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Bangkok's Bumpy Road to Sustainable Urban Mobility: Governance Challenges in the Promotion of Cycle-friendliness

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ABSTRACT

Many cities promote cycling as an environmentally friendly and healthier mode of urban transport. The challenge often is bigger than anticipated, as it involves inducing behavioural change among different groups of actors and reaching agreement about the reallocation of scarce resources. Recent experiences in Bangkok are illustrative. Here, multi-year efforts by the Bangkok Metropolitan Administration (BMA) to promote cycling have yielded only partial success. Recreational cycling has increased, but utility cycling much less so. A gap remains between what the BMA delivers in terms of pro-cycling policies and what Bangkokians need in order to become utility cyclists. This paper investigates the characteristics of this gap and the factors that produce it. It finds that safety concerns in particular keep Bangkokians from cycling, and that organizational inefficiencies and failure to commit key actors, a narrow focus on physical output, wavering political leadership, and a failure to benefit from the knowledge available among members of the public, are key factors preventing the BMA from delivering more effective solutions. The paper concludes by deriving key lessons from the Bangkok experience.

Keywords: Sustainable urban transport, Governance, Pro-cycling policies, Utility cycling, Cycling promotion

INTRODUCTION

Cities around the world, usually as part of concerted policy action to decarbonize urban mobility, have started to promote cycling as a healthier and more environmentally friendly mode of urban transport. The challenges involved in getting a city's inhabitants to cycle, however, often turn out to be bigger than anticipated, as this requires the careful design and steadfast management of several difficult, transformative processes. These processes typically include altering the attitudes and behaviour of city-dwellers; changing the modus operandi of the agencies governing road design and use; the reallocation of what is already intensively used (road) space; the modification of traffic laws; and the realignment of public budgets. While success stories do exist (Cervero et al., 2009; Lanzendorf & Busch-Geertsema, 2014; Pucher & Buehler, 2008; Pucher, Buehler, & Seinen, 2011), the more common experience is for cities to struggle emphatically (Brussel & Zuidgeest, 2012; Butterworth & Pojani, 2018; Handy, van Wee, & Kroesen, 2014; Horton & Jones, 2015; UN Environment, 2016).

A case in point is Bangkok, the capital of Thailand. Here, multi-year efforts by the Bangkok Metropolitan Administration (BMA) to promote cycling, which have included the creation of bike lanes, the introduction of a public bike sharing system, and public campaigns encouraging people to take up cycling, have yielded partial success at best. Recreational cycling (e.g. cycling in public or bike parks, guided urban cycling tours) has indeed visibly increased, but utility cycling (e.g. cycling to and from work, shops, schools, mass transit stations, or the type of cycling that replaces motorized mobility) much less so[1].

Several studies point out that many Bangkokians are in fact sympathetic to the idea of cycling, or cycling more often, for utilitarian purposes (Kijmanawat & Karoonkornsakul, 2016; Lambregts & Panthasen, 2013; Leopairojana et al., 2016; Panthasen & Leopairojana, 2016). That this latent interest has so far not resulted in a noticeable increase in utility cyclists on the city's streets suggests the BMA has not yet been able to create the conditions that Bangkokians need in order to become more regular cyclists.

This paper uses survey, interview and observation data to: a) comprehend why Bangkokians refrain from cycling for their daily travel needs; and b) understand the difficulties that BMA officials face in their efforts to improve the conditions for cycling in the city. The insights so gained offer value to those working to promote cycling in Bangkok and in cities that struggle likewise, and add to the rapidly growing body of literature on cycling. Our contribution to the latter is twofold. First, much of the literature so far has been concerned with establishing which factors encourage or discourage people to cycle and which interventions best serve the cause of getting people to cycle. While indispensable, this kind of research provides little insight into how cities accomplish policy change in favour of cycling (Weber, 2017) and why some cities are more successful than others in doing so (Koglin, 2015). Single case-studies alone, as in the one presented here, cannot answer such questions entirely, but can provide important building blocks. Our second contribution to the cycling literature relates to the fact that geographically most of it so far has focused on Europe and North-America. In these regions, admittedly, efforts to promote cycling have advanced most. However, cities in the Global South, especially those in rapidly growing and rapidly motorizing economies, are in need of a sustainable mobility transition as much as their 'northern' counterparts – perhaps even more so – and face (much) larger challenges in accomplishing it (Dimitriou & Gakenheimer, 2012; Pojani & Stead, 2017). Empirically grounded accounts from such cities (as in the one presented in this paper) contribute to a better understanding of the highly varied and context-dependent nature of the difficulties cities face when promoting cycling. Such understanding should in turn pave the way for the design of more customized and hence more effective pro-cycling policies.

The paper from here breaks down into four parts. We first develop our analytical framework by deriving from the literature what it takes to make a city cycle-friendly. Next, we explain how our

[1]Based on authors' observations, since reliable longitudinal data measuring the share of cycling in Bangkok's traffic does not exist

research in Bangkok was conducted. Subsequently, we present our findings, identifying the factors that keep Bangkok's residents from cycling and the difficulties city officials experience in their efforts to promote cycling. In the last section, we discuss the implications of our study for cycling proponents in Bangkok and elsewhere.

WHAT DOES IT TAKE TO MAKE A CYCLE-FRIENDLY CITY?

In cycle-friendly cities, cyclists typically enjoy the safety and comfort provided by well-planned and well-designed cycling infrastructure, the encouragement and protection of pro-cycling incentives and regulations, and the courteousness of motorists mindful of the vulnerabilities of cyclists (Buehler & Pucher, 2012; Heinen, van Wee, & Maat, 2010; Buehler & Dill, 2016). For city managers to put such conditions in place is no easy task, even under the best of circumstances. It requires, amongst other things, a sophisticated vision on sustainable transport, a thorough understanding of what cyclists need, strong political commitment, capable transition managers, perseverance, and the support of society in general (Civitas Mimosa, 2013; Pettinga et al., 2009). Arguably, the challenge becomes even bigger when a city has become more car-oriented in terms of its infrastructure and residents' mobility preferences, when the competition for (road) space is more intense, and/or when those who are supposed to effectuate the transition are less well-equipped for the task.

While not limited to the larger metropolises of the world's so-called emerging economies, such complicating conditions are typically found in these environments. Here, over the past few decades, rapid economic development has given large segments of the (urban) population access to private motorized mobility in the form of motorbikes and cars, with the latter especially being enthusiastically embraced as a symbol of modernity and signifier of personal success. Simultaneously, however, the provision of (public) transport infrastructure often has lagged behind, resulting in extreme pressure on the available road space and what some call an urban transport crisis (Cervero, 2013; Pojani & Stead, 2017). Yearly 'big data' surveys reveal that many of the world's most congested cities today are located in emerging economies. Making matters worse is that in many of these cities, the capacity of (local) governments to manage effectively has not increased as rapidly as the complexity of the affairs they are supposed to govern (Dimitriou & Gakenheimer, 2012). Myriad factors are responsible for this, including local governments' limited capacities in terms of know-how, financial resources and decision-making powers; dysfunctional administrative structures and lack of coordination between relevant departments and agencies; outdated and/or ineffectual legal frameworks; governance cultures that value short-term, top-down, supply-oriented micro-management over long-term, comprehensive, strategic and participatory approaches to problem-solving; and finally, a lack of political will to change unproductive practices and ineffective frameworks in order to push through strategies that go against the flow (see e.g. Asian Development Bank, 2008; Pojani & Stead, 2018; UN-Habitat, 2016).

Below, we take stock of what it takes to make a cycle-friendly city in more detail, focusing first on the conditions that must be in place for cycling to become a viable transport option for city dwellers, and second on what is needed to create such conditions.

Cyclists' needs

Cyclists' needs stem from a number of characteristics that are (semi-)unique to cycling. First, cyclists use muscle strength to transport themselves. In addition, unlike motorists, they are directly exposed to the elements (rain, wind, sunshine, heat, cold) and other environmental displeasures such as air pollution and traffic noise. While recreational cyclists often find joy in going the extra mile, utility cyclists (i.e. those riding their bicycles to work, school, or other regular destinations) generally like to minimize travel times (like motorists do) and make their journey as free from discomfort as possible. Another key characteristic is cyclists' vulnerability to physical impact. Where motorists, in case of

collision, enjoy at least some protection from the surrounding car frame, cyclists absorb any impact directly with their body. This makes safety a prime concern for cyclists (Buehler & Pucher, 2017).

The cycling environment can be understood as consisting of three dimensions: physical, regulatory and behavioural. The physical dimension is covered by the five basic requirements for cycling-friendly infrastructure identified by the Dutch National Knowledge Platform for Infrastructure, Transportation and Public Space (de Groot, 2016; see also Hull & O'Holleran, 2014; Pettinga et al., 2009). The first requirement is *coherence*, also referred to as *connectivity* or *accessibility*. Cycling infrastructure should support a population's real travel needs, or in other words, enable people to cycle between as many relevant origins and destinations in a given area as possible; proper cycling infrastructure therefore takes the shape of a fine-meshed network (Buehler & Pucher, 2012; Buehler & Dill, 2016). The second requirement is *directness*. Cycling infrastructure should enable its users to move between origins and destinations in the most direct (shortest) possible manner, so as to minimize time and energy spent, and maximize the comparative (time) advantage to other travel modes (see also Schoner & Levinson, 2014). Directness can be enhanced by creating shortcuts for cyclists and by favouring cyclists at intersections and traffic lights. The third requirement is *safety*. Cyclists' vulnerability in traffic situations means that all possible avenues should be undertaken to minimize the chance of cyclists being involved in either unilateral accidents or collisions with other road users. Safety for cyclists can be enhanced by, for instance, spatial separation from other modes of transport (essential where traffic intensity and/or speed differences are high), by keeping traffic situations clear and manageable, and by encouraging cyclists to use proper lighting after dark. *Comfort* is the fourth requirement. As noted, cyclists are maximally exposed to the elements. They also enjoy little vehicular comfort. Discomfort can be minimized, for instance, by ensuring that road surfaces are flat and smooth, passage is unobstructed, signposting is adequate, weather impacts are mitigated, and bicycle parking space is provided at key destinations (Pettinga et al., 2009). The fifth requirement is *attractiveness*. People are more likely to bike if the routes available are perceived as more attractive. Routes leading through lively, visually attractive streets are generally seen as more inviting and, importantly, socially safe than routes leading through deserted areas (Fleming, 2012). Especially at night, and in particular for women, perceptions of social safety greatly influence the decision to cycle or not, and if so, along which routes (Xie & Spinney, 2018).

Furthermore, cyclists can be encouraged and protected by pro-cycling regulations. These may involve traffic regulations (e.g. rules giving cyclists right of way in standard situations or protecting cyclists in case of accidents), but also extend to taxation and employment relations; for instance, in many European countries, bicycle purchases have become tax-deductible or can be sponsored by employers when used for commuting (Haubold, 2014).

Finally, cycling is a much more pleasant and – arguably – safer activity in an environment where other road users are familiar with and considerate to the needs and vulnerabilities of cyclists. While this can be achieved through education, motorists would ideally double as cyclists and as such know from experience what safety margins cyclists need (Fruhen & Flin, 2015).

Policy success factors

To understand what cyclists need is one thing, to realize them in practice is quite another. In their handbook for cycling-inclusive policy development, Pettinga et al. (2009) identify four key factors for success. The first is the presence of well-considered *policy content* that is: a) based on a sound problem analysis, the use of relevant expertise, and clear goal-setting; and b) built around strategies that actually address the identified problem(s) and are capable of achieving the anticipated effects. The second is the existence of an effective *organizational structure* in which tasks, competencies and responsibilities are well-defined, and relations are characterized by trust and a willingness to co-operate. Third, *political support and commitment* is required to ensure the availability of financial and other (public) resources, and, depending on

how local governance works, organize the support or collaboration of other actors. Since turning a city into a more bike-friendly environment is a long-term process, political support/commitment should be robust and long-lasting. Finally, *public support* is needed to increase the chance of policies, projects and measures being adopted and respected. According to the authors, public support can be secured by sensibly and sincerely involving the public in the various stages of the process (Pettinga et al., 2009). These factors resemble many of the ingredients for success identified by Civitas Mimosa (2013) in their compilation of cycling policy lessons learned from various (mostly European) cities. In addition to the factors listed, the authors stress the importance of long-term financial resources being secured, solutions being tailored to local conditions and needs, and hard and soft measures being mindfully balanced.

RESEARCH METHODOLOGY

To achieve its stated aims, this paper draws on data and insights generated during three studies performed by the authors between 2013 and 2016. The first concerned an evaluation study of the quality and functionality of 14 (out of the then 31) bicycle routes previously introduced by the BMA (Lambregts & Panthasen, 2013). This study employed spatial analysis, structured observations, and questionnaires with cyclists (n=458) and people living near the bicycle routes (n=754) to gauge both the objectified and experienced quality of the routes, and the reasons for people to refrain from cycling.

In the second study (Leopairojana et al., 2016), seven of Bangkok's 50 districts were supported in their efforts to create bicycle routes. Potential routes were identified, the most feasible routes were selected, and preliminary design for such routes was provided. Meetings with BMA and district officials (3), interviews with district officials (7), public hearings with local stakeholders (14), and questionnaires received from public hearing participants (280) produced first-hand insights into the officialdom's perceptions and dealings with regard to the promotion of cycling at the local level; they also revealed the concerns and preferences of a variety of stakeholders (including representatives of different local government departments, motorcycle taxi drivers, street vendors, residents, school teachers, and local bicycle groups).

The third study (Panthasen & Leopairojana, 2016) looked into the possibilities for improving the BMA's public bike sharing system (PBS) and the use thereof. It focused on the downtown Sukhumvit area where basic conditions (i.e. high density, mixed land use, proximity to mass transit) should favour cycling. Questionnaires were used to ask residents of 27 condominiums (located within 3 km from mass transit stations) about their travel behaviour, cycling experiences, and reasons for not cycling more often (n=232). Interviews were held with two high-ranking BMA officials (one responsible for civil works, drainage, roads, and footpaths; the other for transport, including bicycle promotion) and four executives of the organizations operating the PBS service (Krungthep Thanakom Co., Ltd. and Smart Bike Service Co., Ltd.) to learn about the problems they face in promoting cycling and the use of the PBS in particular. Moreover, 27 condo managers were questioned to gauge their interest in facilitating cycling and to verify data provided by condominium residents. Finally, the researchers surveyed the physical conditions for cycling in the study area and took stock of the actual use of bicycle routes leading to the four mass transit stations (MTS) in the area. The data so obtained were also used to verify the data collected from the questionnaire and interviews.

RESULTS AND DISCUSSION

In this section, we discuss our findings. We first detail Bangkok's general cycling conditions before examining residents' cycling behaviour and the perceptions affecting it, and we conclude by discussing the difficulties city officials experience in their efforts to promote cycling.

Bangkok's general cycling conditions

Bangkok's built-up area covers roughly 40x40 km^2 and is home to about 10 million people. Land use in the city's central areas is dense and generally mixed, which should in theory favouring cycling (Handy et al., 2014). Density and mixedness rapidly taper off towards the city's edges where low-density (gated) housing projects dominate the landscape. A boon to cyclists is Bangkok's entirely flat topography. The tropical monsoon climate offers pros and cons; winds are generally calm and rain falls in intense but usually short-lived showers, but temperature (~33ºC daytime year-round), humidity and UV-intensity can be very high.

Bangkok's roads are a busy affair. Over the past few decades, sustained economic growth, car-friendly government policies, and the slow development of mass transit have fuelled rapid motorization (Rujopakarn, 2003; Wu & Pojani, 2016) and turned Bangkok into one of the most congested cities in the world (TomTom, 2019). On-road air quality, consequently, on many roads is dangerously poor during much of the day (Noomnual & Shendell, 2017). The main thoroughfares (4-12 lanes) are busy around the clock and typically have central reservations. They can also only be safely crossed at intersections and via footbridges, which can result in lengthy and/or laborious detours. Smaller thoroughfares (two lanes) are usually crowded too and, especially during rush hours, leave little space for cyclists. Accessibility at the neighbourhood level is provided by smaller residential alleys and lanes (called sois); these mostly offer a lower-intensity, 'shared space' experience, but the majority are cul-de-sacs and therefore offer only limited connectivity value for cyclists. The few that are not dead-ends tend again to be crowded, especially during rush hours. Roads and sois are generally decently surfaced, but the same cannot be said for sidewalks. The latter, if present at all, are often poorly paved, frequently interrupted by uneven entries and exits, and home to a great variety of transient and permanent obstacles.

Public transport is provided by motorcycle taxis, regular taxis, paratransit (commuter vans and *songthaews*), buses, and mass-transit. Motorcycle taxis, of which there are over 100,000 (registered) operating in Bangkok alone, are mostly used for short trips within the neighbourhood or to cover the final leg of a journey (e.g. from MTS to place of work). They offer a cheap, flexible and convenient transport service for the kind of trips that in cycle-friendly cities could also be done by bicycle.

While bicycles have been around in Thailand for much longer (used by the poor in particular), in Bangkok, bicycle infrastructure was virtually absent until 2008, the year in which the BMA adopted cycling as a policy priority. Since then, some 50 bike lanes, with a combined length of nearly 400 km, have been added to the city's landscape. They come in different forms; sometimes as narrow, shared tracks painted on sidewalks; sometimes as tracks painted on the edge of roads (with or without physical separators); and sometimes as fully separate bike-lanes located along bigger thoroughfares. Some, like the loop around the airport, are designed to solely serve recreational cyclists. Others are more firmly part of the urban fabric and offer value for utilitarian cyclists too. The BMA's efforts have also included the provision of auxiliary facilities such as bicycle parking at MTS and traffic calming measures in *sois*, the launch of a public bike system (in 2013), and the organization of various public awareness campaigns and cycling promotion events (usually in collaboration with national government agencies and/or pro-health/pro-cycling NGOs).

The BMA's efforts have coincided with a marked increase in the interest for cycling among segments of the urban population. Much of this enthusiasm is for recreational cycling, with cycling tours and events being organized in different parts of town on a regular basis. However, the number of cycle-enthusiasts willing to use their bikes for commuting and other utilitarian purposes seems limited. These cyclists can sporadically be spotted on the roads, but they do not enjoy force of numbers yet. While the modal share of cycling in Bangkok's overall traffic is not reliably known, it can safely be qualified as very small, around one per cent (Bakker et al., 2018) or less.

Notwithstanding the BMA's efforts, cycling conditions in the city generally continue to disappoint (Bakker et al., 2018; Lambregts & Panthasen, 2013). Applying the CROW-framework discussed in Section 2, *network coherence* at the city level must be evaluated as lacking, with most of the created bicycle infrastructure existing in (splendid) isolation and offering limited value in unlocking utilitarian origins and destinations. At the neighbourhood level, conditions differ across town. Where land use is mixed and *sois* frequently interconnected, as, for instance, in central parts of Sukhumvit Road, connectivity can be good (Panthasen & Leopairojana, 2016). Where such conditions are absent (as in much of the rest of town), connectivity tends to be poor. *Route directness* for cyclists generally is poor due to the many cul-de-sacs and non-crossable main roads. While a perfect grid has a maximum detour-factor of two, detour-factors can be several multiples of that in Bangkok. *Safety* for cyclists is compromised by the sheer intensity of motorized traffic, leaving cyclists with very little space and making them easily overlooked by other road users. On the other hand, if traffic intensity is low, safety for cyclists is compromised by the speed differences between cyclists and motorized road users (which may be dangerously large even in the *sois*). Frequent intersections, unclear priority rules, poor driver etiquette, and frequent obstructions of bicycle lanes (forcing cyclists to enter the main road) are just a few of the many factors adding to cyclists' safety woes. *Comfort* in many places is impeded again by obstacles blocking cyclists' free passage (such as parked cars and motorbikes, street vendors, waste, utility poles, signposts, and billboards), but also by inconvenient drainage covers, lack of shade, insufficient bicycle parking space, and exposure to exhaust gases and traffic noise. *Attractiveness*, finally, can be good in the *sois*, but tends to wane along the bigger roads. Moreover, initiatives to favour cyclists by regulatory means are lacking, as are steps to teach other road users how to interact with cyclists in a safe manner.

Cycling behaviour and perceptions

1. Cycling frequency

Our survey conducted in 2016 among 232 residents of 27 condominiums located within 3km from MTS in the downtown Sukhumvit area (see for details Panthasen & Leopairojana, 2016), revealed that 61 per cent of residents of this well-to-do area, characterized by high density and mixed land use, own private cars. These cars were also the mode of transport most frequently used for daily mobility, closely followed by private motorbikes, mass transit, walking, and motorcycle taxis (in that order). Buses and regular taxis were a less popular choice, and the bicycle ranked firmly at the bottom (Table 1). For trips between respondents' residences and the nearest MTS, walking was the most popular way to go, closely followed by motorcycle taxi, bus, private car (drop-offs), private motorbike and regular taxi. Cycling, again, ranked firmly at the bottom. These findings resemble those reported by Kijmanawat and Karoonkornsakul (2016) for the somewhat comparable Ari neighbourhood and suggest that so far, the BMA's pro-cycling efforts have yielded limited impact in this area.

More encouraging findings were generated a few years earlier in a different survey. Here, cyclists and residents living within a few hundred meters from 14 of the BMA's then newly introduced bicycle routes were asked about their cycling behaviour (Lambregts & Panthasen, 2013). Sixty per cent of the questioned cyclists and 34 per cent of the local residents mentioned that they ride their bicycles (almost) every day. One in eight of the local residents reported never riding a bicycle at all (Table 2). No clear relation was found between the perceived overall quality of the respective bicycle routes and the cycling frequency among questioned cyclists and residents, meaning that other factors prevailed in peoples' decisions on whether to cycle or not. However, cycling frequency among local cyclists and residents appeared to be higher along routes located away from the city centre, despite generally lower density and less heterogeneous land use characteristics. An explanation is not readily available, but may relate to variance in socio-economic parameters and/or the

availability of public transport services. While these figures cannot be taken as representative for the entire Bangkok population, they do suggest that people are willing to ride bicycles if bicycle infrastructure is provided, even if this infrastructure underperforms in terms of connectivity, safety and comfort

Table 1

Travel modes of condominium residents in Sukhumvit area, Bangkok (mean values[1] ($\bar{x}$); n= 232)

Travel modes	All trips	Trips to nearest mass-transit station
Private car	4.16	3.42
Private motorbike	3.94	3.30
Mass-transit	3.83	-
Bus	3.40	3.48
Taxi	2.94	3.01
Motorbike taxi	3.65	4.08
Walking	3.78	4.23
Cycling	2.32	1.77

Note. [1] Mean values were calculated as follows: respondents were presented a comprehensive choice of travel modes and asked to rank them according to frequency of use, using a six-level rating scale ranging from never to most frequent. Values ranging from 0 (for never) to 5 (for most frequent) were then attributed to the six rating levels, and these were then used to calculated the mean value for each travel mode.

Table 2

Cycling frequency among cyclists and residents living close to BMA bicycle routes

	Cyclists on evaluated bicycle routes (%, n=458)	Residents living adjacent to bicycle routes (%, n=754)
Everyday	29.0	15.5
Almost everyday	31.0	18.7
Often	27.1	20.4
Sometimes	12.9	32.9
Never	0.0	12.5
Total	100	100

2. Reason for not cycling (more often)

When asked what factors kept them from cycling or cycling more often for utilitarian aims, the Sukhumvit sample (n=232) most frequently cited fear of accidents and crime (36.4 per cent), followed by the lack of suitable bicycle paths (25.6 per cent), and the hot weather and lack of shade (13.2 per cent). With the fear of accidents and the lack of suitable bicycle paths being interdependent, the conclusion here should be that for condo residents along Sukhumvit, safety concerns are *the most* important deterrent to cycling.

Safety concerns were also the most frequently mentioned reason not to cycle more often by the questioned residents along the 14 BMA bicycle routes (n=754). Second and third were, respectively, poor connectivity (people not being able to reach their proposed destinations by bicycle) and adverse weather conditions (too hot to comfortably ride a bicycle and not enough protection against the sun being provided).

The Sukhumvit sample (n=232), finally, was also asked which changes in cycling conditions would tempt them to become utilitarian cyclists. In order of importance, the wish-list comprised: dedicated bicycle lanes, safe road crossings, obstacle-free passage, bicycle friendly drainage covers, adequate lighting, bicycle parking close to MTS and shops, an integrated CCTV system, a connected bicycle network, shaded bicycle routes, and more bicycle information signage. Of lower urgency were speed limit signage for motorized vehicles and changing rooms in the work place. Safety-related concerns obviously dominate this wish-list, but a desire for more comfort also shines through.

Reasons underlying the BMA's failure to meet (would-be) cyclists' needs

The above findings point at a (perceived) lack of safety being the most important factor keeping Bangkokians from cycling more often and in greater numbers. With Thailand ranking high among the world's most traffic-unsafe countries (World Health Organization, 2018), this fear for life and limb cannot be dismissed as imaginary. Interviewed BMA officials displayed awareness of the safety issues, which were already identified at the start of the BMA's pro-cycling campaign (Traffic Policy and Transport Office, 2010). However, putting theory into practice has obviously proven difficult, and it is the reasons why that we focus on now. Mindful of the issues identified in Section 2, we subsequently look into matters of organizational structure, policy content, political leadership, public participation and resource allocation.

1. Organizational structure and institutional capacity

Thailand's public management system is known to have its inefficiencies (Office of the National Economic and Social Development Board, 2017). Zeid Mohd Arif et al. (2018) observes that "[i]n Thailand, the existence of several ministries and agencies competing in similar policy spaces often leads to conflicting policy agendas" and that "[c]o-ordination issues among ministries and agencies, as well as institutional inflexibility in adapting policies to evolving economic and social conditions, represent a challenge". Such conditions also apply to the domain of transport. Estimates of the number of government agencies involved in transport planning and management range from 12 (Wu & Pojani, 2016) to 37 (Thailand Future Foundation, 2017), making for a crowded arena where overlap between tasks and responsibilities is hard to avoid, and trust, willingness to co-operate, and a shared vision are needed to get things done. Wu and Pojani (2016) found the lack of these qualities to be an important factor undermining the BMA's bus rapid transport project, and the issue also surfaced frequently in our interviews with BMA officials and the operators of the PBS. Lack of coordination and coordination mechanisms, and differences of opinion between relevant public agencies were blamed for failure to solve the various practical problems experienced by the PBS operators. BMA officials in turn lamented the traffic police's refusal to include the BMA's bicycle lanes in their local traffic code and their associated reluctance to use their powers to keep motorbikes, cars and other road-side users off the lanes. While this does not reflect favourably on the traffic police (which is not commanded by the BMA), it also points at a

failure by the BMA to (timely) secure the commitment of this crucial stakeholder to its project.

2. Policy coordination and content

The BMA's efforts to promote cycling are associated with several sensible strategic objectives such as the promotion of health through exercise and the reduction of greenhouse gas emissions. Initially, its ambitions were quite comprehensively outlined in a newly drafted city transport policy report. This policy identified potential routes, discussed methods to address safety concerns, and dealt with bicycle parking, participation, public relations, and financing (Traffic Policy and Transport Office, 2010). At the national level, the policy tied in with the Climate Change Master Plan 2013-2050, the National Transport Master Plan (2011-2020), and the Environmentally Sustainable Transport Master Plan. Five years later, however, the policy scope was reduced significantly. The 'City of Happiness' campaign, the BMA's main policy platform following governor Sukhumbhand Paribatra's re-election, still promoted cycling, but the more comprehensive previous guidance was replaced by four narrowly defined operational targets (Office of the Official Information Commission, 2015), hampering the work of the bicycle promotion committee (discussed below).

Effective policy delivery was frustrated further by ambiguous goal setting regarding the campaign's primary target (promoting utilitarian and/or recreational cycling) and, in particular, a failure to acknowledge that recreational and utilitarian cyclists have different needs and thus require different policy approaches. While all cyclists value safety and comfort, utilitarian cyclists also require good network coherence, directness of routes, and adequate bicycle parking facilities. Recreational cyclists, in contrast, are more interested in attractive loops allowing them to pedal in safety (or speed) and enjoy the experience. To help either requires the making of alternative analyses of problems and needs, the application of partly different expertise, the involvement of different collections of stakeholders, the development of different strategies, the acknowledgement of different time frames, and the identification of different criteria for success. By foregoing such tailor-made problem analyses, the risk of producing bicycle infrastructure that does not serve the needs of either group becomes real.

3. Political leadership and support

Trying to achieve a modal shift in favour of cycling is a political choice and a long-term transformational project. Strong and sustained political leadership and support are crucial for the availability of funds and manpower, the organization of intra- and inter-organizational collaboration, and the generation of public support. This is especially true in a hierarchic public management system as is Thailand's (Office of the National Economic and Social Development Board, 2017; Zeid Mohd Arif et al., 2018).

Over the past decade, Thailand's political leaders have indeed warmed to the concept of cycling. They have occasionally come out to voice their support, and the country has seen several massive, royally backed bicycle promotion events (e.g. Bike for Mom and Bike for Dad in 2015). While important, especially in creating awareness and support among the public and the bureaucracy, they have not yet inspired transport ministers to add significantly more weight to cycling in their (national) policies. Pre-coup transport minister Chadchart Sittipunt was close to doing that, but his 18 months of service (2012-2014) were too short for his policy proposals to sail through Parliament. For that to happen is important though, as it is the only way to make cycling more integral to the country's road infrastructure planning and design practice.

Meanwhile, most of the BMA's pro-cycling policies were conceived during the reign of governor Sukhumbhand Paribatra (2009-2016). He appointed a bicycle promotion committee (initially chaired by BMA spokesperson Threedow Aphaiwongs Sukhum, a keen cyclist herself) that would give the city some 400 km of bicycle paths and the PBS. Sukhumbhand's commitment to the promotion of cycling, however, was less than steadfast. In particular, cycling promotion activities with an impact on motorists did not last long, and his reorientation, after his 2013 re-election, to his 'City of Happiness' campaign represented a rollback for the city's cycling ambitions. Today, Sukhumbhand's successor,

the army-appointed Pol Gen Aswin Kwanmuang, is yet to present himself as a proponent of cycling in his city, meaning that the previously initiated developments are currently without clear backing from the highest city office, and that continuity has become more uncertain.

4. Public participation and support

Long-term transformational projects such as the one at hand require the mobilization of various kinds of participation and support. End-users have to be identified and probed about their needs, stakeholders who have a role to play in the process have to be engaged and encouraged to commit, and expertise must be brought in to enhance the quality of process and outcomes. In addition, the broader public must be encouraged to take up cycling as a regular transportation mode, and those that will not cycle made to understand that they too benefit from other peoples' choice to cycle and therefore ought to respect cyclists' rights and needs (Pettinga et al., 2009; cf. Civitas Mimosa, 2013). The latter is crucial especially where, as in Bangkok, the competition for road space is intense and (public/financial) resources are scarce. It calls for a tripartite approach to organizing participation and building support in which key stakeholders and target groups, the most suitable modes of participation, and the most effective communication strategies differ.

While Thailand's centralized, top-down public management practice has traditionally allowed little room for meaningful public participation in policy making processes (Office of the National Economic and Social Development Board, 2017), the BMA, in this case, started off well by establishing the above-mentioned multi-actor bicycle promotion committee to drive the project and generate input from several sides. Participants included various central BMA units, the police, universities, pro-health foundations, pro-bicycle associations, and local communities. However, the potential locked in this set-up was negated by: a) process issues (long, irregular intervals between meetings, making it difficult for the non-BMA participants to remain fully engaged); and b) the BMA's tendency to do little with the advice offered and the requests made, and push matters through according to its own preferences instead. As such, what started as a promising effort to involve at least a substantial part of the relevant actor network in the process went in a different direction. In Thailand, this is not an unusual participatory experience; often, the public is initially invited to contribute, but these contributions do not easily make it to the government's drawing tables (see also Kantamaturapoj, Piyajun, & Wibulpolprasert, 2018).

Furthermore, the BMA has not fully taken advantage of the various options available to (local) governments to warm the broader public to the idea of cycling. Little has been invested, for instance, in the education of aspirant cyclists, the provision of safe bicycle routes to schools, the sustained encouragement of cycling (via, for example, the organization of cycling Sundays), and the gauging of the wider population's desires and needs in relation to cycling. Moreover, the frequent, continuing, and often brazen use of sidewalk and cycling space by motorcyclists, car drivers and street vendors, which was always a 'hot' topic in interviews and during public hearings we organized and attended, signals that the BMA has had little success in making non-cycling road users understand cyclists' rights and needs. All-in-all, and as mentioned before, failure, in part, to either identify and/or commit (key) actors to its project, have left the BMA struggling to achieve its objectives.

5. Resource allocation

As an emerging, but in many places still marginal, policy issue, the struggle to secure adequate and – crucially – long-term funding for pro-cycling purposes can be tough. In Bangkok, cycle-proponents in the BMA did manage to secure a decent budget, but virtually all of that was earmarked for infrastructure construction and the organization of events. None was used, for instance, to subsidize the PBS service, impeding its operation and improvement, and forcing the operators to rely, apart from user fees, on the sale of advertising space at the bicycle docks (which then cluttered their appearance and made building owners reluctant to accept them in front of their properties). Nor was budget reserved for research and advice. As a result, the work by the consulting universities and the bicycle association had to be commissioned and sponsored by the Thai Health Promotion

Foundation, a construction which allowed the BMA to dissociate itself from the research activities; forego proper problem analysis and the study of alternative solutions, their feasibility and potential impacts; and jump towards implementation. This has resulted in the realization, at considerable cost, of bicycle infrastructure that only partly meets the needs of (would-be) cyclists and that, consequently, remains largely underused. Recently, this situation has come back to haunt the BMA with the public becoming more critical and less supportive of the BMA's bicycle projects and the State Audit Office developing an interest in the efficacy of City Hall's spending on them.

CONCLUSIONS

This paper sought to define where the BMA's pro-cycling policies fall short in meeting the needs of Bangkok's (would-be) cyclists and identify the factors that hamper the delivery of more effective policies. With regard to the former, our research reveals that unsafe cycling conditions are the biggest factor keeping (would-be) cyclists from cycling (more often). However, poor comfort, lacking network coherence and high detour factors, the latter two of which are of importance to utility cyclists, weigh in too. In short, much of the cycling infrastructure created by the BMA over the past decade or so is too unsafe, too uncomfortable and too fragmented to please existing and win over large numbers of new cyclists.

Our analysis of factors keeping the BMA from delivering more effective pro-cycle policies identified *organizational inefficiencies* (policy implementation being dependent on too many unaligned actors with at least one crucial actor unwilling to collaborate), *a strongly output-oriented policy approach* (focused on producing bicycle lanes while foregoing proper analysis of problems, objectives and target groups and their needs, and generally underestimating the complexity of the challenge at hand), *wavering political leadership* (the initial push not being forcefully followed through, leading to loss of momentum); *isolationism* (reluctance to benefit from the expertise available externally, and failure to reach out to and make non-cycling road users understand the needs of cyclists); and *unbalanced allocation of financial resources* (focused on physical output while ignoring the need for knowledge and soft measures) as key explanations. Unsurprisingly, there is considerable overlap between these and the factors that were identified in Section 2 as standing in the way of effective urban governance in emerging economies in general.

The lessons Bangkok and other cities can derive from this are, first, that when starting a wholesale transformative process such as getting a congested and car-oriented city to cycle, it is essential to ensure that there is an organizational and institutional framework in place that is capable of actually delivering that transition. In Bangkok, it is critically important for the BMA to enhance its capacity to govern the allocation and use of road space. This would require the reallocation and consolidation among government entities of tasks and responsibilities pertaining to transport and land use planning and traffic management, and the introduction of mechanisms for cooperation between them. If done well, such re-organizations could increase government efficacy in other domains too. Second, it is unwise to underestimate the complexities involved in getting a city to cycle. Local conditions are unique and need to be well understood before viable strategies can be conceived; there are no one-size-fits-all solutions to the promotion of cycling. In Bangkok, for instance, a strategy aimed at increasing utilitarian cycling would probably be best served by acknowledging that given the generally hot and humid weather, the biggest potential for replacing motorized by non-motorized transport is in short-distance trips (e.g. < 3km). This would make an approach focused on improving safety, connectivity and route directness at the neighbourhood level by creating smart pedestrian and bicycle shortcuts between otherwise disconnected *sois* much more effective than the current approach of trying to create lengthy, linear bicycle routes along already extremely crowded major roads. The same understanding also implies that in Thailand's tropical environment, the greatest potential for successfully promoting utilitarian cycling may in fact be located in smaller towns and villages where distances between most origins and destinations are naturally small. Third, and finally,

the process managers (like the BMA in Bangkok) should acknowledge that the promotion of utilitarian cycling constitutes a particular challenge so difficult that it can only be managed jointly, in close collaboration with those who are supposed to become cyclists, those who have knowledge to share, those who have a role to play in policy implementation, and those whose understanding and collaboration are needed to make things work.

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