



Gestión y Análisis de Políticas Públicas. Nueva época
ISSN: 1134-6035
ISSN: 1989-8991
Instituto Nacional de Administración Pública (INAP)

Chaiyapa, Warathida; Abdullah, Kamarulnizam; Gonzalez, Phillip; Afifah Yogar, Hanna Nur
Climate Governance and multilevel policy practices in Thailand and Malaysia
Gestión y Análisis de Políticas Públicas. Nueva época, no. 34, 2024, pp. 74-94
Instituto Nacional de Administración Pública (INAP)

DOI: <https://doi.org/10.24965/gapp.11271>

Available in: <https://www.redalyc.org/articulo.oa?id=281577354006>

- ▶ How to cite
- ▶ Complete issue
- ▶ More information about this article
- ▶ Journal's webpage in redalyc.org



Scientific Information System Redalyc
Network of Scientific Journals from Latin America and the Caribbean, Spain and
Portugal

Project academic non-profit, developed under the open access initiative

Gestión y Análisis de Políticas Públicas, número 34, marzo de 2024
 Monográfico: Gobernanza multinivel de los bienes comunes y sostenibilidad ambiental
 Sección: ARTÍCULOS
 Recibido: 03-10-2023
 Modificado: 27-01-2024
 Aceptado: 29-01-2024
 Prepublicado: 21-02-2024
 Publicado: 01-03-2024
 ISSN: 1989-8991 – DOI: <https://doi.org/10.24965/gapp.11271>
 Páginas: 74-94



Referencia: Chaiyapa, W., Abdullah, K., Gonzalez, P., & Afifah Yogar, H. N. (2024). Gobernanza Climática y Prácticas de Política Multinivel en Tailandia y Malasia. *Gestión y Análisis de Políticas Públicas*, 34, 74-94. <https://doi.org/10.24965/gapp.11271>

Climate Governance and multilevel policy practices in Thailand and Malaysia

Gobernanza climática y prácticas de política multinivel en Tailandia y Malasia

Chaiyapa, Warathida

Chiang Mai University School of Public Policy (Tailandia – Thailand)

ORCID: <https://orcid.org/0000-0002-3359-551X>

warathida.c@cmu.ac.th

NOTA BIOGRÁFICA

Dr. Warathida Chaiyapa is Assistant Professor and Assistant Director at Chiang Mai University School of Public Policy, focusing on energy and climate change. She holds a PhD in Sustainability Science from the University of Tokyo and has contributed to Thailand's energy policies, researched blue hydrogen, and examined Thailand-Myanmar energy dependence.

Abdullah, Kamarulnizam

Institute of Malaysia and International Studies (IKMAS), Universiti Kebangsaan Malaysia (Malasia – Malaysia)

ORCID: <https://orcid.org/0000-0001-6577-1138>

kamarulnizam@ukm.edu.my

NOTA BIOGRÁFICA

Kamarulnizam Abdullah is Professor and Principal Fellow at IKMAS, Universiti Kebangsaan Malaysia, specializing in governance, security, and border studies. He has consulted for government agencies in Malaysia, Japan, and Timor Leste, and the United Nations Office for Drugs and Crime, contributing his expertise in national and regional security frameworks.

Gonzalez, Phillip

Forum of Federations (Australia – Australia)

gonzalez@forumfed.org

NOTA BIOGRÁFICA

Phillip, Senior Director of Programs in the Indo Pacific, specializes in comparative policy within federal systems. With 15 years as a governance specialist, he has supported democratic transitions and reforms in Nepal, Pakistan, the Philippines, Sri Lanka, and Ukraine. His policy expertise extends to Australia, Brazil, Canada, India, and Thailand, contributing significantly to state-building and governance improvements globally.

Afifah Yogar, Hanna Nur

Chiang Mai University School of Public Policy (Indonesia – Indonesia)

ORCID: <https://orcid.org/0000-0003-3266-2132>

hanna_yogar@cmu.ac.th

NOTA BIOGRÁFICA

Hanna Nur Afifah Yogar is a Master's student at Chiang Mai University's School of Public Policy, with a background in law, development studies, and public policy. Her research focuses on political ecology, environmental policy, and development issues in Southeast Asia.

ABSTRACT

Objectives: This paper investigates Thailand and Malaysia climate governance policy in practice within their multi-level governance structures. Thailand presents a unique case of a unitary state with a degree of deconcentration and decentralization, while Malaysia showcases a federal state with a high degree of centralization. **Methodology:** The paper collected and analyzed both primary and secondary data. In-depth interviews with government officials, NGOs, and international organizations were conducted online and onsite in Thailand and Malaysia from May 2022 to September 2023. Interview data was triangulated with secondary data from key national policy documents on climate change and related issues. This paper examines the contributions and hindrances of multi-level governance on climate governance and highlights some lessons learned from both countries. **Results:** It concludes that multi-level government systems provide opportunities for various stakeholders to engage in decision-making and create policy innovation. However, the administration of decision-making in these systems can be constrained by tensions within these systems, between tendencies towards the centralization of decision-making, and little engagement between subnational governments and local-level stakeholders. **Conclusions:** Overall, we assert that clear direction and guidance at the national level complemented by mechanisms that engage local stakeholders in administration and civil society is essential to achieve overarching climate action goals regardless of the administrative system.

KEYWORDS

Multilevel governance; subnational government; local government; climate change policy; inclusive decision-making.

RESUMEN

Objetivos: este artículo investiga la política de gobernanza climática en la práctica en Tailandia y Malasia dentro de sus estructuras de gobernanza multinivel. Tailandia presenta un caso único de un Estado unitario con un grado de desconcentración y descentralización, mientras que Malasia exhibe un Estado federal con un alto grado de centralización. **Metodología:** el artículo recopiló y analizó datos tanto primarios como secundarios. Se llevaron a cabo entrevistas en profundidad con funcionarios gubernamentales, organizaciones no gubernamentales y organizaciones internacionales en línea e in situ en Tailandia y Malasia desde mayo de 2022 hasta septiembre de 2023. Los datos de las entrevistas se triangulan con datos secundarios de documentos clave de políticas nacionales sobre cambio climático y temas relacionados. Este artículo examina las contribuciones y obstáculos de la gobernanza multinivel en la gobernanza climática y destaca algunas lecciones aprendidas de ambos países. **Resultados:** los sistemas de gobierno multinivel ofrecen oportunidades para que diversos actores participen en la toma de decisiones y creen innovación en políticas. Sin embargo, la administración de la toma de decisiones en estos sistemas puede estar limitada por tensiones internas, entre tendencias hacia la centralización de la toma de decisiones y la escasa participación de los Gobiernos subnacionales y los actores a nivel local. **Conclusiones:** en general, sostenemos que una dirección clara y orientación a nivel nacional, complementada con mecanismos que involucren a los actores locales en la Administración y la sociedad civil, son esenciales para lograr objetivos generales de acción climática independientemente del sistema administrativo.

PALABRAS CLAVE

Gobernanza multinivel; gobierno subnacional; gobierno local; política de cambio climático; toma de decisiones inclusiva.

SUMARIO

1. INTRODUCTION. 2. RESEARCH METHODOLOGY. 2.1. ANALYTICAL FRAMEWORK. 2.2. DATA COLLECTION METHOD. 3. CLIMATE CHANGE SITUATION AND KEY CLIMATE POLICIES IN THAILAND AND MALAYSIA. 3.1. THAILAND. 3.2. MALAYSIA. 4. CLIMATE CHANGE AND MULTILEVEL GOVERNANCE IN THAILAND AND MALAYSIA. 4.1. THAILAND: COMPLICATED BETWEEN DECONCENTRATION AND DECENTRALIZATION. 4.2. MALAYSIA: CENTRALIZED FEDERALISM. 5. MULTILEVEL GOVERNANCE'S IMPACT ON CLIMATE GOVERNANCE IN THAILAND AND MALAYSIA. 6. RESULTS AND DISCUSSION. 6.1. THAILAND. 6.1.1. Multilevel governance ability to tailor climate actions in context. 6.1.2. Multilevel governance provides conditions for the sub-national governments to compensate for the central government in climate actions. 6.1.3. Multilevel governance can encourage policy innovation and knowledge sharing. 6.1.4. Sub-national government limited capacity to influence national climate efforts. 6.1.5. Multilevel governance creates divergent climate actions which leads to inefficiency and

ineffectiveness. 6.1.6. Multilevel governance leads to inertia among SNG and free-riders. 6.2. MALAY-SIA. 6.2.1. Multilevel governance encourages locally appropriate and tailored climate actions and measures to meet local contexts. 6.2.2. State government compensates the failure of inaction by the central government. 6.2.3. Policy lab, experimenting with new policies, instruments and knowledge sharing. 6.2.4. Local government use veto rights, which may obstruct the national climate efforts. 6.2.5. Divergent climate policy action leads to inefficiency and ineffectiveness. 6.2.6. Race to the bottom competition, or free-rider cases of some local governments. 7. COMPARATIVE CONCLUSION. ACKNOWLEDGMENT. APPENDIX: LIST OF INTERVIEWEES. REFERENCES.

1. INTRODUCTION

Thailand and Malaysia's emerging economies in Southeast Asia face increasingly severe climate impacts due to their geographic location having long coastal lines and the majority of populations' livelihood depending on agricultural activities (Alam *et al.*, 2012; Austin and Baharuddin, 2012; Tang, 2019; Jatuporn and Takeuchi, 2023). Both countries are parties to the UNFCCC and are committed to communicating their Nationally Determined Contributions (NDCs) every five years, starting in 2020. Both countries have multilevel systems of government. The NDCs of Thailand and Malaysia highlight overall national efforts to mitigate greenhouse gas emissions and adapt to the impacts of climate change. Although emitting less than 1% of global GHG emissions, the two countries assume ambitious reduction targets. Thailand aims to reduce GHG emissions by 30% from its BAU level by 2030 and will increase to 40% with additional international support¹. Malaysia pledges to reduce economic-wide carbon intensity in 2030 by 45% compared to its 2005 levels².

Such ambitious climate mitigation commitments in the international community need to be translated into actions at the subnational level. Therefore, it begs the question of how this is to be achieved? Concretely, what role will each nations governments, administrative systems, and intergovernmental relations play (between national governments and subnational governments, and those among subnational governments) in delivering climate actions to achieve the national reduction targets and successfully implement climate adaptation actions.

Given the interconnected policy implications of climate change impacts, there is strong opinion that federal or federal-type systems may be well placed to address climate change given their capacity to provide for a diverse range of policy options amongst the breadth of its federal partners. Federated or decentralized governments "virtues" offer an alternate pathway to policy innovation and implementation that may better placed to address the complexity of climate impacts³. In addition, federal and decentralized entities can develop tailor-made responses to the complex factors involved in climate change governance, which is fundamental to the success of climate change policy initiatives. Politically, although the leadership challenge may remain the same, the room for exercising the state or lower-level authorities have provided a strong platform for regional governments to address climate change issue with place-specific adjustment (Craig, 2022). Self-directing climate policy as exercised by the local authorities can also be taken as a proper alternative, as they are considered "local resource experts" when it comes to the local evidence-based approach (Bianco *et al.*, 2020). The federal system country also allows its layers of governance to act on its behalf, making an experimental regulation possible which is supported by flexibility and local ability to identify and address climate change (Reich, 2021). This claim implies that federal states are better positioned to address climate impacts and implement climate policies effectively than the unitary states with a top-down policy-making process, leaving little opportunities for policy innovation and experimentation from constituent units (Farber, 2008; Fox, 2020).

This paper, therefore, poses interrelated but crucial questions: firstly, are federal states better positioned to address climate change than unitary states. Secondly, does the practice of federalism encourage constituent units to design climate actions suitable to their context and stimulate knowledge sharing or policy adoption among other subnational governments. Finally, do the dynamics of federal governance become an obstacle for the country to reach national overarching climate goals.

Ultimately, this paper proposes that policy practice is much more complex because no single country is 100% decentralizing or centralizing its power. The governance practice tends to invest in a hybrid system

¹ Thailand's 2nd updated nationally determined contribution (n.d.). Retrieved from UNFCCC.int website: <https://unfccc.int/sites/default/files/NDC/2022-11/Thailand%202nd%20Updated%20NDC.pdf>

² Malaysia's update of its first nationally determined contribution (n.d.). Retrieved from UNFCCC.int website: <https://unfccc.int/sites/default/files/NDC/2022-06/Malaysia%20NDC%20Updated%20Submission%20to%20UNFCCC%20July%202021%20final.pdf>

³ Reflections on Climate Governance and Federalism, in Fenna *et al.* (2023, p. 335).

and the delineation between federalism and unitary, in this case, is blurred (Sahadžić, 2023; Zahrin and Mohamed, 2022).

As a result, the authors chose to use the term multilevel governance instead of federalism as the former better captures the actual administrative system and mechanism in both cases. The authors examine Thailand –as a unitary state with a certain degree of deconcentration and decentralization and Malaysia– as a federal state, where States in theory hold some degree of autonomy. But as we discover, in both systems the process is very nuanced and demands delving deeper into the climate policy-making process, and multilevel intergovernmental relations. The paper investigates the challenges and experiences of Thailand and Malaysia in translating national climate commitment into actions at various levels and highlights lessons learned from each country, worth discussing as examples for other countries to address the global climate crisis.

The rest of the paper is structured in four sections. Section 2 describes climate change and impacts experienced by Thailand and Malaysia, their contributions to global GHG emissions, national reduction targets, and other significant climate-related policies i.e. adaptation strategy and renewable energy plans. In section 3, multilevel governance in Thailand and Malaysia is discussed to highlight the power division between national and subnational governments on climate change issues and organizational structures at national and subnational levels. Section 4 investigates the contribution and hindrance of multi-level governance based on the analytical framework adopted from the work of Fenna *et al.* (2023). Lastly, Section 5 concludes and provides policy implications and lessons other jurisdictions could learn from the experiences in Thailand and Malaysia with respect to the design and implementation of climate policies.

2. RESEARCH METHODOLOGY

The authors utilize qualitative research methods to collect primary and secondary information. The subsequent sections provide an explanation of the analytical frameworks and methods employed in this research.

2.1. Analytical framework

This research employs a comparative analysis to distinguish the political systems related to climate change between Thailand, characterized as a unitary country, and Malaysia, characterized as a federal country. The analysis extends to the governance systems of both countries, exploring their approaches to climate change in both theory and practice. Table 1 serves as a guide for identifying the six contributing factors that govern climate change within the framework of multilevel governance. The authors adopted an analytical framework on facilitating and hindrance of multi-level governance in climate governance by Fenna *et al.* (2023).

TABLE 1. SIX ISSUES TO BE CONSIDERED ON CONTRIBUTION AND HINDRANCE OF MULTI-LEVEL GOVERNANCE IN CLIMATE ACTION

N.º	Issues to be considered	Thailand	Malaysia
1	Locally appropriate and tailored measures to meet local contexts.	Yes	Yes
2	Local government compensates for the failure of inaction by the central government.	Bangkok Metropolitan Administration	Somehow
3	Policy lab, experimenting with new policies, instruments, knowledge sharing.	Khon Kaew Model	Yes
4	Local government use veto rights, which may obstruct the national climate efforts.	Not application	Somehow
5	Multilevel governance creates divergent climate actions which leads to inefficiency and ineffectiveness.	Not applicable	Yes, in the past
6	Multilevel governance leads to inertia among SNG, race to the bottom competition, or free-rider cases of some local governments.	Yes	No

Source: Own elaboration.

2.2. Data collection method

In this analysis, we have researched, collected, and investigated secondary data regarding Thailand and Malaysia's multilevel governance and administrative systems. National policy documents and regulations are reviewed i.e. decentralization policies, national climate policies, Nationally Determined Contributions, and other climate-related policies such as energy policy and waste management policy. In addition, the authors conducted online and onsite in-depth interviews with governmental officials in Thailand and Malaysia from May 2022 to September 2023. Thailand interviewees included one governmental official from the Ministry of Natural Resources and Environment, 4 from provincial offices of Natural Resources and Environment; namely Suphanburi, Chonburi, Chantaburi and Tak), one from Bangkok Metropolitan Administration (BMA), one from the UNDP, and one from Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). Malaysian interviewees are government officials at both national and state levels. They are the Malaysian Green Technology and Climate Change Corporation (MGTC), the Ministry of Environment and Water, the Melaka Green Technology Corporation (MeGTC), the Sarawak Economic Planning Unit (EPU), and the Sabah Forestry Department. Plus, one environmental NGO activist based in Sarawak state was interviewed.

The chosen interviewees are individuals affiliated with relevant government offices, international organizations, and civil society organizations involved in climate change-related work within their respective sectors. We have delineated the hierarchical and interconnected relationships among them, as also reflected in their multilevel governance structures and official documents.

Most of the interviews were conducted in English; however, some were in Thai or Malaysian, then translated and transcribed into English. The authors applied qualitative content analysis to extract the part on intergovernmental relations in climate governance vertically and horizontally.

3. CLIMATE CHANGE SITUATION AND KEY CLIMATE POLICIES IN THAILAND AND MALAYSIA

TABLE 2. GREENHOUSE GAS EMISSIONS OF THAILAND AND MALAYSIA IN 2020

	Populations (millions)	Total Emissions (MtCO ₂ e)	Emissions per Capita (tCO ₂ e/person)	Emissions per GDP (tCO ₂ e/million \$GDP)
Thailand	69.95	451.42	6.47	903.42
Malaysia	32.78	367.76	11.36	1,091.25

Source: Climate Watch Data 2023⁴.

3.1. Thailand

In the past four decades, Thailand has moved from a low-income to an upper-middle-income country with a widely known story about successful economic development, infrastructure construction, and substantial poverty reductions⁵. Thailand's GDP per capita was ranked fourth among Southeast Asian countries in 2021, after Singapore, Brunei and Malaysia. Such fast economic growth has manifested in the form of increased GHG emissions. Thailand with a population of 69.95 million in 2020, released total emissions 451.42 million tonnes of CO₂ equivalent representing 0.95% of global emissions. This is a significant increase given that the total emissions in 1990 were only 172.30 Mt CO₂e.

Thailand has actively participated in global climate negotiations and agreements and has shown continued efforts to mainstream climate action at national and subnational levels. A key milestone of climate action in Thailand was in 2007 and the establishment of the National Committee on Climate Change Policy (NCCC) which the Prime Minister serves as a chair, the Regulation of the Office of the Prime Minister on Climate Change, and the Thailand Greenhouse Gas Management Organization (TGO). These have made climate change a national priority, incorporating a climate change policy and action plan into the country's

⁴ Climate Watch 2023. Malaysia climate change data: Emissions and policies, https://www.climatewatchdata.org/countries/MYS?end_year=2020&start_year=1990 and Thailand climate change data: Emissions and policies, <https://www.climatewatchdata.org/countries/THA>

⁵ World Bank (2023). Overview. Retrieved April 24, 2023, from: <https://www.worldbank.org/en/country/thailand/overview>

national economic and social development plans. In 2015, the government implemented the Climate Change Master Plan (CCMP) (2015-2050), which set overarching goals for national climate action, both mitigation and adaptation. In addition, several climate-related policies have been issued to compliment climate actions, for example.

- Power Development Plan (2015-2036).
- Thailand Smart Grid Development Master Plan (2015-2036).
- Energy Efficiency Plan (2015-2036).
- Alternative Energy Development Plan (2015-2036).
- Environmentally Sustainable Transport System Plan (2013-2030).
- National Industrial Development Master Plan (2012-2031).
- Roadmap on Plastic Waste Management (2018-2030).

In the 26th Conference of Parties (COP 26), Thailand pledged it would take ambitious climate action and commit to achieving carbon neutrality by 2050 and net-zero emissions by 2065. This pledge was added to the Nationally Determined Contribution submitted to the UNFCCC in November 2022 which aims to reduce GHG emissions by 30% from its BAU level by 2030 and will increase up to 40% with international support.

The energy sector has been the most significant contributor to Thailand's GHG emissions, accounting for 69.06% of total emissions in 2018. Thailand's Nationally Determined Contribution Roadmap on Mitigation (2021-2030) provided action plans for targeted sectors to reduce GHG emissions. According to the mitigation roadmap, three sectors are assigned to mitigate GHG emissions by 2030; namely the energy and transportation sector 113 Mt CO₂e, the waste management sector 2 Mt CO₂e and the Industrial Processes and Product Use (IPPU) 0.6 Mt CO₂e. Significant mitigation effort is therefore given to cut down GHG emissions from the Public Electricity and Heat Production. The Ministry of Energy is very keen to deploy and support the development of a wide range of renewable and low-carbon energy sources, for instance, solar energy, wind, hydropower, biomass, municipality waste, biogas, biofuels, and hydrogen. The Alternative Energy Development Plan has set the target to have 30% of final energy consumption from renewable energy sources by 2037.

In addition to climate mitigation, Thailand has given adaptation action equal importance because of its vulnerability to severe climate impacts i.e. floodings, heavy rains, landslides, coastal erosion, and drought. Assessment by the Long-Term Climate Risk Index (CRI): World Map of the Global Climate Risk Index from 1997-2016 ranked Thailand N.º 9 for being a country at risk of climate impacts in the form of extreme weather. The Office of Natural Resource and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment, therefore implemented the National Adaptation Plan (NAP) in 2018. The NAP assessed vulnerability and proposed general adaptation plans for six sectors: water management, agriculture and food security, tourism, public health, natural resource management, human settlement, and security.

3.2. Malaysia

In 2020, Malaysia, with a population of 32.78 million, emitted 367.76 million tonnes of CO₂ equivalent, representing 0.77% of global emissions. According to Malaysia's updated NDC submitted to the UNFCCC in July 2021, the country set an ambitious GHG emissions reduction target, namely the pledge to reduce unconditionally economic-wide carbon intensity in 2030 by 45% compared with the 2005 level⁶.

Malaysia's commitment to address climate change was first reflected in the introduction of the National Policy on Climate Change (NPCC), during the Najib administration in 2009. Like Thailand's National Committee on Climate Change Policy (NCCC), Malaysia established Malaysia's Climate Action Council (MyCAC) in 2021 to design national targets and reinforce multi-level and cross-sectoral participation in low carbon development efforts at the federal level.

Two ministries: the Ministry of Natural Resources and the Ministry of Environment and Water, (KASA) are responsible for climate action at the federal level. However, they are undergoing restructuring at the time of writing this article (September 2023). Restructuring aims to merge these two ministries into the Ministry of Natural Resources, Environment, and Climate Change (NRECC). Another significant state agency at federal level which plays a key role in green development of the country is Malaysia Green Technology and Climate

⁶ Malaysia's update of its first nationally determined contribution (n.d.). Retrieved from UNFCCC.int website: <https://unfccc.int/sites/default/files/NDC/2022-06/Malaysia%20NDC%20Updated%20Submission%20to%20UNFCCC%20July%202021%20final.pdf>

Change Cooperation (MGTC). It is a government agency under NRECC working on the implementation and coordination of the low-carbon energy projects, low-carbon city and low-carbon or green manufactured products. This agency contributed to build a national standard and procedure of low-carbon city as a green technology expert, recommending the “green” components for incentives. Furthermore, tax and incentives management will be handled by MIDA (the Malaysian Investment Development Authority).

In Annex 1 of Malaysia’s NDC, the country’s adaptation strategy focuses on vulnerable sectors including water resource management, coastal resources, agriculture and food supply, urban and infrastructure resilience, public health, forestry and biodiversity, and cross-sectoral adaptation issues. The agricultural sector is particularly vulnerable to climate impacts. Expected decreased crop yields which jeopardize food security, are occurring due to changing temperatures, unpredictable precipitations, and humidity. The government made efforts to mainstream climate adaptation by incorporating it into various national development plans, for example, the Eleventh Malaysia Plan (2016-2020) and the Twelfth Malaysia Plan (2021-2025). After severe floodings in December 2021, which damaged 11 States and caused losses and damages of as much as RM6.2 billion, the then-government under Prime Minister Datuk Seri Ismail Sabri Yaakob, announced plans to create the Malaysian National Adaptation Plan (MyNAP), to address increasing climate impacts in the country and aimed to encourage the state governments to adopt the MyNAP⁷. However, at the time of writing this paper, MyNAP has not been launched.

The paper reviewed existing climate change-related policies issued by the Federal government of Malaysia and presented them in Table 3. It should be noted that most promote energy transition to renewable energy and climate mitigation action in the energy sector.

TABLE 3. THE LIST OF CLIMATE CHANGE-RELATED POLICIES IN MALAYSIA AS OF MARCH 2023

Policy Name	Sector	Policy Type and objective	Year of Enactment
Nationally Determined Contribution – NDC	General	Energy efficiency, energy service demand, non-use energy, other low-carbon tech, renewables	2021
Twelfth Plan 2021-2025	General	Energy efficiency, energy service demand, non-use energy, other low-carbon tech, renewables	2021
Green Technology Master Plan 2017-2030	General	Energy efficiency, renewables	2017
National Energy Efficiency Action Plan (NEEAP)	Electricity and heat, industry	Energy efficiency, energy service demand	2016
Eleventh Plan 2016-2020	Electricity and heat, renewables	Renewables	2016
Intended Nationally Determined Contribution – INDC Malaysia (2015)	General	Energy efficiency, energy service demand, non-use energy, other low-carbon tech, renewables	2015
Feed-in Tariffs Guidelines	Electricity and heat, renewables	Renewables	2011
Sustainable Energy Development Authority Act	General, electricity heat	Energy service demand, renewables	2011
Sustainability Achieved Via Energy Efficiency Rebate Program (SAVE)	Building, appliance	Energy efficiency	2011
The Renewable Energy Act	General	Renewable energy	2011

Source: Climate Policy Database 2023⁸.

⁷ The Sun Daily (2022, June 21). Climate change: Govt to formulate national adaptation plan. Retrieved April 13, 2023, from <https://www.thesundaily.my/local/climate-change-govt-to-formulate-national-adaptation-plan-FC9361304>

⁸ Malaysia: Climate Policy Database, <https://climatepolicydatabase.org/countries/malaysia>

4. CLIMATE CHANGE AND MULTILEVEL GOVERNANCE IN THAILAND AND MALAYSIA

4.1. Thailand: Complicated between deconcentration and decentralization

Thailand is a unitary state under its Constitutional Monarchy. Like many countries, Thailand faces emerging difficulties that the central government cannot address and, therefore, has delegated a significant amount of authority and responsibility to sub-national governments. According to the National Government Organization Act, BE 2534 (1991), Thailand has three levels of government: central, provincial, and local. While the central government comprises ministries, bureaus, and departments, the provincial administration is based on principles of *deconcentration*. Thailand has 76 provinces and 1 Special Administrative Area (Bangkok). Each Province is governed by a Governor dispatched by the Ministry of Interior; each Province is divided into districts or *amphoe*, subdistricts or *Tambon*, and the village or *Moo Baan*. The heads of district, subdistrict, and village are government officials appointed and supervised by the Ministry of Interior. Local administrative organizations are based on the principles of *decentralization* and are divided into two categories: general and special. For the general type, it consists of Provincial Administration Organization (PAO) or *Oor-Bor-Jor*, Municipalities Offices or *thetsaban*, and Subdistrict Administration Organization or *OOr-Bor-Tor*. The special decentralized organizations include Bangkok Metropolitan Administration and Pattaya City.

The decentralization framework took hold after the enactments of the 1997 constitution, which also known as “People’s Constitution”. The Constitution (1997) required the central government to devolve its responsibilities and resources to local governments, allowing them to be more responsible, responsive and accountable for local matters. After 1997, the decentralization process has been strengthened as evidenced by the Decentralization Plans and Procedure Act of B.E. 2542 (1999) as well as the establishment of National Decentralization Committee (NDC). The Municipality Act of B.E. 2496 (1953), its Amendment (13th Edition) of B.E. 2552 (2009) and the Decentralization Plans and Procedure Act of B.E. 2542 (1999), have stated that the local Administrative Organizations (namely, Provincial Administration Organization, Municipality Offices and Subdistrict Administrative Organization) shall have the authority to systematize public services for the benefit of local communities in the areas of land route, water route, and water drainage maintenance, as well as managing, maintaining, and utilizing forestry, national resource land, and the environment, among other things.

Despite its dual system of decentralized and deconcentrated legislative and bureaucratic structure, Thailand functions as a unitary state “with a strong tradition of centralization”. Although decentralization reforms have been introduced in Thailand over many decades, Thailand’s local authorities appear to have limited power as they must rely on direction from the National Government in Bangkok. Thus, the high degree of centralization in Thailand hinders the decentralization process in at least three ways. Firstly, the fiscal health of local governments is determined by the central government’s willingness to support or allocate revenue. Secondly, despite decentralization’s relative success, many departments at national level are still hesitant to fully relinquish authority and responsibility to Provincial and local government. Furthermore, the Thai state and central authorities advocate re-centralization, jeopardizing the future of Thailand’s local administration. Finally, whether through direct or indirect processes, Thailand’s government always directs, oversees, and controls public policy, public services, and local governance administration.

Climate Governance in Thailand

The Ministry of Natural Resources and Environment (MNRE) oversees climate policy and plans at the national level. In each province, a Provincial Office of Natural Resources and Environment works to implement policy and plans according to the directives of MNRE. The Provincial Office of Natural Resources and Environment will also work with other Provincial Offices under other Ministries, such as the Provincial Office of Energy, the Provincial Commercial Office and the Provincial Agricultural Extension Office. All provincial offices will report to their Ministry at the national level, and also report to the provincial governor, who is dispatched and supervised by the Ministry of Interior. In the same constituent unit, there are also local administrative offices that exercise decentralized authorities given by The Municipality Act of B.E. 2496 (1953), its Amendment (13th Edition) of B.E. 2552 (2009), and the Decentralization Plans and Procedure Act of B.E. 2542 (1999). However, local administrative offices must report to the Department of Local Administration (DLA) under the Ministry of Interior. This creates a highly complex, complicated overlapping of responsibilities and authorities between entities under deconcentration and those with decentralization. Thus, when it comes to climate governance at the provincial level, the directive of the Ministry of Natural Resources and

Environment is only implemented by its Provincial Office. A directive from MNRE cannot be directly imposed on Local Administrative Offices in the same constituency unit as the Provincial Office. MNRE must cooperate with the Ministry of Interior to give direct orders to Local Administrative Offices to implement climate actions. This profoundly impacts climate actions at the local level as it means that Local Administrative Offices are not obligated to act on climate unless they receive direction from the Ministry of Interior.

4.2. Malaysia: Centralized federalism

Malaysia practices a federal constitutional monarchy. It is primarily based on the Westminster parliamentary system, where the *Yang DiPertuan Agung* (the King) is the head of the state. The King is rotationally appointed every five years by the royal conference of rulers – consisting of nine sultanate states in the Federation. The prime minister, as the majority leader of Parliament, is appointed by the King to form a government. Under Constitution 127, the federal government functions under the basis of the principle of *trias politica* (separation of power), which consists of the Executive, Legislative, and Judiciary.

The Federation of Malaysia comprises 13 states and one federal territory. A federal territory consists of Kuala Lumpur, Putrajaya, and Labuan. Each State, except the federal territory, has its own constitution and unicameral state legislative assembly. Generally, the Federal government controls foreign relations and international agreements, finance, defense and security, and education. Although States collect local taxes like land, city councils, and mines, the Federal government, under the Constitution, is also obliged to provide monies for annual state grants. The distribution of federal grants is calculated according to the number of people in the State (the capitation grant) and the maintenance of state infrastructure like roads.

The States' political administration is headed by a Chief Minister (*menteri besar*) or Premier in the case of Sarawak. Under the constitution, both Parliament and State legislative assembly have the power to enact the law. Part IV of the Malaysian Federal Constitution (hereinafter: the Constitution), and significantly arts. 73-79, guarantees states the power to regulate matters on Islam and Malay/native customs, land, water, agriculture and forestry, public works, local government, and public holidays.

The distribution of power between the Federal and state government is defined under art. 73,

In exercising the legislative powers conferred on it by this Constitution–

(a) Parliament may make laws for the whole or any part of the Federation and laws having effect outside as well as within the Federation.

(b) the Legislature of a State may make laws for the whole or any part of that State.

Yet, when Federal law conflicts with State, the federal law supersedes other laws. This has been clearly emphasized under art. 76 (1): “Parliament may make laws with respect to any matter enumerated in the State List”. Furthermore, art. 81 stipulates that “(a) as to ensure compliance with any Federal law applying to that State; and (b) as not to impede or prejudice the exercise of the executive authority of the Federation”.

Arts. 74-70 of the Federal Constitution also provide specific state-federal jurisdiction. It is categorized as Federal Lists, State Lists, and Concurrent Lists. Constitutionally, the list could be amended if supported by a two-thirds majority in Parliament. For example, in 2005 the Federal Parliament amended the Lists by removing water jurisdiction under State Lists into Concurrent Lists. Thus, States and the Federal government share water supply and management responsibilities. The States agreed to surrender its rights due to state financial constraints in partially repairing and modernizing its aging water supply system.

In theory, both State and Federal governments have separation of powers. The State has the flexibility to regulate its laws and regulations. However, in practice, Malaysia tends to conform to the centralized federalism model –where the Federal government imposes its will on States.

Climate Governance in Malaysia

As a Federation, States and the Federal government must work and cooperate closely to achieve national-level targets. The Federal government plays a dominant role in planning, coordinating, and formulating policy and action plans, providing a framework for States to follow and implement locally. However, the State needs to develop its climate change policies to suit their specific context and challenges according to several umbrella policy documents provided by the federal government, as explained by an interviewee who is part of the working committee on climate change at the Ministry of Natural Resources, Environment, and Climate

Change (NRECC). The Federal government empowers States to assess and design their exigencies on climate change issues since each State has its own priority. For instance, the States of Sabah and Sarawak are more concerned with forestation issues, while Penang focuses more on water security. Thus, policy, action plan, and specific strategies for climate actions vary from one state to another.

TABLE 4. PROGRESS AND COMMITMENT IN CLIMATE ACTIONS OF EACH MALAYSIAN STATE, AS OF MARCH 2023

N.º	States	Climate Policy and/or Initiatives
Category 1: No specific initiatives on climate change		
1	Negeri Sembilan	No proactive measures on climate change. The state assembly reminded the ruling government to set up a special committee to tackle flood and water shortages ⁹ .
2	Kelantan	Pelan Induk Pembangunan Mampan Negeri Kelantan, 2019-2023 (Kelantan Sustainable Development Masterplan, 2019-2023 ¹⁰).
3	Pahang	No sustainable plan or policy introduced. Very limited focus under PlanMalaysia@Pahang through the setting up Jawatankuasa Teknikal Kawasan Sensitif Alam Sekitar (Tanah Tinggi & Lereng Bukit) or Pahang State Technical Committee on the Environmentally Sensitive Areas (Highlands & Hill slopes).
4	Perlis	Strategic Development Plan for Perlis 2012-2030.
5	Terengganu	Terengganu Strategic Plan 2019-2023 (Strategic Thrust N.º 5).
Category 2: Progressing or in the final process of drafting the policy		
6	Kedah	Pelan Tindakan Alam Sekitar Negeri Kedah (Kedah State Action Plan on Environment). The state is still in the planning stage in introducing a broader sustainable development action plan ¹¹ .
7	Sabah	Integrating and addressing climate change issues with the forestry focus (under Forestry Department)
8	Sarawak	The establishment of the Ministry of Energy and Environmental Sustainability; The Climate Change Working Group (CCWG) in 2022.
9	Selangor	The state government is still developing the Selangor Climate Change Policy and Action Plan 2030 ¹²
Category 3: Launching climate policy and implementing the plans		
10	Labuan	Labuan Development Blueprint (Under Strategic Thrust 6: Enhancing Ecology, Water Bodies, and Biodiversity Areas) (Perbadanan Labuan, 2018)
11	Kuala Lumpur	Kuala Lumpur Climate Action Plan 2050
12	Putrajaya	It is basically aligned with the national targets and agendas, since Putrajaya is the central of national administrative government.
13	Melaka (V)	Melaka State Climate Action Plan 2020-2030
14	Johor	Pelan Pembangunan Mapan Negeri Johor (Johore Sustainable Development Plan 2030)
15	Penang	Penang Green Council; The Penang Climate Adaptation Programme (in progress) (Othman <i>et al.</i> , 2021).
16	Perak	The state has launched Perak Sustainable Greenprint 2030 ¹³

Source: Authors have synthesized information from diverse and varied sources, with no infringement of data intended.

⁹ New Straits Times (2022, April 19). N. Sembilan govt needs action committee to address climate change. Retrieved from: <https://www.nst.com.my/news/nation/2022/04/790084/n-sembilan-govt-needs-action-committee-address-climate-change>

¹⁰ Unit Perancangan Ekonomi Negeri Kelantan (2019, May). Ringkasan Pelan Induk Pembangunan Mampan Negeri Kelantan. Kota Baharu.

¹¹ Jabatan Alam Sekitar Kedah (2008). Pelan Tindakan Alam Sekitar Negeri Kedah.

¹² *Mesyuarat Ketiga (Bajet) Penggal Kelima Dewan Negeri Selangor Yang Keempat Belas Tahun 2022* (The Third Meeting of the Fifth Term of the Fourteenth Selangor State Assembly, 2022). <http://dewan.selangor.gov.my/question/pelan-adaptasi-dan-mitigasi-terhadap-perubahan-iklim/>

¹³ Harakahdaily (2021, December 6). Perak Sustainable Greenprint 2023. Retrieved from: <https://harakahdaily.org/index.php/2021/12/06/perak-sustainable-greenprint-2030/> and The Malaysian Reserve (2021, March 30). Perak Sejahtera Plan outlines 5 main thrusts. Retrieved from: <https://themalaysianreserve.com/2021/03/30/perak-sejahtera-plan-outlines-5-main-thrusts/>

Table 4 indicates each Malaysian State policy initiative and implementation target. State initiatives can be divided into three categories: No specific initiatives, progressing or final drafting of policy, launching climate policy and implementing plans.

5. MULTILEVEL GOVERNANCE'S IMPACT ON CLIMATE GOVERNANCE IN THAILAND AND MALAYSIA

The promise of multi-level governance and climate change linkages seem at first glance a positive ally in achieving climate change action that is both tailored and effective. In practice, however, several issues need to be taken into account. In this regard, consideration of political procedure and climate change issues should also be integrated within socio-economic contexts, which all influence the capacity for some form of localized climate governance application (Fenna *et al.*, 2023). In addition to that, a preventive measure in gauging the governance practice's actual effectiveness needs to be analyzed from the positive interaction between national and sub-national authorities or otherwise (*id.*). The need for policy experimentation, as well, is indeed a vital action as a part of monitoring any assessment of policy effectiveness. It assists in creating a pragmatic domino effect and minimizes the failure in addressing a new and potential innovation (Harrison, 2023). However, multi-level governance may also cause an asymmetrical relationship between central and local governments, which in some cases is indicated by the local superiority over the national level (Eckersley *et al.*, 2023; Harrison, 2023). Another last point to consider is the diverse and fragmented authorities that likely lead to disharmony of work among government levels. In regards to that, this study scrutinized the mentioned matters (as listed in table 1), in comparison between Thailand and Malaysia.

6. RESULTS AND DISCUSSION

6.1. Thailand

6.1.1. *Multilevel governance ability to tailor climate actions in context*

There are two types of constituent units at the subnational level in Thailand's multi-level governance structure (as noted above). The first is the Provincial Office of Natural Resources and Environment, which is given some authority from MNRE via a deconcentration process. The second is the Local Administrative Organizations which have some authority via the decentralized process (LAOs comprised of three organizations in a vertical hierarchy: Provincial Administration Organization, Municipality Offices, and Subdistrict Administrative Organization).

The Provincial Office of Natural Resources and Environment (76 in total commensurate with the number of Provinces) until recently had no authority to design climate policy and actions as they did not possess executive power. Their mission was mainly to implement the policies and comply with directives of the MNRE regarding environmental conservation and pollution control and monitoring. It is worth noting that Provincial Office of Natural Resources and Environment do have considerable jurisdiction in the policy area of disaster resilience and management which does and will prove helpful in addressing these closely related phenomena and policy issues. Such authority belongs to the Provincial Governors, who is given power and budget by the Department of Disaster Prevention and Mitigation, the Ministry of Interior, to declare a state of emergency and manage disaster such as forest fire, PM2.5 pollution, flooding and the pandemic COVID-19.

Significantly, this changed in early 2023; provinces were empowered to design their climate actions, measures, and GHG reduction targets. Since this change, the MNRE has directed all Provincial offices to conduct a baseline study on GHG inventory and climate risks evaluation in their provincial areas with allocated budgets to each province office according to the population size (S-Small, M-Medium, L-Large). Sixty percent of the allocated budget is earmarked to hire an expert consultant, which are drawn from a university in that province or nearby; these conduct research work, *i.e.*, to measure GHG emissions, study the climate risks, as well as determine a suitable GHG emission target for the province. The remaining forty percent of that budget is earmarked for public relations, to be undertaken by Provincial offices.

After the expert consultant completes their research, they put forward these findings to the Provincial climate change committee where the Provincial Governor is the chair; the Provincial Office of Natural Resource and Environment serves as a secretariat. The committee reviews and provide comments on the findings

and its GHG emission reduction targets and mitigation plans; a final decision of the committee is based on consensus, regarding the reduction targets and which sectors are to reduce GHG emissions. Each province has a different GHG reduction target, based on the capacity and context of each province, based again on the expert advice provided by the Provincial University. There is no competition among Provinces to reduce higher amounts of GHG emissions, as it is particular to the readiness and capacity of each province. This means that each Province has its own reduction targets; for example, Chanthaburi set to reduce 40% of its GHG emission, while Tak province set only 13% reduction target.

Importantly, the Province has the authority to tailor the provincial climate change committee members to meet with local political, social, and economic contexts. Apart from the governor and the Provincial office of Natural Resources and Environment, other committee members include representatives from governmental departments that have a role in GHG emission reduction, such as the Provincial Office of Energy, the Provincial office of Agriculture and Cooperatives, the Provincial Office of forestry, the government department that oversees waste management and Provincial electricity authority (PEA), etc. The private sector and civil society can be included in the climate change committee depending on the context of that Province. For example, some Provinces have industrial developments, so they invite the Association of Industry to join the committee; Chantaburi province has a mega development project called the Eastern Economic Corridor (EEC), thus it invites representatives from the EEC to join the committee.

The Local Administrative Organization (LAO) has the authority to provide public services for local communities in the areas of the land route, water route, and water drainage maintenance, as well as managing, maintaining, and utilizing forestry, national resource, and the environment, which include climate mitigation and adaptation actions. In addition, they hold the authority to collect tax: land and buildings tax, signboard tax, and local maintenance tax.

However, the role of LAO in climate actions has proved to be limited and less active. Although holding executive, legislative, and fiscal authority, most LAOs are not keen to take climate action and plans. The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) and the MNRE had launched a project to build the capacity of LAO officers' capacity to design and implement their own climate policies and action plans. However, in practice municipality offices expressed their difficulty in doing so, for a host of reasons, lack of human and financial resources, and perceived climate action is an add-on to their overwhelming work. As a result, a revised strategic plan works with the Ministry of Interior and targets Provincial governors as key partners. The unwillingness of LAOs to tackle climate change issues will be discussed in Section 4.1.6.

6.1.2. Multilevel governance provides conditions for the sub-national governments to compensate for the central government in climate actions

In general, local governments (LAOs) in Thailand invest their power in the scope they are given authority from the decentralization law. They mainly comply with government instructions. However, the Bangkok Metropolitan Administration (BMA) is an exception case. Thanks to the Bangkok Metropolitan Administration Act, BE 2528 (1985), BMA is allocated executive and legislative power. Majors of BMA are elected politicians with 4-year terms. The BMA legislative body comprises 50 parliamentarians with a 4-year term. The 50-member parliamentary is appointed to work on 12 different committees, i.e. education, cleanliness and environment, public health, traffic, and transportation. In 2011, Bangkok and metropolitan areas faced severe flooding which created loss and damages of approximately US\$46.5 billion according to the World Bank¹⁴. Bangkok and its Metropolitan region are vulnerable to riverine floods and are projected to face significant flooding in the next 50 years due to the climate crisis. With climate risks, BMA. has been actively preparing for the disasters induced by climate change, which was much ahead of the central government's Climate Change Master Plan (CCMP) 2015-2050. As early as 2007, BMA launched the Bangkok Action Plan on Global Warming Mitigation 2007-2012 *setting the* reduction target of at least fifteen percent of the total GHG emission anticipated in 2012 under business-as-usual projection. The Bangkok Action Plan was recognized as the first climate policy implemented by Local Administration Organizations in the country, covering five aspects: 1) developing public transportation system and traffic management, 2) promoting renewable energy, 3) improving electricity usage in the building sector, 4) enhancing waste and wastewater treatment and management system, and

¹⁴ World Bank (2012). *Thai Flood 2011 Overview- Rapid Assessment for Resilient Recovery and Reconstruction Planning*. Retrieved September 10, 2023, from <https://documents1.worldbank.org/curated/en/677841468335414861/pdf/698220WP0v10P106011020120Box370022B.pdf>

5) increasing green space. The plan 2007-2012 was later revised and promoted to the Bangkok Master Plan on Climate Change 2013-2023. The Master Plan is a crucial guideline for Bangkok Metropolis to pave its way toward a low-carbon and climate-resilience city.

However, to emphasize the success of policy design and planning of both the Bangkok Action Plan on Global Warming Mitigation 2007-2012 and the Bangkok Master Plan on Climate Change 2013-2023, the BMA interviewee referred to the full support from ministries and agencies both from Thailand and a foreign assistance. The Ministry of Natural Resources and Environment, the Ministry of Energy, the Federation of Thai Industries, the Thailand Environment Institute, and the private and public sectors in Thailand provided interdisciplinary expertise and insights to draft the climate action plans for Bangkok Metropolis. In addition, Japan International Cooperation Agency's (JICA) Technical Cooperation has greatly assisted since the designing process of the Bangkok Master Plan on Climate Change 2013-2023. Technical Cooperation Project to strengthen institutional capacity by deploying Japanese technical experts to work closely with BMA officers, site visits, and knowledge sharing was a tremendous assistance for ensuring the effective implementation of the master plan.

6.1.3. Multilevel governance can encourage policy innovation and knowledge sharing

Khon Kaen Municipality is an excellent example of this policy innovation, policy lab, and knowledge sharing. Khon Kaen Municipality is in Khon Kaen province which has a strategic position in the northeastern region of Thailand and has the potential to become the future hub of the Greater Mekong Subregion. The Khon Kaen province faces climate change-related challenges, including drought, forest fires, and PM2.5 pollution. Local governments and communities are increasingly concerned about climate change issues and eager to initiate policies and plans to address the environmental challenges.

Khon Kaen Municipality has conducted a wide range of initiatives that are well-recognized as good practices in policy innovation for other local governments. First, the Khon Kaen Municipality established the Office of Public Health and Environment to oversee climate actions. It is noted that a few municipality offices have set up this Office of Public Health and Environment. Second, Khon Kaen Municipality has declared five key strategies, including strategy 3 – developing and conserving environmental quality, with the goal of becoming a smart city that can balance carbon emissions with city development and is ready to adapt to climate change (Khon Kaen Municipality Development Strategy 2017-2020). Third, Khon Kaen Municipality was one of four cities in the demonstration project entitled “Achieving Low Carbon Growth in Cities through Sustainable Urban Systems Management in Thailand” or Low-carbon City Project in short, funded by the Global Environment Facility (GEF) and implemented by crucial partner organizations; namely UNDP in Thailand, and Thailand Greenhouse Gas Management Organization (TGO) under the Ministry of Natural Resources and Environment. Under the Low-Carbon City project and a strong motivation to become a smart city, Khon Kaen Municipality built solid collaboration with the private sector in implementing smart city projects, for instance, the installation of solar panels on the roof of Municipality Fresh Market and the roof of Wastewater Treatment Plant, the construction of Waste-to-Energy power plant, the Light Rail System in urban area, and the Municipality Waste Management Network operated by local communities (OPCSCD, 2023).

Fourth, Khon Kaen Municipality and the other four municipalities in the province established the Khon Kaen Transit System Co., Ltd. or KKTS, to run the construction project of Light Rail System. The KKTS is the first Co., Ltd in Thailand which was a joint venture by local administrative organizations, rendering the KKTS an excellent example of a social innovation and is famous as the “Khon Kaen Model”. The Light Rail System initiated by local administrative organizations has demonstrated the courage and determination of local governments to enhance the well-being of the local population and promote low-carbon cities as none of the provinces in Thailand apart from Bangkok has a Light Rail system. In addition, the local governments in Khon Kaen raised their own funds and brought in over 20 private companies to pool resources, around Thai Baht 200 million. KKTT Co, Ltd was established with those seed funds with a mandate to invest in urban development projects in the province. This showcases the collaboration between local governments, private sectors, civil society, and local people clearly without dependence on the central government budget (Wongtanawasuw *et al.*, 2019).

6.1.4. Sub-national government limited capacity to influence national climate efforts

Given its unitary system and centralizing power, all provinces report and comply with their line Ministry at the National level. The permanent secretariat is the highest rank civil servant in each ministry and oversees all work and decides on behalf of a Minister in his/her absence. All Provincial offices follow instructions and

directives of the permanent secretariat and ministers. In addition, the ministry's directives and regulations are considered the second in the policy hierarchy of Thailand. The apex policy is the 20-year national strategy 2018-2037, the country's first national long-term strategy developed under the Constitution. It is pursued by all governmental entities to formulate consistent and integrated plans in a congruous drive.

In concert, LAOs' operation is under the supervision of the Department of Local Administration (DLA), the Ministry of Interior. The DLA has authority over LAOs to check and balance the power of LAOs. However, such authority has created tension and frustration between LAOs and the department. DLA has authority over LAOs to: 1) develop the organizational structure of LAOs, 2) set up and assign Key Performance Indicators (KPI), and systems for monitoring and evaluating LAOs, 2) issue, revise, amend, and implement plans and policies relating to LAOs' authority and responsibilities, 3) set the procedure and standard for human resource management of LAOs, and 4) Promote, support and coordinate financial, fiscal, budgeting, procurement, revenue collection operations and commercial operations of LAOs, including setting up a system to check the financial, accounting, and supplies systems¹⁵. With such power over LAOs, local governments in Thailand have no veto rights.

6.1.5. Multilevel governance creates divergent climate actions which leads to inefficiency and ineffectiveness

Given the centralized control that National government and authorities have in its governance system there is little or no divergent climate policies and actions in Thailand. Control and supervision power over Provincial offices and nationwide LAOs via its vertical organizational structure and its related laws. In addition, all operations of Provincial offices and LAOs must comply and align with higher ranked policy and plan i.e., the 20-year national strategy 2018-2037 and the ministry's directives. Furthermore, climate-related organizations at the national level have worked to ensure consistent and uniform climate action, especially in mitigating GHG emissions.

An essential entity at the National level is the Thailand Greenhouse Gas Management Organization (TGO), an autonomous public organization. TGO established in 2007 has a mandate to "manage and expedite development and implementation of greenhouse gas reduction projects and support public, private and international organization partnerships to promote the implementation of climate action" (TGO, 2019). It has been leading the climate mitigation actions in Thailand with a wide range of initiatives and projects. To name a few, technical supports in quantifying GHG emissions and reporting GHG inventory, developing GHG reduction tools and mechanisms, building capacity and awareness in climate mitigation, and establishing a carbon credit and trading mechanism called T-VER (Thailand Voluntary Emission Reduction Program). TGO works actively with Provincial Office of Natural Resources and Environment by providing advice, technical teams and a budget. Every month, there is an online meeting where TGO meets with representatives of each Provincial Office and address their concerns and questions regarding their work on GHG emission measurement and reduction. The interviewees from Provincial Office appreciate the work of TGO which not only reduces the burden of the Provincial office but also acts as a mentor.

The Office of Natural Resources and Environment Policy and Planning (ONEP) under the Ministry of Natural Resources and Environment is an essential institution in climate action. ONEP has worked rigorously in implementing national climate policies. In July 2023, the cabinet approved the decree to establish the Department of Climate Change and Environment (DCCE) under the Ministry of Natural Resources and Environment supervision. The Climate Change Management and Coordination, a sub-department of ONEP that served as a national focal point for the UNFCCC, was transferred to be under the newly established DCCE. The authority and responsibilities of DCCE cover all climate actions, compliance with international commitments, and steering the country to achieve carbon neutrality by 2050 and net-zero-emission by 2065¹⁶. Interviewees from the Provincial Office of Natural Resources and Environment expected that with the establishment of DCCE, Thailand's National climate actions will become even more consistent and uniform as they could monitor the climate efforts of all provincial offices. However, much work remains in building capacity of LAO's and providing incentives, as well as assistance for them to join force in climate actions. Provincial offices will have to actively approach LAOs in their province and invite them to play more role in the climate actions.

¹⁵ Department of Lands, Thailand (n.d.). Home page. Retrieved September 12, 2023, from: <https://www.dla.go.th/en/index.jsp>

¹⁶ Department of Climate Change and Environment (n.d.). Retrieved from: <https://www.dcce.go.th/>

6.1.6. Multilevel governance leads to inertia among SNG and free-riders

This is evident in Thailand's LAOs. Although they have the authority to provide services on environmental conservation, most LAOs are reluctant to take climate actions and have not yet mainstreamed climate action plans into their work, either climate mitigation or adaptation. According to interviews with the Provincial Office of Natural Resources and Environment, some factors cause the unwillingness of LAOs, for instance, lack of knowledge, lack of human resources, lack of financial resources, and a lack of political will of some majors. The interviewees explained that the majors as elected officials rely on popularity to maintain power during his/her executive term and win the next election. Building infrastructure, i.e., road and pedestrian paths, directly benefit the local economy and population. This kind of project is given a higher budget and priority than climate mitigation and adaptation, which do not seem urgently needed and take time to bear fruit. The situation reflects the dilemma between electoral cycles and climate governance. Given the nature of climate impacts, which take decades to manifest and are difficult to notice; climate mitigation and adaptation actions seem less relevant and not urgent for many people (Frantz and Mayer, 2009). It is questionable whether short-term decision-making can accommodate the medium and long-term impacts of climate change and to what extent it can incorporate the needs of future populations into the present policy planning (Willis *et al.*, 2022).

6.2. Malaysia

6.2.1. Multilevel governance encourages locally appropriate and tailored climate actions and measures to meet local contexts

Policy on adaptation or mitigation is highly centralized at the federal level. As policy practice depicts, the state tends to depend on deferral policy direction for its implementation. Therefore, states as constituent units generally make less investment in environmental protection. The policy governance, initiatives, and implementation vary from one constituent state to another. Each state has its priority on climate change. The states of Sarawak and Sabah focus more on forest rehabilitation project, Kelantan and Terengganu on coastal erosion and mangrove, while a more urbanized state like Penang focus on urban resilience and reducing health and health ecosystem vulnerability.

So far, the States of Sarawak, Sabah, the Federal Territory of Kuala Lumpur, and Melaka have been proactive in introducing several action plans, policies, and laws at local level. Sarawak has been in the forefront in the priority agenda by establishing Ministry of Energy and Environmental Sustainability as explained by the interviewee from Sarawak Economic Planning Unit. The state also initiates the Climate Change Working Group (CCWG) in 2022. The group comprise various stakeholders, from federal and state agencies to environmental activists, and Civil Society Organizations (CSO). It provides policy recommendations to the state ministry. In Sabah, CSOs like LEAP (Land, Empowerment, Animal, People) and Forever Sabah, work closely with the through Sabah Climate Action Council. The council is chaired by the State Secretary, as stated by the interviewees from the Sabah Forestry Department and from Sabah Land Empowerment Animals People (LEAP).

There are several examples where policy such as The National Policy on Climate Change (NPCC) has been adopted and implemented by individual state and local government. Under The National Policy on Climate Change (NPCC), introduced in 2009, for instance, the government (through local authority) would "conduct systematic reviews and harmonise existing legislation, policies and plans, taking into account and proposing relevant balanced adaptation and mitigation measures, to address various issues following waste management the local authority would not approve construction of a building like health centre or clinic without having retention pond for hazardous materials. Government would "conduct systematic reviews and harmonise existing legislation, policies and plans, taking into account and proposing relevant balanced adaptation and mitigation measures..." to address among others land use and land use change (include land reclamation) and waste management.

At the local government level, city and district council did tailor their federal compliance to their local needs. at the district of Besut, Terengganu, for instance, the local district council, with a support grant from Government-linked Corporation (GLC), initiated a rehabilitation program to address coastal and wetland erosion¹⁷.

¹⁷ Mohd Iskandar, Muhammad (former President of Setiu District Council, Terengganu). (2023, August 6). Interview conducted in Redang.

6.2.2. State government compensates the failure of inaction by the central government

The lack federal financial support and federal's policy direction, which can be attributed to a federal level policy vacuum, has led some state entities to move forward with policy setting independently some of the [policy implementation through outside financial support, found through other avenues such as ODA). In this way, Penang, Sabah and Sarawak have actively engaged financial support from external sources, either directly or through the Ministry of Natural Resources, Environment, and Climate Change (NRECC). The State of Sarawak, for instance, received technical and financial support from UK PACT (United Kingdom Partnering for Accelerated Climate Transitions). It is a program provided to countries to several Southeast Asian countries like Thailand, Vietnam, Cambodia, to work on accelerating towards climate change partnership and raise to zero emission or to zero emission target. Furthermore, Penang secured USD10 million from the World Bank to address the impact of climate change particularly on flood mitigation and rising temperature (Liew Jia, 2021). Other state constituent units have tended to rely on Federal assistance to achieve modest policy ambition.

6.2.3. Policy lab, experimenting with new policies, instruments and knowledge sharing

Prior to States fiscal capacity to establish its own formal policies in climate action, NDCs (Nationally Determined Contribution) was the apex platform or the first national communication between Federal and State governments work together on climate related strategies. The NDCs is the venue where States compile data, information, and details, as well an opportunity to seek support from the Federal government on climate mitigation programs. This arrangement then supplies the data subsequently submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

Subsequently, as States increased in capacity and voice, various national action council / working committees have been set up where State and Federal governments deliberate and negotiate on climate change programs and actions. But all these working committees can be described as coordinating units. The Ministry Natural Resources, Environment and Climate Change is the secretariat of all working committees.

- Malaysia Climate Change Action Council (MyCAC). The council is chaired by the Prime Minister and composed of the chief ministers/primer, federal cabinet members, Federal Secretary, and invited experts.
- EPU Working Committee. EPU or Economic Planning Unit of the Prime Minister Department serve as a source of budget allocation for climate change implementation project. Committee members consist of representative from Prime Minister department, Ministry of Finance, and the Ministry Natural Resources, Environment and Climate Change. Each state is also represented by its senior officer.
- Ministerial Working Committee is chaired by the Ministry Natural Resources, Environment and Climate Change. Its function focus on streamlining project execution and progress.

It has been reported that the current government is proposing a Special Parliamentary Committee on Climate Change¹⁸. It is a platform aimed to assist all governments (State and Federal) to provide policy direction on climate change in the future. But its likelihood and progress is still unknown.

In terms of knowledge sharing, the Ministry Natural Resources, Environment and Climate Change set up special agency called MGTC (Malaysia Green Technology and Climate Change Corporation, previously known as Green Tech Malaysia) this body acts as a referral local expert agency that advises government on the implementation of three policy areas: National Policy on Climate Change (NPCC), National Green Technology Policy (NGTP) and The Green Technology Master Plan (GTMP), 2017-2030. MGTC also works together with MIDA (the Malaysian Investment Development Authority) to advise the government on tax incentives for green technology. MGTC would assess "whether the project is green, what are the green components of the projects, conducting evaluation, and then based on our assessment, so we give recommendation to committee", at the ministerial level. The committee is made up of those from various ministries and stakeholders, as explained by the interviewee from Malaysia Green Technology and Climate Change Corporation.

MGTC also advises and provides expert opinion to council or agencies under state government that are mandated to drive green technology. For instance, MGTC provide expert opinion to Penang's Green Council and Kelantan's Utilities Mubaarakan (KUM). MFGTC offers program incentives for state agencies to follow.

¹⁸ Astro Awani (2022, September 2). Anwar dijangka usul tubuh jawatankuasa khas perubahan iklim (Anwar expected to announce the setting up of a special parliamentary on climate change). Retrieved from: <https://www.astroawani.com/berita-malaysia/anwar-dijangka-usul-tubuh-jawatankuasa-khas-perubahan-iklim-379181>

6.2.4. Local government use veto rights, which may obstruct the national climate efforts

There has been one instance where a federal agency used its power to cancel its Environmental Impact Assessment (EIA) on a massive development despite that project's deemed impact to destruct the environmental eco system. In the Penang South Reclamation (PSR) project, local activists rejected and launched the campaign "Penang Rejects Reclamation". The project's EIA initially gave the go-ahead for the project with certain strict conditions, in spite of the Environmental Management Plan (EMP) report which voiced concerns over marine and social ecosystem destruction. Representatives from environmentalist and local fishermen groups used the EMP report as the basis for their opposition to the Federal governments decision to proceed with the project. In response, the Special Appeal Board, set up by the Department of Environment (DoE), proposed the revocation of EIA report. The case was brought forward by the fishing community, where the Special Appeal Board's decision was further upheld by the High Court. (Sinnappan, 2021). Subsequently, the Penang government decided to submit a judicial review for the DoE decision. The High Court decision put the project on hold, however the Penang government decided to resubmit a new EMP report for EAI assessment (Mok, 2021). The EIA approved state's new application where the project has been downsized from a three-island to a single-island project. The State government also argued that there has been no court injunction to stop the project. (Ragu, 2023)

6.2.5. Divergent climate policy action leads to inefficiency and ineffectiveness

Federal policy initiative began in 2009 when the National Policy on Climate Change (Dasar Perubahan Iklim Negara), hereinafter referred to as the NPCC, was introduced during the Najib administration (2009-2018). Today, several policies are in place associated with the climate change like National Green Technology Policy (NGTP) and The Green Technology Master Plan (GTMP), 2017-2030. The Green Technology Master Plan 2017-2030, for instance, outlines Malaysia strategic plans and initiatives for green technology development to create a low-carbon and resource efficient economy. However, there are other climate related policies embedded in other initiatives such as, Eleventh Plan 2016-2020, Twelfth Plan 2021-2025; and Nationally Determined Contribution – NDC, which reside among Malaysia's other plans and commitments for energy efficiency and renewability and low-carbon technology.

Two specific laws deal with specific climate change issues: The Renewable Energy Act and the Sustainable Energy Development Authority Act (SEDA).

The Renewable Energy Act (Act 725) was introduced in 2011 to establish and implement special tariff system to facilitate and speed up the generation of renewable energy. In 2023, the Section 2(1) has been amended to give the power to the minister to "suspend the operation of the whole or any of the provisions..." of the Act in different parts of Malaysia. The amendment has not been gazetted or yet in force. The Act 725 is administered by the Sustainable Energy Development Authority (SEDA) Act (act 726), a statutory body that acts as a monitoring and enforcing body.

Ironically, what we note is that in spite of its centralizing tendency, Malaysia does not have a centralized or standardised law on climate change. A comprehensive Federal law is still in the making. The proposed *Climate Change Act* (initiated in 2019) is in limbo due to Malaysia's unstable political leadership, where three different governments have been installed since the 14th General Elections in 2018. It was reported in 2022 that the legal framework for the Act had been completed. The current Malaysia Minister Natural Resources, Environment and Climate made a parliamentary statement in February 2023 that "[t]he development of the national climate change Bill is expected to take two to three years" (Soo Wern, 2023).

6.2.6. Race to the bottom competition, or free-rider cases of some local governments

State constituents and local government units cannot take a cue from federal initiatives by offering their own initiative. Federal-level climate change initiatives and programs rely on state commitment and translate into local government programs. However, in spite of this policy and fiscal reality, thus far there has been no instances where each State as a constituent unit has done little to address climate change. Whilst there have been no examples or proof that States have failed to act, there is also no examples of band wagoning on other state's initiatives, shared learning and action. The predominant issue here is more on the vacuum created by the Federal government in legislation and fiscal support for State's to prioritize climate action and therefore implementation capacity of State's to come out with their own climate change policy especially on mitigation action. Some states have managed to create their special focus driven by economic need and popular demand, yet there are states embedded it in a wider vacuum of climate action policy inaction.

7. COMPARATIVE CONCLUSION

Investigation into the multilevel governance functions of Malaysia and Thailand presents some interesting observations. This research suggests that there are benefits in adopting practices akin to those of effective multilevel systems with proper assignment of functions, where States and Provinces have jurisdiction and fiscal powers to design and implement their own policy. Thus, both cases support the view that multilevel governance can and does positively impact on climate action; though in both countries it is only to varying degrees, both ultimately constrained by their centralizing features.

Of the six issues under investigation in this paper we found an interesting mix of outcomes relevant to climate policy practice and the contribution or hindrance of multilevel governance in climate action.

Of note, in both country comparisons we found in those issues under investigation where we found positive response of the contribution of multilevel governance, it was the existence of three conditions that correlated with positive outcomes: jurisdictional space and discretion, fiscal capacity and human resources. Thus, in these areas we found positive evidence of:

- Locally appropriate and tailored measures to meet local contexts.
- Local government compensates for the failure of inaction by the central government.
- Policy lab, experimenting with new policies, instruments, knowledge sharing.

Of the multilevel jurisdictions that were active and empowered to tailor measures appropriate to local contexts, most prominent was the influence of State or Provincial governments (in Thailand the Provincial Office of Natural Resources and Environment recently empowered to design their own climate actions, measures and GHG reduction targets and in Malaysia at the state level Sarawak has been in the forefront in the priority agenda by establishing Ministry of Energy and Environmental Sustainability. Here national governments provided guidance and policy space for provincial and state governments to take some measure of action, which in turn was augmented by fiscal and human resources. This influence was also evident, though to a much lesser extent in larger local level units, metropolitan areas with greater access to resources (fiscal and human). In Thailand that was seen with the Bangkok Master Plan and at the local level in Malaysia the district of Besut, Terengganu, initiated a rehabilitation program of its coastal erosion and wetland).

In terms of policy lab or policy innovation in Thailand we noted that this was overwhelming true of Khon Kaen Municipality which is well-recognized for its good practices in policy innovation for other local governments. In Malaysia this was seen in State and Federal governments deliberation and negotiation on climate change programs and actions, these coordinating units are Malaysia's unique platform to discuss state innovation – here, once again, the common influence was the three conditions of jurisdictional space, discretion to act as well as fiscal and human resources.

Of the other issues under investigation, we found little or no evidence to indicate that:

- Subnational jurisdiction used veto rights to obstruct national climate action plans.
- Multilevel governance creates divergent climate actions which leads to inefficiency and ineffectiveness.
- Multilevel governance leads to inertia among SNG, race to the bottom competition, or free-rider cases of some local governments.

However, we did note isolated instances of some actions falling loosely under those three headings. On the question of veto powers by subnational government, or in this one instance a civil society group from Malaysia successfully challenged State plans that were viewed to harm the marine and social ecosystem, the Penang South Reclamation (PSR) was subsequently downsized. (Dermawan, 2021). Overtime this kind in subnational stakeholder participation will increasingly impact climate action decision making – which will be positive step forward.

While we noted overwhelming merits for national level leadership in climate policy action, there were no instances of converse impact where national absence may have led to inefficient or ineffective policy action. We do note that such a vacuum does lead to inaction or reluctance of subnational actors to make decision relevant to climate action, this compounded by subnational electorate that until recently did not value climate action (adaptation and mitigation plans) have led to a race to the bottom in Thailand's LAOs.

In both cases, the National government has an important role to play in “facilitating” (Fenna *et al.*, 2023, p. 329) climate action; in determining overall commitments, financing, and enabling conditions for States and Provinces working within either a tolerant unitary deconcentrated/ decentralized governance structure (Thailand) or a highly centralized federal governance apparatus (Malaysia) for climate action to work effectively.

This comparative research also illustrates that when National government is not able to provide guiding legislation, then the inherent unitary or centralizing tendencies prohibit climate action at the State or Province level.

In the unique case of Thailand, the combination of top-down directive of climate policy from the Ministry of Natural Resources and Environment and the deconcentration of power to Provincial Office leads to an establishment of GHG emission reduction measures and targets at all 76 provinces which suit context and capacity of the locales. Conversely in Malaysia, the lack of legislation, as seen in the stalled *Climate Act* and a general policy vacuum has meant that there has been what can be considered a disparate and dispersed set of policies related to climate action, which has been largely ineffective. Thus, the observation is that regardless of the governance structure legislation can provide clear direction as to the division of powers and process which supports effective climate action policy.

In addition, we have observed that when States and Provinces are empowered, to any degree, with fiscal resources and policy space to design their own climate action, there is a substantial degree of tailored policy implementation. Hence there has been some level of policy laboratory or learning effect, either because of National guidance or by creating a vacuum, subnational entities are able to make substantial contribution to mitigation and adaptation efforts.

Thus, in Thailand, we noted that Khon Kaen Municipality together with other four municipalities took a bold move to raise funds to set up a company to operate public transportation without depending on an allocated budget from the central government. With financial resources and a degree of decentralized policy freedom this has meant that local governments can create successful climate action in their jurisdiction with collaboration with local stakeholders. This is conversely true of Malaysia, the lack of National guidance in legislation and financial support, has only served to hinder States. Nevertheless, here has been innovation at subnational levels in Malaysia, illustrating again the potential of subnational governments in climate action.

Key policy observations

Formal and informal coordination mechanisms have been successful in supporting effective climate action. In Thailand this is most evident; its Climate Coordination Committees located at Provincial levels are profound in two ways. They have been instrumental in applying external expert advice to its GHG target setting (involving Provincial expertise located in its universities). The construction of committee members is inclusive and tailored to each specific Province; committees are made up of political, and administrative leaders and include business and civil society representatives. In a traditional centralized system, this is a positive tool and means to reflect and respond to local demands.

Institutions play a vital role in realizing targets and facilitating climate actions within a multilevel system, particularly evident in capacity building, coordination, and fostering trust among diverse entities within each country. These elements have demonstrated their significance as essential strategies for proficiently managing crises within the framework of multi-governance coordination (Culebro Moreno *et al.*, 2021).

In Thailand this stands out as a key lesson and recommendation here the TGO has been instrumental in providing both technical expertise, financial resources and mentoring leadership to Provinces – this could be replicated as a capacity-building initiative in other countries faced with similar governance and capacity challenges (Malaysia's MGTC serves a similar role).

The role of ODA has been very influential in positive climate action outcomes. In both countries, they have been instrumental in supporting the impact of States, Provinces, and local governments where they have worked to build capacity and awareness of the rationale and opportunity for climate action, fiscal resources and capacity to deploy impactful initiatives within the existing governance environment as well as nudging better practice.

Interprovincial exchanges on climate governance have proven very useful for sharing of policy initiatives and progress, these platforms use various mediums. In Thailand the existence of interprovincial dialogue platforms (detailed previously) within small, medium and large Provinces are beneficial to policy practice and building a Provincial voice, especially with Governors who chair meetings. In Thailand, these virtual meetings are a regular occurrence between Provinces, this practice perhaps could be adopted to encourage coordination between Provinces and LAO's. In Malaysia intergovernmental exchanges could be described as *proforma* given its centralized policy practice and their infrequency.

When empowered public pressure and public mobilization has been a force for change, successful in prompting concentrated efforts by subnational government because of economic need; we have seen this in both Thailand and Malaysia. Public engagement on matters relevant to their economic interests will only

grow. Provinces have also been able to utilize public awareness funds to address the broader public support in Thailand and in Malaysia livelihood urgency has compelled action.

Perhaps the most intriguing of observations is that regardless of governance structure, whether Malaysia's centralized federal system or Thailand's unitary system with deconcentrated and decentralized features, it is national-level tolerance or facilitation of Provincial and local climate action that matters most. National support for coordinate practices impacts most on the Provincial or State's capacity to act – to design policy that makes the most sense to their unique circumstances.

However, these practices have afforded a degree of flexibility essential to address the complexities of achieving GHG emission targets in Thailand and Malaysia. Neither country provides for the kind of autonomy that support ample policy variance or sufficient financial resources to incentivize Provinces and local units (for instance) to the degree that they can pursue ambitious policy agenda that may achieve greater success in climate action on adaptation and mitigation.

Thus, we conclude that in both cases greater consultation, coordination and a degree of autonomy to design "own" policies will have a positive policy impact on climate action.

ACKNOWLEDGMENT

The authors express gratitude to all the interviewees for their time and invaluable knowledge, as well as to the anonymous reviewers for their constructive feedback.

APPENDIX: LIST OF INTERVIEWEES

Country	Number of Interviewee	Affiliation
Malaysia	One	Malaysia Green Technology and Climate Change Corporation (MGTC)
	Three	Melaka Green Technology Corporation
	One	Sarawak Economic Planning Unit (EPU)
	Three	Sabah Forestry Department
	One	Sabah Land Empowerment Animals People (LEAP)
Thailand	One	Ministry of Natural Resources and Environment
	Four	Representatives from the Provincial Offices of Natural Resources and Environment, including one each from Suphanburi, Chonburi, Chantaburi, and Tak.
	One	Bangkok Metropolitan Administration (BMA)
	One	The United Nations Development Programme (UNDP) Bangkok Regional Hub
	One	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

REFERENCES

- Alam, M. M., Siwar, C., Talib, B., Mokhtar, M., & Toriman, M. E. (2012). Climate change adaptation policy in Malaysia: Issues for agricultural sector. *African Journal of Agricultural Research*, 7(9), 1368-1373. <https://academicjournals.org/journal/AJAR/article-abstract/D6B4EC436577>
- Austin, O. C. and Baharuddin, A. H. (2012). Risk in Malaysian agriculture: The need for a strategic approach and a policy refocus. *Kajian Malaysia: Journal of Malaysian Studies*, 30(1).
- Bianco, N., Litz, F., Saha, D., Clevenger, T., & Lashof, D. (2020). *Meeting the climate challenge through a new climate federalism*. World Resources Institute. <https://www.wri.org/insights/meeting-climate-challenge-through-new-climate-federalism>
- Craig, R. K. (2022). Climate adaptation law and policy in the United States. *Frontiers in Marine Science*, (9). <https://doi.org/10.3389/fmars.2022.1059734>

- Culebro Moreno, J. E., Méndez Bahena, B., & Cruz, P. (2021). Coordinación y gestión de crisis. El caso del gobierno federal y dos gobiernos subnacionales en México. *Gestión y Análisis de Políticas Públicas*, (27), 101-114. <https://doi.org/10.24965/gapp.i27.10902>
- Dermawan, A. (2021, September 10). DoE accepts Appeal Board's decision on EIA cancellation for Penang reclamation project. *New Straits Times*. <https://www.nst.com.my/news/nation/2021/09/726112/doe-accepts-appeal-boards-decision-eia-cancellation-penang-reclamation/>
- Eckersley, P., Kern, K., Haupt, W., & Müller, H. (2023). Climate governance and federalism in Germany. In A. Fenna, S. Jodoin, & J. Setzer (eds.), *Climate Governance and Federalism. A Forum of Federations Comparative Policy Analysis* (pp. 150-176). Cambridge University Press. https://www.cambridge.org/core/services/aop-cambridge-core/content/view/7832F447082D7576C738692ACF2FFDC3/9781009249652c8_150-176.pdf/climate_governance_and_federalism_in_germany.pdf
- Farber, D. A. (2008). Climate change, federalism, and the Constitution. *Arizona Law Review*, 50(3), article 879. <https://arizonalawreview.org/farber/>
- Fenna, A., Jodoin, S., & Setzer, J. (2023). Climate governance and federalism: An introduction. In A. Fenna, S. Jodoin, & J. Setzer (eds.), *Climate Governance and Federalism. A Forum of Federations Comparative Policy Analysis* (pp. 1-13). Cambridge University Press. https://www.cambridge.org/core/services/aop-cambridge-core/content/view/DDD2BE3A9C507EEFE1CE7E99D30E9290/9781009249652c1_1-13.pdf/climate_governance_and_federalism.pdf
- Fox, S. (2020). Localizing Environmental Federalism. *UC Davis Law Review*, 54(1), 133-194 <https://ssrn.com/abstract=3559849>
- Frantz, C. M., & Mayer, F. S. (2009). The emergency of climate change: Why are we failing to take action? *Analyses of Social Issues and Public Policy*, 9(1), 205-222. <https://doi.org/10.1111/j.1530-2415.2009.01180.x>
- Harrison, K. (2023). Climate Governance and Federalism in Canada. In A. Fenna, S. Jodoin, & J. Setzer (eds.), *Climate Governance and Federalism. A Forum of Federations Comparative Policy Analysis* (pp. 64-85). Cambridge University Press. https://www.cambridge.org/core/services/aop-cambridge-core/content/view/66553220B345533312D2BD4F1D8F388/9781009249652c4_64-85.pdf/climate_governance_and_federalism_in_canada.pdf
- Jatuporn, C., & Takeuchi, K. (2023). Assessing the impact of climate change on the agricultural economy in Thailand: an empirical study using panel data analysis. *Environmental Science and Pollution Research*, (30), 8123-8132. <https://doi.org/10.1007/s11356-022-22743-0>
- Liew Jia, X. (2021, November 1). World Bank funding will help Penang reach its green development goals. *The Star*. <https://www.thestar.com.my/metro/metro-news/2021/11/01/world-bank-funding-will-help-penang-reach-its-green-development-goals/>
- Mok, O. (2021, September 16). Penang to resubmit EIA for three-island reclamation, seek judicial review of Appeal Board ruling. *Malay Mail*. <https://www.malaymail.com/news/malaysia/2021/09/16/penang-to-resubmit-eia-for-three-island-reclamation-see-judicial-review-of/2006019/>
- OPCSCD (2023). Achieving Low Carbon Growth in Cities through Sustainable Urban Systems Management in Thailand. *Operations and Promotion Center for Livable Smart City Development*. <https://opcsmartcity.org/12950>
- Othman, M., Ahrasan, N., & Tan, T. (2021). *Report on Climate Change Impacts in Penang*. Penang Green Council. <https://pgc.com.my/2020/wp-content/uploads/2021/04/Climate-Change-Impacts-in-Penang.pdf>
- Perbadanan Labuan (2018). *Labuan Development Blueprint 2030*. <https://www.pl.gov.my/info-korporat/penerbitan/labuan-development-blueprint-2030/?lang=en>
- Ragu, D. (2023, September 24). No injunction, so we went ahead with reclamation, says Chow. *Free Malaysia Today*. <https://www.freemalaysiatoday.com/category/nation/2023/09/24/no-injunction-so-we-went-ahead-with-reclamation-says-chow/>
- Reich, J. (2021). Federalism and mitigating climate change: the merits of flexibility, experimentalism, and dissonance. *Transnational Environmental Law*, 10(2), 263-291. <https://doi.org/10.1017/s2047102521000121>
- Sahadžić, M. (2023). Asymmetric Federalism. In J. Cremades, & C. Hermida (eds.), *Encyclopedia of Contemporary Constitutionalism*. Springer. https://doi.org/10.1007/978-3-319-31739-7_215-1
- Sinnappan, A. (2021, September 8). Penang fishermen win appeal in move that may frustrate reclamation project. *The Vibes.com*. <https://www.thevibes.com/articles/news/40877/penang-fishermen-win-appeal-in-move-that-may-frustrate-reclamation-project/>
- Soo Wern, J. (2023, February 23). Three years to develop Malaysia's climate change Bill, says Nik Nazm. *Malay Mail*. <https://www.malaymail.com/news/malaysia/2023/02/23/three-years-to-develop-malysias-climate-change-bill-says-nik-nazmi/56385/>
- Tang, K. H. D. (2019). Climate change in Malaysia: Trends, contributors, impacts, mitigation and adaptations. *Science of the Total Environment*, 650(2), 1858-1871. <https://doi.org/10.1016/j.scitotenv.2018.09.316>
- Willis, R., Curato, N., & Smith, G. (2022). Deliberative democracy and the climate crisis. *Wiley Interdisciplinary Reviews: Climate Change*, 13(2), article e759. <https://doi.org/10.1002/wcc.759>
- Wongtanawas, S., Naweesaengsakulthai, S., Polsim, S., & Kamnuensil, P. (2019). *The Khon Kaen Model. Klannawittaya Publishing*. Retrieved on 12 September 2023 from <https://opcsmartcity.org/1553>
- Zahrin, Z., & Mohamed, A. M. (2022). Revising the unitary vs. federal classification. *Journal of International Studies*, (18), 125-157. <https://doi.org/10.32890/jis2022.18.5>