action or interaction/cooperativeness of community (i.e., monitoring, sanctioning mechanism). As for the benefits or product of POS, ideally, it has more indirect/intangible (unpriced/non-pecuniary) economic values. It is typically used for leisure activity whereby the residents can gain better health, social cohesion, and, economically, the nearby properties' price will increase if the POS' quality is well preserved.

This may not, however, be attractive as they are quite subtle but this has at least indicated some productivity and predictability of POS (note that only if it is properly governed) plus with such benefits, it may somehow trigger the residents to have fairly high dependency on it (higher motivations). We suggest that both NT and CL POS would motivate/incentivize the residents to effectively manage and use if the fees can be imposed i.e., not just a pure exclusion on the outsiders but the idea of commercializing by imposing use fees on e.g., basketball court, to generate some income to the park is worthily to be regarded (note that: only if the POS condition is inviting then the outsiders will be willing to pay for the purpose of consumption). Thus, this may also encourage a positive competition among parks of which residents may attempt to yield better quality of POS to attract more outsiders for more income generation (See, Webster, 2007). As for Selangor, some similar explanations/strategies (methodologies) of Sabah applies here, that each POS is unique so it must be uniquely governed, especially the heterogeneity, distribution issues pertaining to spatial (some hidden location, too small and irregularly shaped) and social aspects (different races with varied customs and cultural belief systems). In this state, heterogeneity is spotted as well but it is quite different from Sabah (mostly POS are surrounded by the natives) while in Selangor, mostly are Malay, Chinese and Indian, so rules must be devised accordingly. Moreover, the use/provision rules of Shah Alam city cannot exactly be applied in Petaling Jaya city even though both of them located in Selangor as the features of POS/ and community are dissimilar, so, the governance rules should be dynamically different.

### 5.3 **Third principle: ‘Collective-Choice Arrangements’**

*Participation of local residents in operational rules devising is permitted*

Both Sabah and Selangor states should allow the local residents (users) to take part in operational rules devising. E.g., all the residents within the POS/ ‘taman’ are called to attend a meeting once a month to discuss any adaptive changes that have to be made pertaining to the operational rules. They can voice out their ideas, suggestions, dissatisfactions, perceptions, needs about the current rules such as amount of the fees payable for maintenance (each year may differ), POS monitoring methods, ways of using and management of POS: equipment or facilities alteration etc. The committee should take note of the requests and make some necessary revision and improvements depending on the criticality of the arisen issues e.g., majority of residents (90%) oppose the current management fees for being too expensive. Instead of blanketing the issue, probably fees reduction or better management should be contributed so that the users may not feel dissatisfied. In this stage, public officials need not be directly involved as they may not understand the real issues emerged and what are the real needs in that particular POS.

### 5.4 **Fourth Principle: ‘Monitoring’**

*Monitoring the users’ behavior and POS condition (With assistance of the government)*

Both Sabah and Selangor states require a monitoring system not only on POS condition but also the users’ appropriating behavior. Monitoring can be done in many ways: hiring guards to take turns for monitoring, installing surveillance cameras (CCTV), and so on. CCTV may be too expensive and technically, this is not so feasible and useful. At this stage, it would be better to have internal or indirect-mutual monitoring, as this method is more cost-saving. Formal monitoring duties can easily be assigned to those who can have better monitoring position e.g., residents who live nearby the POS (few meters away from houses). They can also observe the current condition/quality of POS. Hiring private guards to carry out monitoring (rotational basis, only if the financial resource allows), especially mid-night hours- patrolling around the POS. This can be patronized/shared by the local government who can sometimes or routinely do inspections and surveillance on POS conditions e.g., collaborating with police department to strengthen the policing activity. This is useful and important as such reciprocity (mutual monitoring in teams/among the peers) can attenuate the incentive of other users to shirk/overuse/ free-ride (Carpenter, Bowles, and Gintis, 2006).

### 5.5 **Fifth Principle: ‘Graduated sanctions’**

*Sanctions according to the severity of violation (With assistance of the government)*

Whether in Sabah or Selangor states, negative externalities or social costs should be internalized or reduced by firmly penalizing the violators but of course, it should be sanctioned accordingly to the gravity of violation. This must impartially be executed i.e., no favoritism involved so that everyone may feel convinced and fair, e.g., first-time rule breaker (light vandalism) should be fined via payment/contribution of extra fees to the committee for maintenance purpose. Warning or persuasion is another option. For more serious cases, paying an increased fine, asked to be directly involved in management e.g., they

are obliged to clean and furnish the park and involved in the monitoring task for few months. Publicly announce who are the violators can be one of the options, but must carefully be handled. Such act causes them to feel ashamed- psychologically affected, but will set as a good lesson/ example to others. Exclusion may not be appropriate as this may cause underused/disused POS, resulting in poor quality. Probably, some assistance can be provided by the government whereby the committee can actually consult the council on the suitability of sanctions or the council may also involve in sanctioning or punishing with the permission of committee (like extra tax imposition/fine) particularly on the more serious violators as certain degree of coercive punishment (*Leviathan* concept) can actually maintain the cooperation between the users, see, Pigou Tax idea, Pigou, 1920) to attenuate the free-rider, shirker, or misuser.

### 5.6 **Sixth Principle: ‘Conflict-resolution Mechanism’**

*Low cost and rapid access to conflict-solving mechanism (With assistance of the government)*

Conflict among residents is inevitable in both states so, a means to resolve such dispute must be rendered. It is better to solve the issue earlier whenever it is still ‘solvable’. Do not wait or ignore it albeit it seems trivial as this can become very ‘costly’ later on which detrimentally affects users’ relationship/interactions and subsequently the whole self-governance system turns into a failure. Normally, the differences/conflicts in POS are due to the changing of POS’ condition/ quality e.g., landscaping or vandalism, management fees issues that caused poor quality of POS as well as dissatisfactions of other users. Via some negotiation, mediation, public hearings, public meetings, and forums (discussion among neighbors), it is hoped that those conflicts can be solved. Residents can hear out the root of the problems and propose some potential solutions. Do not litigate the cases, as this is costly and time-consuming. Focus more attention on the critical conflict issues e.g., more than half of the residents disagree with the current POS maintenance methods and fees. Sometimes if it goes more severe, the local government as a third party can render a better platform (intervention) as they have their own experts within the department to resolve it (as mediator/negotiator).

### 5.7 **Seventh Principle: ‘Minimal Recognition of Rights to Organize’**

*With slight modification that governments are involved in recognizing the communities who will be organizing the POS. (The recognition of the government via registration- for more secure tenure)*

Related to the 1<sup>st</sup> principle above, the rights of the POS residents to constitute own team and devise their own rules should not be challenged/contested by any party. Thus, we think it would be better if it is recognized by the State authority and local authority (constitutional rules) i.e., assure legality of such collective choice say, via registration process. In Sabah, if the self-organization is acknowledged by the government (Lands and Surveys Department and Kota Kinabalu City Hall, in which the rules do not contravene with the urban plans or state laws: SLO, TCPO, & LGO, the rights should be formally/ de jure and clearly stipulated within them or in another set of documents, stating that the self-organizing is set aside (registered) on that particular POS. In fact, this has partly satisfied the current Sabah’s institution that some communities who volunteer to manage the POS, they are registered thereby granted partial rights of management by the council. While as for Selangor, Sabah’s explanation is quite applicable herein except the



organizations and institutions parts: cooperation between local authority and residents; in Selangor, it can be recognized under NLC, TCPA, and LGA e.g., by DDGLM and Shah Alam city council.

### 5.8 Eighth Principle: ‘Nested Enterprise’

*For larger/more complex SES or CPR, polycentric governance is needed (Not only vertical linkage, hierarchical version is applied as well)*

As for Kota Kinabalu, Sabah, roughly around 400 residential POS are solely under the governance of Kota Kinabalu City Hall (KKCH, big center). Thereby, this number is considered large, nesting governance/ devolution is necessary like subsidiarity principle: delegation of power to the most local level who has a better position in governing the POS. In this sense, probably each ‘taman’ becomes a sub-center that governed by the committee or if within one ‘taman’ there are sometimes having five POS, then probably two/three centers (committees) are needed instead of one center only. The burden (e.g., cost of monitoring and maintain) of five POS that initially shouldered by one center/ committee, is now shared by another three centers/committees. Cooperation between the centers/inter-communities and ‘taman’ is encouraged as well. This principle is related to principle 1 above i.e., once the boundaries are clearly defined, then a multi-level of nested enterprise can be noticed and vice versa. In short, before such nesting takes place, it hinges on complexity and size of SES i.e., the larger and more complex the SES, the more likely the nesting takes place. However, say in Shah Alam, Selangor, 1,656.13 hectares of land are used for open space and recreation under the governance of Shah Alam City Council (SACC). Same analogy of Sabah is applied here, whereby multi-level governance is required as the area of POS above is considerably large. Meaning that, SACC should delegate the governance down to the scale of one “taman” managed by one committee or if within one “taman”, there are many or too large area of POS, so perhaps two or three committees can be formed so that, the POS’ quality is manageable.

Succinctly, in view of the above conceptual discussion pertinent to both states’ institutional, community, organizational and spatial structures on POS governance, generally, they can dynamically employ Ostrom’s robust principles. Connoting that, by adopting some purported approaches (e.g., government intervention and contract existence) in principles adaptation, do, however, showcase that Ostrom’s principles are, at the very least, theoretically coherent and capable of success.

Based on the Table 3 below, there are two key elements in order to bestow successful CPR-based POS; (i) exclusion right must be exercised i.e., the space becomes public closed access (members only) and (ii) the management right must either be held by the residents alone or with the help of government (e.g., in conflict resolution and monitoring principles or redevelopment of POS). By exercising such rights, the position changes from the original claimant to proprietor.

**Table 3: Proposed Ostrom’s Collective Action-based Property-rights structure on both states pertaining to POS Governance**

Property-Rights Structure	Surrendered POS
Land ownership	State property: State land (Gazetted)
Management regime	Common property only: Committee (residents of the park only)/ Common property + State property: Committee of residents + State (local authority) (shall be vested in)**
Positions: Bundle of rights:	Proprietors
Access	x
Withdrawal/ using	x
Management	x
Exclusion	x
Alienation	None
Public access and withdrawal rights	Yes if membership/ permission is granted (as this is now public-closed access)

\*\*Optional (assisting in e.g., sanctioning, monitoring, conflict-resolutions mechanism & maintenance/management operations) (This option is more preferable at this point of time). Certain interventions are vital to lower the costs/ ease the burden of communities’ interactions and action. Source: Adapted from Schlager & Ostrom (1996).

## 6. Conclusion

Besides demonstrating both states’ institutional discrepancy that ensued in POS governance tragedy, which demands Ostrom’s institutional solution (as POS revitalization), the cardinal questions on what and how are Ostrom’s common-property-based eight core principles applied and implemented in two-state’s current residential commons governance are foremost answered conceptually. It is found that the interwoven principles are indeed basic, insightful, well-defined, organized, broadly applicable, and useful (as a potential place to begin an investigation) which can only be employed as a framework not the prescriptive model.

In other words, by exclusively adopting Ostrom’s work may not amply suffice, ergo, interdisciplinary views are needed. Few adaptive modifications and considerations such as involvement of contractual arrangement, government’s interventions and additions of some components/variables (especially pertaining to institutional, POS spatial and community’s features) are vital.

Since this preliminary analysis merely suffices to demonstrate its conceptual relevancy which provides strategies and approaches in succeeding the self-governance system, but such breakthrough (platform) adequately contributes some policy implications. First, it sheds light on the CPR-based POS’ dilemmas that Ostrom’s collective action can be deemed a future paradigm to supersede the current state-owned regime in supplying a better POS quality. Each principle imparts understanding and information into domains for betterment in current POS policy initiatives so that the collective action can be achieved. We believe this essence is locally respectable as it has been inspired and currently practiced<sup>9</sup> e.g., State of Sabah in particular, due to its current institutional arrangement on committee formation, is actually rather related to the proposed Ostrom’s collective action framework. Additionally, the aforementioned spatial (POS) features of SES are also seemed feasible. Nevertheless, as for future directions, further

<sup>9</sup>Such concept is neither unprecedented nor spic-and-span as it has widely been accepted and practiced in different kinds like “toll road” and “Management Corporation” (MC) concepts. Now, this view should thereof be extended to residential POS domain (see the argument in Lee and Webster, 2006).

investigations that involve more in-depth IAD (See, Ostrom et al., 1994) i.e., multi-tier (see the figure 5 above) of SES on inter-related meta variables examination, via some methodologies are expected. Field research like questionnaire surveys and in-depth interviews on residents and public officials, respectively are too anticipated to address some posed questions e.g., what are the current stumbling blocks that stymie the collective action system? and what are the possible avenues to encourage its implementation? These are significant in exploring the level of likelihood i.e., the present readiness, acceptance (incentives/willingness), as well as issues, considerations, and restrictions particularly pertaining to the governance (rule) system (e.g., property-rights system) as well as properties of local community (e.g. trust). Therefore, much a posteriori demonstrations on the likelihood of successful self-governance are necessitated so that this canon or premise that heading towards “stateless” society can viably (with low transaction costs) be translated into pragmatic steps for this exercise to be of real value to policymakers.

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