

学位論文の要旨 (論文の内容の要旨)
Summary of the Dissertation (Summary of Dissertation Contents)

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学 位 論 文

Dissertation

論 文 題 目

Dissertation Title: A Critical Analysis of Urban Climate Action Plans Towards Developing City-Specific Climate Solutions

The world is undergoing rapid urbanization, with more than half the global population now residing in cities. Concurrently, climate change is leading to increasingly frequent extreme weather events such as floods, rainstorms, heat waves, droughts, and unusually hot days. These events greatly affect the daily lives of more than half of the global population living in cities. Climate change also poses challenges to critical urban sectors, disrupting access to basic services, infrastructure, and housing. Particularly, there is evidence to suggest that climate change coupled with rapid urbanization will have devastating effects on people living in cities in the Global South. Nevertheless, cities are identified as the cause and solution to climate change. Cities contribute significantly to global GHG emissions through the combustion of fossil fuels such as oil, coal, and gas. Unlike rural areas, cities possess the resources and authority needed to plan and implement strategies and actions aimed at combating climate change. In light of this, cities are seen as an integral part of the solution to addressing climate change. City governments are encouraged now more than ever to plan and implement actions to limit urban GHG emissions (mitigation) and adapt to the perceived impacts of climate change (adaptation). Cities' actions and strategies for climate mitigation and adaptation are embedded in their climate action plans (CAPs). Yet, existing urban CAPs and climate action planning processes have been criticized as ineffective, unsustainable, and reactive.

To date, research on urban climate action planning processes and critical analysis of existing urban CAPs from a global context is scant. Much of the previous research has analyzed city-scale climate action planning from a limited scope, theme, and foci. While acknowledging the effectiveness of inclusive and participatory approaches in climate planning for cities in the Global South, few existing studies utilize a more participatory approach to envision actions relevant to future urban climate action planning. Moreover, empirical evidence is scarce regarding perceived relationships and networks that could guide future urban climate action planning initiatives in cities within the Global South. For these reasons, this doctoral study aims to critically analyze existing urban CAPs, learn from the global scale of case studies in urban climate action planning, and propose city-specific solutions for future urban climate action planning.

This study argues that effective urban climate action planning requires an integrated and comprehensive guiding framework for developing and assessing suitable CAPs. It also emphasizes the need for understanding pathways relevant to urban climate action planning in Global South cities. The study employed a mixed-method research design that integrates varying quantitative and qualitative data collection and analysis techniques. The systematic literature review followed the PRISMA model to collect relevant literature, and analysis was conducted using the content and thematic analysis approach. A qualitative content analysis method was adopted to critically examine the content and structure of urban CAPs developed or published by 278 cities globally. The study then followed an eight-step approach to develop an urban climate action planning (UCAP) framework and adopted non-parametric including Kruskal-Wallis, Dunn's post hoc, and Mann-Whitney U tests to statistically assess the suitability of urban CAPs across city types, regions, and the global divide. The Ghana case study involved a public survey and a Delphi study for data collection. The study then applied the Q methodology approach and Social Network Analysis to analyze the relevant data, focusing on identifying key climate actions and understanding the

relationships between various actors involved.

The systematic literature review revealed interesting dynamics in the trends of case study research on urban climate action planning since 2007. Most of the papers on the subject were published following the release of IPCC AR5, with the publication rate marginally decreasing during the peak of the COVID-19 pandemic. Over the years, case studies on urban climate action planning have focused on adaptation more than mitigation planning. It has also concentrated on the intersection of adaptation, adaptive management, smart cities and urban planning, urban policy, and climate policy. Again, it was found that barriers and drivers for urban climate action planning can be intrinsic or extrinsic. Critical gaps found in the literature include case study bias, limited focus on exploring effective participatory and inclusive planning, and the need for integrated and comprehensive frameworks and pathways for future climate action planning in cities.

The analysis of the content and structure of urban CAPs also identifies variations in the adoption or publication of urban CAPs from 2015 to 2022 across city types and world regions. It showed a rise in the number of CAPs adopted or published during the global COVID-19 lockdown period as compared to the post and pre-COVID-19 lockdown period. The study further revealed a transition from developing mainly mitigation-focused CAPs pre-COP21 to both mitigation and adaptation CAPs. About 96% of the sampled urban CAPs focus on the transport sector to achieve climate objectives. The content analysis observed a lack of inclusiveness, transparency and verification, evidence-based climate planning, comprehensiveness, and integration as the most common areas of non-alignment of urban CAPs with best practices in climate action planning.

The insights from the literature review and content analysis informed the development of the UCAP framework. Overall, 43 criteria are included in the framework across three stages of climate planning. The pilot test of the framework revealed that more than half of the sampled urban CAPs have a medium level of suitability, with 39% having a weak level of suitability. About 51% of plans from Europe have a weak level of suitability. A Kruskal-Wallis test shows a statistically significant association between stages of climate planning and (a) city types (p-value of 0.004326) and (b) year of adoption or publication of climate plans and suitability scores (p-value of 0.0001027). The research results also revealed that sampled urban CAPs from the Global South had higher average suitability scores than those from the Global North. This finding affirmed the literature review's conclusion regarding the significance of external technical support in developing suitable urban CAPs.

The case study in Ghana contextualized pathways as relevant climate actions and perceived interrelationships and networks for future climate action planning. It identified seven climate actions and distinct networks for collaboration, resource sharing, and knowledge/information flow relevant to future urban climate action planning. These actions include three pro-adaptation actions, one pro-mitigation action, and three actions to achieve synergies from simultaneously implementing both adaptation and mitigation. Lessons are then drawn from the pathways to propose a conceptual framework to guide Ghana's future urban climate action planning. The findings of the research underscore two main points: First, the importance of involving multiple stakeholders to prioritize climate actions and strengthen social networks and relationships in urban climate action planning. Second, the necessity for future urban climate action planning to adopt a systematic approach in developing urban CAPs. This method contributes to effective climate planning, governance, and policymaking by ensuring that CAPs are consistent with established standards and benchmarks, incorporate inclusive and participatory methods, integrate sustainable development principles, and strive to achieve multiple benefits while mitigating potential long-term negative impacts from implementing adaptation and mitigation actions.

Keywords: Urban Climate Action Planning, Framework, Adaptation, Mitigation, Cities, Climate Change, Urbanization