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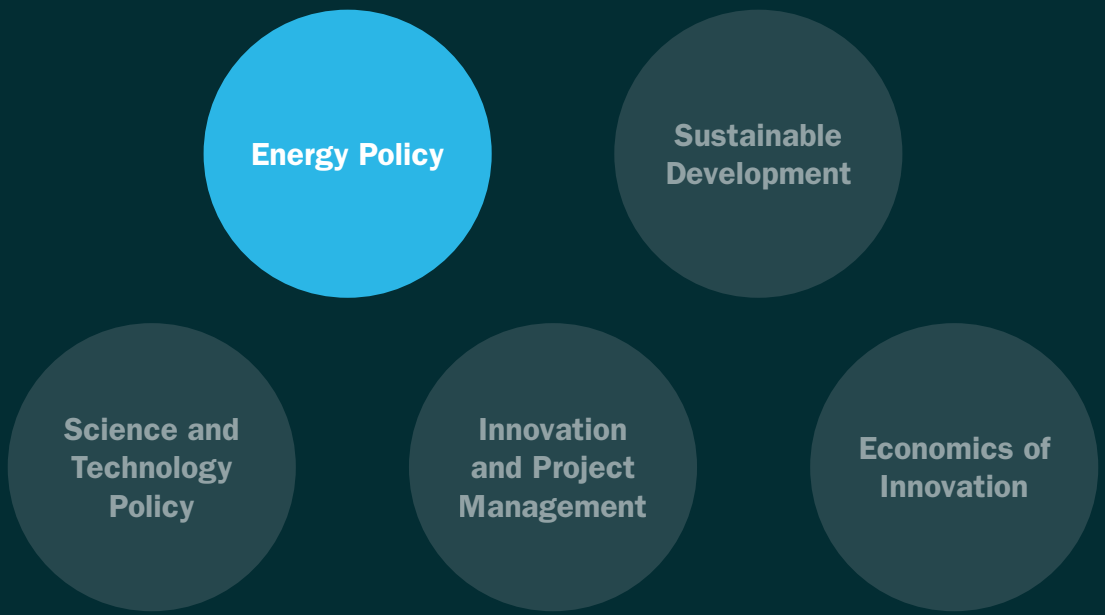

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The “Wheel of Logics”: Towards conceptualising stability of regimes and transformations in the Global South

Bipashyee Ghosh (SPRU, University of Sussex)

Abstract

In transitions theories, a key characteristic of socio-technical regimes is the stability in its socio-technical arrangements. Stability of the regimes (SORs) is the fundamental reason why it is difficult to replace them. However, in the Global South, transition scholars have characterised regimes to be unstable and chaotic, yet these regimes have persisted and thrived for decades. This begs the question: Should regime stability be differently understood in Global South contexts? In this paper, we explore different forms of regime stabilities, based on the presence of multiple institutional logics guiding socio-technical system transformations through multiple regimes. A framework – ‘Wheel of Logics' is developed in which regimes are comprised of multiple ideal-type institutional logics (IILs), and transition is characterised as the change in the composition of logics in the regimes. The paper argues that there can be many forms of dynamic stabilities of regimes – each associated with a specific transformation pattern proposed through the framework. Mobility regimes in a Global South megacity – Kolkata are used as empirical cases to demonstrate the different forms of dynamic stabilities and subsequently different types of regime transformation. The empirical analysis highlights that transitions in the Global South need to be assessed in relation to power dynamics, informality and social exclusions that are more prevalent in these contexts.

Keywords

Regime stability, Transformation, Sustainability transitions, Institutional logic, Global South

Introduction

In transitions literature, regimes are stable configurations, resulting from alignment of rules and actors' routinised behaviour (Rip and Kemp, 1998; Geels, 2002; Fuenfschilling and Truffer, 2014). However, the notion of stability of regime (referred to as SOR hereafter) has been scrutinised and found to be problematic to define in contexts of transitions in the Global South (Verbong et al., 2010; Furlong, 2014; Wieczorek, 2018; van Welie et al., 2018). In cities in developing parts of Asia and Africa, for instance, socio-technical regimes are seen as highly unstable due to the presence of multiple rationalities, conflicting interests, high levels of informalities, uncertainties and competing rules. At the same time, some recent literature suggests that the nature of stability may be different in the Global South[1], where configurations appear superficially unstable but may, in fact, be deeply stable through interconnections with other regimes and together these regimes survive for a long period (Wieczorek, 2018). This is illustrated through a case study in Kolkata in this article. Kolkata is a megacity[2] in India, where multiple socio-technical regimes around public transport systems can be found to operate in parallel over decades, with a diverse range of actors, technologies and institutions guiding them. This heterogeneous composition of actors and rules can create misalignments and tensions within regimes. Yet the regimes have persisted and thrived for decades. This begs the question: How can we assess the dynamic SOR in the Global South?

The concept of SOR in transitions corresponds to the idea that regimes represent deep underlying structures, consisting of semi-coherent set of rules. Fuenfschilling and Truffer (2014) argued that the 'content and coherence of structures' can be explained by the presence of institutional logics guiding regimes. These logics "...highlight how (regime) actors are influenced by their institutional context... [and how] institutions regularise behaviour, but at the same time enable agency and change." (Fuenfschilling & Truffer, 2014: 775). In their view, each socio-technical regime is guided by one or more institutional logics, which

[1] Global South is a category used for developing, under-developed, low- and middle-income contexts in Asia, Africa, Latin America and the Carribean, primarily characterised by presence of poverty, inequality and rapid economic growth (Rigg, 2007; Satterthwaite and Mitlin, 2012; Pagel et al., 2014). It is thus not just a geographical marker; it is referring to specific conditions and characteristics which may also exist in parts of Europe and the USA.

[2] A megacity is defined by more than 10 million inhabitants in an urban agglomeration. As on 2016, there are 31 megacities in the world, out of which 24 at located in Global South. (UN-DESA, 2016).

structures the operation of the regime, both stability and change. In this paper, the concept of institutional logics is mobilised and developed to show that it is a useful theory for understanding stability and change of regimes. In order to characterise the SOR, this paper introduces a new framework of institutional logics relevant to socio-technical system transformations. This framework is coined as the 'Wheel of Logics'. The wheel has two components: institutional orders (representing the *type* of transformation and stability) and sustainability values (representing the *directionality* of transformation and stability). Interactions between these two components result in nine ideal type institutional logics (IILs) that comprise the wheel.

In the next section, the literature on institutional logics is reviewed and then used to develop the 'Wheel of Logics' framework. Section 3 discusses the method and case selection for the empirical exploration of the framework. Section 4 presents the results of the analysis of three regimes from Kolkata's public transportation system: metro, auto-rickshaws and cycling. Section 5 discusses the results and presents the conclusions drawn from the study.

2. Theory and framework

2.1 Stability and transformation of regimes

The idea of regime stability is at the heart of socio-technical transition studies (Elzen et al., 2004). Regimes are defined to be stable socio-technical configurations, owing to an alignment of rules and actors' shared expectations (Rip and Kemp, 1998; Geels, 2004; 2014). However, even in the multi-level perspective, regimes are not seen as a completely peaceful space of operation. Despite the emphasis on the shared-ness and alignment that stabilise regimes, various studies have shown that disagreements and tensions offer questions regarding the degree of stability and level of coherence to the fore (Van Driel and Schot, 2005; Campbell and Sallis, 2013). Scholars have argued that regime stability is not constant, instead it is relative to the stability of niches and landscapes (Berkhout et al., 2004; Geels, 2011).

The most logical explanation of the regime stability is through the notion of path-dependency. From an evolutionary perspective, regimes represent a rigid and stable state of development where incremental changes occur in a pre-determined path that is locked-in to certain

technologies, markets, or cultural values (Arthur, 1994; Sydow et al, 2009). It is the path-dependency and lock-in effects of systemic actors conforming the viability and legitimacy of dominant rulesets, that help preserve the dynamic stability of regimes. Transforming the regimes would mean radical changes in the regimes to overcome the path-dependency and lock-ins, often through unlearning among regime actors, higher risk appetite and bearing greater cost in short and medium terms (Rip, 1992; Geels and Kemp, 2007; Ghosh et al., 2021). From an institutional perspective, stability of an institutional environment (regime) is characterised in terms of the conformity of individuals and social groups to organisational values (DiMaggio and Powell, 1991; Greenwood and Hinings, 1996). Recently, an increased number of actor-centric approaches towards understanding transitions have engaged with the notion of stability in a more critical manner, suggesting that political actors, corporations and social movements hold power to destabilise established regimes and support stabilisation of new regimes (Meadowcroft, 2011; Hoffman, 2013; Kivimaa, 2014). These different perspectives indicate that calling a regime either stable or unstable is a rather simplistic way of analysing regimes. The simplification arises from the fact that scholars in Global North have often presented regimes to be homogenous, monolithic structures, despite acknowledging that rules guiding regimes are semi-coherent (Rip and Kemp, 1998; Geels, 2004; 2011; Smith et al., 2005). Hoffman (2013: 263) argues that in the multi-level perspective "action is implicated in alternative webs of relations with different, and sometimes contradicting logics and 'rules of the game'." The 'Wheel of Logics' presented below allows to explore these web-of-relations, contradictions and semi-coherence of regimes.

2.1.1 Stability of regimes in the Global South

The task of defining regime stability or instability is complex in the Global South context. Recent studies in the Global South have established that regimes work in different ways in cities in Asia and Africa (Wieczorek, 2018; van Welie et al., 2018; Ghosh and Schot, 2019; Yuana et al., 2020). These regimes are observed as fragile and chaotic (Wieczorek, 2018; Sengers and Raven, 2014), and the prevalence of informal institutions[3] is readily observable as an important characteristic (Sengers and Raven, 2014; Wirth et al., 2013; Yuana et al., 2019;

[3] Sengers and Raven (2014) provides examples of informal institutions in mobility in Thailand as site-rent or bribes associated with a chain of privileges and corruption (page. 461).

Cherunya et al., 2020). These institutions guide the regime independently over a long period, in absence or failure of formal regulatory and/or market institutions. Therefore, the framing of informality as the source of instability of regimes in Global South is problematic (Minh et al., 2014; van Welie and Romijn, 2018; Cherunya et al., 2020).

Using MLP, change is understood through regime destabilisation and niche development. Verbong et al., (2010) show in their study of Biomass gasification in India, unstable regimes are barriers for niche development. Yet, many scholars argued that such analysis does not consider the normality of a malfunctioning regime (Cherunya et al., 2020; van Welie et al., 2018; Furlong, 2014). The lack of infrastructure, for instance, actually often "frees them from the pressure of replacing it" (Wieczorek, 2018: 208-209). The diversity of actors, technologies and practices often proves to be useful for minimising risks and in coordinating across regimes facing unprecedented sustainability challenges (Meadowcroft, 2011; Stirling, 2010). In such conditions, the conventional transitions approach of shifting from one stable regime to another may not apply. Instead, "fostering coexistence – as opposed to uniformity – in a socio-technical system" is a desirable strategy to meet basic and differentiated needs, unfulfilled by current regimes (Furlong, 2014: 141). Co-existence of rules, options, practices in a heterogeneous regime also helps in navigating change towards sustainable directions (Raven et al., 2017).

Transition studies have always acknowledged that stability and change share a dialectic relationship (Köhler et al., 2019). Regimes being dynamically stable incorporates the idea that regimes are continually optimising and transforming (Ghosh and Schot, 2019). Previous studies show that transitions can happen in multiple pathways depending on the nature of the multi-level interactions between niche, regime and landscape (Geels and Schot ,2007). In this paper, an alternative approach to understanding regime transitions is put forward through the concept of transformation. Transformations in the regimes are characterised by radical and fundamental changes within the regimes led by regime actors (Ghosh and Schot, 2019). Attending to the dialectic relationship between stability and change in regimes, I will define the dynamic SOR in Global South in relation to different patterns of transformation of regimes – that can be observed by mobilising the concept of institutional logics. The latter is introduced in the next section.

2.2 Institutional logics and regime transformations

Institutional logics is a useful theory to study socio-technical systems and their transformation. An institutional logic is defined as *"...socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality"* (Thornton and Ocasio, 1999: 804; Thornton et al., 2012). Drawing on elements of this definition, we can say institutional logics represent a particular alignment between different rules, thereby embodying the definition of a socio-technical regime. The importance of regime actors is apparent in the definition, as their values and practices help construct the logics. At the same time, logics 'regularise' individual behaviour in a given context (Fuenfschilling and Truffer, 2014). Institutional logics, therefore, co-evolve with actors' changing practices and new values embraced by these actors in the course of socio-technical change in regimes.

Institutional theorists have developed ideal types of institutional logics to "facilitate systematic comparison of empirical variation" of institutional logics (Goodrick and Reay, 2011: 378; Thornton and Ocasio, 2008). These are "intelligible and distinct characterisation of a particular meaning scheme (here, an institutional logic) that can be used as a yardstick to compare actual behaviour" (Fuenfschilling and Truffer, 2014: 777). Ideal types are therefore useful analytical constructs to determine all possible values and characteristics constituting a socio-technical regime. Different authors use different terminologies to characterise IILs. Fuenfschilling and Truffer (2014) use 'logic elements' like sector logic, values, mission, technologies, main actors, expertise, organisational form and funding to characterise each ideal type institutional logic that they define in the context of the Australian water sector. Thornton et al., (2005: 135,144, 151) define 'attributes' of an institutional logic like: economic system, sources of identity, sources of legitimacy, sources of authority, basis of mission, basis of attention, basis of strategy, logic of investment, governance mechanism, institutional entrepreneurs, event sequencing and structural overlap (see table 1 below). These elements help define IILs that are comprised of institutional orders and sustainability values. Specific combinations of an order and a value constitute an institutional logic. More than one

institutional logic can co-exist in socio-technical regimes, owing to the presence of multiple orders and multiple values in a socio-technical system (Smink et al., 2015).

Conceptualising regimes to be constituted by multiple logics has important implications for understanding stability. It becomes relevant to understand how the presence of multiple ideal type logics are co-existing in a regime, including the relationships between conflicting values and rationales, and how such multiple logics and underlying values and rationalities, in turn, affects the SOR. Smink et al., (2015) argue that even when multiple logics co-exist, regimes can be considered stable, "given the embeddedness and stability of logics" (pp. 235). This embeddedness and stability of logics are in particular highly relevant in the context of the Global South, where in the course of change, old logic(s) are almost never completely destabilised as new logics appear in regimes. This is due to the diversity of socio-economic needs, socio-political pressures to uphold existing values and planning for future uncertainty in these contexts (Wieczorek, 2018). Under such conditions of presence of multiple logics, transformation cannot be simply portrayed as a shift from "an old to a new logic" (Greve and Zhang, 2017: 673). It is instead a shift from an old composition to a new composition of logics comprising the regime. Along the course of this changing composition of logics, the SOR can only be interpreted by looking systematically at the relationship between existing and emerging IILs (Greenwood et al., 2010; Thornton et al., 2012; Smink et al., 2015). Such a systematic exploration can be done using two components – institutional orders and values. Both introduced in more detail in the following sections.

2.2.1 Institutional orders

Friedland and Alford (1991: 244) define institutional order as the entity which "shapes the mechanisms by which organisations are able to conform or deviate from established patterns." These established patterns can be considered as existing rules and/or logics guiding a regime. Scholars have used other terminologies to refer to the institutional orders such as 'institutional sectors' or 'societal sectors' (Thornton and Ocasio, 2008; Fuenschilling and Truffer, 2014). Institutional orders "help to understand why actors behave in a certain way", and legitimises action (Smink et al., 2015: p.226). Often these behaviours and actions are politically expedited, rather than driven by individual or organisations' deeply held values (Scoones et al., 2015).

Thorton et al., (2012) suggests seven institutional orders. These include the State, Market, Community, Profession, Corporation, Family and Religion. Each of these institutional orders follow distinctly different norms, values and strategies and have different sources of legitimacy, authority, and identity. The mechanisms through which they control activities and the resulting economic structures following their rules of governance also differ distinctly.

In the context of governing socio-technical systems, it is however possible to narrow down to three of these seven institutional orders that that dominate in their agency to shape most socio-technical systems. These are the State, Market and Community orders which are commonly present as dominant actor groups in sustainability transitions field, as evidenced in the literature (Avelino and Wittmayer, 2016; Köhler et al., 2019) (Table 1).

Table 1. Institutional orders relevant to socio-technical systems

Characteristics	***State***	***Market***	***Community***
Root metaphor	State as a redistribution mechanism	Transaction	Common boundary
Source of legitimacy	Democratic participation	Share price	Unity of will, belief in trust and reciprocity
Source of authority	Bureaucratic domination	Shareholder activism	Commitment to community values and ideology
Source of identity	Social and economic class	Faceless	Emotional connection, Ego-satisfaction, and reputation
Basic of norms	Citizenship in nation	Self-interest	Group membership
Basis of attention	Status of interest group	Status in market	Personal investment in group
Basis of strategy	Increase community good	Increase efficiency profit	Increase status and honour of members and practises
Informal control mechanisms	Backroom politics	Industry Analysts	Visibility of actions
Economic system	Welfare capitalism	Market capitalism	Cooperative capitalism

(Source: Fuenfschilling and Truffer, 2014: pp. 787)

In a 'multi-actor' framework for transitions, Avelino and Wittmayer (2016) articulate that actors belong to either state, market, community and a third, non-profit sector. The State exerts authority through bureaucracy; is guided by principles of redistribution, democracy and represents a socio-political organisation for promoting the welfare of citizens. Johnstone and Newell (2018) articulate the role of the state in sustainability transitions as incumbents, promoters of niche innovations, powerful political actors who are sensitive to their institutional contexts. In the Global south, states and nature of democracy are often seen as weak and fragile, yet national and regional policies and the political economy governed by the powerful State often dominates socio-technical systems (Scoones et al., 2015; Swilling et al., 2016; Croese and Pitcher, 2019) The role of market order is to distribute of capital, through investment strategies and business models for sustainability transitions (Geels, 2013; Loorbach, D. and Wijsman, 2013; Feola, 2020). The Market operates through pricing and transaction and represents an economic organisation for maximising benefits and minimising costs in exchange. While markets are mostly assumed as formal spaces of economic exchange, informal market mechanisms play a prominent role in the Global South, where the modes and strategies differ while the basic principles of the market as an institutional order remaining the same (Cherunya et al., 2020; Blomkvist et al., 2020). The Community relies on trust and reciprocity of groups; guided by common ideologies and practises and representing a socio-cultural organisation for co-operation, commitment, and unity for a shared cause (Thornton et al., 2012). Presence of community order is predominant in grassroots innovation literature, as well as literature on 'community energy' especially in the Global South, promoting the idea of socio-technical transition through bottom-up initiatives in local contexts (Seyfang and Smith, 2007; Seyfang and Haxeltine, 2012; Marquardt and Delina, 2019). It is therefore reasonable to argue that for State, Market and Community drives sustainability transitions, even and especially in the Global South.

However, it doesn't mean that the rest of the institutional orders are irrelevant in transition studies. The role of family, professions, corporations, and religions are often highlighted in studies focussing on household behaviour, specific user groups, firms, and other types of

organisations. While these orders may be present and characterise parts of the systems; they rarely dominate the regimes and lead transformations of entire socio-technical systems.

Many actors can operate simultaneously under each of these institutional orders. For instance, the state order may consist of different public entities including national and regional governments, and municipalities. The Market order may include public entities alongside private firms, individuals, and organisations as actors. Many actors including individual users, non-profit, non-governmental organisations, activist groups, neighbourhood based, gender-based networking and public engagement groups can follow the logic of a community order. Actors' behaviours can be interpreted to follow particular institutional orders, and multiple institutional orders can co-exist in a regime, because different actors in a single regime may follow distinctively different institutional orders.

The multiplicity and shift of institutional orders in a regime can be considered an important variable to interpret different patterns of transformation and dynamic stability of a regime. However, regimes as socio-technical configurations, are more complex than to be defined by just actors' differentiated behaviours portrayed by institutional orders. Values associated with solving sustainability issues drive directionality of transitions. Sustainability values are therefore a second important factor at play in determining SOR.

2.2.2 Sustainability values

Understanding the dynamic stability of a regime requires analysing the direction of the change of the regime. Stirling (2009) points out that there can be multiple directions of change, given that there are "divergent values and interests" (pp. 5). These divergent values, in context of sustainability transitions, can be understood as sustainability values, which are themselves diverse and plural, particularly in the context of the Global South (Raven et al., 2017).

Values are already central to the definition of institutional logics. For instance, in framing IILs in a transition case study of the Australian water sector, Fuenfschilling and Truffer (2014) defined values as the security of (water) supply, social equity, environmental sustainability,

liveability and economic efficiency. These are a few examples of the diverse values that guide sustainability transitions. In transitions literature, sustainability is mainly targeted towards addressing environmental degradation and climate change-related problems (Geels, 2004; Berkhout et al., 2004; Grin et al., 2010). This homogeneity in definition led to an understanding of transition as if it is unidirectional (Stirling, 2009). In the context of Global South, sustainability is seen to carry heterogenous meaning and need to be understood using several social, economic, and environmental criteria (Raven et al., 2017; Wieczorek, 2018; Ghosh, 2014). This multi-dimensionality of sustainability is captured in the list of sustainability criteria listed by Ghosh (2014), as proposed by stakeholders in India and Thailand in a previous research project.

Considering this multi-dimensional nature of sustainability, we can generalise three broad sustainability values that are 1) Well-being, 2) Efficiency and 3) Green. These three values echo the three pillars/dimensions of sustainability, namely social, economic, and ecological aspects (Gibson, 2006). In the transitions and SDG literature, these are the predominant values (each defined through several criteria - see Table 2) that are steering transformation in socio-technical systems, such as mobility or energy (Rogers et al., 2012; UN, 2015; Raven et al., 2017). For instance, in Global Mobility Report prepared by 'Sustainable Mobility for all' (2017), four global objectives for sustainable mobility are suggested: 1. Universal access, 2. Safety 3. Efficiency and 4. Green. Universal access and safety are integral to well-being values, while efficiency and green objectives echo the other two sustainability values.

The well-being value represent the issues of social justice and just transitions more generally, manifested through discourses on accessibility, distribution, safety, and empowerment (Bazilian et al., 2021; Delina and Sovacool, 2018; Avelino et al., 2017). Efficiency value includes economic considerations and some of the more traditional motivators of innovation like cost minimisation, cost recovery, sustainable business models, self-sufficiency, profit maximisation. Cases of low carbon transition focus on achieving energy efficiency, as well as reducing cost through new technologies and new institutional arrangements (Geels et al., 2017; Hodson and Marvin, 2012). The objectives of green mobility traditionally concerned with environmental sustainability – eco-friendliness, reduction of emission, climate mitigation and adaption at local, regional, or global scale.

Treating all three values with similar levels of importance is crucial for sustainability transitions in the Global South. This is to say that attending to well-being values are as important as reducing emission levels. The table below presents a comprehensive (non-exhaustive) list of criteria for each of the three institutional values, drawn from previous research with practitioners in Indian context.

Table 2. Indicative list of criteria to map the three institutional values for sustainable mobility in a megacity (Consolidated from Sustainable Mobility for All, 2017 and Ghosh, 2014)

Well-being value	**Efficiency value**	**Green mobility value**
Equity of access across income groups, gender, age, disability status, and geographical location (reduced barrier and affordability)	More efficient use of resources (including energy, technology, space, institutions, and regulations)	Reduced air pollution
Improved access to jobs and productive opportunities	Decoupling of GDP growth and energy consumption for transport	Reduced noise pollution
Improved access to markets and basic services as health and education	Good Governance	Reduced GHG emission
Reduction of fatality, injury, and crash rates	Average age of vehicle fleet	Reduced CO_2 emission
Reduced risks for vulnerable groups, such as pedestrians, bicyclists, and children	Economic feasibility	Resilience to climate disasters
Reduction of social costs of transport related (such as health costs and forgone productivity)	Accessibility of technologies	Preservation of Ecosystems
Comfort of commuters	Profitability of service provider	Reduction of health costs associated with poor air quality and noise levels
Improved health and peace of mind	Minimisation of Cost (capital, operation, maintenance)	Climate Change Mitigation
Improvement in quality of life	High economic benefit to cost ratio	Climate change adaptation
Active community participation	Control over operation and misuse of public resources	Potential to mitigate CO_2 emission
Robust and inclusive actor-network	Complete and robust value chain	Use of renewable energy
Awareness among all stakeholders	Possibility of Income generation and expansion of market	Preservation of natural resources
Use of indigenous capacity (knowledge and technologies)	Job security	Minimisation of non-renewable energy usage

Acceptability/ possibility of emotional attachment	Positive impact on economy	Waste minimisation
Fulfilment of status symbol		Easy and efficient waste disposal
Possibility of fun and hassle-free travel		Minimal and efficient land use
Existence of conducive and coherent governance policy		No compromise with agricultural land
Knowledge dissemination and awareness		
Public outreach		

For regime change to be transformative, Schot and Steinmueller (2016) argue that change needs to be directed towards addressing multiple social and environmental challenges. Institutional actors set directionalities of change in regimes by choosing and negotiating between multiple sustainability challenges. Transitions literature had so far black-boxed the directionality aspect of change and focussed on the multi-level dynamics with which stability and instability of regimes respectively hinder and enable niche-led change process (Raven et al., 2017; Miller et al., 2014; Smith and Stirling, 2010). We argue that by mapping which sustainability values are dominant in the logic of the system, it is possible to better understand and steer directionalities of change in the dynamically stable regimes of the Global South.

2.3. Wheel of Logics

Combining the two components - orders and values, a conceptual framework of ideal type institutional logics (IILs) is developed. The implication of defining nine IILs is that we assume that other institutional logics are possible at the intersection. The framework, named "Wheel of Logics" as illustrated in the figure below, can characterise dynamic stability and transformation of regimes in a general way, across a range of socio-technical systems.

Figure 1. Wheel of Logics framework

2.4 Composition of regimes with institutional logics

In the sustainability transitions literature, a socio-technical regime represents a stable configuration with one dominant institutional logic, defined by a particular alignment of a set of rules (Geels, 2011; Fuenfschilling and Truffer, 2014). Other scholars have shown that regimes are often composed of multiple institutional logics (Greenwood et al., 2010; Smink et al., 2015). The co-existence of these multiple logics, determine the 'composition' of the regime. Following Hoffman (2013: 263), we assume that "action is implicated in alternative webs of relations with different, and sometimes contradicting logics." The idea that each regime is composed to multiple IILs allows exploration of these web-of-relations, contradictions, and semi-coherence of regimes.

Figure 2 shows a hypothetical Regime X comprised of Community led wellbeing, State led green, and State led efficiency IILs. Another hypothetical Regime Y is comprised of Community led green, Market led well-being and Market led green IILs. Identifying such composition of a regime is the first step to understand the nature of dynamic stability of regimes.

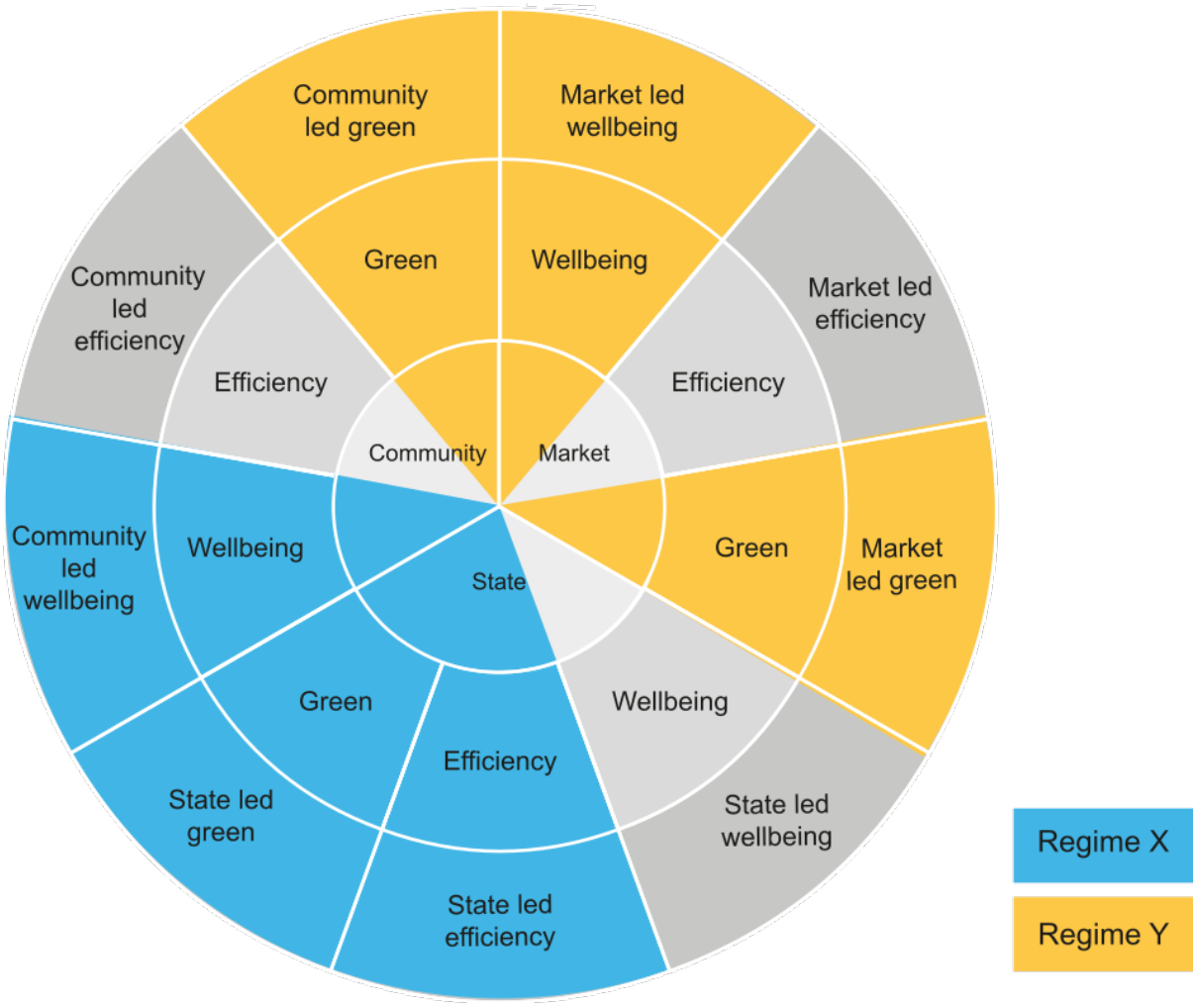

Figure 2: Composition of dynamically stable regimes

2.5 Transformations in dynamically stable regimes

The regimes composed of multiple IILs are however, constantly transforming. Applying the Wheel of Logics framework, this can be observed as changing composition of IILs in a socio-technical regime. Three types of regime transformation are possible – each associated with a unique form of dynamic stability: 1) Single ordered transformation, 2) Multi-ordered transformation, 3) Switching ordered transformation. I elaborate each in detail below.

1) Single-order transformation

As the composition of the regime changes along the course of transformation, one institutional order may remain or become dominant over others. New institutional values may emerge, either through new or old actors in the same institutional order. Multiple institutional logics may still comprise the regime, due to multiple sustainability values. A regime therefore, comprised of multiple IILs following a single institutional order, can be interpreted to have *ordered stability*, in contrast to regimes where multiple orders are present. The directionality of the change process is determined by the sustainability values appearing in the new composition of the regime. Dynamic stability in a single-order regime transformation process is defined by the coherence and coordination between actors in the said institutional order and /or the trade-off between the different sustainability values.

2) Multi-order transformation

A multi-order transformation may happen in situations where new actors following new institutional order start operating in parallel to the existing actors. This new hybridity may create conflict within regimes, and the SOR may begin to be compromised. However, the dynamic stability of the regimes is retained if the sustainability values are shared across the actors following different orders. In the course of a multi-order transformation, a set of sustainability values that aligns with one another may provide common directionalities of change. The consequent form of dynamic stability is, therefore, a *directed* one - where a particular set of values are shared and actors coordinate in enacting these values.

3) Switching order transformation

This type of transformation is conceptualised in relation to physical space where the regimes are situated and co-exist. In the course of switching order transformation, a single regime can experience single order transformation in one space and multi-order transformation in another. New institutional values emerging from new or old actors in the existing order may not apply to the whole regime due to the fragmented nature of the regime. Consequently, the regime in different parts may experience different mechanisms and degree of dynamic stability. This type of transformation through switching and substitution between orders,

negotiation between old and new actors and/or values thus result in a fragmented stability of the regime in multiple geographical pockets.

Table 3. Types of transformation and stability of regimes following Wheel of logics

Type of transformation	Composition of institutional order	Composition of sustainability values	Nature of stability of regimes (SOR)
1. Single ordered transformation	One dominant order	Multiple values	Ordered stability
2. Multi-ordered transformation	Multiple co-existing orders	One dominant value	Directed stability
3. Switching ordered transformation	One or multiple orders in a single space	One or multiple values in a single space	Fragmented stability

3. Methods

3.1 Operationalising the Wheel of Logics

The framework can be operationalised in understanding stability and transformation of regimes, in three steps. As a first step, scholars need to identify the institutional orders operating in a regime and those that are newly emerging in the regime. In this step, one can follow the characteristics outlined in Table 1 to understand whether the State, Market or Community orders guide the regime. The dominance of one particular institutional order, in the presence of other orders, is interpreted through identifying dominant actors in governing the regime, and understanding how these actors legitimise their actions.

In the second step, one needs to identify sustainability values guiding change in the regime. Using the criteria in Table 2, one can identify whether well-being, efficiency or green values drive actions of institutional actors. Sustainability values are drivers of action, often found in discourses put forward in documents and visions of actors. Therefore, in application of this framework, scholars might identify sustainability values as mechanisms of justification of

action, which drive future transformations. Presence of multiple sustainability values in policy discourses and initiatives for change are not uncommon. It is highly likely that an actor justifies his/her actions using more than one sustainability value. Therefore, sustainability values are disconnected independent of institutional orders.

In the third step, one needs to identify changes in the composition of logics in a regime. This can be done through analysing whether new institutional actors and their characteristics are emerging to be dominant institutional orders in the course of time. A second unit of observation are shifting sustainability values, which can be identified in ongoing discourses and articulated expectations by the actors for the immediate or long-term future. It is through mapping these changes in a particular period; one can identify a specific pattern of transformation in regimes. In the Global South, these transformations can be messy, subtle, or even rhetorical. The context in which the regimes are historically situated, and their dynamic character are critically important to understand the nature of transformations in the South. The operationalisation of the framework in this paper considers such nuances of the context and regime characteristics in a Global South megacity.

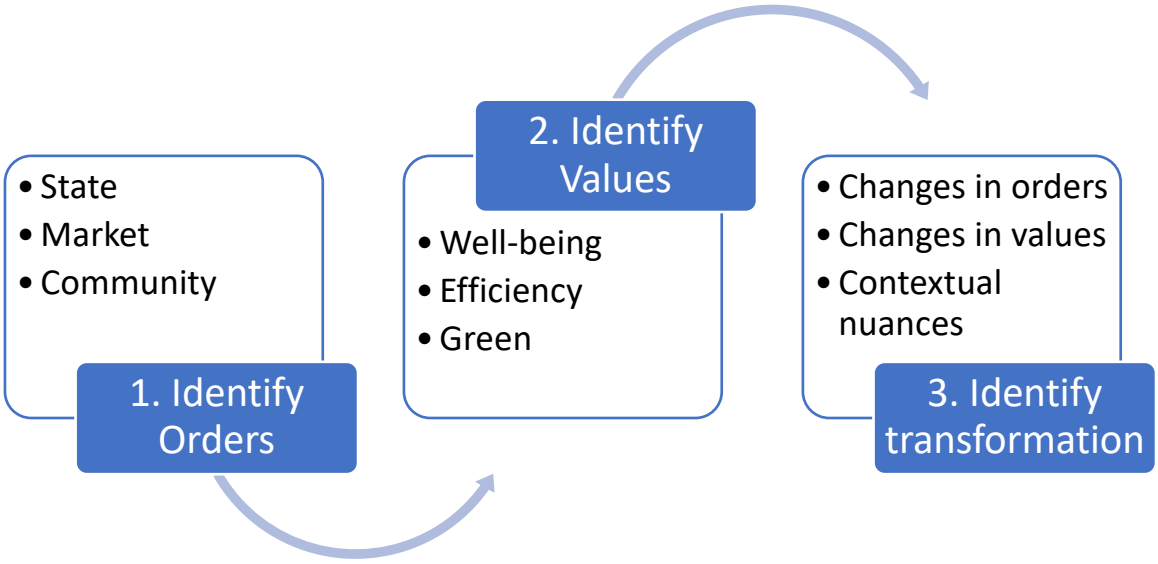

Figure 3. Steps-by-step guide to operationalise Wheels of Logics framework in empirical contexts

3.2 Case selection

The rest of the paper is an analytical case study of three public transport regimes in an Indian megacity, Kolkata. Mobility system in Kolkata offers a *revealing case study* (Yin, 1994) for the empirical understanding of the different forms of stability and types of transformation in regimes - each with different actors, dominated by particular institutional orders and sustainability values.

Kolkata is one of largest megacities of the world, located in the eastern part of India. The city has one of the world's highest population densities of 24,000 people per square kilometre or 63,000 per square mile (World Population Review, 2017). In such a dense urban space, mobility is a real challenge, given only six percent of land is available for transportation, "with a whole gamut of modes from hand-pulled carts to tractor trailer trucks sharing the same carriageway" (Government of West Bengal, 2008: iv). Kolkata has a wide range of public transportation options like buses, metros, trams, train, ferries, auto-rickshaws, cycle-rickshaws, cycles, taxis etc. Each of these public transport regimes is uniquely comprised of specific combinations of institutional logics. The regimes have existed for decades, despite the presence of internal conflicts and tensions. They are characterised by multiplicity of values, actors' behaviours, and interests; informality; presence of persistent sustainability problems and relentless efforts to change, predominantly led by regime actors (Wieczorek, 2018; Köhler et al., 2019). Such characteristics make these regimes interesting cases for understanding regimes and their nature of transformation in a Global South context.

Using the Wheel of Logics framework, the paper studies shift in the composition of institutional logics in metro, auto-rickshaw and cycling regimes of Kolkata in the past 15 years. These three regimes in particular, among other public transport regimes in Kolkata, offers 'diverse' units to capture different types of transformation, satisfying a 'maximum variation sampling technique' within the domain of public transportation system in the city (Seawright and Gerring, 2008; Patton, 1990).

3.3 Data collection and analysis methods

A key method of data collection for this research is fieldwork in Kolkata (and briefly in Delhi) in two phases (2015-2016 and 2016-2017) for a total duration of seven months. Semi-structured interviews were conducted with twelve government officials, transport planners, transport operators, academics, consultants and users (their roles and regimes are presented in Appendix I). A repeat interview was conducted with four of these interviewees to understand the changes better in subsequent years and validate preliminary results. The selection of interviewees was focussed for each of the specific regimes, but also experts and users of the overall transportation system. Interviews were also conducted with auto-rickshaw operators, drivers, cyclists, cycle shop owners in Kolkata, where they articulated their role, actions, and visions for change in the regimes. These interviews typically lasted for 20mins and were often conducted on the go, where the actors shared not only information, but also emotional connections and cultural nuances of their actions. The interviews were aimed to understand the governance mechanism and specific sustainability values guiding ongoing changes in the regimes. These interviews were complemented by access to several policy reports, policy guideline documents ranging from 'Detailed Project Reports' for metro, City level transportation plans, government circulars, reports by consultancy organisation – either specific to each of the regimes and overall mobility system. These sources complemented the interviews by providing evidence of change in each of the regimes.

The data was further triangulated through conversations with citizens (as users of each mode), which helped in understanding the context-specific characteristics of change like prevailing informality and political, cultural biases that are instrumental in day to day functioning of the regimes (Flick, 2004). The second round of triangulation and validation of the empirical data was done online – searching through secondary literature, websites of local and national newspapers and social media presence of the organisations. These sources provided an excellent overview of the follow-up changes, and highlighted the heterogeneous perceptions of different actors regarding the positive and negative aspects of the ongoing transformations.

The data is analysed and interpreted following the steps of operationalising framework (see section 3.1). Through this analysis, I show that different combinations of IILs are at play in different regimes in Kolkata. The interpretation of the data and possible results of the analysis

are discussed and cross-checked with colleagues in several stages of writing this paper as well as with experts in Kolkata, as an effort to make this analysis credible and useful for the stakeholders (Petty et al., 2012).

4. Analysis

4.1. Metro regime transformation

Kolkata Metro is India's first rapid transit system which began operating in 1984. The operators of Kolkata Metro are Government of India enterprises, with some of the new metro corridors being implemented fully by the Ministry of Railways. In one corridor, in particular, there is a 74:26 share of equity between Ministry of Railways and Ministry of Urban Development, Government of India (Railway Board, 2018). The day-to-day operation of the metro along a single corridor is managed By Metro Railway Kolkata – a public organisation, and 'wheels of bureaucracy' dictates and often restricts the course of change in the regime (Acharya, 2016). Currently, 111 kilometres of new metro corridors are in different stages of implementation. These corridors were initially envisioned by regional representatives in the National government, and subsequently, funds were allocated in the national railway budget. This change is thus primarily driven by political actors, which coupled with the bureaucratic control suggest that the State institutional order governs the metro regime of Kolkata.

A key sustainability value guiding the metro regime during its early years in the 1980s is that of well-being. This value is clearly observable in the quote by an official, who explained that Kolkata's Metropolitan planning authorities deemed buses to be incapable of meeting future demand for travel. *"the [existing] mass transit system was going to be crammed after say 20 – 30 years or so, so it was his (Minister of Railway: 1982) planning to have an underground railway."* [Interviewee 7]. The remark highlights that Kolkata metro was primarily the plan of a visionary politician, and the underlying rationale was to maintain quality and accessibility of public transport through creating a superior alternative to the bus, which would ensure faster and more comfortable travel. At the same time, emphasis was on the affordability of metro by Kolkata's low -income earning citizens. The first metro fare was set at a level lower than break-even point of the project cost, necessitating an annual subsidy of 10 million rupees. (Metropolitan Transport Project, 1972). The significant change in the past 15 years in this

regime has been scaling up the system to make additional areas of Kolkata accessible by metro. Universal accessibility of metro, as a criterion to ensure the well-being of more citizens served as the first trigger for the ongoing efforts of transformations of the metro regime[4].

Over the years, State order remained as the centre of governance of this regime, while new values are emerging. The new sustainability value of efficiency is apparent in the understanding that metro guarantees the most efficient utilisation of space (through facilitating an 'underground city') and through carrying large volumes of commuters at the same time (Prasad, 2015; Chow et al., 2002). Given the limited share of land available for road transportation in Kolkata, policymakers believed that building metro corridors is the only way to keep public transport system efficient [Interviewee 1, 8, 9]. At the same time, the new metro projects detail energy saving measures, such as modern rolling stock with low energy consumption, 30 percent regenerative capacity, energy-efficient electrical equipment, control and monitoring of power systems (RITES, 2014: pp. 19-20). Energy efficiency is also proposed as a way to reduce operation and maintenance cost – together constituting State-led efficiency logic. Besides efficiency, the green value has also emerged to direct the ongoing changes. Metro is considered free from air pollution, low on noise pollution and generally an eco-friendly transit system (Prasad, 2015). National Metro Rail policy, published in 2017, reinforces this State-led green logic, indicated by 'substantial reduction in per capita pollution emission bringing down various chronic diseases', serving as a rationale to invest in transit-oriented development in Indian cities including Kolkata (MOHUA, 2017).

In spite of the new emphasis on efficiency and green values, metro regime actors continue to be concerned with the affordability and overall well-being of metro users. The criteria of universal access through affordability of metro still seem predominant. As an official at RVNL notes, "... for metro, as far as our work is concerned, we study the prospect of the corridors from a passenger viability point of view. The metro has to be highly economical to its users." [Interviewee 6] This vision is supported by another official from Metro Railway Kolkata, who stressed that the starting fare of Kolkata metro is, in fact, lower than that of buses and by

[4] Note that this is a case of ongoing transformation of the regime. Current efforts of expansion of metro can be seen as efforts to optimise the regime and not (yet) a transformation. However, the regime is moving in the direction of a transformation pathway (for details see Ghosh and Schot, 2019).

keeping the fares low they ensure metro to be accessible for the poor [Interviewee 7]. According to Sadhukhan et al., (2017), 60% of the metro users do not own a car, and 49 percent of total commuters use the metro more than three times a week. Therefore, keeping the fare low is an important criterion of well-being, since most metro users are from the lower or middle-income group of the society (Sadhukhan et al., 2017). Besides affordability, the safety of users and operators also gained prominence as a criterion for the value of well-being. This is evident in the motto for the construction of the new East-West Metro corridor: "Safety first and last, along with comfort" (Kolkata Metro Rail Corporation, 2016). Several safety measures including platform screen doors, noise level assessment, fire protection, real-time monitoring of conditions of buildings near tunnels and stations as well as safety guidelines for construction workers. There have also been “disaster management drills” in metro stations to promote awareness and rescue strategies in case of terrorist attacks (Bose, 2016). To increase accessibility of the metro, as a measure for well-being, authorities have emphasised the reduction of barriers to access metro by old and disabled people, while increasing convenience for all users by introducing smart cards, lifts, escalators, wheel-chairs, ATM’s and other facilities in metro stations. There is also an emphasis on comfort through air-conditioned coaches, entertainment systems, new seating facilities (Metro Railway Kolkata, 2016). These facilities target the relatively wealthier class of citizens, who might seek traffic-free daily commute using the metro, without compromising health and quality of life that they could avail by using private cars. Reduction of travel time also appeared as a reason for users (including car owners) to avail the metro (RITES, 2014). Finally, the new metro alignments touch the old and new business districts of Kolkata – Dalhousie and Sector V respectively – therefore promising access to jobs the soon, fulfilling another criterion of well-being.

Therefore, the metro regime is composed of all three State-led logics from the wheel. The Metro Railway Policy presents all three sustainability values to be necessary for the transformation of the metro regime. Statements like *"appraisal of metro rail projects should entail economic and social cost-benefit analysis. Metro rail projects provide larger economic and social benefits to the society in terms of reduction in cost and time of travel, substantial reduction in per capita pollution emissions resulting in reduction in chronic diseases, reduction in road accidents, bringing down noise pollution etc*.” shows the multi-faceted nature of

sustainability in metro regime transformation (MOHUA, 2017: 5). Based on this discursive evidence, I conclude that multiple actors following the State order share the sustainability values, thereby agreeing on the directions of the regime transformation. In the course of analysis, I also found that well-being value is more prominently enforced through multiple criteria compared to efficiency and green values – suggesting that this transformation is predominantly towards addressing societal challenges. The dynamic stability of this regime is therefore enabled by the single (State) order that is governing the regime since the 1980s. The presence of multiple institutional logics in the composition of the regime does not adversely affect this dynamic stability. Change is slow and controlled, which further characterises a regime with ordered stability.

4.2. Auto-rickshaw regime transformation

The auto rickshaw is a motorised three-wheeler, acting as a prominent public transport option in Kolkata. The central actors in the auto-rickshaw regime are individuals who own and operate autos. Some owners may rent out autos to drivers with a contract for sharing profits between the owner and the driver. There are other actors in the market, like 'starters' - individuals who maintain time schedules at the auto-stands; 'agents' who are middlemen bridging access of operators to RTA, 'unions' who locally maintain stands, regulate fares, routes, operations (Arora et al., 2016). These actors follow the principles of Market as an institutional order, which can be observed in competition and transactions to match demand for auto service, the motivation of actors to profit and generate an income by providing this mobility service.

Market-led efficiency logic is predominant in the localised governance of the auto-rickshaw regime. This is a regime which is almost entirely managed on the ground through informal (/semi-formal) governance arrangements, which ensure earnings and livelihood for the auto-rickshaw drivers. Unlike other cities in India, in Kolkata, autos operate as a shared mode of transport in fixed routes and fares. However, in order to increase their meagre incomes, auto-rickshaw drivers may sometimes cut some routes short, extend other routes, or deviate from them (Arora et al., 2016: 29) (see Figure below). In spite of the RTA being the legitimate authority to issue permits upon registration of auto-vehicles and fix fares in the auto-rickshaw

regime, many auto-drivers operate without an official permit as the government stopped issuing permits in order to control the growth of the number of auto-rickshaws in the city. However, high demand for this mode of transport was matched with the supply of auto-rickshaw without legal permit, often financed by private financiers (Basu, 2017). Furthermore, fares are also allegedly distorted through "haggling and overcharging", and these vary across routes in great proportion (Harding et al., 2016). These instances show that the Market-led efficiency logic primarily governs the auto-rickshaw regime.

At the same time, some of the criteria for well-being value was also met in this market-led auto-rickshaw regime. Certain sections of the population such as women with children, older and differently-abled[5] people prefer to use auto as it offers easy accessibility and comfortable travel. Autos being much smaller and lighter vehicle, the drivers skilfully manoeuvre their way through the congested streets of Kolkata much faster than other modes to take commuters to their destination. As a result, young urban middle-income population prefer autos for a quick commute and saving on journey time. On the other hand, my conversation with several auto-rickshaw drivers in Kolkata suggests that they predominantly come from lower-income families. The regime, therefore, provides them with 'access to jobs' – fulfilling another criterion for well-being logic.

In the past five years, the West Bengal government took measures to gain control of the auto-rickshaw regime. This is apparent in State Transport department and Regional Transport Authorities' increasing interventions in the regime through implementing policies, regulations, monitoring and punishment mechanisms to regulate and formalise the regime. These reforms are however introduced in consultation with local trade unions operating the auto-rickshaws on the ground, a majority of which are affiliated to the ruling party of the State of West Bengal. The state government officials exercised power to take control of the governance in this regime. Thus, the state as an institutional order is newly emerging to govern the auto-rickshaw regime in parallel to the market. The emergence of state-led efficiency logic in the regime is visible in the new "Auto Policy" unveiled by West Bengal

[5] Term used as a substitute for disabled or handicapped, as is common practice in many parts of India. Source: http://www.yourdictionary.com/differently-abled

government in 2016. According to the official notification about the policy, the objective of this policy was to ensure efficient use of the road space by controlling the growth of autos and govern the system effectively to provide an essential public transport service in the city. Some of the new measures under the policy include route-specific permits, standard fare charts, badges for auto-drivers, vehicles fitted with High-Security Registration Plates (TNN, 2016). The Regional Transport Authority, in March 2017, published the number of auto-rickshaws permitted to operate in each of the 125 routes (Joint Secretary to the Government of West Bengal, 2017).

This State-led efficiency logic, however, clashes with the market-led efficiency logic predominant in the regime. Formal regulations and control mechanisms proposed in the policy aim to ensure that the auto-drivers do not deviate from regulated routes, do not charge higher than permitted fares, do not overload passengers and/or do not operate without a legal permit. Therefore, attempts are being made to substitute the efficiency value held up by the market mechanisms that characterise the governance and operation of the regime, by the State-led efficiency value. The latter is expected to dominate the auto-rickshaw regime from September 1st 2018 (Bandopadhyay, 2018).

However, some directions of change in the regime are shared between the actors following the Market and State orders. Complementing the State-led efficiency logic, a new State-led well-being logic has also gained momentum. The State government aims to improve the accessibility of auto-rickshaws to users by reducing existing unpredictability and unreliability of the service. The well-being value is fulfilled through the criteria of safety and reduced vulnerability of pedestrians. This issue of safety, especially that of women is given utmost importance in the government's recent discourse of change in this regime, which the auto-operators on the ground agreed with (in my interviews). The agreement is also reflected in the fact that the political party affiliated auto-rickshaw unions recently took initiatives to encourage women to join the profession of driving auto-rickshaws and are offering training as auto-drivers in order to eliminate the safety concerns of women auto users (Team MP, 2018). The emphasis on safety and accessibility of marginalised user groups attempts to challenge the male-domination in the profession. At the same time, if offers women

assurance to feel safe while using autos, indicating the shared sustainability value of well-being between actors of State and Market orders (Interviewee 5; Kabiraj, 2018).

The actors following the State order, however, didn't replace the existing actors following the Market order. Both institutional orders continue to operate in the regime. The fact that the auto-rickshaw regime is currently guided by institutional logics incorporating both State and Market orders makes it a case of multi-ordered transformation. Besides the presence of multiple actors following different orders, some actors such as the auto-rickshaw unions operate at the boundary of the State and Market orders. Affiliated with political parties, the unions are geared towards protecting and advancing the welfare of auto-drivers, but at the same time they may resort to bribery and self-promotion as leaders to serve their status, self-interest and profit (Arora et al., 2016). Yet, due to their continued presence and prominence, the unions also lend stability to the regime. This suggests that the presence of actors following two (or more) institutional orders in parallel, could be constitutive of a regime's dynamic stability rather than being detrimental to it. Regimes operating in between two or more logics, may not be disrupted by apparent tensions (e.g., those between the informality of market-led logics, as observed above, and the formality of state-led logics characterised by legal regulations and control mechanisms to govern the market). However, the dynamic stability in the auto-rickshaw regime can be explained through the shared sustainability value of users' well-being. Actors from both institutional orders agree on the importance of well-being of users (characterised by safety, accessibility, comfort and convenience criteria). The shared sustainability value of well-being, which governs the direction of change in the regime, points to 'directed' dynamic stability of the regime. This well-being value seems to be commonly embraced by a majority of actors in the regime. State led, and market-led well-being logics – focussing on safety and accessibility together seem to be predominant in shaping the future of auto-rickshaw regime of Kolkata. This case study further shows that apparent instabilities in a regime (rooted at a different understanding of efficiency by State and market orders) is not necessarily a weak point for a regime, as long as the directionality of regime transformation is set towards addressing important social challenges. These differences in governance strategy on one hand, and a shared sense of directionality of change, on the other, provides the regime with a continuous directed 'momentum' for improvement and sustainability in the long run (Furlong, 2014). Owing to such momentum, the regime will

continue to transform (adapting to new technologies, new demands) and is unlikely to be destabilised entirely and substituted by another socio-technical system.

4.3. Cycling regime transformation

Cycling in Kolkata has predominantly been a personal means of transport for individuals and households in the lower and middle-income groups. Cycling in India is traditionally considered a 'poor man's mode of transport', and is continuously threatened by the aspiration of people to own motorised vehicles (Joshi and Joseph, 2015; Rahul and Verma, 2013). Based on interviews with respondents 1, 9, 10, 12, it can be argued that a community-led well-being logic is prominent in this regime, based on the prevalence of mutual trust, dependencies, and co-operation in (low-income) communities using bicycles as their primary mode of transportation.

The presence of the Community institutional order can be observed in the social relationships between cycle owners, cycle users, parking space owners, repair shop owners – which go beyond market transactions. Through conversations with cycle owners and parking shop owners in the suburban region of Kolkata, it is understood that the competition between different shops is overruled by long-established personal connections which dictate a fixed customer base for each supply-side actor. The cyclists and cycle shop, parking space owners look after each other and families in times of distress. The well-being logic is apparent in the affordability and easy accessibility of bicycles which are used to earn a livelihood (including commuting) by groups such as milkmen, newspaper delivery men, repairmen, and workers in sectors ranging from construction to security (Tiwari and Jain, 2008). Many consider cycling short and medium distances to save on transport fares (Rahul and Verma, 2013). The regime provides access to markets, health and education services and is sometimes characterised by emotional attachment of individuals to their own (often old, broken and non-personalised) bicycles (personal interviews).

The cycling regime in Kolkata is currently witnessing a 'switching order transformation', as discussed in section 2.5. New actors following the Market order are gaining prominence as those governing the regime in specific geographical pockets of Kolkata. In 2017, New town

Kolkata, formerly aspiring to be “smart city” considered cycling as a key ingredient for smart and green transport mode for the city. This is mainly envisioned by the governing authorities, New Town Kolkata Development Authority (NKDA). Private companies were invited to invest and implement strategies to introduce cycling sharing infrastructures. Following this invitation, Zoomcar, a firm leading in car-sharing business in India took charge of implementing the first dock-less cycle sharing scheme of Kolkata, named “PEDL” (Maitra, 2017). Going by the principles of the Market as an institutional order, this new addition to the regime assumes cycle as a public transport mode and cycle sharing as a service provided to the users following market rules of competition, transactions and profit (Interviewee 9). This change requires setting up new cycling infrastructure in the city and a new arrangement where cycles are not owned by the individuals, but by Zoomcar, which users can use through app-based payments. This change in cycling regime of Kolkata is predominantly guided by market-led green logic. The green sustainability value is evident in the expectation that bicycle sharing and new cycling paths are the way forward to promote eco-friendly, green and clean transportation for the city (Mateo-Babiano et al., 2017; Interviewee 9). An official at NKDA articulates this newly emerging logic in the local context: *“Traditionally cycles have been ridden by people like milkmen, for whom it has been the cheapest conveyance. We want to bring about a change whereby people ride cycles not because they cannot afford cars but because they care for the environment.”* (Interviewee 9). This vision indicates that the transformation through an emerging order (market) and value (green) in cycling regime in Kolkata is seen as a necessary measure to reduce the carbon footprint from mobility in the city. This desired transformation is aimed to be achieved by encouraging people from wealthier class to shift to bicycling from cars (Interviewee 1, 9). However, the existing value of well-being indicated through affordability and accessibility criteria is also present in the new cycle sharing system. The PEDL bike sharing scheme is proposed to offer last mile connectivity in New town, ensuring easy accessibility of people to metro and bus stations from the residential areas. The scheme is also promoted to be affordable, with prices set as low as two Indian rupees per hour, which is less than a third of the cheapest bus ride in Kolkata (Kabiraj, 2017). Riding these bikes are also promoted to be fun and hassle-free due to locking, unlocking and payment mechanisms with a smartphone app. The company also encourages and promotes bicycling as a way forward for ‘healthy cities’ (Pucher and Buehler, 2010).

Alongside the attempts to introduce the new cycling sharing scheme, there was also an ongoing process of destabilising the existing cycling regime. The prevailing community-led regime is under threat due to a ban imposed on cycling in major arterial roads of Kolkata in 2012 (Gowen, 2013). The governance actors imposed the ban, as an effort to curb congestion and 'ease traffic' by going against the well-being of millions of lower-income populations of the city (Interviewee 1, 10, 11; PTI, 2014). Thus, the efforts of maintaining dynamic stability in the regime are 'fragmented', because the transformation of the cycling regime in Kolkata remained partial and concentrated in specific neighbourhoods of Kolkata. The value of well-being is shared between community and market actors, yet the latter focussed on the well-being of higher and middle-income groups residing in relatively wealthier neighbourhoods of Kolkata. The parallel efforts of promoting cycle-sharing for the (upper) middle classes and criminalising existing cycling practices of low-income groups, paves the way for exclusion of and discrimination against the poor of the city (Gowen, 2013; PTI, 2014). The direction of this switching-ordered transformation of the regime is geared toward ensuring an eco-friendly, healthy, and convenient lifestyle of higher-income groups in wealthy neighbourhoods of Kolkata, at the expense of the well-being of marginalised citizens of the Kolkata.

5. Discussion

Regimes in the Global South are often portrayed as inherently unstable. Yet they persist and thrive for decades and centuries without being destabilised or replaced by new niches, as theorised in the transitions theory. In the multi-level perspective, this is explained either through the absence of niches and/or the lack of sufficient landscape pressures (Geels, 2002; 2004; Geels and Schot, 2007). However, unequal distribution of power, heterogeneous preferences, social and economic differences between actor groups, multiple persistent sustainability problems are at play in regimes in the Global South which demands a different understanding of the nature of stability of regimes (SOR). This paper aims to characterise different forms of dynamic SORs through developing and operationalising a new framework of Wheel of logics. Nine ideal-type institutional logics – each consisting of an institutional order and a sustainability value offers a useful approach to theorise different types of regime transformation and stability, based on the relations and contradictions between multiple

institutional logics constituting a regime (Hoffman, 2013). The conceptual framework in this paper associates a particular type of regime transformation with a particular form of dynamic stability of the regime. Each of the three types also reveals directionalities of transformation. The framework allowed understanding the *composition* of regimes by multiple institutional logics. Therefore, in this paper, less attention is paid towards identifying which logic 'dominates' the regime, but more towards which combination of logics are 'co-constituting' a regime and how regime composition shifts in the course of transformation.

The metro, auto-rickshaw and cycling regime transformation cases from Kolkata provide interesting insights into the nature of dynamic SORs. First, the metro regime transformation case shows ordered stability, as the State order continues to dominate the governance of the regime. The case exposes the underlying *politics* of such transformations and shows that ordered stability does not necessarily guarantee a conflict and tension-free regime. The national and regional political actors operationalise their power to transform the metro regime towards an envisioned future. In order to enable this future, they use multiple sustainability values in policy discourses to legitimise ongoing courses of transformation. The case, among others, illustrates how sustainability transitions in Southern contexts are inherently 'political enterprise', and are primarily driven by rationalities (logics) of those whose benefit from the unequal distribution of power (Gopakumar, 2010; Ahlborg, 2017). The case is a vivid example of how 'single-ordered' governance structures, active involvement of political actors and large-scale infrastructural lock-in characterise 'dynamic stability' of regimes in the Global South (Frantzeskaki et al., 2010; Monstadt, 2009).

The auto-rickshaw regime demonstrates directed stability, associated with multi-ordered transformation. Here, the presence of informality in governance and operation of the regime, despite the presence of State order can hardly be ignored. The auto-rickshaw regime highlights a greater diversity of actors as multiple institutional orders are at play, which brings the conflict of interests between State and Market actors to the fore. The case analysis demonstrates that the Market actors continue to fight for *their* efficiency values that are distinct from and contradicts the efficiency values put forward by the State actors. However, the 'directed stability' of this regime stem from an agreed directionality of transformation, shaped by well-being value, the meaning of which is shared between the State and Market

actors. The case demonstrates 1) presence of informality does not necessarily mean lack of stability of regime; 2) shared envisioned directionality of change can ensure the dynamic stability of sustainable regimes. As a corollary of the continued momentum for change, the auto-rickshaw case also demonstrates 'fluidity' in a regime in Global South, which can be a unique gift for survival in Southern contexts. Regimes that are driven by informality and may seem unstable, could open up to a greater diversity of logics and more suited for meeting heterogeneous needs. Scholars agree that such diversity can be pivotal as necessary 'back-up' in the face of uncertainties, unexpected threats and system failure (Berkhout et al., 2009; Wieczorek, 2017).

The cycling case portrays fragmented stability in the course of switching order transformation. It is a unique example of how some transformations can exaggerate urban inequalities and lead to social exclusion (Thorns, 2017). This case offers a critical insight into the distributional aspect of SOR. The case shows that stability of the existing cycling regime can be torn apart in parallel to efforts of stabilising an alternative practice in the same regime. This partially transformed cycling regime is on offer for the (upper)-middle classes - 'smart citizens' of Kolkata, while the rights and freedom of cycling by the poor and 'ordinary' citizens are taken away. The case study shows that regimes in the Global South can be fragmented and can be operationalised for certain (privileged) sections of the population in an exclusionary and discriminatory process of transforming. This is an important case that invites transition scholars to think whether stability that is fragmented, exclusive and partial - is desirable after all.

Figure 3 visually illustrates the transformations in the three mobility regimes in Kolkata as of 2019 – Metro (in blue), Auto-rickshaw (in green) and cycling (in yellow and red). The presence of State led efficiency logic in all three regimes indicate the dominance of State order and the overall prioritisation on efficiency over well-being and ecological sustainability.

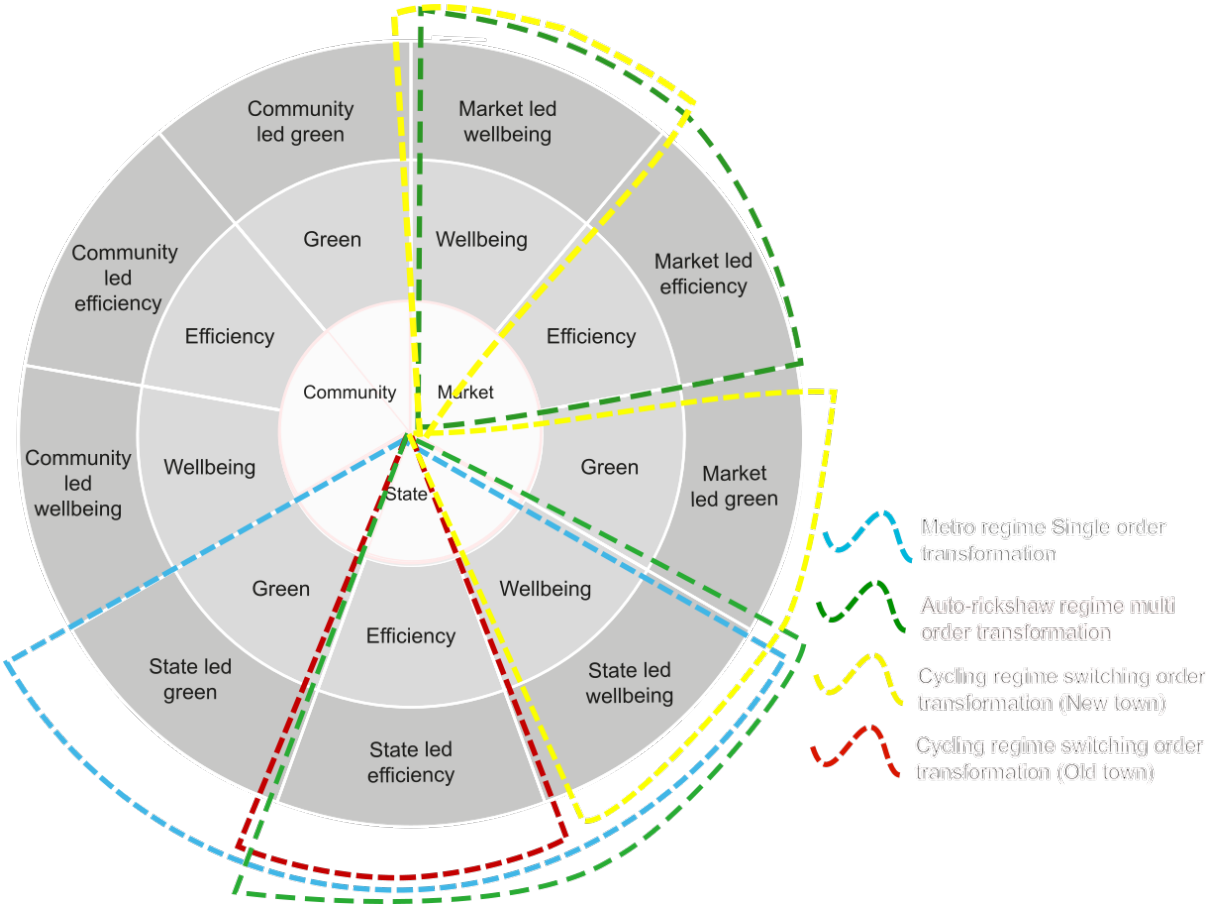

Figure 3. Compositions of regimes in transformation in Kolkata, India

The case studies associated one institutional order to each actor, while acknowledging that many actors can be seen as located in the 'grey area' between two institutional orders. Similarly, many sustainability criteria can be for instance, in between well-being and green values. The choice made for associating an actor or a criterion to a particular order and value is a highly stylised interpretation of reality (Jørgensen, 2005; Oltra and Jean, 2005). This stylised representation should perhaps not be treated as a weakness of the analysis, as it is common practice in transitions literature and useful to "reinforce the differences" (Jones and Sunmer, 2009: 38). One of the main difficulties of mobilising this framework is the way sustainability values are defined. Sustainability goals are context dependent (Meadowcroft, 2011). This means sustainability values may differ across actors, contexts and socio-technical systems (Raven et al., 2017). Instead of seeing this as a weakness of the framework, we see this as a flexibility afforded by the framework to capture the plural understanding of

sustainability. Future research may consider refining the wheel into a continuum to capture the intersectionality between orders and values.

6. Conclusion

The main contribution of this paper is to foreground the issue of stability of regimes and offer a nuanced understanding the dynamic SOR in the Global South, moving beyond the (rather simplistic) dichotomy between stable versus unstable regimes. In the Global South, where a diverse set of actors, visions and actions are at play in even single socio-technical systems, we need an alternative understanding of stability and change in regimes. This paper offers a novel "Wheel of Logics" framework, built on the institutional logics literature, which contributes to this understanding by redefining regimes as composed of multiple IILs. Consequently, different nature of stability and patterns of transformations in these regimes can be mapped through changes in composition of IILs. The application of the framework in analysing single ordered, multi-ordered and switching ordered transformation in mobility regimes in Kolkata reveal the complexities at play in the course of sustainability transitions in the Global South, hence contributes to the debate.

The framework is not only useful for scholarly understanding of transitions, but also for implementing policies to set the directions of change. In megacities in the Global South, where multiple interconnected regimes are transforming in different ways, this theoretical lens allows identifying which institutional logics are emerging, which ones are dominating, and which ones are disappearing from the regimes. Such understanding is necessary for practitioners to evaluate whether the ongoing transformations are in desirable directions as well as how to allocate resources in ongoing regime transformations in ways that ensure socio-economic justice and environmental protection.

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Appendix I. List of interviewees (anonymised)

Interviewee No.	**Position**	**Organisation**	**Interview date**	**Regime**
1	Senior official	Department of Transport, Government of West Bengal	January 2016	All three
2	Senior official	West Bengal Transport Corporation	December 2015 and November 2016	All three
3	Engineer	West Bengal Pollution Control Board	November 2016	Auto - rickshaw
4	Senior Official	Public Vehicles Department, Government of West Bengal	January 2017	Auto - rickshaw
5	Official	Public Vehicles Department, Government of West Bengal	January 2017	Auto - rickshaw
6	Senior Official	Rail Vikas Nigam Limited	November 2016	Metro

7	Senior Official	Metro Railway, Kolkata	October 2015 and December 2016	Metro
8	Senior official	RITES, Kolkata	November 2015 and November 2016	Metro
9	Senior official	New Town Kolkata Development Authority	December 2016	Cycling
10	Transport researcher and consultant	Indian Institute of Technology-Delhi	November 2015	Cycling
11	Official	Kolkata Police	December 2015 and November 2016	Cycling
12	Representative	A Kolkata based NGO	December 2016	Cycling

Abbreviations

IILs - Ideal type Institutional Logics
MCM – Multi-criteria mapping
MLP – Multi-level perspective
MOHUA- Ministry of Housing and Urban Affairs
RITES - Rail India Technical and Economic Service
RTA – Regional Transport Authority
RVNL – Rail Vikas Nigam Limited
SDG – Sustainable Development Goals
SOR – Stability of regimes

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