The Search for Enabling Conditions to Polycentric Governance: The Case of E-waste Import into Thailand

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Abstract
In recent years, growing attention has been paid to polycentric governance as the potential institutional arrangement and system that can enhance the ability of governance to deal with environmental change. However, existing literature has paid less attention to the enabling conditions, defined as the institutional features necessary for the transition to polycentric governance. The transition to polycentric governance has gained increasing interest in a wide range of issue areas, including energy systems, water governance and climate change. However, the study of polycentric transition has been applied less in the context of e-waste governance. To fill the research gap, this paper aims to examine the enabling conditions that facilitate the shift toward polycentric governance in the context of e-waste imports into Thailand. Based on qualitative research, semi-structured interviews were used to collect data from a wide range of stakeholders involved in governing e-waste imports into Thailand. The research findings demonstrate that the three enabling conditions, including bridging organisations, authority of decision-making centres and mechanisms for accountability, are considered the institutional conditions that facilitate the emergence of polycentric governance. Moreover, the findings suggest that the adaptive law emerges as the fourth enabling condition, regarded as the important legal feature necessary for the achievement of polycentric governance. The enabling conditions recommended in this study can enable the capacity of concerned stakeholders to achieve the advantages of polycentric governance in the context of e-waste imports into Thailand.
Keywords: Polycentric Governance, E-waste Import, Enabling Condition

Introduction
Growing interests have shifted towards a new mode of governance, so-called polycentric governance, defined as a complex combination of multiple overlapping centres of decision-making which interact within a single set of rules (Schröder, 2018). The prominent feature of polycentric governance is that the decision-making power is not mainly dominated by government actors but rather dispersed among various non-government actors from the private sector, NGOs and community participating in the governance process. The inclusion of various stakeholders in polycentric governance is thought to support flexibility, self-organisation and adaptive learning through information sharing and collaboration (Galaz et al., 2011). A review of literature shows that most scholars are often interested in the positive contribution of polycentric governance (Baltutis & Moore, 2019; Heikkila et al., 2018). Particular attention has been paid to many functions of a coherent system of polycentric governance, including self-organisation, mutual adjustment and collaborative network.

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However, the research on polycentric governance tends to focus less on the conditions, regarded as the institutional features that enable the transition to polycentric governance (McGinnis et al., 2020). Many authors argue that the transition towards polycentric governance is often hindered by several obstacles, including socio-institutional barriers, power dynamics constraining the functionality of polycentric system and other collective-action problems (Mudliar, 2021). Therefore, the enabling conditions are regarded as the important features that foster the successful transition to polycentric governance. This paper aims to explore the favourable conditions considered necessary to enable the shift towards polycentric governance. Much of the work on the transition to polycentric governance is likely to concentrate on the issue areas of energy systems (Melville, 2017), water governance (McCord et al., 2016) and climate change (Dorsch & Flachsland, 2017). The issue area rarely considered in the study of polycentric transition is the issue of cross-border electronic waste (e-waste). The enormous volume of e-waste generated worldwide each year has raised concerns regarding the improper disposal, transportation and recycling of e-waste. The global e-waste problems have been exacerbated by the implementation of a waste import ban initiated by the Chinese government in early 2018 (Wong, 2018). Since then, the large amount of e-waste has been transferred from the dumping site in China to a new destination in many developing countries in Southeast Asia, including Thailand. Due to the failure of state-centric governance in handling the problems of e-waste imports into Thailand, many efforts have focused largely on the transition towards polycentric governance. Therefore, this research intends to address two research objectives, which are 1) to explore the existing governance approach applied in governing the growing import of e-waste into Thailand and 2) to examine the enabling conditions considered necessary to the emergence of polycentric governance in the context of e-waste imports into Thailand. By addressing the research objectives, this study contributes to identifying the specific conditions that help create opportunities for the shift to polycentric governance in the context of e-waste imports into Thailand.

Polycentric Governance

A common understanding of the concept of polycentric governance can be characterised into two attributes. The first attribute of polycentric governance connotes the arrangement of multiple centres of decision-making authority with overlapping jurisdictions or areas of responsibilities. Stephan et al. (2019: 31) further explained that the multiple decision-making centres have significant autonomy to make collective decisions and no single authority has full control over other authorities or holds ultimate decision-making power in governance process. The second attribute refers to a system of polycentric governance. Polycentric governance can function as a system when many decision-making centres constitute an interdependent system of relations by participating in the process of taking each other into account when making their decisions (Marshall, 2015). As discussed by Pahl-Wostl & Knieper (2014), a coherent system of polycentric governance can be defined as a governance system of multiple decision-making centres that act in ways that take account of others through processes of cooperation, competition, conflict and conflict resolution. The interaction of multiple decision-making centres can create a social order which supports the emergence of adaptation and self-organisation within the governance system.

Carlisle & Gruby (2019) argue that many obstacles can challenge the functionality of polycentric governance system and therefore the enabling conditions are necessary to facilitate the successful achievement of polycentric governance system. In this paper, the enabling conditions are defined as the institutional features which are designed to facilitate the shift toward a system of polycentric governance that supports the process of mutual adjustment, coordination and self-organisation. Based on this definition, the enabling conditions of polycentric governance can be identified as three conditions, including bridging organisations,

authority of decision-making centres and mechanisms for accountability. These three enabling conditions help create opportunities for decision-making centres to transform the existing governance approach to polycentric governance, as discussed in detail below.

Enabling Conditions to Polycentric Governance

1) Bridging Organisations: One of the important conditions that enable the polycentric governance to function as a coherent system is bridging organisations. Bridging organisations are organisations that use collaborative mechanisms or strategies to link multiple decision-making centres to solve problems together (Crona & Parker, 2012). Bridging organisations are different from an ad hoc group or informal social networks in that they are structured in formalised organisations with their own resources and personnel to sustain bridging function and process (Stewart & Tyler, 2017). Bringing diverse actors and groups into a network can provide an arena for knowledge coproduction, trust building, sense making, learning, vertical and horizontal collaboration, and conflict resolution (Berkes, 2009). Therefore, bridging organisations create the bridge to integrate multiple decision-making centres into the collaborative network rather than a separating relationship.

2) Authority of decision-making centres: The source of authority distributed to the decision-making centres derives from two ways. The first source of authority is visible and legislated in formal institution such as laws and legally binding policies, decision-making procedures, distribution of power and authority, and enforcement mechanisms (Söderasp, 2018). This type of authority provides the formal authority to the decision-making centres. The second source of authority can be seen in informal institution, described as informal rules, norms, power relations and practices developed within the decision-making process of governance. This kind of authority, as mentioned by Morrison et al. (2019), can be identified as pragmatic authority. Pragmatic authority is the capability of decision-making centres to interpret and implement their authority in practice. It is important for decision-making centres to have some degree of formal and informal authority or in other words they should have de facto authority to gain the benefits of a polycentric governance system (Marshall, 2015).

3) Mechanisms for accountability: Participants in polycentric governance may find it difficult to hold governance actors accountable for their poor performances because there are multiple actors, performing the same or similar tasks, resulting in confusion over whom to blame or punish (Lieberman, 2011). Due to the concerns of accountability, many mechanisms for participation, deliberation and monitoring can be initiated to enhance accountability in polycentric governance. These accountability mechanisms aim to achieve two functions of answerability and enforcement. Answerability means the obligation of decision-making authorities to answer questions regarding decisions and/or actions, whereas enforcement is defined as the ability to apply sanctions when decision-making authorities give unsatisfactory answers (Brinkerhoff, 2001: 2-3). The examples of these mechanisms can range from the provision of information by authorities to various levels of public consultation, independent monitoring and sanctioning (Ribot, 2002). The mechanisms for accountability need to enhance the capacity of the marginalised or disadvantaged groups to take advantages in the policy-making process and to hold decision-making authorities responsible for their decisions and actions.

Research Methodology

This research is based on qualitative research that aims to draw out the opinions of the relevant informants about the enabling conditions considered important for the emergence of polycentric governance in the context of e-waste imports into Thailand. Semi-structured interviews are used to collect data from a wide range of government and non-government actors involved in governing e-waste imports into Thailand. The informants participating in the interviews were selected by using a snowball sampling. The recruitment of interviewees is

selected and added to the study until a saturation point - the point at which no new information or themes are emerging from the data - has been reached (Parker et al., 2019). Fourteen informants were selected from a wide range of actors, related to the study, including state agencies tasked with managing and regulating e-waste imports into Thailand, private sector from waste management consultants, environmental NGOs acting as an independent organisation monitoring the problems of hazardous waste in Thailand and academic researchers on waste management. The interviews are cited anonymously in this paper by using the capital letter to represent each interview (Table 1). The interview was recorded by using a voice recorder with the consent of the interviewees. The duration of each interview was around one hour. The data collected from the interviews was analysed by using thematic analysis.

Table 1 Details of Interviewees

Organisations	**Participant code**
Government sector	
Pollution control department, Ministry of nature resources and environment	G1
Pollution control department, Ministry of nature resources and environment	G2
Thai Customs Department, Ministry of Finance	G3
Thai Customs Department, Ministry of Finance	G4
Department of industrial works, Ministry of industry	G5
Department of industrial works, Ministry of industry	G6
NGO Sector	
Environmental NGO	N1
Environmental NGO	N2
Private Sector	
Waste Management Consultant	P1
Waste Management Consultant	P2
Electronic component Manufacturer	P3
Electronic component Manufacturer	P4
Academic Sector	
Academic Researcher	A1
Academic Researcher	A2

Results and Discussion

Governance Approach to E-waste Import in Thailand

After China's ban policy on e-waste import, the volume of used electrical and electronic equipment has been imported into Thailand rapidly. One interviewee from environmental NGO shared an opinion by stating that it was not enough just to rely on government agencies to mitigate the problems of e-waste imports into Thailand; rather stakeholders related to the problems, such as communities and manufacturers, need to participate and share their responsibilities in the governance process (Interview, N1). The research findings, however, demonstrated that the existing governance approach applied in the context of e-waste imports into Thailand is based on a state-centric governance. Within the mode of state-centric governance, the less powerful groups of local communities are often excluded from the decision-making process. As illustrated in the interview data, the governing bodies tasked with the regulation of e-waste import in Thailand are dominated by the three government agencies, including 1) Department of Industrial Works, Thai Ministry of Industry, 2) Thai Customs Department and 3) Thai Ministry of Commerce. These three governing bodies have the main responsibilities in imposing ban measures on the importation of e-waste into Thailand. The governing strategies to regulate the importation of e-waste into Thailand rely on a top-down manner through rules and regulations. Due to the command and control techniques to regulate

e-waste imports, Thailand has mainly relied on the government measures to ban the flooding of e-waste imported from abroad, as shown in Table 2.

Table 2 Government measures to ban the import of e-waste into Thailand

Government Agencies	Ban measures on e-waste imports
Ministry of Commerce	The Ministry of Commerce issued a ministerial regulation in 2020 to ban the import of 428 types of e-waste as listed in accordance with Thailand's Hazardous Substance List BE 2556, under Annex 5.2 - chemical wastes.
Department of Industrial Works	The Ministry of Industry issued a ministerial regulation in 2020 to ban recycling factories from importing the prohibited e-waste listed in accordance with the notification of Ministry of Commerce.
Thai Customs Department	Developing a custom database to facilitate the inspection of imported e-waste and smuggling. Using an X-ray scanner to scan containers. The collaboration between the Customs Department and the Industrial Works Department to tighten the inspection of imported e-waste at Thailand's seaport.

Despite the initiation of ban policy on e-waste imports, many environmental NGOs, local communities and academics have raised concerns that the restriction measures on e-waste importation are not sufficient to tackle all relevant problems associated with the increasing import of e-waste. As pointed out by an environmental NGO, "although Thai government issued the import ban on e-waste, it was not the total ban. Only 428 items of e-waste were banned to import in the country according to the Ministry of Commerce's announcement. The ban policy failed to regulate the illegal e-waste smuggling into Thailand leading to severe impacts on environment and local communities" (Interview, N2). Thus, the ban policy implemented by government agencies was inefficient in managing the growing surge of e-waste imported in Thailand. Due to the lack of efficient e-waste management in Thailand, concerned parties from various societal actors have called for the transition from state-centric to polycentric governance. However, the shift to polycentric governance may encounter many socio-institutional challenges that prevent the successful transition. Therefore, the informants participating in the interview suggested that the enabling conditions that facilitate the emergence of polycentric governance were needed in the context of e-waste import in Thailand.

Enabling Conditions to Polycentric Governance: The E-waste Import into Thailand

The research findings found that the three enabling conditions, including bridging organization, authority of decision-making centres and mechanisms for accountability, are considered the institutional features facilitating the emergence of polycentric governance. Furthermore, the interview data shows that adaptive law emerges as one of the additional enabling conditions favourable to the successful transition to the polycentric approach to manage and regulate e-waste imports into Thailand, which is recommended by key informants taking part in the interview.

Bridging Organisation

In Thailand, there are no direct agencies responsible for the problem of e-waste imports. However, the tasks to deal with e-waste imports are dominated by two government bodies which are the Department of Industrial Works (DIW) and the Thai Custom Department, as one interviewee pointed out that "much of the authority to regulate e-waste import is held by the DIW whose tasks can range from issuing permits or licences to import e-waste, regulating waste management and disposal in compliance with the related laws and launching new laws to manage hazardous waste. The e-waste importers then will be inspected by Thai Custom

Department at Thailand's seaports to prevent the smuggling of illegal e-waste into the country" (Interview, G5). In addition, although the two government bodies are assigned to regulate e-waste import from abroad, they operate their tasks in a different rather than integrated manner through their own rules and regulations (Interview, G6). Separating responsibilities to regulate e-waste import have raised concerns that the governing agencies are unable to manage e-waste imports. The informants made comments that a new governing body should be set up to oversee and regulate overall e-waste imports. The new governing body can act as a new platform in which various stakeholders, including local government agencies, electronic equipment producers, recycling operators and consumers, are able to participate in designing e-waste management and implementing the proper e-waste recycle and disposal. One informant from a waste management consultant suggested that "the new governing body should include not only government actors but also non-government actors, particularly electronic equipment producers or manufacturers. These producers/manufacturers should take responsibilities to collect end-of-life products and transport them as e-waste to the proper recycling and disposal plants" (Interview, P1).

The new governing agency therefore acts as a bridging organisation aiming to build a bridge to connect various stakeholders, particularly from the private sector, related to the e-waste management, to take more responsibility for proper e-waste recycling and disposal. One of the prominent functions of a bridging organisation is that the organisation provides the platform or arena in which various stakeholders can learn working together through some form of bridging strategies and process to produce the knowledge necessary for solving problems (Berdej & Armitage, 2016). The new governing body aims to facilitate the arena for the learning process in which the concerned stakeholders can learn to share their responsibilities for e-waste management and gain common understanding on the proper e-waste recycling and disposal. The new governing body, therefore, builds the bridge that facilitates the shift from highly centralised governance to a polycentric institutional arrangement and system.

Authority of Decision-Making Centres

In the case of e-waste imports into Thailand, the form of governance is still dominated by state authorities, particularly the Department of Industrial Works (DIW), holding most of power in making decisions and regulating the import of e-waste into Thailand. The DIW has two main tasks: the first task is to promote the economic and industrial growth; and the second task is to control and regulate the volume of e-waste imported into the country. However, NGOs and societal actors argue that the main mandate of the DIW is to promote the economic and industrial growth rather than to promote the environment (Hom-ngern, 2020). The overlapping authority of the DIW can therefore result in a lack of efficiency in e-waste management, particularly the failure in preventing illegal e-waste smuggling into Thailand. The concern was raised by an informant, stating that "the Department of Industrial Works was the main agency in governing the importation of e-waste into the country. However, the first priority of this agency was to promote economic development and industrial growth rather than to regulate the import of e-waste in the country to protect environment and local communities. The clashing authority of the Department of Industrial Works was the main source of problem" (Interview, A1).

Suggestions have been proposed to remove the authority of e-waste management regulation from the DIW. An alternative agency with direct authority to deal with e-waste regulation should be appointed. The possible agency appropriate for e-waste regulation and inspection should be the Pollution Control Department (PCD). The PCD is an environmental protection agency which is under the supervision of the Ministry of Natural Resources and Environment, Thailand. Its main task focuses on monitoring all types of pollution, including e-waste pollution. Although the PCD acts as a coordinator in hazardous environment pollution, the Department has limited authority to enforce the violation of e-waste pollution. According to

the interview, the main mandate of the PCD was to inspect any violation of pollution control and to enforce the compliance with the law and regulation concerning environmental protection. However, the PCD has no authority to issue an order to close down e-waste recycling factories violating the laws relating to pollution control.

One of the interviewees argued that "it was the Department of Industrial Works, not the Pollution Control Department, which had authority to close down the illegal recycling factories. The PCD had authority only to make a report after the investigation on pollution control violation and submit the report to the relevant agencies involved in hazardous waste management and regulation" (Interview, A2). Due to the limited authority of the PCD, the key informants participating in this research suggested that the PCD should have sufficient authority to regulate the importation of e-waste through law enforcement and penalties being imposed for non-compliance stakeholders. The authority for e-waste governance should not be dominated by the DIW holding most of authority in governing the importation of e-waste. One informant stated that the centralisation in e-waste regulation and management should be reformed to deal more efficiently with the current situation of e-waste imports (Interview, P2). The proper distribution of authority among the governing agencies is considered the important condition that will enable the transition to polycentric governance in the context of e-waste imports into Thailand.

Mechanisms for Accountability

The large amount of e-waste imported into Thailand has caused concerns over serious impacts on communities, environment and public health, as shared by one informant who raised a concern that "the increasing trend in the amount of e-waste imported in the country had urged the authorities to tighten cargo inspection at Thailand's seaports to control illegal imports of hazardous waste, including e-waste" (Interview, G4). Although Thailand imposed a ban policy on e-waste imports in 2020, the import ban was proved to be an inefficient measure to tackle the smuggling of illegal e-waste into the country. The illegally imported e-waste was distributed to the waste management plants located in the eastern part of Thailand where the e-waste was recycled and disposed in improper ways (Rujivanarom & Aksorndej, 2018). Due to the inefficiency of the restriction policy on e-waste imports, the mechanisms for accountability should be initiated to inspect and control illegal e-waste smuggling into Thailand. Relying only on the import ban measures is not sufficient to respond to the problems of e-waste smuggling. More accountable mechanisms, especially a monitoring system, need to be developed to trace the trail of illegal e-waste smuggling into Thailand; as suggested by an informant: "the import ban on e-waste helped reduce the amount of e-waste imported into the country. However, it was not enough to control the smuggling of illegal e-waste in Thailand. More mechanisms such as a monitoring system to follow the route of illegal e-waste imported in the country was important" (Interview, G3). A monitoring system is regarded as the additional mechanism for controlling the illegal import of e-waste into the country. The governing authorities need to collaborate to implement monitoring strategies, including the inspection of the overall movement of illegal smuggling of e-waste, the investigation of the e-waste smuggling network of foreign investors and the control of the expansion of illegal recycling factories in the country. The monitoring system therefore functions as an accountable mechanism, holding governing authorities responsible for their tasks in e-waste management and regulation. The governing authorities have an obligation to monitor the route of illegal e-waste trafficking and punish those who are involved in the illegal e-waste network. Thus, a monitoring system would help enhance fair governance, defined as the important condition that enables the emergence of polycentric governance.

Adaptive Law

Thailand has no specific law on e-waste management. However, various acts have been adapted to manage and control e-waste. These acts include Factory Act 1992, Public Health Act 1992),

Hazardous Substances Act 1992) and Enhancement and Conservation of National Environmental Quality Act 1992) (Sumleeon, 2018). However, the legislations adapted for e-waste management are often criticised by concerned parties that they are not efficient enough to deal with the large amount of e-waste generated, both within the country and imported from abroad. The existing laws applied for e-waste management in Thailand are unable to handle the problem of e-waste imports because of the vagueness and legal loophole of the laws. An informant from the interview pointed out that "the legal measures and other existing provisions on e-waste management were not efficient enough to control the current situation of e-waste stream problem due to the lack of specific laws on e-waste" (Interview, G1). To cope with the e-waste problem more efficiently, the PCD proposed a draft of Waste Electrical and Electronic Equipment Management Act (draft WEEE Act) as a part of Thailand's National Agenda on garbage and hazardous waste management. The draft WEEE Act aims to regulate the e-waste problem more sustainably by focusing on managing the whole life-cycle of e-waste. The informants participating in the interviews commented that the content of the draft WEEE Act should not use command and control techniques relying on too static rules to regulate the e-waste problem. Rather, the draft should be designed to facilitate the emergence of polycentric governance, helping multiple stakeholders become more adaptive, responsive and innovative to the challenges of e-waste flooding from abroad. As stated by an informant, "the draft could be designed to be more adaptive to the current situation of e-waste by facilitating the participation of various stakeholders relating to the e-waste problem in taking proper responsibility for e-waste management and regulation" (Interview, G2).

DeCaro et al. (2017) proposed that legal and institutional structures that shape opportunities for responsive governance are based on a concept of adaptive law, defined as the design principles that advocate governing authorities should establish goals, standards and ground rules for engagement, but leave open final solutions, so that decision-makers have enough flexibility to respond to a complex environmental dilemma. The adaptive law does not rely on too rigid rules and regulations that specify exact solutions for complex problems. By adopting the adaptive law, multiple stakeholders can have more recognised authority and take proper responsibility to make decisions and even self-organise within a governance system. This is similar to the opinion of one of the interviewees, saying that "the draft WEEE Act should move away from the highly-centralised regulation and adopt the concept of adaptive law and regulation as its main mechanism so that manufacturers and importer of electrical and electronic equipment could take more responsibilities for managing the life-cycle of recycling and disposing e-waste" (Interview, P1). Therefore, the adaptive law becomes the fourth condition that creates space for concerned stakeholders ranging from government actors to corporate manufacturers and local communities to have adequate authority, responsibility and necessary legitimacy to reconfigure the governance institutional arrangement and process towards polycentric governance.

Conclusion

The research found that the three institutional conditions, namely bridging organisation, authority of decision-making centres and mechanisms for accountability, are regarded as the enabling conditions for the transition to polycentric governance to deal with the import of e-waste into Thailand. Further, the analysis of findings found that adaptive law was added as the fourth legal condition enabling the emergence of polycentric governance. The knowledge provided by this study will enhance the capacities of stakeholders involved in the e-waste governance in Thailand to design and implement better conditions that are favourable to the successful transition towards polycentric governance. Further study should elaborate more on the potential roles of these institutional and legal conditions in creating enabling opportunities to achieve the advantages of polycentric governance.

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