Summary

The literature shows that inter-municipal cooperation (IMC) is essential to address collective action problem. Previous studies have extensively discussed the relationship between IMC and economic outcomes, but the relationship between IMC and environmental outcomes is understudied. In five chapters (introductory chapter, three empirical chapters and a concluding chapter), this thesis contributes to the literature by broadly addressing the question “How does IMC impact environmental outcomes, and under which conditions can it emerge in metropolitan areas?”. In answering the question, varied methodological approaches (regression analysis, qualitative comparative analysis (QCA) and game theory) are used to address three specific sub-questions. These include:

- **Sub-question 1:** Does IMC have an impact on environmental outcomes in metropolitan areas?

- **Sub-question 2:** What are the necessary and sufficient conditions for IMC success?

- **Sub-question 3:** How can incentives facilitate IMC success in metropolitan areas?

**Chapter 2 addresses sub-question 1.** The chapter contributes to the literature by analysing whether inter-municipal cooperation makes a difference when environmental outcomes are considered. Inter-municipal cooperation in metropolitan areas has been previously shown to save costs, but can it also improve environmental outcomes? The existing empirical evidence is largely based on single case studies and does not allow to ascertain the net effect of cooperation. The chapter adopts a three-level mixed-effects linear model to conduct a systematic large-n study testing the impact of cooperation in transportation on CO₂ transport emissions. A novel dataset covering over 200 metropolitan areas in 16 OECD countries was used for the estimation. The findings demonstrate that both fragmented and consolidated metropolitan governance structures are equally inefficient in delivering a reduction in CO₂ transport emissions. Further, without functional enforcement mechanisms, mitigation policies fail to have a positive effect on environmental outcomes. Inter-municipal cooperation in metropolitan areas facilitates coherence and widespread

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enforcement and emerges as a crucial factor explaining the reduction of CO$_2$ transport emissions. Effects of metropolitan cooperation on transportation are magnified by the presence of national environmental mitigation policies.

**Chapter 3 addresses sub-question 2.** The chapter advanced a methodological path to identify the most important factors that drive IMC and contributes to the literature in two ways. First, it explores the overarching factors (necessary conditions) and critical contributing factors (sufficient conditions) that drive IMC when outcomes are intangible. Second, by comparing several metropolitan areas in Africa, the chapter compensates for the complete lack of comparative research on IMC in the African continent to date. The IMC literature identifies a wide range of economic and socio-political factors that may drive cooperation. However, the studies are limited to single variable relations and net effects, while in reality, it is expected that the factors that drive IMC will be conjunctural and thus must not be viewed as isolated explanations. Also, the existing literature bundles the factors and does not allow singling out the most important factors for IMC success. The chapter fills this methodological and empirical gap by drawing on the factors that underlie the production and transaction costs hypotheses and employs a most similar comparative case design to test the causal drivers of IMC success. As the first comparative case study on IMC in Africa, which uses QCA, the chapter analyses the institutionalisation of IMC in the implementation of transportation infrastructure projects in the metropolitan areas of Greater Accra (Ghana), Greater Kumasi (Ghana), and Dar es Salaam (Tanzania). The findings show that no overarching factors must be present for IMC success. However, the availability of financial incentives or the political alignment between the preferences of local government officials and their principals were critical contributing factors for IMC success. This finding provides an alternative perspective in understanding the drivers of IMC beyond the global North context as it deviates from the growing literature on the role of network embeddedness in facilitating IMC success.

**Chapter 4 addresses sub-question 3** by building on a rare game theory approach in the IMC literature.$^2$ The chapter contributes to the literature by introducing the role of exogenous benefits that align with joint benefits to demonstrate the optimal strategy to incentivise IMC. Assuming that cooperation in transport infrastructure provision between two local governments to reduce CO$_2$ transport emissions is absent, though each stands to benefit from joint provision, one-shot bargaining games are played for two differently motivated local governments. The first is a

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core city most affected by the problem, whereas the second city is peripheric and less affected. Using three game theory scenarios (a prisoner’s dilemma and two sequential bargaining games), the chapter shows that contrary to the expectations in the literature, even if the sum of the status quo of the core and periphery is greater than their joint benefits, IMC can still emerge if the right exogenous incentives are provided. Exogenous incentives add to the value of joint benefits and make it higher than the players status quo to make cooperation an optimal choice.

Based on the insights from the three substantive chapters, three core research and policy contributions emerge. To start, while cities are unilaterally taking on the climate change mantle (for instance, New York and Washington adopting the Paris Agreement after the USA government excluded itself), the findings indicate that the impact of cooperation on CO$_2$ transport emissions is magnified in metropolitan areas within countries with stringent environmental mitigation policies. As a result, it is worthwhile for scholars and practitioners to continue advocating a coupling of local thinking with global and national scales of action in order to secure a reduction in negative environmental outcomes.

Secondly, drawing on cases from the African context, the thesis breaks the high prevalence of global North literature on understanding the drivers of IMC. The thesis highlights that accounting for contextually defined incentives such as finances in the African context and other political realities remains critical to IMC success.

Lastly, standard models and discourses addressing environmental dilemmas suggest tradeoffs between individual and collective social gains. This thesis suggests that, although not easy, both personal and collective gains in ensuring IMC around environmental challenges can be realised. The thesis sheds light on a win-win strategy to balance both individual and collective societal benefits to ensure IMC emerges to address environmental challenges.