



Research article

Intergovernmental relations for environmental governance: Cases of solid waste management and climate change in two Malaysian States



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ARTICLE INFO

Keywords:

Intergovernmental relations
 Environmental governance
 Climate change
 Waste management
 Developing country
 Asia
 Malaysia
 Johor
 Penang

ABSTRACT

Institutions for environmental governance evolve differently across sectors. They also vary in the same sector when governments at two levels (national and subnational) have different political alignments. As the policy environment becomes more complex, with global problems like climate change, and politics more dividing, better coordination among various levels of government is a tough governance challenge. Scholars and practitioners need to realize how best to build institutions to bridge the various levels of government in different political environments and environmental sectors. This research analyzes the influence of intergovernmental relations in two environmental sectors in two localities with contrasting political alignments between two levels of government. It draws lessons from solid waste management and climate policy in two Malaysian states (Johor and Penang). In an evolving State and new policy arenas, when formal institutions for intergovernmental relations may not be effectively in place, politics play an even larger role through the discretionary power of federal and subnational authorities. An open political process can help with the engagement of different political groups and civil society to bring legitimacy, resources and efficiency to environmental management, if it is done with robust intergovernmental institutions; otherwise, intergovernmental relations can also become a tool for zero-sum games, cronyism and patrimonialism, which can undermine policies, and result in inefficiencies and ineffectiveness in environmental management.

1. Introduction

The world population is expected to reach 8.5 billion by 2030. Five billion of those will live in cities, increasing the world's already over-exploited resources. The ability to achieve the Sustainable Development Goals (SDGs) of the United Nations' 2030 Agenda for Sustainable Development (UN, 2015) will depend on effective urban environmental management to deal with issues such as climate change and waste. There has been an unprecedented demand for improving governance in cities (in this paper, city is a subnational government having an urban area) and other subnational governments to deliver better environmental management, particularly in light of limited resources and under increasing pressure resulting from rapid changes. Changes in governance can enhance environmental management and sustainability (Den Uyl and Driessen, 2015). However, city governments have limited autonomy and capacities to handle a growing set of challenges (Pierre, 1999). Intergovernmental relations are indispensable to coordinate efforts between national and subnational governments (Agranoff, 1986; O'Toole and Christensen, 2012). Non-governmental sectors, such as civil society organizations and the private sector, are also increasingly being decisive players in action and knowledge transposition to cover

political and capacity gaps to address certain environmental issues at different levels (Andrade and Puppim de Oliveira, 2015; Kadirbeyoglu, 2017).

The context of urban environmental management in Asia and elsewhere has also become more complex. Multiple levels of governance (i.e., global, federal, state and local) affect the way cities impact and are impacted by local and global environmental issues (Hickmann et al., 2017). This is particularly important for multi-sectoral environmental issues that require the participation of various levels and departments in the State, such as policies to tackle climate change. For example, decisions about the energy supply in Malaysian cities, which are key to addressing climate change, are primarily made by the national government, not local or state authorities. Thus, building mechanisms for intergovernmental relations among the different organizations in a State is crucial to coordinate environmental management and policy.

This paper aims to examine environmental governance at subnational level in Malaysia. It analyzes how institutions for building intergovernmental relations in different environmental sectors develop and how they vary when governments in the two levels (state/local and federal) have different political alignments. It is an attempt to understand how best to build governance mechanisms in different political

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<https://doi.org/10.1016/j.jenvman.2018.11.097>

Received 9 January 2018; Received in revised form 16 November 2018; Accepted 22 November 2018

Available online 26 December 2018

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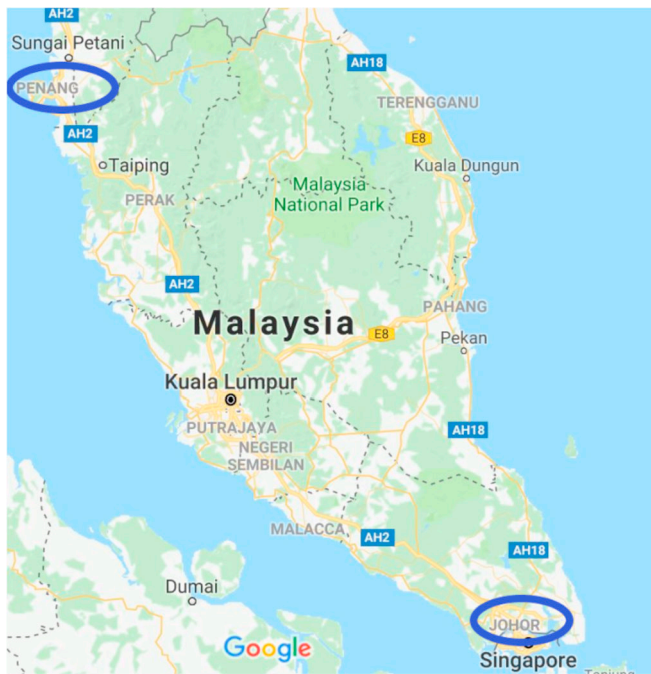


Fig. 1. Peninsular Malaysia. Location of the Malaysian states of Johor and Penang (based on google maps). <https://www.google.com/maps/place/Malaysia/@3.5162984,101.9586154,7.08z/data=!4m5!3m4!1s0x3034d3975f6730af:0x745969328211cd8!8m2!3-d4.210484!4d101.975766>.

environments and environmental sectors. The research particularly evaluates institution building for and the effects of intergovernmental relations in waste management and climate policies in two states in Malaysia: Penang and Johor (see map Fig. 1). It identifies patterns of governance in waste management and climate change to understand institution-building and policy-implementation processes, where several governmental departments across various levels of government have to work together, including their links with international regimes. Intergovernmental relations can hinder or facilitate environmental management in urban development.

2. Literature review

As policy issues and governance contexts have grown in complexity, intergovernmental relations have become increasingly important to analyze how best to delivery public services and implement public policies (Phillimore, 2013; Wright, 1978; Keating, 2012). Global issues (e.g., climate change) and regional integration (e.g., European Union and ASEAN) require a multi-level governance approach to be properly governed and intergovernmental relations is fundamental to manage them (Happaerts et al., 2012; Peters and Pierre, 2001). Intergovernmental relations are key to policy innovation such as environmental policies, and increase the effectiveness of the State in responding to problems (Balme and Ye, 2014; Hickmann et al., 2017). However, there are still many questions to be answered on intergovernmental relations and management (Kincaid and Stenberg, 2011). Nevertheless, the literature has dedicated scant attention to issues related to intergovernmental relations (O'Toole and Meier, 2004), particularly to analyze environmental governance.

Intergovernmental relations occur through formal and informal processes (Phillimore, 2013). Many countries, particularly Anglo federations, have assigned the responsibilities between central and sub-national governments by the constitution, and they are expected to work autonomously (Fenna, 2012). Little provision is given to how intergovernmental relations should happen, leaving this to informal

processes. There is also scant attention to the bureaucracy-politics interface, assuming that issues will be dealt administratively (Dasandi and Esteve, 2017). This is increasingly problematic as more coordination, both at the administrative and political levels, is needed for certain environmental issues, such as climate change, when responsibilities become more complex and jurisdictions interfere with each other. This research focuses specifically on how institutions for intergovernmental relations and management evolve in various contexts, by comparing two policy sectors and two different kinds of political alignment between two levels of government.

2.1. Sectoral capability for environmental management in cities

In many countries, city governments are responsible for several key urban management tasks, such as land use, transport, housing, education, waste and health. Cities have also been pivotal in advancing efforts to tackle global environmental challenges, such as loss of biodiversity and climate change (Bulkeley and Betsill, 2005; Puppim de Oliveira, 2009; Hickmann et al., 2017). Scholars and practitioners have shown an increasing interest in how governments innovate to improve urban management in sectors like transportation and waste (Berry, 1997; Van den Bergh et al., 2007; Marsden et al., 2011; Puppim de Oliveira, 2017).

The effectiveness of city and subnational governments differs among sectors in environmental management and policy due to different capabilities or policy contexts where the particular policy or management task takes place. Tackling global environmental problems, such as climate change, require a much better coordination among different levels of government as compared to more localized problems such as air and water pollution or waste management. For example, Mie Prefecture in Japan, like many other subnational governments around the world, was effective in tackling air pollution in the 1960s and 1970s, but struggled to reduce greenhouse gas (GHG) emissions in the 1990s and 2000s (Puppim de Oliveira, 2011). Intergovernmental relations are key to determine good governance, and in turn the success or failure of an environmental management initiative.

2.2. Political alignment

Intergovernmental relations, or lack thereof, can respectively improve or impede the development of environmental management capacity. Policies, even from higher levels of government, need local support to be properly implemented (Puppim de Oliveira, 2002). Many public policies require the collaboration of various stakeholders (e.g., civil society, citizens and the private sector) and coordination among various departments and levels of government (Marsden et al., 2011; Kadirbeyoglu, 2017) and good interface between bureaucracy and politics (Dasandi and Esteve, 2017). Those relations are influenced by various formal and informal institutions, including political relations (Nice, 1987). In most States, formal institutions, such as the Malaysian constitution, exist to define responsibilities and mediate the intergovernmental relations and coordinate public policies (Malaysia, 1957). However, actors across the highest and lowest levels of government (and between departments within these levels) generally hold a degree of discretion regarding how much to cooperate with each other, particularly in terms of sharing resources, information and expertise. Consequently, politics can play an important role in this discretion, and can mold the intergovernmental coordination in a public policy process or environmental management task.

In principle, policy coordination seems to be easier when the same political group holds power at all levels, or both sectoral departments, when more than one political group is in a coalition in one level of government (Nice, 1987; Souza, 1997). When one party presides at the federal and subnational levels, individual and group interests and values are generally similar and differences can be internally mediated by the party or coalition. However, having the same group in power in two

or more levels of government (e.g., federal, state, city) can generate dependency and expectations that the other — in general, the higher level — will bring the resources and capabilities to implement the policies (often in exchange for political loyalty or favors). Thus, institutional inertia can set in when the same political group leads across various governmental levels, by inhibiting innovation and effective resource use.

On the other hand, political differences in two levels of government can decrease willingness to coordinate efforts or even create a “zero-sum” game. It is not uncommon for players at two government levels dominated by different political groups to blame each other for a problem or ineffectiveness in public policies or for invading each other's jurisdiction (Stratton, 1989). Nevertheless, political rivalry can drive institution building to improve services and policies through “healthy” political competition (Fiszbein, 1997). Two political groups at two levels of government or in different governmental divisions could agree to innovate and “do better” in order to achieve political gains and legitimacy for each of their constituencies.

In light of the above, a key point concerning improvement in environmental governance is the institutions that bridge intergovernmental relations. Thus, the primary research question in this paper is: How do institutions in diverse environmental sectors emerge to bridge intergovernmental relations between two government levels under different political alignments?

3. Research methodology

This paper applies the case study method for the two Malaysian states in two sectors. The case study approach is particularly recommended for research where quantitative data alone cannot explain a phenomenon (Ragin and Becker, 1992). This research explores patterns of intergovernmental relations as they affect urban environmental management and policies in cases in Malaysia to better understand institution building in the waste management sector and climate change under different political alignments. The justification for choosing Penang and Johor as cases are that they had historically quite different political relations with the national government. Until the 2018 elections, Penang was controlled by the opposition in recent times and Johor was politically aligned to the federal government, though the federal government and each state were able to work together in several initiatives. Also, policies in the two selected sectors, waste management and climate change, need to have different kinds of coordination among government levels to be properly implemented.

The field research included visits and more than 42 semi-structured interviews with policy-makers in government, academia, civil society groups, private service providers and citizens in Johor (where the author lived for four months), Putrajaya/Kuala Lumpur (three field visits) and Penang (three field visits) between September 2015 and May 2018. The author interviewed individuals from several organizations, including: SWCorp national headquarters in Putrajaya, SWCorp's state branch in Johor, Municipal Council of Penang Island (MBPP: *Majlis Bandaraya Pulau Pinang*, in Malay), Johor Bahru Tengah Municipal Council (MPJBT: *Majlis Perbandaran Johor Bahru Tengah*, in Malay), Federal Ministry of Housing and Local Government, Town and Country Planning Department, Think City, The Penang Institute, Penang Green Council (PGC), Iskandar Regional Development Authority (IRDA), Universiti Sains Malaysia (USM), UTM School of Build Environment, University of Malaya and various members from civil society groups, particularly those working in urban environmental issues, such as Tzu Chi Education and Recycle Centers and Consumers Association of Penang (CAP). The interviews lasted between 20 and 60 min, and sometimes were followed by field visits in the projects or localities the organization or individuals worked.

The author carried out extensive data collection related to the trends of the different environmental sectors in Penang, Johor and more broadly about Malaysia, but concentrated the questions in waste

management and climate change during the interviews, some of which were transcribed and others recorded. In order to understand dynamics at the local level, one local authority in the capital of each state where the author had access to informants were selected for more in-depth analysis: MBPP in Penang and MPJBT in Johor. However, the analyses were broader for the states, as local authorities are under the state's political control. From the interviews, the author collected information on the various factors that shaped the relations between organizations in different levels of government, and how those relations helped to build or hinder institutions in addressing urban environmental issues (e.g., waste management) and in combating climate change. The interviews provided data that was analyzed to examine how different initiatives in waste management and climate policy emerged and developed, how organizational and institutional capacity was built and how the stakeholders were able to overcome various political, resource and institutional obstacles to improve waste management and fulfill Malaysia's climate change agenda.

4. A diagnosis of governance in Malaysia

Malaysia has a multi-ethnic population of more than 31 million, of primarily ethnic Malays, Chinese and Indians. The Chinese tends to dominate the economy in urban centers, whereas Malays control public administration and politics (Harding and Chin, 2014). The Malaysian economy grew rapidly after its independence, although its growth slowed after the economic recessions in 1997 and 2008. From a post-colonial poverty-stricken country in the 1960s, with a large part of the population illiterate and without basic services, it has become a middle-high income country aiming to be a “fully developed” country by the 2020s, according to the 11th Malaysia Plan 2016–2020 (Government of Malaysia, 2015).

The country is a federal constitutional monarchy and consists of three federal territories and 13 states, nine of which have hereditary rulers. It has a prime minister as government head (selected among the majority political group in the national parliament) and a king (or *Yang di-Pertuan Agong*) as a head of State, chosen among the nine ‘hereditary’ rulers. The Federal Constitution and laws divide the responsibilities among the different entities in the federation. The constitution designates exclusive responsibilities of the states and the federal government, as well as their shared responsibilities (Malaysia, 1957). The federal government controls a large part of the responsibilities and resources, but states control some important resources such as land, forests and water within their territories. The country also has a third tier of government: the municipalities or local authorities (LAs). However, Malaysia abolished municipal elections in 1969 for political reasons (i.e., after waves of ethnic and political unrest). Thus the states control municipal governments, appointing the heads of the local authorities (LAs) and councilors. Therefore, LAs function more as administrative bodies and the mayors are often career public servants.

Malaysia has several political parties divided along ethnic, religious and ideological lines. The same political group (called *Barisan Nasional* or BN, a coalition of mainly ethnic parties) had dominated national politics since the creation of Malaysia as a country, though BN lost elections in 2018 to a splitter group that aligned to the traditional opposition.

Unlike other countries in the region, such as Indonesia, which is a unitary state but has pursued decentralization (Lewis, 2015), Malaysia has become more centralized in recent decades (Hutchinson, 2014). The New Economic Policy (NEP) of 1971, and its follow-up plans, required tight control of the state bureaucracy and economy (Harding and Chin, 2014). In this trend of centralization, one of the latest responsibilities to be centralized was waste management. Previously in the hands of the local authorities, waste management was federalized by the Solid Waste and Public Cleansing Management Act of 2007 (SWPCM Act, 2007). The main alleged reason for this centralization is that many local authorities could not afford and lacked the technical

capabilities to manage waste and needed to focus on other issues.

4.1. Lack of solid formal institutions to mediate the intergovernmental relations

The political tension that led to the centralization of the Malaysian State after the NEP left a growing gap in intergovernmental relations. The abolition of local elections, after the 1969 riots, left the BN (led by Malay nationalists) in power in the federal and in most state governments across Malaysia until 2018. Thus, the State structure was built to have the same party/coalition in power in the various State entities. Institutional relations among different State organizations (in the same and different levels of government) were built through little formalization, as existing channels for informal institutional relations, such as party/coalition networking and personal relations, were in place. Such lack of robust formal institutions to coordinate the relations between the local, state and federal governments led to difficulties for implementing policies that needed intra and intergovernmental coordination. For instance, effective transportation policies require strong integration with land use, but transportation is a federal responsibility and land management is a state responsibility. According to the Ninth Schedule of the Federal Constitution (Malaysia, 1957), several other areas of concern that affect urban and environmental planning directly have shared responsibilities between federal and state governments, such as housing, town-and-country planning and public health.

The centralization of State responsibilities in the hands of the federal government was developed *in tandem* with a heavy centralization of public finances. The federal revenues as part of the total government revenues grew from 79% in the 1986–1990 period to 91% in 2006–2010 (Hutchinson, 2015). State governments are left with no more than a few alternatives for public financing, such as land-related fees, including a local assessment fee (similar to property taxes) and fees for land development. Centralization resulted in reduced funding at the state and local levels. Indeed, states and local authorities felt relieved when waste management sector was centralized last decade as a large and growing part of the tight local budgets were allocated to waste management, and many local authorities could no longer cope with its costs anymore. Municipalities agreed to transfer to federal government the value they had been spending in waste management before the centralization (from the assessment fee), and the federal government agreed to match the increasing costs to expand and upgrade the system, though some municipalities could not afford (and failed to transfer) a portion of the assessment fees. On the other hand, the centralization and scarcity of funding at the state and local levels led to a certain inertia or “creativity” at any cost for raising funds. The poorer cash-strapped states and local governments had no alternatives to raise funds and depended heavily on the federal government for almost everything from waste management and education to transportation and healthcare services. The richer states, particularly those controlled by the opposition, such as Penang and Selangor, resisted centralization and tried to raise funds from whatever alternatives they had, such as a land reclamation project in Penang to fund the transportation master plan, in order to fill a gap in development projects that the federal government cannot, or does not want, to carry out.

5. Emerging institutional arrangements to bridge the gaps: the cases of waste and climate change in Penang and Johor states

The centralization and gaps in the formal intergovernmental mechanisms led to the emergence of different institutions and organizations to build bridges between various State entities. The political contrast between the two states — Johor's government was allied with the federal government and Penang's government was run by the opposition — provides an opportunity to identify the institutional gaps and innovations that emerged in the two environmental sectors in different political contexts.

5.1. Civil society and solid waste management

Solid waste management in Malaysia was under the purview of municipalities until 2007. Some municipalities managed solid waste through state/municipal companies or departments, while others opted to hire or give concessions to private companies. The decentralized system led to a large variation in the results. Some local authorities, generally the wealthiest, were able to create more effective and comprehensive waste collection systems, whereas others could not afford to have frequent collections and struggled to manage different types of waste. However, there was a general lack of investment in disposal systems, and properly controlled landfills for domestic waste managed by local authorities were almost unknown in Malaysia until mid-2000s. Except for a few cases, most municipalities and towns lacked funding and capabilities to effectively manage the different types of waste across the country (Pek and Jamal, 2011).

Solid waste management was centralized in Malaysia by the SWPCM Act, 2007 under the coordination of SWCorp, the regulatory agency, which also contracts and monitors the private operators. Three companies were given the concessions for waste management in peninsular Malaysia (SWM Environment, Alam Flora and E-Idaman, in the southern, central and northern regions of the peninsula, respectively). The federal government has two kinds of contracts. One between the federal government and state and municipal governments (“tripartite agreement”) for the transfer of responsibilities and funds and another contract between the federal government and the firms who receive the concession for waste management in a particular area.

Except for the then opposition government of Penang (and later Selangor), most municipalities and state governments showed little resistance to the centralization, as the federal government agreed to cover the rising costs of waste management and enforce the regulations to improve waste management practices and control the private waste management operators. There were also political factors that facilitated the transition to the more centralized waste management system, as most of the states were controlled by the same coalition in power in the federal government. In the case of Johor, for example, waste management was gradually passed to the hands of the federal government, which in turn contracted out a private concessionary (SWM Environment). Penang, on the other hand, which was controlled by an opposition party (DAP), fought to keep waste management under local control. The state also agreed to bear the rising costs of waste management, which consumed around 40% of the MBPP budget in 2015, according to a city council member.

As a result, diverse institutional arrangements emerged in the states. Johor state government has mostly withdrawn from waste management, leaving it to the federal government through SWCorp (the regulatory agency) and SWM Environment (the private operator). There was little engagement of the local authorities in waste management on the ground. Municipalities were not involved in daily direct waste management activities, though they held regular meetings (~monthly) between the local branch of SWCorp in Johor and the 15 municipalities so as to coordinate pending tasks, address issues, suggestions or complaints. On the other hand, as Penang state had to rely on its own funds to managing waste, its local authorities had tight control of waste activities. In order to reduce the rising costs, MBPP had been working with civil society organizations and built formal and informal relations with organizations controlled by the federal government, such as schools (Puppim de Oliveira, 2017).

Penang has several initiatives in recycling and composting with the help of civil society organizations (Meen-Chen and Narayanan, 2006). For example, Tzu Chi, a Buddhist lay organization originally from Taiwan, has three recycling centers in Penang state and collects and sells tons of recyclables per year. The revenues from the sales support the Tzu Chi Dialysis Center. A thriving private sector has joined the recycling business with many businesses buying and selling recyclables. The state government supports the recyclable markets through 3R

(reduce, reuse, recycle) and awareness-raising campaigns and by providing information about where citizens can deposit their recyclables through an app developed by the Penang Green Council (PGC). As a result, Penang has a recycling rate estimated in 30%, possibly the highest in Malaysia (there was no official numbers for recycling rates in Malaysia. Penang's estimates were based on reports of the recycling business to the local authority. However, the numbers may not be precise, as some sellers come from other states, such as Kedah, to sell their recyclables in Penang, as verified during this author's field work in December 2015). Even though the state of Johor has several recycling centers and buyers, including Tzu Chi, there is hardly any coordination between them and the local authorities. As the residential garbage collection was privatized, the federal government had little knowledge about and could not give much support to the recycling activities. This may explain the lower recycling rate in Johor state, estimated in 15% by SWCorp officials.

Penang state has developed programs in partnership with federally controlled organizations, such as the public schools. For example, the Methodist Boys' School, a traditional public school, has developed a composting program in the last four years. The compost is used in the school garden with several edible and medicinal plants. Even though the school is under federal government control, the composting machine was bought with the support from the local authority (MBPP). Other initiatives, such as a school recycling competition promoted by F & N Beverages Marketing and MBPP, were launched and supported by the Penang Education Department (the federal government).

Thus, the political rivalry between the Penang state and the federal government kept waste management local and supported the emergence of a series of institutions to bridge the federal-subnational institutional gap in providing waste management in Penang. This led to several urban innovations that made the Solid Waste Management (SWM) system more efficient. Despite the political rivalry, institutional arrangements were created to make state and federal organizations work together in Penang, as in the case of recycling and composting programs in the federally controlled schools. Penang State and MBPP also had to develop more trust with civil society organizations (CSOs), as the state/local governments had to count on CSOs to reduce waste streams. They supported the scaling up of CSO initiatives. On the other hand, in Johor, the SWM responsibilities were all transferred to the federal government. The institutions for federal-state relations in SWM did not emerge as in the case of Penang because the local government in Johor was disengaged in SWM issues with the centralization, despite the valuable initiatives from CSOs, such as the Tzu Chi recycling center in Johor. The SWM system have been driven by bureaucratic procedures with no external institutional incentives or broader stakeholder engagement, even though there seem to be improvements in the SWM system because of increasing investment and expertise from the federal government.

5.2. New state and federal organizations in climate change

In contrast to waste management, which began as a local (municipal) responsibility and was later centralized, the federal government has maintained responsibility for climate related policies since its first policies emerged in 1990s. Malaysia has ratified all major international climate change agreements, such as the UN Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and the Paris Agreement. However, Malaysia's 2015 GHG emissions grew by more than 50% compared to its 1990 baseline. The federal government has not set any specific mandatory targets for emission reductions since the Intended Nationally Determined Contribution (INDC) to the UNFCCC for the Paris Agreement in 2015, where Malaysia pledged to reduce its current GHG emissions by 45% by 2030 (Bernama, 2015).

Energy is the main source of GHGs in Malaysia, accounting for 76% of the total emissions, followed by waste with 13.6% (2000 as the base year) (Bernama, 2015). Malaysia's federal government has relied mostly



on technological approaches to improve energy efficiency and renewable energy, though it has put forth limited efforts to link SWM and climate change policies at the federal level. In contrast, Penang, because it keeps the SWM responsibility, highlights SWM as one of their contributions to reducing GHGs.

The states have little direct involvement in climate change policies, because the main drivers of emissions, such as energy (and now waste), are under control of the federal government. However, states have been working on climate policies through several innovative initiatives that emerged over the last few years. In Penang, the state government has created the Penang Green Council (PGC), a semi-autonomous government funded organization, to advance the agenda of sustainable development in several areas, including climate change. As the state has no specific mandate for reducing GHGs, and a limited budget, the PGC focuses on raising public awareness, which has positive impact on citizens' behavior towards sustainable practices (Al Mamun et al., 2018), and other small initiatives, such as the app for locating waste facilities or the climate change march during the Paris UNFCCC COP 21. The state's lack of coordination with the federal government makes climate action more difficult. The state did not have basic data, such as energy or electricity consumption, as this information was held by federally controlled organizations. On the other hand, the federal government has created an organization called Think City through Khazanah, a federal sovereignty fund, to award federal grants to create more sustainable cities. For instance, Think City granted funds to organizations in George Town in MBPP to enhance its heritage area, after UNESCO declared it a World Heritage Site in 2008. Think City has been involved in several urban initiatives in Penang, including some related to climate change. Originally its focus was on physical planning in the heritage site in George Town, but later its scope broadened both in geographical and sectoral areas, including waste management and transportation.

The state of Johor has a more formal federal-state institutional arrangement for supporting Johor's climate change policy through the Iskandar Regional Development Agency (IRDA). Established in 2007, IRDA, jointly managed by the Johor state and the federal government, is tasked with planning and advising on the strategic directions for the development of Iskandar, the tip of the peninsular Malaysia (and part of Johor state). Among other things, IRDA has been involved in initiatives for "low-carbon" development in the Iskandar region (Bong et al., 2017). Even though IRDA has little coercive power and funds, it helps to coordinate the actions among the different stakeholders in the Iskandar region, particularly bringing together the local, state and federal governments, though not always with sustainable outcomes (Ho et al., 2013).

The institutions that emerged in response to climate change planning are different than those that emerged in response to solid waste management because climate policy requires more inter-sectorial coordination. In Johor, although a jointly managed technocratic organization (IRDA) was created with good technical capacity, it has limited political power and resources to drive drastic changes. In Penang, where there was unwillingness between the federal and subnational governments to cooperate politically, both state and federal organizations created their own "special" organizations (e.g., PGC and Think City) to address the sectorial responsibilities that were not exactly their legal responsibilities in order to bypass the control of the government in the other level or coordinate better with CSOs. However, the state had few resources and the federal government had little political impetus to invest in an opposition state in an issue low on its political agenda, such as climate change. The CSOs were not as interested in climate change as they were in waste management, as the former would require immense efforts to achieve coordination between state and federal governments, different from waste. Results in SWM are easier to achieve by CSOs alone and coordination is needed with one level of government (state/local in Penang and the federal government in Johor). Also, both states have little leverage over the federal government or the coordination between governmental entities to advance the climate agenda.

Table 1
Intergovernmental relations for environmental governance and management.

POLITICAL RELATIONS  COORDINATION EFFORT 	POLITICALLY ALIGNED (Johor)	NOT-ALIGNED (Penang)
LESS INTERGOVERNMENTAL COORDINATION NEEDED (Waste Management)	Intergovernmental driven by bureaucratic procedures and rules -Little involvement of local authorities (too centralized)	Intergovernmental relations filled by institutional arrangements with civil society organizations and more efforts from local authorities -More engagement of civil society (in part due to lack of funds) and punctual initiatives with federally controlled organizations (e.g., recycling competition among schools)
MORE COORDINATION NEEDED (Climate Change)	Intergovernmental and sectoral coordination rely on top-down initiatives and political will -A joint state-federal organization with strong technical capacity but little administrative/regulatory power and resources	Intergovernmental relations filled by semi-autonomous organizations working with limited coordination -Efforts to create organizations to bypass the other level of government (e.g., PGC and Think City)

Differently, in SWM, Penang could engage with federally controlled organizations, such as the composting initiatives with public schools, as CSOs and personal relations played a larger role to build the relations. Moreover, because most of the sectors directly related to climate change planning are in the hands of the federal government, most of the emission reduction strategies need to be led by the federal government since it controls transportation planning, fuel subsidies and other key policies. However, as climate change is not a national political priority, not much is invested in climate change in Penang, Johor and nationally.

5.3. How are institutions for intergovernmental relations built?

Intergovernmental relations are fundamental to build collaborative networks for governance that determine the effectiveness of public policies, particularly when they involve multi-sectorial approaches, efficient use of resources and complex coordination (Agranoff, 2004). Table 1 summarizes the case analyses of intergovernmental relations based on political alignment and the level of coordination needed in the sector. When opposing political groups are in power at different levels of government, collaboration can become more challenging if robust intergovernmental institutions are not in place. In Penang, advancements in SWM were possible because less political stakeholders linked state and federal organizations, such as the involvement of schools and NGOs in composting and recycling. In the absence of such an arrangement, the state and federal governments would not have worked together due to strained (opposing parties) political relations. However, policies to tackle climate change, which requires better coordination between levels of government, were more difficult to advance, as the state/local government had limited control over important policy areas such as energy and transportation. The CSOs/NGOs in Penang had not been much involved in climate change, as the CSOs and NGOs more engaged in climate issues are based in Kuala Lumpur because their focus are on engaging with the federal government that controls much of the formal climate policy.

In the case of Johor, however, where the same ruling political group controlled both the state and federal government, IRDA facilitated coordination on climate change between state and federal entities. However, lack of political power and resources to advance climate policies and institute good “low carbon” practices prevented IRDA from playing a more influential role in the development of climate policy and implementation process in Johor. In the case of waste, the Johor state/local authorities withdrew almost completely from policymaking and implementation, leaving the federal government in charge. This lack of local political interest and institutional responsibility limited the capacity of CSOs engaging with state/local governments as the latter did not have many responsibilities over SWM.

Thus, the lack of robust formal institutions has prevented better governance and more effective environmental management. When

there is political control and will, sometimes also due to fiscal reasons such as SWM in Penang, environmental policies that require less coordination can advance more effectively without robust institutions for intergovernmental relations, but when strong coordination is needed (e.g., climate policy in Penang) and political engagement (e.g., SWM in Johor) or will (e.g., climate policy in Johor) are absent, environmental policy and implementation can be stalled.

6. Conclusions

Intergovernmental relations are key for environmental governance in an increasingly complex environmental arena. Political players always exercise a certain degree of discretion, so politics play an important role in defining the intergovernmental relations (Phillimore, 2013). In an evolving State, when formal institutions for governmental coordination and intergovernmental relations may not be effectively in place, such as in the case of Malaysia and some other Asian countries, politics play an even larger role through the discretionary power of federal and subnational authorities. An open political process can help engaging different political groups and civil society to bring legitimacy, resources and efficiency to improve environmental management, if it is done in with robust intergovernmental institutions; otherwise, politics can also become a tool for cronyism and patrimonialism, which can undermine democracy and the political system, and result in inefficiencies and ineffectiveness in dealing with environmental matters. This study of two environmental sectors (waste management and climate change) with distinct needs for intergovernmental coordination in two Malaysian states (Penang and Johor) with different political relations with the federal government provided the following lessons on environmental governance for other countries, particularly in Asia.

Importance of building robust institutions for intergovernmental relations for better environmental governance. The key lesson for improving environmental governance is the need to build strong institutions for intergovernmental relations, and not rely only on the administrative structure or political relations between political groups in power to determine the outcomes of governmental relations (Pierre, 1999). Even though coordination tends to be easier when the same political group is in power at both the state and federal levels, institutional mechanisms can help to avoid the “laid-back” inertia of politically aligned federal and state governments, such as the creation of performance incentives and strong accountability mechanisms through civil society or governmental auditing systems. On the other hand, the cases showed that robust civil society institutions can set up ways for overcoming weak intergovernmental relations. This can bridge political differences through policy dialogue to improve policy development and public services, such as environmental management, through ‘healthy’ fair political competition. It can also avoid the “zero-sum” game that often evolves in political relations with rivals in power at different levels.

Independent State organizations can facilitate intergovernmental relations for improving environmental governance. State organizations with technical capacity and resources are crucial to bridging intergovernmental gaps and improving collaboration and coordination among governmental agencies leading to better environmental management. These organizations can filter political interests into technical discussions, and advise government on the best use of the resources based on technical criteria. As these are not political organizations, but have administrative power, their role is not heavily affected by changes in government. They can also be formed as a partnership between governments or departments in the same level. IRDA in Johor is a good example of such an organization. However, IRDA, as it is primarily a technical organization, did not have the administrative/regulatory and political power and resources to shape environmental management in Johor.

Bringing in civil society bridges gaps in intergovernmental relations and improves governance for environmental policy making and implementation. NGOs and civil society organizations can impact environmental governance positively (Li et al., 2018). Thus, facilitating the participation of civil society organizations in environmental policy making and implementation can bridge gaps in intergovernmental relations and improve environmental management through accountability mechanisms, and provision of information, resources and knowledge. In Penang, the civil society (including business representatives) was important to advancing recycling and composting initiatives across the state. They have worked across the political and administrative borders facilitating coordinating activities and bringing resources from several sources to improve waste management, which traditionally have not cooperated.

Civil society-led environmental initiatives can be scaled up by the State. In this research, institutions and civil society organizations emerged to support environmental management and policies, such as in the case of waste management in Penang and Johor, but State support is needed to coordinate and scale up those initiatives (e.g., Penang Green Council awareness and App) as CSOs tend to be small and loosely coordinated. Without the State support, these civil society initiatives may fade away when they run out of resources (e.g., funding or key persons). In this process, certain overlaps occur among the roles of different CSOs, and between CSOs and State organizations (e.g., responsibility for recycling solid waste), but these overlaps can be managed through better coordination and a clearly defined division of responsibilities. Several mechanisms can be used to support CSO-led initiatives, such as the provision of seed money for start-up initiatives and government-civil society committees for coordinating activities.

Making local governments central players can further certain environmental initiatives. Improvement in waste management in Penang resulted from local authorities' direct control over waste management. On the one hand, there was increasing budgetary pressure for SWM in the MBPP budget. Because the city paid itself for SWM, it had direct interest in promoting the reduction of waste through civil society initiatives and partnerships with schools and other organizations. On the other hand, the existence of active civil society organizations in other areas, even before the centralization of SWM, facilitated these initiatives in Penang. The role of the state in promoting those initiatives helped them to thrive even further. The partnerships between local authorities and federal organizations can improve environmental management and policy effectiveness locally, such as enforcement capacity (Puppim de Oliveira, 2005; Tang et al., 2010) or joint actions such as composting initiatives in Penang's schools.

Several countries in Asia, such as Malaysia, continue to have many institutional gaps in intergovernmental relations that may compromise effective environmental management in sectors such as waste management and climate change, as this research analyzed. Waste management may be easier to coordinate locally, as it is done in many countries around the world, but other pressing issues such as climate change, which requires more intergovernmental and inter-sectoral coordination, have failed to advance much in Malaysia, and Asia in

general, due to heavy centralization and lack of strong independent civil society in many countries. Thus, there is a need to build better institutions and organizations to bridge the intergovernmental relations in Asia, such as in the case of Malaysia. Those institutions could be in the civil society or quasi-governmental organizations whose role would be to link the different levels of government, but more robust formal institutions for intergovernmental relations may be needed in the long run.

Acknowledgments

The research for this paper was funded by the Massachusetts Institute of Technology (MIT), USA, and Universiti Teknologi Malaysia (UTM), Malaysia, through the Malaysia Sustainable Cities Program (MSCP). I thank Larry Susskind and Yasmin Bijani for their comments in the early versions of this paper, as well as the fellows and staff from the MSCP for the administrative support during the period of the research. Finally I appreciate the suggestions and comments from the two reviewers of JEMA.

References

- Agranoff, R., 1986. *Intergovernmental Management: Human Services Problem Solving in Six Metropolitan Areas*. State University of New York Press, Albany.
- Agranoff, R., 2004. JPART symposium introduction: researching intergovernmental relations. *J. Publ. Adm. Res. Theor.* 14, 443–446.
- Al Mamun, A., Mohamad, M.R., Yaacob, M.R.B., Mohiuddin, M., 2018. Intention and behavior towards green consumption among low-income households. *J. Environ. Manag.* 227, 73–86.
- Andrade, J.C.S., Puppim de Oliveira, J.A., 2015. The role of the private sector in global climate and energy governance. *J. Bus. Ethics* 130, 375–387.
- Balme, R., Ye, Q., 2014. Multi-level governance and the environment: intergovernmental relations and innovation in environmental policy. *Environ. Pol. Gov.* 24 (3), 147–154.
- Bernama, 2015. COP21: 'Malaysia to Push for Climate Change Agreement at Paris Summit'. 5 December 2015, Bernama Website Accessed on 13 January 2017: <http://www.bernama.com/bernama/v8/ge/newsgeneral.php?id=1197067>.
- Berry, F.S., 1997. Innovation in public management: the adoption of strategic planning. *Publ. Adm. Rev.* 54, 322–330.
- Bong, C.P., Goh, K.R.Y., Lim, J., Ho, W.S., Lee, C., Hashim, H., Mansor, N.N.A., Ho, C.S., Ramli, A.R., Takeshi, F., 2017. Towards low carbon city in Iskandar Malaysia: implementation and feasibility of community organic waste composting. *J. Environ. Manag.* 203, 679–687.
- Bulkeley, H., Betsill, M., 2005. Rethinking sustainable cities: multilevel governance and the 'urban' politics of climate change. *Environ. Polit.* 14, 42–63.
- Dasandi, N., Esteve, M., 2017. The politics–bureaucracy interface in developing countries. *Publ. Adm. Dev.* 37, 231–245.
- Den Uyl, R.M., Driessens, P.P.J., 2015. Evaluating governance for sustainable development—Insights from experiences in the Dutch fen landscape. *J. Environ. Manag.* 163, 186–203.
- Fenna, A., 2012. Federalism and intergovernmental coordination. In: Peters, B.G., Pierre, J. (Eds.), *The SAGE Handbook of Public Administration*. SAGE, Los Angeles, pp. 750–763.
- Fiszbein, A., 1997. The emergence of local capacity: lessons from Colombia. *World Dev.* 25, 1029–1043.
- Happaerts, S., Schunz, S., Bruyninckx, H., 2012. Federalism and intergovernmental relations: the multi-level politics of climate change policy in Belgium. *J. Contemp. Eur. Stud.* 20, 441–458.
- Harding, A.J., Chin, J., 2014. *50 Years of Malaysia: Federalism Revisited*. Marshall Cavendish International Asia Pte Ltd., Singapore.
- Hickmann, T., Fuhr, H., Hoehne, C., Lederer, M., Stehle, F., 2017. Carbon governance arrangements and the nation-state: the reconfiguration of public authority in developing countries. *Publ. Adm. Dev.* 37, 331–343.
- Ho, C.S., Matsuoka, Y., Simson, J., Gomi, K., 2013. Low carbon urban development strategy in Malaysia—The case of Iskandar Malaysia development corridor. *Habitat Int.* 37, 43–51.
- Hutchinson, F.E., 2014. Malaysia's federal system: overt and covert centralisation. *J. Contemp. Asia* 44, 422–442.
- Hutchinson, F., 2015. (De)centralization and the Missing Middle in Indonesia and Malaysia. *Economics Working Papers*. ISEAS–Yusof Ishak Institute.
- Kadirbeyoglu, Z., 2017. The impact of power and civic engagement in the decentralized management of natural resources: the case of Turkey. *Publ. Adm. Dev.* 37, 277–291.
- Keating, M., 2012. Intergovernmental relations and innovation: from co-operative to competitive welfare federalism in the UK. *Br. J. Polit. Int. Relat.* 14, 214–230.
- Kincaid, J., Stenberg, J.W., 2011. "Big questions" about intergovernmental relations and management: who will address them? *Publ. Adm. Rev.* 71, 196–202.
- Lewis, B.D., 2015. Decentralising to villages in Indonesia: money (and other) mistakes. *Publ. Adm. Dev.* 35, 347–359.
- Li, G., He, Q., Shao, S., Cao, J., 2018. Environmental non-governmental organizations and urban environmental governance: evidence from China. *J. Environ. Manag.* 206,

- 1296–1307.
- Malaysia, Federal Constitution. 31 August 1957. Downloaded on 27 January 2017 from <http://www.refworld.org/docid/3ae6b5e40.html>.
- Malaysia, 2015. The Eleventh Malaysia Plan, 2016-2020. Downloaded on 15 March 2017 from <http://rmk11.epu.gov.my/book/eng/Elevent-Malaysia-Plan/RMKe-11%20Book.pdf>.
- Marsden, G., Frick, K.T., May, A.D., Deakin, E., 2011. How do cities approach policy innovation and policy learning? A study of 30 policies in Northern Europe and North America. *Transport Pol.* 18, 501–512.
- Meen-Chee, H., Narayanan, S., 2006. Restoring the shine to a pearl: recycling behaviour in Penang, Malaysia. *Dev. Change* 37, 1117–1136.
- Nice, D.C., 1987. *Federalism: the Politics of Intergovernmental Relations*. St. Martin's Press, New York.
- O'Toole, L.J., Christensen, R.K., 2012. *American Intergovernmental Relations: Foundations, Perspectives, and Issues*. CQ Press, Thousand Oaks.
- O'Toole Jr., L.J., Meier, K.J., 2004. Public management in intergovernmental networks: Matching structural networks and managerial networking. *J. Public Adm. Res. Theory* 14, 469–494.
- Pek, C., Jamal, O., 2011. A choice experiment analysis for solid waste disposal option: a case study in Malaysia. *J. Environ. Manag.* 92, 2993–3001.
- Peters, B.G., Pierre, J., 2001. Developments in intergovernmental relations: towards multi-level governance. *Pol. Polit.* 29, 131–136.
- Phillimore, J., 2013. Understanding intergovernmental relations: key features and trends. *Aust. J. Public Adm.* 72, 228–238.
- Pierre, J., 1999. Models of urban governance: the institutional dimension of urban politics. *Urban Aff. Rev.* 34, 372–396.
- Puppim de Oliveira, J.A., 2002. Implementing environmental policies in developing countries through decentralization: the case of protected areas in Bahia, Brazil. *World Dev.* 30, 1713–1736.
- Puppim de Oliveira, J.A., 2005. Enforcing protected area guidelines in Brazil: what explains participation in the implementation process? *J. Plann. Educ. Res.* 24, 420–436.
- Puppim de Oliveira, J.A., 2009. The implementation of climate change related policies at the subnational level: an analysis of three countries. *Habitat Int.* 33 (3), 253–259.
- Puppim de Oliveira, J.A., 2011. Why an air pollution achiever lags on climate policy? The case of local policy implementation in Mie, Japan. *Environ. Plann.* 43, 1894–1909.
- Puppim de Oliveira, J.A., 2017. Breaking resilience in the urban system for improving resource efficiency: the case of the waste sector in Penang, Malaysia. *Int. J. Urban Sustain. Dev.* 9, 170–183.
- Ragin, C.C., Becker, H.S., 1992. *What Is a Case? Exploring the Foundations of Social Inquiry*. Cambridge University Press, Cambridge, UK.
- Souza, C., 1997. *Constitutional Engineering in Brazil: the Politics of Federalism and Decentralization*. St. Martin's, New York.
- Stratton, R.M., 1989. *Disaster Relief: the Politics of Intergovernmental Relations*. University Press of America, Lanham.
- SWPCM, 2007. *Solid Waste and Public Cleansing Management Act 2007 (SWPCM Act)*.
- Tang, S., Lo, C.W., Fryxell, G.E., 2010. Governance reform, external support, and environmental regulation enforcement in rural China: the case of Guangdong province. *J. Environ. Manag.* 91, 2008–2018.
- UN – United Nations, 2015. *Transforming Our World: the 2030 Agenda for Global Action*. <https://sustainabledevelopment.un.org/post2015/transformingourworld>, Accessed date: 18 May 2018.
- Van den Bergh, J.C.J.M., Leeuwen, E., Oosterhuis, F., Rietveld, P., Verhoef, E., 2007. Social learning by doing in sustainable transport innovations: ex-post analysis of common factors behind successes and failures. *Res. Pol.* 36, 247–259.
- Wright, D.S., 1978. *Understanding Intergovernmental Relations*. Duxbury Press, North Scituate.