

# A Conflict-Sensitive Approach to Climate Change Mitigation and Adaptation in the Urbanizing Asia-Pacific

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## Abstract

Existing studies have extensively studied the link between climate change and conflict. Less well-researched is the potential of climate change mitigation and adaptation in leading to conflict, in particular urban violence. There is potential for the two to undermine one another if a conflict-sensitive approach is not taken. Conflict sensitivity means ‘do no harm’ and implies a contribution to peacebuilding. Mitigation and adaptation may increase inequality in access to resources and the distribution of costs and benefits, which is a risk factor in socio-economic violence. Violence causes the loss of social capital, destruction of infrastructure, diversion of scarce resources, and undermines the perceived legitimacy and effectiveness of institutions by the groups involved in violence. All of this damage may in the long term reduce the effectiveness of mitigation and adaptation. This paper examines the special considerations that should be given in the design and implementation of mitigation and adaptation strategies in order to reduce urban violence while addressing climate change in cities in the rapidly urbanizing Asia-Pacific. The paper’s findings are four considerations for conflict sensitivity, namely a) horizontal coordination between various departments of the government, b) vertical coordination among different levels of government, c) collaboration with non-state actors and d) inclusivity of the needs of the poor. The paper views actors at the municipal level as an appropriate level and unit to take up the conflict-sensitive approach to mitigation and adaptation. It ends with some general recommendations for these actors as well as for future research.

Keywords

Urban violence, mitigation, adaptation, climate change, inequalities, Asia-Pacific



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WORKING PAPER 7  
MARCH 2015

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## Acknowledgements

The author would like to thank Dr. Patrick Huntjens and Dr. Hens Runhaar for taking their time to provide constructive written feedback on earlier drafts of this paper. The author would also like to thank Dr. Eamon Aloyo, Dr. David Connolly and Dr. Enza Roberta Petrillo for the discussions that helped shape the paper. Any mistakes that remain are the author's sole responsibility.

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## 1. Introduction

Between 2010 and 2050, the world's urban population will grow by 3 billion, with the majority of new urban residents living in developing countries.<sup>1</sup> Among the various challenges accompanying urbanization are violence and climate change. The World Health Organization defines violence as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.”<sup>2</sup> Violence in urban areas mainly consists of “violence expression of grievances (which may be social, political or economic) vis-à-vis the state or other actors”.<sup>3</sup> It is a reactive process and is generally expressive rather than instrumental.<sup>4</sup> Over the past decade, urban violence has become the most serious form of lethal violence, most present in non-conflict countries.<sup>5</sup> Its relevance has also increased due to the expansion of megacities. A statistically significant correlation exists between urbanization growth rate and the inclination to violence.<sup>6</sup>

A survey of 468 cities found that between 2007 and 2012 representatives from 79 percent of the cities have perceived changes in temperature, precipitation, sea level, or natural hazards attributed to climate change.<sup>7</sup> Climate change impacts health, safety, water and food security, with risks being particularly high for those lacking essential infrastructure and services, or those living in poor-quality housing and exposed areas.<sup>8</sup> Since the early 2000s, mitigation and adaptation have taken place at the city-level around the world.<sup>9</sup> Mitigation is “technological change and substitution that reduce resource inputs and emissions per unit of output [...]”.<sup>10</sup> Adaptation is “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.”<sup>11</sup> Within adaptation in particular, Tompkins and Eakin draw distinctions between (a) public provision of adaptation goods for public benefit, (b) public provision of adaptation goods for (largely) private benefit, (c) private adaptation for private benefit, and (d) private adaptation for public benefit.<sup>12</sup> When talking about adaptation, this paper only focuses on the second and

<sup>1</sup> Jack Goldstone, “The New Population Bomb: The Four Megatrends That Will Change the World,” *Foreign Affairs*, 2010, 31–43.

<sup>2</sup> WHO, *World Report on Violence and Health* (Geneva, Switzerland: World Health Organization, 2002), <http://whqlibdoc.who.int/hq/2002/9241545615.pdf>.

<sup>3</sup> Jo Beall, Thomas Goodfellow, and Dennis Rodgers, “Cities and Conflict in Fragile States in the Developing World,” *Urban Studies* 50, no. 15 (November 2013): 3069.

<sup>4</sup> *Ibid.*

<sup>5</sup> EUISS and ICRC, *Urban Violence and Humanitarian Challenges* (Paris: European Union Institute for Security Studies, January 19, 2012), [http://www.iss.europa.eu/uploads/media/Urban\\_violence\\_and\\_humanitarian\\_challenges.pdf](http://www.iss.europa.eu/uploads/media/Urban_violence_and_humanitarian_challenges.pdf).

<sup>6</sup> World Bank, *Violence in the City: Understanding and Supporting Community Responses to Urban Violence* (Washington, D.C.: World Bank, 2011).

<sup>7</sup> JoAnn Carmin, Nikhil Nadkarni, and Christopher Rhie, *Progress and Challenges in Urban Climate Adaptation Planning: Results of a Global Survey*. (Cambridge, MA, USA: Massachusetts Institute of Technology, 2012).

<sup>8</sup> IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Summary for Policymakers* (Intergovernmental Panel on Climate Change, March 31, 2014), 18, [http://ipcc-wg2.gov/AR5/images/uploads/IPCC\\_WG2AR5\\_SPM\\_Approved.pdf](http://ipcc-wg2.gov/AR5/images/uploads/IPCC_WG2AR5_SPM_Approved.pdf).

<sup>9</sup> Harriet Bulkeley, “Cities and the Governing of Climate Change,” *Annual Review of Environment and Resources* 35, no. 1 (November 21, 2010): 229–53, doi:10.1146/annurev-environ-072809-101747.

<sup>10</sup> IPCC, *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. (Cambridge, UK and New York, NY, USA: Cambridge University Press, 2007), 818, [http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4\\_wg3\\_full\\_report.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4_wg3_full_report.pdf).

<sup>11</sup> IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. (Cambridge, UK: Cambridge University Press, 2007), 869, [http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4\\_wg2\\_full\\_report.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4_wg2_full_report.pdf).

<sup>12</sup> Emma L. Tompkins and Hallie Eakin, “Managing Private and Public Adaptation to Climate Change,” *Global Environmental Change* 22 (2012): 3–11.

third categories. Examples of the second category include government subsidies for adaptation measures, in which non-participants do not benefit while having to pay. Examples of the third category include home insulation and relocation measures. The adoption of the measure by one can reduce the possibility of another to adopt the same measure. In addition, non-payers do not benefit. These two categories are likely to be prone to conflict due to the tension between participants and non-participants and the cost-benefit distribution that may not always be just, as explained further below.

This paper sees three links between urban violence and mitigation as well as adaptation. Firstly, mitigation and adaptation can create new or exacerbate existing tensions with, between, and within communities, which can escalate into violence. Secondly, mitigation and adaptation can be a mechanism for conflict prevention and peacebuilding by addressing the causes and impacts of violence. Thirdly and finally, violence can negatively impact on mitigation and adaptation. This paper focuses on the first and second links, which call for a minimization of risks that mitigation and adaptation create or exacerbate violence and a fair distribution of their impacts. Table 1 provides examples of mitigation and adaptation that can potentially increase or prevent urban violence, which will be elaborated on in Section 4.

	<b>Mitigation</b>	<b>Adaptation</b>
<b>Housing</b>	Positive incentives for energy conservation	Eviction from areas vulnerable to climate change impacts
		Building codes for new buildings or retrofitting for existing buildings
<b>Transport</b>	Positive incentives for using public transport	Managed retreat of public transport infrastructure away from flood-sensitive areas
	Investment in public transport infrastructure	
<b>Utilities</b>	Demand management by changing price of utilities	
<b>Municipal waste management</b>	Waste recycling and better waste collection services	
<b>Employment</b>	Growth of employment in green industries and decline in carbon-intensive industries	New employment opportunities, particularly for highly-skilled laborers

*Table 1 Examples of mitigation and adaptation that can potentially influence urban violence.<sup>13</sup>*

## 2. The need for conflict-sensitive urban responses to climate change

### 2.1 Increasing urban violence due to climate change

Climate change can be linked, alongside other factors, to urban violence. This is notwithstanding the multiple pathways and feedbacks between the climate system, natural

<sup>13</sup> See references in Section 4.

resources, human security, and society stability.<sup>14</sup> There is broad agreement that in general climate change causes resource scarcity, which may lead to conflicts, and that climate change acts a ‘threat-multiplier’ that intensifies problems and undermines coping capacities, which in turn results in conflict.<sup>15</sup> The former explanation is not directly applicable to urban areas. However, to the extent that urban livelihoods depend on resources from their hinterlands, resource scarcity indirectly relates to urban violence when city dwellers are deprived of or have to pay higher prices for resources. In addition, land is scarce in cities. The availability and usability of this land can also be undermined by climate change. Regarding the latter explanation on climate change as a threat multiplier, CNA Corporation views this phenomenon in two ways. Firstly, climate change contributes to higher instability in some of the world’s most volatile regions. Secondly, climate change can contribute to tensions in stable regions.<sup>16</sup> Cities can be viewed as volatile hotspots within a country, ‘volatile’ being understood as “on edge in terms of [the] ability to provide basic needs: food, water, shelter and stability”.<sup>17</sup> Last but not least, urban island effect accentuated by climate change may influence the behavior of citizens. Mares has used 20 years of monthly data on urban violence and temperature in St. Louis, Missouri and has found that more socially-disadvantaged neighborhoods are likely to experience higher levels of violence as a result of anomalously warm temperatures than the more affluent communities.<sup>18</sup> Mares has attempted to explain the findings using ‘heat aggression theory’ and ‘routine activities theory’.

Empirical studies so far have detected a general correlation between climate change and different types of conflict, although other factors also play a role. Studies in a special issue of *Political Geography* emphasized the importance of not decoupling climate change and other factors when identifying their link to conflict. For example, Raleigh and Urdal concluded that demographic and environmental variables, including soil degradation, local water scarcity, population density and growth, GDP, as well as changes in polity, only have a modest effect on the risk of civil conflict.<sup>19</sup> Barnett and Adger stressed that “...climate change will not undermine human security or increase the risk of violent conflict in isolation from other important social factors”.<sup>20</sup> Temperature and precipitation change and anomalies are normally used to represent climate change. Some studies also included changes in water and food availability as indicators of climate change alongside temperature and precipitation. Zhang et al. combine agro-ecological, socio-economic, and demographic variables from the period 1500-1800 A.D. in a quantitative study. The findings indicate climate variability to be the ultimate cause, and climate-driven economic downturn as the proximate cause, of large-scale human crises (such as social disturbance, war, migration, epidemics, and famine), in Europe

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<sup>14</sup> Jürgen Scheffran et al., “Climate Change and Violent Conflict,” *Science* 336 (May 18, 2012): 869–71; Dennis Tänzler, Achim Maas, and Alexander Carius, “Climate Change Adaptation and Peace,” *Wiley Interdisciplinary Reviews: Climate Change* 1, no. 5 (October 2010): 741–50.

<sup>15</sup> Pius Yanda and Salome Bronkhorst, *Climate Change and Conflict: Conflict-Sensitive Climate Change Adaptation in Africa*, Briefing Paper, Policy & Practice Brief (Umhlanga Rocks, South Africa: African Centre for the Constructive Resolution of Disputes (ACCORD), November 2011), [http://dspace.cigilibrary.org/jspui/bitstream/123456789/32462/1/policy\\_practice14.pdf?1](http://dspace.cigilibrary.org/jspui/bitstream/123456789/32462/1/policy_practice14.pdf?1).

<sup>16</sup> CNA Military Advisory Board, *National Security and the Threat of Climate Change* (Alexandria, VA: CNA Corporation, 2007), <http://www.cna.org/sites/default/files/National%20Security%20and%20the%20Threat%20of%20Climate%20Change%20-%20Print.pdf>.

<sup>17</sup> *Ibid.*, 44.

<sup>18</sup> Dennis Mares, “Climate Change and Levels of Violence in Socially Disadvantaged Neighborhood Groups,” *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 90, no. 4 (2013): 768–83.

<sup>19</sup> Clionadh Raleigh and Henrik Urdal, “Climate Change, Environmental Degradation and Armed Conflict,” *Political Geography* 26, no. 6 (2007): 689.

<sup>20</sup> Jon Barnett and W. Neil Adger, “Climate Change, Human Security and Violent Conflict,” *Political Geography* 26, no. 6 (August 2007): 644.

and the Northern Hemisphere.<sup>21</sup> In another geographical setting, a quantitative analysis by Zhang et al. identified strong and statistically significant correlations between climate change, war, harvest level, population size and dynastic transitions in China.<sup>22</sup> There were more frequent wars, population decline and dynastic changes during the cold periods.<sup>23</sup> Tol and Wagner have reached similar conclusion; in preindustrial Europe, cooler periods were more likely to be related to periods of violence than warmer phases.<sup>24</sup> More recently, Hsiang et al. conducted a synthesis of quantitative studies on climate and human conflict.<sup>25</sup> The data analyzed spanned from 10,000 BC to the present day, and covered all major regions in the world. Their conclusion is that given the large potential changes in precipitation and temperature projected for the coming decades, amplified rates of human conflict could represent a large and critical social impact of anthropogenic climate change in low- and high-income countries.

## 2.2 Conflict-sensitive mitigation and adaptation

Since climate change itself has been shown to be linked to urban violence, mitigation and adaptation should address the root causes of urban violence or not increase urban violence at a minimum. Conflict sensitivity is not new to some fields, such as development cooperation. A consortium of non-governmental organizations (NGOs) funded by the UK Department for International Development issued a conflict sensitivity resource pack for businesses, humanitarian assistance and peacebuilding organizations.<sup>26</sup> The resource pack defines conflict sensitivity in a minimalistic sense, as a means for donors to factor conflict awareness into programming and reducing any harmful effects in order to boost the effectiveness of development work and to increase the cost-benefit ratio. Another guideline, the Principles for Good International Engagement in Fragile States and Situations, has been endorsed by the Organisation for Economic Co-operation and Development. It includes the ‘do no harm’ principle, as a core principle that resembles conflict sensitivity.<sup>27</sup> The so-called ‘harm’ denotes societal divisions, as well as corruption and abuse that could be created or exacerbated by international interventions, if the interventions are not preceded by conflict and governance analysis and designed with adequate safeguards. In addition to the general frameworks, there are also guidelines targeted at specific sectors. For example, the US Agency for International Development developed a checklist for conflict sensitivity in education programs, describing conflict-sensitive education as one that promotes equitable access to educational opportunity and curricula based on skills and values that support peace and social cohesion.<sup>28</sup> In nature conservation, the International Institute for Sustainable Development produced a practitioners’ manual. It targets NGOs designing and implementing

<sup>21</sup> David D. Zhang et al., “The Causality Analysis of Climate Change and Large-Scale Human Crisis,” *Proceedings of the National Academy of Sciences of the United States of America* 108, no. 42 (2011): 17296–301. Climate change indicated in this article is interpreted as natural climate variability, since the study focused on pre-industrial Europe.

<sup>22</sup> David D. Zhang et al., “Climate Change, Wars and Dynastic Cycles in China over the Last Millennium,” *Climate Change* 76, no. 3–4 (2006): 459–77.

<sup>23</sup> *Ibid.*

<sup>24</sup> Richard S. J. Tol and Sebastian Wagner, “Climate Change and Violent Conflict in Europe over the Last Millennium,” *Climatic Change* 99 (2010): 65–79.

<sup>25</sup> Solomon M. Hsiang, Marshall Burke, and Edward Miguel, “Quantifying the Influence of Climate on Human Conflict,” *Science* 341 (2013): 1235367–1 – 14.

<sup>26</sup> APFO et al., *Conflict-Sensitive Approaches to Development, Humanitarian Assistance and Peacebuilding: Tools for Peace and Conflict Impact Assessment* (London, 2004).

<sup>27</sup> OECD, *Principles for Good International Engagement in Fragile States & Situations* (Paris: Organisation for Economic Co-operation and Development, April 2007), <http://www.oecd.org/development/incf/38368714.pdf>.

<sup>28</sup> USAID, *Checklist for Conflict Sensitivity in Education Programs* (Washington D.C.: U.S. Agency for International Development, November 2013), [http://www.usaid.gov/sites/default/files/documents/1865/USAID\\_Checklist\\_Conflict\\_Sensitivity\\_14FEB27\\_cm.pdf](http://www.usaid.gov/sites/default/files/documents/1865/USAID_Checklist_Conflict_Sensitivity_14FEB27_cm.pdf).

field-level conservation activities and protected area management authorities. Recognizing that conservation can restrict people's access to key livelihood resources, can introduce new or additional economic burdens or risks, and can result in unequal distribution of benefits, the manual characterizes conflict-sensitive conservation as one that takes into account the causes, actors and impacts of conflict in order to minimize conflict risks and maximize peacebuilding opportunities. The United Nations Development Programme (UNDP) makes similar recommendations regarding conflict-sensitive natural resources management. It outlines four steps that should each be inclusive and participatory, namely analysis, design, implementation, and monitoring and evaluation.<sup>29</sup> Currently, no framework for conflict-sensitive mitigation and adaptation exists. Conflict-sensitive mitigation and adaptation can strengthen the feasibility, effectiveness, sustainability and equitability of the strategies. Violence negatively impacts on social capital and cohesion. As social capital and cohesion are destroyed, people are unable or unwilling to collaborate on any initiatives related to the environment or development.<sup>30</sup> Social capital is defined as "features of social life – networks, norms and trust – that enable participants to act together more effectively to pursue shared objectives."<sup>31</sup> Social cohesion is defined as "the willingness of members of a society to cooperate with each other in order to survive and prosper."<sup>32</sup> Urban residents trapped in violence 'hotspots' may opt to decrease or avoid investing in their physical or human capital. They may also delay setting-up businesses, and curb their own social exchange and solidarity with neighbors for fear of becoming victims to violence.<sup>33</sup> However, social capital and cohesion are instrumental in increasing societal resilience and, therefore, in mitigating and adapting to climate change.<sup>34</sup> Moreover, violence diverts resources from other purposes compatible with mitigation and adaptation (such as investment in green urban growth) to expenditures on police, security systems and judicial services.<sup>35</sup>

Mitigation and adaptation can increase armed conflict, particularly in circumstances where property rights and conflict management institutions are ineffective or illegitimate.<sup>36</sup> Under these circumstances, mitigation and adaptation may change the distribution of access to resources or reinforce unjust existing distribution. In a special issue of *Global Environmental Change*, researchers presented such examples, such as the "Reducing Emissions from Deforestation and Forest Degradation" program in Tanzania that has undermined local livelihoods and led to evictions; inequitable water policies in Bolivia and Peru that have interacted with pre-existing inequalities to produce a skewed asset distribution and water access; and a technocratic approach to adapt to water scarcity in Mexico that has led to a reliance on precarious and expensive technologies.<sup>37</sup> All examples flagged the need for

<sup>29</sup> UNDP, *Strengthening Capacity for Conflict-Sensitive Natural Resource Management* (New York: United Nations Development Programme, 2012).

<sup>30</sup> World Bank, *Violence in the City: Understanding and Supporting Community Responses to Urban Violence*.

<sup>31</sup> Robert D. Putnam, "Tuning In, Tuning out: The Strange Disappearance of Social Capital in America," *Political Science and Politics* 28, no. 4 (December 1995): 664–665.

<sup>32</sup> Dick Stanley, "What Do We Know about Social Cohesion: The Research Perspective of the Federal Government's Social Cohesion Research Network," *The Canadian Journal of Sociology* 28, no. 1 (Winter 2003): 5.

<sup>33</sup> Robert Muggah, "Researching the Urban Dilemma: Urbanization, Poverty and Violence," Canada: IDRC-UKAID, 2012, <http://www.hasow.org/uploads/trabalhos/98/doc/1401774567.pdf>.

<sup>34</sup> W. Neil Adger, "Social Capital, Collective Action, and Adaptation to Climate Change," *Economic Geography* 79, no. 4 (2003): 387–404; Mark Pelling and Chris High, "Understanding Adaptation: What Can Social Capital Offer Assessments of Adaptive Capacity?," *Global Environmental Change* 15 (2005): 308–19.

<sup>35</sup> Muggah, "Researching the Urban Dilemma"; Caroline O. N. Moser, *Reducing Urban Violence in Developing Countries*, Policy Brief, Global Views (Washington D.C.: Brookings Institution, November 2006).

<sup>36</sup> IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Summary for Policymakers*.

<sup>37</sup> Julia McDowell and Jeremy Hess, "Assessing Adaptation: Multiple Stressors on Livelihoods in the Bolivian Highlands under a Changing Climate," *Global Environmental Change* 22, no. 2 (2012): 342–352; Jamie McEnvoy and Margaret Wilder, "Discourse and Desalination: Potential Impacts of Proposed Climate Change Adaptation Interventions in the Arizona–Sonora Border Region" *Global Environmental Change* 22, no. 2 (2012): 353–363; Betsy Beymer-Farris and Thomas Bassett, "The REDD Menace: Resurgent Protectionism in

conflict-sensitive responses to climate change. Existing research has identified ways in which adaptation could contribute to conflict. According to Yanda and Bronkhorst, this could happen when adaptation lacks coherency with other political processes and sectoral policies, when adaptation has a national focus and is neglecting local and transboundary initiatives, when there is low participation by affected stakeholders, when adaptation reinforces inequities or establishes competition between distinct groups, and when decision-making processes regarding adaptation are not perceived as legitimate.<sup>38</sup> The lack of consideration of these unintended consequences of adaptation could undermine and threaten natural resources, livelihoods and human security, an issue that Babicky has found to have been ignored by most studies, referring to adaptation with scale as large as transboundary river basins and problems of migration.<sup>39</sup> Using the Nile river basin as an example, he contends that adaptation by an upstream country can result in water scarcity in downstream countries, thereby increasing the chance for conflict over the shared water resource. With regard to migration, he mentions the use of resettlement as an option to adapt to climate change, which is most applicable to low-lying states. The conflict potential of this adaptation option lies in the uprooting of people from their values, culture and land, which may lead to tension among themselves and their host communities. In addition, Vivekananda and Tänzler et al. warn that a technical approach to adaptation focusing on environmental risks but not broader socio-political and cultural contextual realities may contribute to more violence.<sup>40</sup> Others such as Hiller et al. and Bulkeley et al. raise similar issues, albeit from an urban climate justice perspective.<sup>41</sup> In this perspective, various notions of justice such as fairness, equity, inequality, participation, legitimacy and so on are currently being used and understood in different ways by various actors in the urban responses to climate change.<sup>42</sup> For mitigation and adaptation, one needs to address governance issues, as well as provide technical solutions.

### 2.3 Research design

In the above-mentioned publications and projects, researchers focus on national and international adaptation efforts in areas of conflict and do not distinguish between mitigation and adaptation in a rural and an urban setting. Nor do they link mitigation and adaptation specifically to urban violence, which is different from conflicts occurring in rural areas. This paper differs from previous work mainly due to the focus on urban violence that relates to the (unintended) impact of mitigation and adaptation at the city level. In addition, instead of proposing a conflict-sensitive approach to be taken by donors and NGOs operating in peacebuilding and development aid contexts, this paper concentrates on actors located within urban agglomerates, including the municipal government, local branches of the central government, civil society organizations, and the private sector. Finally, the scope of the paper is limited to socio-economic violence rather than political and institutional conflict.

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Tanzania's Mangrove Forests." *Global Environmental Change* 22, no.2 (2012): 332-341; Barbara Deutsch Lynch, "Vulnerabilities, Competition and Rights in a Context of Climate Change toward Equitable Water Governance in Peru's Rio Santa Valley." *Global Environmental Change* 22, no.2 (2012): 364-373.

<sup>38</sup> Yanda and Bronkhorst, *Climate Change and Conflict: Conflict-Sensitive Climate Change Adaptation in Africa*.

<sup>39</sup> Philipp Babicky, "A Conflict-Sensitive Approach to Climate Change Adaptation," *Peace Review: A Journal of Social Justice* 25, no. 4 (2013): 480-88, doi:10.1080/10402659.2013.846131.

<sup>40</sup> Janani Vivekananda, *Practice Note: Conflict-Sensitive Responses to Climate Change in South Asia* (Initiative for Peacebuilding, October 2011); Tänzler, Maas, and Carius, "Climate Change Adaptation and Peace."

<sup>41</sup> Jean Hiller et al., "Climate Justice in the Australian City" (presented at the *State of Australian Cities National Conference*, Sydney: Sydney: SOAC, 2013); Harriet Bulkeley, Gareth A.S. Edwards, and Sara Fuller, "Contesting Climate Justice in the City: Examining Politics and Practice in Urban Climate Change Experiments," *Global Environmental Change* 25 (2014): 31-40.

<sup>42</sup> Bulkeley, Edwards, and Fuller, "Contesting Climate Justice in the City: Examining Politics and Practice in Urban Climate Change Experiments."

This paper aims to bridge the literature on urban violence and inequality with that on mitigation and adaptation, which have largely remained separated. It argues that inequality is an underlying cause of urban violence, and thus needs to be taken into account in mitigation and adaptation. My research question is “What special considerations should be given in the design and implementation of mitigation and adaptation strategies in order to reduce urban violence while addressing climate change in cities in the Asia-Pacific?” This paper consists of desk research based on peer-review journal articles and grey literature. Through a literature review, it identifies mitigation and adaptation strategies that impact on inequality, and thus potentially lead to violence. It uses illustrative cases from large urban agglomerates in some of the most rapidly urbanizing countries in Asia-Pacific, such as Jakarta, Metro Manila and Bangkok.<sup>43</sup> The cases are gathered from journal articles and working papers, as well as publications from the UN Human Settlements Programme (UN-Habitat), UN Economic and Social Commission for Asia and the Pacific, UNDP, as well as knowledge institutes.

The paper focuses on the Asia-Pacific firstly because of its unprecedented scale of urbanization. Home to half of the world’s urban population, the Asia-Pacific has accounted for 65 percent of the demographic expansion of urban areas worldwide since 2000.<sup>44</sup> Today, seven out of the ten most populous cities are in Asia.<sup>45</sup> Secondly, the region is highly vulnerable to climate change. Seven out of the ten countries most vulnerable to climate change and disasters caused by natural hazards are located in the region, which also experienced 38 percent of global disaster-related economic losses between 1980 and 2009.<sup>46</sup> Its residents are four times more likely to be affected by natural disasters than people living in Africa and 25 times more likely than those living in Europe or North America.<sup>47</sup> Thirdly, despite significant progress in economic development, the region hosts two-thirds of the world’s poor with 1.8 billion living on less than US\$2 per day, of which close to one billion live on less than US\$1.25 per day.<sup>48</sup> In addition, inequality is still prevalent in many countries, as indicated by the World Bank’s Gini Index. Half of the world’s slum population is based in the Asia-Pacific, which represents a third of the region’s households.<sup>49</sup> Fourthly and finally, Asia-Pacific is a region rarely studied in urban violence literature, which has largely focused on Latin America.<sup>50</sup>

Although the selection of best practices to illustrate a conflict-sensitive approach to mitigation and adaptation is to some extent determined by the availability of English-language information, the paper applied some criteria to ensure a level of consistency among the

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<sup>43</sup> The region ‘Asia-Pacific’ refers to countries in the Eastern Asian and the South-Eastern Asian region as distinguished by the UN, which comprises China, Democratic People’s Republic of Korea, Japan, Mongolia, Republic of Korea, Brunei Darussalam, Cambodia, Indonesia, Lao People’s Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam.

<sup>44</sup> UN Habitat, *State of the World’s Cities 2012/2013. Prosperity of Cities* (Nairobi, Kenya: United Nations Human Settlement Programme, 2012), <http://sustainabledevelopment.un.org/content/documents/745habitat.pdf>.

<sup>45</sup> *Ibid.*

<sup>46</sup> Bindu N. Lohani, “Asia-Pacific’s Vulnerability to Climate Change,” Asian Development Bank, November 29, 2012.

<sup>47</sup> UNESCAP, *Economic and Social Survey of Asia and the Pacific 2010. Sustaining Recovery and Dynamism for Inclusive Development*. (Bangkok: United Nations Economic and Social Commission for Asia and the Pacific, 2010), [http://unctad.org/en/docs/escap\\_2547\\_en.pdf](http://unctad.org/en/docs/escap_2547_en.pdf).

<sup>48</sup> *Ibid.*

<sup>49</sup> UN Habitat, *Promoting Resilient Housing and Secure Tenure in a Changing Climate, Asia-Pacific Urbanization and Climate Change Issue Brief Series* (Bangkok: UN Habitat and UNDP, January 2014). Note that UN Habitat uses a different scope of the ‘Asia-Pacific’ than this paper, the main difference being the inclusion of South Asia in the scope.

<sup>50</sup> A. Winton, “Urban Violence: A Guide to the Literature,” *Environment and Urbanization* 16, no. 2 (October 1, 2004): 165–84, doi:10.1177/095624780401600208; Muggah, “Researching the Urban Dilemma.”

examples. The examples, with the exception of Guangzhou and a broad case covering various cities in Indonesia, are all capital cities of Asia-Pacific countries. The Human Development Index of these countries range between medium and very high.<sup>51</sup> With the exception of China and Cambodia, all have a democratic regime.<sup>52</sup> Most have multiple ethnic minorities.<sup>53</sup> With the exception of Mongolia, for which data is unavailable, the others have experienced some kind of conflict in the past few decades.<sup>54</sup> Despite the conflicts, three of the countries (Indonesia, Mongolia and South Korea) currently enjoy a high state of peace, whereas the other four (the Philippines, China, Thailand and Cambodia) are in a medium state of peace.<sup>55</sup> Where data is available, Gini-coefficients of the countries studied are similar, with the overall national Gini-coefficient and the Gini-coefficient for urban areas at the national level ranging between 0.32 and 0.43.<sup>56</sup> The Gini-coefficients for the cities themselves have a wider range of variation between 0.27 and 0.48.<sup>57</sup> For the period 1993 to 2012, The Philippines, Thailand and Mongolia were ranked in the top 10 countries on the long-term Climate Risk Index.<sup>58</sup> Manila, Jakarta and Bangkok are three cities most at-risk from climate change.<sup>59</sup> Most of the cities are located on or near coastal areas or deltas, some with major rivers flowing through their territories.

Section 3 of this paper starts by presenting the risk factors of urban violence, particularly socio-economic risk factors related to inequality. It then provides examples of how inequality is manifested in economic, social, and political domains that are most relevant to mitigation and adaptation and, as a result, how it relates to urban violence. Section 4 delves deeper into the Asia-Pacific and the lack of conflict sensitivity in existing urban strategies of mitigation and adaptation. This is followed by Section 5 that proposes four considerations that ought to be taken into account in order to realize a conflict-sensitive approach to mitigation and adaptation, illustrated with best practices from Asia-Pacific cities. The paper concludes with recommendations for future research, as well as for urban actors.

### 3. Inequality and urban violence

#### 3.1 Risk factors of urban violence

Urban space is characterized by conflict, which becomes violent through several risk factors and their interaction.<sup>60</sup> Cities provide physical, social and demographic infrastructure for significant mobilization of the masses.<sup>61</sup> Vanderschueren calls poor urban families in the

<sup>51</sup> UNDP, *Human Development Report 2014* (New York: United Nations Development Programme, 2014).

<sup>52</sup> As indicated by the score of 2013 in the *Polity IV Individual Country Regime Trends, 1946-2013*, available at: <http://www.systemicpeace.org/polity/polity4x.htm>, accessed 12 November 2014.

<sup>53</sup> According to the *Minorities at Risk* political or economic discrimination indicators, see <http://www.cidcm.umd.edu/mar/assessments.asp?regionId=3>.

<sup>54</sup> According to the *Uppsala Conflict Data Program* (Date of retrieval: 12 November 2014) UCDP Conflict Encyclopedia: [www.ucdp.uu.se/database](http://www.ucdp.uu.se/database), Uppsala University, Department of Peace and Conflict Research.

<sup>55</sup> Institute for Economics and Peace, *Global Peace Index 2014: Measuring Peace and Assessing Country Risk*, IEP Report (Sydney, New York, and Oxford: Institute for Economics and Peace, June 2014).

<sup>56</sup> UN Habitat, *State of the World's Cities 2010/2011. Bridging the Urban Divide. Overview and Key Findings* (Nairobi, Kenya: United Nations Human Settlement Programme, 2010), [http://sustainabledevelopment.un.org/content/documents/11143016\\_alt.pdf](http://sustainabledevelopment.un.org/content/documents/11143016_alt.pdf). See also the *World Bank Gini Index*: <http://data.worldbank.org/indicator/SI.POV.GINI>, accessed 12 November 2014.

<sup>57</sup> *Ibid.*

<sup>58</sup> Sonke Kreft and David Eckstein, *Global Climate Risk Index 2014*, Briefing paper (Bonn, Germany: Germanwatch, November 2013).

<sup>59</sup> Maplecroft, *Climate Change Vulnerability Index 2013: Most at Risk Cities* (Bath, United Kingdom: Maplecroft, November 2012), [http://www.preventionweb.net/files/29649\\_maplecroftccvisubnationalmap.pdf](http://www.preventionweb.net/files/29649_maplecroftccvisubnationalmap.pdf).

<sup>60</sup> Giulia Agostini et al., *Understanding the Processes of Urban Violence: An Analytical Framework* (London: London School of Economics, 2007).

<sup>61</sup> Beall, Goodfellow, and Rodgers, "Cities and Conflict in Fragile States in the Developing World," 3069.

South "... a milieu permeated with social frustrations in which the culture of violence can flourish".<sup>62</sup> Researchers have different ways of classifying urban violence. This paper uses the frameworks put forward by Gizewski and Homer-Dixon, as well as Moser to explain the type of urban violence addressed in this paper. Gizewski and Homer-Dixon have identified three broad categories of urban violence: political violence (which involves violence between the state and its challengers), communal and ethnic violence, and finally criminal and anomic violence.<sup>63</sup> Political violence (in the form of riot, insurgency, rebellion, revolution or civil war) results from dissatisfaction with the performance of the state, which may itself respond with violence or other tactics to the challenges.<sup>64</sup> As for communal and ethnic violence, protagonists are private parties whose rivalries often involve perceived disparities in access to political and economic opportunities, which also relate to the state's performance.<sup>65</sup> Moser's conceptual framework distinguishes between political, institutional, economic and social violence.<sup>66</sup> Social violence, which includes ethnic, territorial or identity-based violence, is similar to the concept of communal and ethnic violence identified by Gizewski and Homer-Dixon. Economic violence, which is associated with street crime and organized crime, is closely related to Gizewski and Homer-Dixon's concept of criminal and anomic violence. Finally, institutional violence perpetrated by state institutions and non-state groups as well as political violence driven by the will to win or hold political power are comparable with Gizewski and Homer-Dixon's definition of political violence. Both frameworks emphasize the interrelationship between the types of violence.

Existing literature divides urban violence risk factors into political, environment and socio-economic. Political factors relate to "the will to win or hold political powers".<sup>67</sup> Examples include clientalism or political tribalism for control of power.<sup>68</sup> Agostini also mentions the example of a non-accountable government for citizens' needs for security and safety, which results in the need for communities to combat criminality, and creates a sense of insecurity on their own, as well as to express political grievances.<sup>69</sup> When referring to environmental factors in this paper, these factors include those identified in psychology and public health studies such as exposure to environmental contaminants.<sup>70</sup> Other factors related to the environment at large, such as natural resources and food, are categorized as socio-economic factors in this paper, which is the focus of this paper. In the socio-economic realm, urban violence can be understood as an expression of discontent, demands for attention, and claims of entitlements to the resources of the city,<sup>71</sup> especially if certain groups are underprivileged and suffer from social exclusion.<sup>72</sup>

<sup>62</sup> F. Vanderschueren, "From Violence to Justice and Security in Cities," *Environment and Urbanization* 8, no. 1 (April 1, 1996): 99.

<sup>63</sup> Peter Gizewski and Thomas Homer-Dixon, *Urban Growth and Violence: Will the Future Resemble the Past?*, Occasional Paper, Project on Environment, Population and Security (Washington D.C.: American Association for the Advancement of Science and the University of Toronto, June 1995).

<sup>64</sup> *Ibid.*

<sup>65</sup> *Ibid.*

<sup>66</sup> Caroline O. N. Moser, "Urban Violence and Insecurity: An Introductory Roadmap," *Environment and Urbanization* 16, no. 2 (October 1, 2004): 3–16.

<sup>67</sup> Caroline O. N. Moser and Cathy McIlwaine, "New Frontiers in Twenty-First Century Urban Conflict and Violence," *Environment and Urbanization* 26, no. 2 (2014): 331–344.

<sup>68</sup> Agostini et al., *Understanding the Processes of Urban Violence: An Analytical Framework*.

<sup>69</sup> Eduardo Moncada, "The Politics of Urban Violence: Challenges for Development in the Global South," *Studies in Comparative International Development* 48 (2013): 217–39.

<sup>70</sup> David O. Carpenter and Rick Nevin, "Environmental Causes of Violence," *Physiology and Behavior* 99 (2010): 260–68.

<sup>71</sup> Thomas Goodfellow, Dennis Rodgers, and Jo Beall, "From Civil to Civic Conflict? Violence and the City in 'Fragile States,'" *openSecurity*, November 2013, <http://www.opendemocracy.net/opensecurity/thomas-goodfellow-dennis-rodgers-jo-beall/from-civil-to-civic-conflict-violence-and-cit>.

<sup>72</sup> Gudrun Østby, "Horizontal Inequalities and Political Violence" (University of Oslo, 2010), <https://www.duo.uio.no/bitstream/handle/10852/13093/dravh-Ostby.pdf?sequence=3>.

### 3.2 The relevance of inequality for mitigation and adaptation

Social exclusion relates to inequality. Inequality in this paper refers to both horizontal and vertical inequalities. Vertical inequality means inequality among individuals or households, while horizontal inequalities relate to parallel differences on four dimensions between identity groups.<sup>73</sup> The four dimensions comprise the economic dimension (ownership of assets as well as income and employment opportunities), the social dimension (access to basic services such as education, health, and housing), the political dimension (distribution of political opportunities and power), and the cultural dimension (the recognition and *de facto* hierarchical status of cultural norms, customs and practices).<sup>74</sup> The inequalities in the four dimensions can reinforce one another. Langer and Stewart reviewed empirical research on the relationship between horizontal inequalities and violent conflict and found that the probability of conflict increases with the increase of social and economic horizontal inequalities, and the strongest relationship occurs when the horizontal inequalities are social and economic as well as political.<sup>75</sup> They also found that both perceptions and the reality of horizontal inequalities matter for the likelihood of conflict.<sup>76</sup> The positive correlation between horizontal inequalities and violent conflict is confirmed by other qualitative and quantitative studies using different variables on all dimensions, of which Brinkman et al. provide a comprehensive review.<sup>77</sup>

This section continues to elaborate upon some examples of manifestation of inequality in the economic, social and political domains most relevant to mitigation and adaptation. Furthermore, attention will also be paid to how these domains relate to violence. In the economic domain, quantitative studies have demonstrated income inequality to be positively correlated with murder rates.<sup>78</sup> Studies have found income inequality to be even more influential on national murder rates than poverty.<sup>79</sup> Possible explanations include that inequality leads to less focus on providing public goods such as policing, or that inequality breeds resentment. Inequality in employment opportunities, particularly with respect to the youth, is also relevant for urban violence as the majority of perpetrators of urban violence are between the ages of 15 and 25.<sup>80</sup> Unemployment implies inability to conform to social norms or participate in a stable lifestyle, and that there is little to be gained from refraining from urban violence.<sup>81</sup> Unemployment in the formal sector means those excluded must work within the informal economy,<sup>82</sup> where tensions sometimes erupt into violence as workers clash with

<sup>73</sup> Francis Stewart, "Crisis Prevention: Tackling Horizontal Inequalities," *Oxford Development Studies* 28, no. 3 (2000): 245–62.

<sup>74</sup> Arnim Langer and Francis Stewart, *Horizontal Inequalities and Violent Conflict: Conceptual and Empirical Linkages*, CRPD Working Paper (Leuven, Belgium: Centre for Research on Peace and Development, May 2013).

<sup>75</sup> *Ibid.*

<sup>76</sup> *Ibid.*

<sup>77</sup> Henk-Jan Brinkman, Larry Attree, and Sasa Hezri, *Addressing Horizontal Inequalities as Drivers of Conflict in the Post-2015 Development Agenda* (UN Peacebuilding Support Office, Saferworld, Columbia University, February 2013), <http://www.saferworld.org.uk/downloads/Inequalities-conflict-FV.pdf>.

<sup>78</sup> Edward L. Glaeser, Matt Resseger, and Kristina Tobio, "Inequality in Cities," *Journal of Regional Science* 49, no. 4 (2009): 617–46.

<sup>79</sup> Moser, "Urban Violence and Insecurity."

<sup>80</sup> Vanderschueren, "From Violence to Justice and Security in Cities."

<sup>81</sup> *Ibid.*

<sup>82</sup> Caroline Moser and David Satterthwaite, *Towards pro-Poor Adaptation to Climate Change in the Urban Centres of Low-and Middle-Income Countries*, vol. 3 (IIED, 2008), [http://books.google.com/books?hl=en&lr=&id=gw6-ayKAXqgC&oi=fnd&pg=PR5&dq=%2244+20+7388+2826+\(international\)%3B+020+7388+2826%22+%22\(DA+NIDA\)+for+their+support+for+IIED%27s+work+on+adapting+cities+to+climate%22+%22A+printed+version+of+this+paper+is+also%22+&ots=9LTHTaGcmx&sig=VXaDtUmczFLuYrfcPUbpNCKfEhc](http://books.google.com/books?hl=en&lr=&id=gw6-ayKAXqgC&oi=fnd&pg=PR5&dq=%2244+20+7388+2826+(international)%3B+020+7388+2826%22+%22(DA+NIDA)+for+their+support+for+IIED%27s+work+on+adapting+cities+to+climate%22+%22A+printed+version+of+this+paper+is+also%22+&ots=9LTHTaGcmx&sig=VXaDtUmczFLuYrfcPUbpNCKfEhc).

public authorities.<sup>83</sup> In the social domain, there is unequal access to housing or land, which occurs in the physical sense and in people's attitudes. Due to a lack of formal land titles, a proportion of urban residence occurs in informal settlements. When governments fail to provide security, out of fear and sometimes resentment generated by real and perceived violence,<sup>84</sup> the higher-income groups construct privately-maintained gated communities to 'keep the poor at bay'.<sup>85</sup> Meanwhile, the security vacuum of informal settlers may sometimes be filled by informal structures such as gangs. A consequence is informal settlements becoming 'no-go' zones in which law enforcement cannot enter and in which residents become stigmatized.<sup>86</sup> At the same time, the attitude of exclusion - often based on misconception - that is adopted by some government officials and elites also leads to problematic relationships between informal settlers and their government.<sup>87</sup> Informal settlers pay higher prices for utilities than their richer counterparts, whose utilities are usually subsidized. In light of the income inequality, this makes matters worse. In the political domain, inequality in political participation leads to many of the abovementioned inequalities. This inequality is due to a lack of financial resources, free time, civic skills, or the level of engagement necessary to participate effectively or be recruited for political action by people involved in politics.<sup>88</sup>

#### 4. Lack of conflict sensitivity in urban mitigation and adaptation in the Asia-Pacific

The risk of urban violence may be increased by inappropriately designed and implemented mitigation and adaptation strategies. Mitigation and adaptation may reinforce the very ecological conditions, distribution of assets and systems of power that place certain communities at greater risk in the face of climate change.<sup>89</sup> Interventions in the name of climate change may serve to maintain the interests of elite groups at the expense of minority groups. Accordingly, this can in turn perpetuate patterns of inequality in the city.<sup>90</sup> Despite significant economic growth in most parts of the Asia-Pacific, a large proportion of urban residents remain poor, with both vertical and horizontal inequalities rising.<sup>91</sup> For several emerging Asian economies, there appears to be a positive correlation between the increase in the Gini coefficient and GDP growth.<sup>92</sup> This section of the paper shows how there is a lack of

<sup>83</sup> Diane Davis, "Urban Violence, Quality of Life, and the Future of Latin American Cities: The Dismal Record so Far and the Search for New Analytical Frameworks to Sustain the Bias towards Hope," in *Global Urban Poverty: Setting the Agenda, Comparative Urban Studies Project* (Washington D.C.: Woodrow Wilson International Center for Scholars, 2007).

<sup>84</sup> World Bank, *Violence in the City: Understanding and Supporting Community Responses to Urban Violence*; Oliver Jütersonke and Keith Krause, *Peacebuilding and the City: Setting the Scene* (Geneva Peacebuilding Platform, 2013).

<sup>85</sup> Muggah, "Researching the Urban Dilemma."

<sup>86</sup> World Bank, *Violence in the City: Understanding and Supporting Community Responses to Urban Violence*.

<sup>87</sup> Satterthwaite, *Towards pro-Poor Adaptation to Climate Change in the Urban Centres of Low-and Middle-Income Countries*.

<sup>88</sup> Sidney Verba, Kay Lehman Schlozman, and Henry Brady, *Voice and Equality: Civic Voluntarism in American Politics* (Cambridge, MA, USA: Harvard University Press, 1995).

<sup>89</sup> Elizabeth Marino and Jesse Ribot, "Adding Insult to Injury: Climate Change and the Inequities of Climate Intervention," *Global Environmental Change* 22, no. 2 (May 2012): 323–28.

<sup>90</sup> Bulkeley, Edwards, and Fuller, "Contesting Climate Justice in the City: Examining Politics and Practice in Urban Climate Change Experiments."

<sup>91</sup> UNESCAP, *Economic and Social Survey of Asia and the Pacific 2010. Sustaining Recovery and Dynamism for Inclusive Development.*, 2010; Juzhong Zhuang, Ravi Kanbur, and Changyong Rhee, *Rising Inequality in Asia and Policy Implications*, Working Paper (Ithaca, New York: Cornell University, April 2014); UNESCAP, *Growing Inequality Challenges Sustainable Asia-Pacific Growth* (Bangkok: United Nations Economic and Social Commission for Asia and the Pacific, August 6, 2014), <http://www.unescap.org/media-centre/feature-story/growing-inequality-challenges-sustainable-asia-pacific-growth>.

<sup>92</sup> Zhuang, Kanbur, and Rhee, *Rising Inequality in Asia and Policy Implications*.

conflict sensitivity in the mitigation and adaptation strategies taken at the municipal level in the Asia-Pacific, with implications for the economic, social and political dimensions of inequalities.

In the economic dimension, the potential of mitigation and adaptation to lead to inequality in part lies in the mainstream employment opportunities created due to these strategies. The technocratic focus of Asian-Pacific cities' mitigation and adaptation has increased the demand for highly-skilled labor. The urban poor, generally low-skilled laborers, face further unfavorable consequences as carbon-intensive industries shrink. Another part of economic inequality lies in the access to (economic) benefits of mitigation and adaptation. Several cities in the Asia-Pacific have implemented programs aimed at stimulating low-carbon behavior by providing positive incentives.<sup>93</sup> Such programs presume a 'sufficiently-high' carbon footprint of the beneficiaries, deriving from for instance beyond-essential utilities consumption and car ownership. In fact, there are deficiencies in utilities provided to the urban poor due to irregular tenure, shared spaces, ill-defined responsibilities for payment, and low consumption.<sup>94</sup> Moreover, the same groups of people may not own a car. Their fuel poverty and limited mobility persist while benefits accrue to their richer urban counterparts, whose high-carbon lifestyle continues to be legitimized.

In the social dimension, inequalities in the Asia-Pacific lie in adequacy and tenure of housing, regulations and mobility. Urban development in Asia-Pacific has not been a pro-poor process.<sup>95</sup> During this period land prices have also risen to the benefits of the nexus of housing developers, politicians and bureaucrats.<sup>96</sup> The urban poor tend to live in vulnerable locations such as low-lying or steep and unstable areas,<sup>97</sup> resulting from trade-offs among proximity to economic opportunities, tenure security, provision of basic services, protection from extreme events, and costs.<sup>98</sup> Tenure security is not always guaranteed on these marginal lands either. Consequently, the urban poor in informal settlements are excluded from municipal utilities provision, such as water, gas, electricity, and waste collection, which has implications for inequality in the quality and price of services.<sup>99</sup> Tenure insecurity also excludes the urban poor from financial support to implement building codes (for new buildings) and retrofit (for existing buildings) to reduce emissions or build resilience of their homes. Moreover, tenure insecurity means no incentive to invest labor and other resources in upgrading the quality of dwellings or value of land and property.<sup>100</sup> In addition, building

<sup>93</sup> See, for example, two such programs run by the Government of Seoul: firstly, an eco-mileage program that encourages households and businesses to implement energy conservation measures and in turn rewards them with points that can be redeemed as discounts on eco-friendly products or public transport vouchers, and secondly, a weekly no-driving-day program that encourages people to reduce their car usage by rewarding them with discounted petrol, free parking, and car washing. Seoul Solutions, *Eco-Mileage System, Best Practice Policies* (Seoul, South Korea: Seoul Solution, November 8, 2014), <https://seoulsolution.kr/content/eco-mileage-system-1?language=en>.

<sup>94</sup> UN Habitat, *The State of Asian Cities 2010/11* (Nairobi, Kenya: UN Habitat, 2010).

<sup>95</sup> *Ibid.*

<sup>96</sup> *Ibid.*

<sup>97</sup> UN Habitat, *Addressing Urban Issues in National Climate Change Policies*, Policy Note, Cities and Climate Change Initiative (Nairobi, Kenya: UN Habitat, October 2013); Judy L. Baker, *Climate Change, Disaster Risk, and the Urban Poor*, Urban Development Series (Washington D.C.: World Bank, 2012), <https://openknowledge.worldbank.org/bitstream/handle/10986/6018/683580PUB0EPI0067869B09780821388457.pdf?sequence=1>.

<sup>98</sup> UN Habitat, *Addressing Urban Poverty, Inequality, and Vulnerability in a Warming World*, Asia-Pacific Issue Brief Series on Urbanization and Climate Change (Bangkok: UN Habitat, October 2013).

<sup>99</sup> Informal water providers are defined as illicit or semi-illicit, not formally recognized or authorized by government. See Ganesh Pangare and Vasudha Pangare, *Informal Water Vendors and Service Provides in Uganda the Ground Reality*, The Water Dialogues, September 2008.

<sup>100</sup> UN Habitat, *Secure Land Rights for All* (Nairobi, Kenya: UN Habitat, 2008).

codes are often inapplicable to low-income neighborhoods, where building modification is generally incremental.<sup>101</sup>

In terms of mobility, adequate public transport network as mitigation can in theory accrue benefits to the urban poor by providing affordable mobility.<sup>102</sup> In the Asia-Pacific, rapid urbanization is not always accompanied by the construction of extensive transport links. In addition, transport modes favored by authorities are largely road-based and not always accessible to the poor.<sup>103</sup> Despite their need to use public transport to connect to city life, residents of informal settlements in peri-urban areas often have limited access to public transport or cannot afford it.<sup>104</sup> UN-Habitat found that they spend up to 30 percent of their income on transportation and three to four hours per day walking to reach their place of employment if they do not have access to transport.<sup>105</sup> Public transport networks can also unintentionally create exclusion if, as part of adaptation, they deliberately avoid flood-sensitive areas or deploy a managed retreat in the medium to long term, which could be the very areas marginalized groups live in.<sup>106</sup>

Inequality in the political dimension lies at the root of the causes of inequality in other dimensions, while also caused by the latter. The urban poor are seldom included in the decision-making processes related to mitigation and adaptation. As mentioned above, mitigation and adaptation largely take place as a technical exercise, where scientific knowledge is applied for risk assessment, the result of which often favors the more politically-dominant groups. Despite the urban poor being owners of specific (local) knowledge and more pro-poor ways to build resilience and reduce vulnerabilities, their knowledge is usually considered ‘inferior’ and is consequently disregarded.

## 5. Integrating conflict sensitivity in urban mitigation and adaptation

Although the strategies of cities on mitigation and adaptation do not intend to create new or exacerbate existing inequalities in urban areas, they sometimes inevitably do so due to a lack of integration of conflict sensitivity in their design and implementation. With poverty, historical inequalities, and the resulting lack of tenure as the central underlying reasons, mitigation and adaptation can exacerbate existing inequalities to such an extent that tensions turn into violence. The paper scanned the best practices from cities in the Asia-Pacific. Four common characteristics emerged from the review. These will be discussed below.

<sup>101</sup> Sheridan Bartlett et al., “Social Aspects of Climate Change in Urban Areas in Low- and Middle-Income Nations,” in *Cities and Climate Change: Responding to an Urgent Agenda*. Research Cluster 5 (presented at the *World Bank Fifth Urban Research Symposium*, Marseille, France, 2009); UN Habitat, *Addressing Urban Issues in National Climate Change Policies*.

<sup>102</sup> Lloyd Wright and Lewis Fulton, “Climate Change Mitigation and Transport in Developing Nations,” *Transport Reviews* 25, no.6 (2005): 691–717.

<sup>103</sup> Aprodicio A. Laquian, “Who Are the Poor and How Are They Being Served in Asian Cities?” (presented at the *Forum on Urban Infrastructure and Public Service Delivery for the Urban Poor, Regional Focus: Asia*, New Delhi, India, 2004).

<sup>104</sup> Chung et al. found that unskilled migrant workers in South Korea, most of whom live in the outskirts of the cities where they also work, are heavily reliant on but not well-served by public transport. They are therefore isolated during non-working days, without access to core urban services. Younshik Chung et al., “Social Exclusion and Transportation Services: A Case Study of Unskilled Migrant Workers in South Korea.” *Habitat International* 44 (2014): 482-490.

<sup>105</sup> UN Habitat, *The Challenge of Slums: Global Report on Human Settlements 2003* (London and Sterling, VA: Earthscan Publications Ltd, 2003).

<sup>106</sup> Urda Eichhorst, *Adapting Urban Transport to Climate Change* (Bonn, Germany: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, November 2009).

The first characteristic is *horizontal coordination between various municipal departments* when carrying out mitigation and adaptation. Climate change has largely remained confined to the environmental department, which is often marginalized and weakly resourced.<sup>107</sup> Furthermore, strategies of various departments,<sup>108</sup> each with their own board, staff, budgets, and by-laws are not well coordinated,<sup>109</sup> resulting in missed opportunities at a minimum and contradicting policies at worst. The benefits of horizontal coordination are three-fold. Firstly, horizontal coordination allows policy-makers to reap benefits from different sectors and increase the effectiveness of their strategies. Secondly, it minimizes negative unintended consequences and thirdly, it increases cost efficiency by removing policy duplication.<sup>110</sup> For mitigation, the IPCC lists “institutional arrangements that facilitate the integration of mitigation with other priority urban agendas” as a key factor for successful urban climate governance.<sup>111</sup> For adaptation, Huntjens et al. developed eight institutional design propositions for the governance of adaptation based on those proposed by Ostrom and focusing on the water sector.<sup>112</sup> In particular, nested enterprises/polycentric governance is essential for dynamic and larger problems such as climate change. UN-Habitat suggests that at a minimum level, there should be consistency between climate change and other policies, with cross-reference to one another where applicable.<sup>113</sup> Horizontal coordination should begin with a baseline assessment of the institutional capacity of departments, followed by the establishment of shared understanding of roles and responsibilities in executing mitigation and adaptation.<sup>114</sup> Finally, horizontal coordination enables joint/participative knowledge production, which in turn strengthens the coordination. Horizontal coordination increases the potential for pro-poor solutions to build the urban poor’s resilience. For example, instead of simply evicting (informal) settlements on vulnerable land - which will be left vacant - horizontal coordination enables amelioration of negative impacts on the livelihoods of the evicted groups by generating livelihoods for them by making use of the vacant land.<sup>115</sup> Text Box 1 provides an example of horizontal coordination among municipal departments that has resulted in a relatively positive outcome for all.

The second characteristic is *vertical coordination among the different levels of government*. Mitigation and adaptation at the municipal government level is not a novel concept. They already perform functions not labelled as ‘mitigation’ or ‘adaptation’, but implicitly relate to the climate change agenda.<sup>116</sup> However, the municipality level has shortcomings. The first is municipal governments’ lack of power *vis-à-vis* their national counterparts. Municipal governments have limited power to raise revenues for climate change responses, in particular

<sup>107</sup> Bulkeley, “*Cities and the Governing of Climate Change*.”

<sup>108</sup> Other departments relevant to mitigation and adaptation include education, housing, spatial planning, finance, development planning, public health, social services, administration, disaster response, water, transport, energy, and water.

<sup>109</sup> IPCC, *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*.

<sup>110</sup> UN Habitat, *The Impact of Decentralization and Urban Governance on Building Inclusive and Resilient Cities*, Asia-Pacific Urbanization and Climate Change Issue Brief Series (Bangkok: UN Habitat, January 2014).

<sup>111</sup> IPCC, *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, UK and New York, NY, USA: Cambridge University Press, 2014).

<sup>112</sup> Patrick Huntjens et al., “Institutional Design Propositions for the Governance of Adaptation to Climate Change in the Water Sector,” *Global Environmental Change* 22 (2012): 67–81.

<sup>113</sup> UN Habitat, *Addressing Urban Issues in National Climate Change Policies*.

<sup>114</sup> World Bank, *Guide to Climate Change Adaptation in Cities* (Washington, D.C.: World Bank, 2011).

<sup>115</sup> For example, by using the land for urban agriculture, jobs can be created, food security can be strengthened, and vulnerable lands are prevented from being used for purposes they are unfit for. Baker, *Climate Change, Disaster Risk, and the Urban Poor*.

<sup>116</sup> UN Habitat, *The Impact of Decentralization and Urban Governance on Building Inclusive and Resilient Cities*.

infrastructure investments.<sup>117</sup> This means that the measures with high upfront costs and long payback periods are difficult to implement; this is the case with most adaptation and some mitigation measures.<sup>118</sup> Mitigation and adaptation strategies thus run the danger of a focus on the most ‘profitable’ measures instead of pro-poor measures. Municipalities also have limited jurisdiction with respect to high-emitting sectors, including energy, transport, and buildings.<sup>119</sup> The second shortcoming is dictation of strategies by the larger national policy and legal framework, and the funding thereof. While there may be local champions, the extent to which individual ambition can be translated into financially supported action may be limited. At the national level, mitigation and adaptation tend to take sectoral approaches, for example as evidenced by the National Adaptation Programs of Action.<sup>120</sup> Sectoral approaches will likely trickle down to the municipal level. The third shortcoming is municipal governments’ often-lacking institutional capacity, which depends on the level of vertical autonomy between municipalities and other levels of government, exacerbated by the “problem of fit”<sup>121</sup>, knowledge of climate change, internal coordination, and human and financial resources.<sup>122</sup> Text Box 2 illustrates two examples of vertical coordination.

A multi-partner project led by the municipal government, the project’s aim was to restore the Cheonggyecheon River by removing the busy highway under which the river was buried. Departments involved included urban planning, traffic control, environment, restoration and refurbishment, cultural/historical preservation, as well as affected businesses and communities. The end results benefited all participating departments and their stakeholders to some extent. In terms of the environment and health, air, water and noise pollution were all reduced, and the urban heat island effect was relieved. In terms of tourism, the restored river has created new space for public recreation. In terms of commerce and development, the restored area uplifted the central business district and reduced the preexisting imbalance in development between the north and south of the river.

*Text Box 1. Cheonggyecheon Restoration Project in Seoul.*<sup>123</sup>

The third characteristic is that mitigation and adaptation should be done in *collaboration with non-state stakeholders*. Climate change is a complex multi-scalar problem requiring “a diversity of actors across the state-society divide”.<sup>124</sup> The involvement of non-state actors can increase the capacity for mitigation and adaptation. Businesses can increase economic resources as investors and owners of land and buildings. They can also advise on innovative strategies, as innovation and efficiency are two characteristics often associated with private

<sup>117</sup> Patricia McCarney et al., “Cities and Climate Change,” in *Climate Change and Cities: First Assessment Report of the Urban Climate Change Research Network* (Cambridge, UK: Cambridge University Press, 2011), 249–69.

<sup>118</sup> *Ibid.*

<sup>119</sup> Bulkeley, “Cities and the Governing of Climate Change”; UN Habitat, *The Impact of Decentralization and Urban Governance on Building Inclusive and Resilient Cities*.

<sup>120</sup> Tänzler, Maas, and Carius, “Climate Change Adaptation and Peace.”

<sup>121</sup> Coincident boundaries between the scale of the issues that need to be addressed, e.g., commuting.

<sup>122</sup> Bulkeley, “Cities and the Governing of Climate Change.”

<sup>123</sup> ECRR, *Cheonggyecheon Restoration Project* (Utrecht, the Netherlands: European Centre for River Restoration), accessed November 6, 2014, <http://www.restorerivers.eu/Portals/27/Cheonggyecheon%20case%20study.pdf>; Seoul Metropolitan Facilities Management Corporation, *Start to Completion of the Cheonggyecheon Restoration Project* (Seoul, South Korea: Seoul Metropolitan Facilities Management Corporation), accessed November 6, 2014, <http://english.sisul.or.kr/global/cheonggye/eng/WebContent/index.html>; UN Habitat, *Urban Patterns for a Green Economy: Working with Nature* (Nairobi, Kenya: UN Habitat, 2012).

<sup>124</sup> Maria Carmen Lemos and Arun Agrawal, “Environmental Governance,” *Annual Review of Environment and Resources* 31 (2006): 315.

sector involvement.<sup>125</sup> Civil society organizations can add to the capacity by providing context-specific understanding of the needs and vulnerabilities of groups that tend to be under-represented in devising strategies,<sup>126</sup> which are often framed by technical discourses from higher levels of government that lessen local relevance.<sup>127</sup> Non-state actors also benefit from working with state actors, because the latter can provide information to guide mitigation and adaptation that the former may not have access to.<sup>128</sup>

The Filipino Government's Climate Change Act (2009) provides a framework for climate change governance and mainstreaming of climate resilience into government mandates across sectors. An action plan was developed within the framework of the Act, providing guidance for local governments to formulate and implement their own action plans. The Act recognizes local governments as frontline actors for climate change action planning and implementation. The same 'trickle-down' effect also occurred in South Korea, where corresponding national and local level adaptation action plans have been developed pursuant to the 'Enforcement Decree of Framework Act on Low Carbon, Green Growth'. It is a consistent effort with the national level adopting the National Climate Change Adaptation Measure (2011-2015), a joint effort of 13 central governmental agencies and the local level adopting their own action plans involving various sectors.

*Text Box 2. Approaches by the Filipino and South Korean Governments to mainstream climate change.*<sup>129</sup>

UN-Habitat lists stages in which communities can be engaged in mitigation and adaptation at the municipal level, namely during scoping and vulnerability assessment, fundraising and cost-sharing, operational management, the strengthening of resilience, and education and outreach. Through first-hand engagement in these stages, not only are the (poor) communities empowered to participate, but the resulting solutions will also likely address more inequalities if poor communities' needs are taken into account. For instance, it is important during the vulnerability assessment to map the locations of vulnerable groups, size and type of land they occupy, their daily cultural practices and livelihoods, and any other special requirement they may have.<sup>130</sup> However, a participatory process is not a panacea and will not automatically lead to a conflict-sensitive outcome. In fact, such a process can raise the expectations of the participants. If the outcome is not followed up with action, then not only may participants feel frustrated and their likelihood to resort to violence to resolve their grievances instead be increased, but also future participatory processes may be undermined. An example of an unsuccessful participatory process is shown in Text Box 3.

<sup>125</sup> Heleen L.P. Mees, Peter P.J. Driessen, and Hens A.C. Runhaar, "Exploring the Scope of Public and Private Responsibilities for Climate Adaptation," *Journal of Environmental Policy & Planning* 14, no.3 (2012): 305–30.

<sup>126</sup> Marino and Ribot, "Adding Insult to Injury: Climate Change and the Inequities of Climate Intervention."

<sup>127</sup> Hiller et al., "Climate Justice in the Australian City."

<sup>128</sup> Mees, Driessen, and Runhaar, "Exploring the Scope of Public and Private Responsibilities for Climate Adaptation."

<sup>129</sup> Katherine Lofts and Alex Kenny, *Mainstreaming Climate Resilience into Government: The Philippines' Climate Change Act*, Inside Stories on Climate Compatible Development (Montreal, Canada: Centre for International Sustainable Development Law, July 2012); Young-shin Lim et al., *Local Governments' Steps toward a Giant Leap in Climate Change Adaptation: Local Adaptation Plans of Korea* (Seoul, South Korea: Korea Adaptation Center for Climate change and Korea Environment Institute), accessed November 6, 2014, [http://resilient-cities.iclei.org/fileadmin/sites/resilient-cities/files/Frontend\\_user/Poster\\_KACCC\\_Korea\\_\\_wdb.pdf](http://resilient-cities.iclei.org/fileadmin/sites/resilient-cities/files/Frontend_user/Poster_KACCC_Korea__wdb.pdf).

<sup>130</sup> World Bank, *Guide to Climate Change Adaptation in Cities*.

In the Asia-Pacific, mitigation and adaptation in the (informal) housing sector have seen participation of non-state actors. Housing is the most vulnerable sector to climate change and natural disasters in terms of scale.<sup>131</sup> Some cities have used a participatory approach to upgrade informal settlements, an *in-situ* solution proposed by many as a first choice for building community resilience and adapting to climate change (see Text Box 4). These initiatives not only empowered the residents to have their demands included, but also enabled them to manage the upgrading funds themselves.

In China, water price increases are mandated to be accompanied by public hearings. Despite opportunities for participation in several cities, the public was satisfied with neither the process nor the outcome, due to a lack of perceived legitimacy and fairness. Reports explaining why water prices should increase and the intended use of the increased revenue were published, but ultimately dismissed by the public as being too technical to understand. Other complaints included the inflexibility of the public hearings, as they were unable to accommodate sufficient citizens' needs and work schedules, and the authorities not valuing negative opinions. After the erosion of public trust, such public hearings are no longer (well-) attended.

*Text Box 3. Water price-related grievances in China.*<sup>132</sup>

The Baan Mankong Collective Housing Program in Thailand is a self-help urban-upgrading project for the poor, directed by the Thai Government, but led by communities. Under this program, public funds are channeled to the communities through subsidies and loans, which then use them to improve their housing, environment, and basic services. In Ulaanbaatar in Mongolia, an upgrading strategy for informal settlements initiated by the municipality led to a formal recognition of three types of informal settlements in urban development programs. As a result, the municipality formulated development visions for the informal settlements, followed by a citywide consultation. Similarly, the Kampung Improvement Program in Indonesia brought tenure security to dwellers of informal settlements in improved 'villages' officially recognized by the municipality.

*Text Box 4. Urban upgrading projects in Thailand, Indonesia and Mongolia.*<sup>133</sup>

A common starting point for the aforementioned examples is formal recognition of the informal settlements - or at least a proportion thereof - as part of the city and the needs to include them in participatory processes. Finance provision should accompany formal recognition. However, this alone is insufficient for building climate-resilient housing for the urban poor. When no technical guidance or professional supervision is available for either

<sup>131</sup> UN Habitat, *Global Report on Human Settlements 2011* (London and Washington, D.C.: Earthscan Publications Ltd, 2011).

<sup>132</sup> B. Zhao, X. Guo, and D. Marinova, "To Pay More or Use Less: China's Urban Water Pricing Regime and Water Awareness" (presented at the *19th International Congress on Modelling and Simulation*, Perth, Australia, 2011), 1724–30; Jincui Yu, "Silent Public in No Position to Throw Stones," *Global Times*, July 25, 2011, sec. Op-Ed, <http://www.globaltimes.cn/content/667836.shtml>; Jiawei Zhang, "Public Hearing Washout over Water Price Hike," *China Daily*, June 9, 2011, [http://www.chinadaily.com.cn/china/2011-06/09/content\\_12665724.htm](http://www.chinadaily.com.cn/china/2011-06/09/content_12665724.htm).

<sup>133</sup> CODI, *50 Community Upgrading Projects*, CODI Update (Bangkok: Community Organizations Development Institute, March 2008); UN Habitat, *The State of Asian Cities 2010/11*; MIT, *Kampung Improvement Project III*, Jakarta, Indonesia (Massachusetts Institute of Technology), accessed October 28, 2014, <http://web.mit.edu/urbanupgrading/upgrading/case-examples/ce-IO-jak.html>.

upgrading or construction, they may be of poor quality.<sup>134</sup> Both in various cities of Thailand and Ulaanbaatar technical guidance was a component in the upgrading projects. UN-Habitat mentions some pro-poor technical measures, such as traditional techniques made of locally available materials.<sup>135</sup> It also suggests a system of both voluntary and mandatory building codes, of which the former can be applied to low-cost housing projects while the local or national government should set the latter.<sup>136</sup> *In-situ* upgrading, despite its advantages, should only be done in informal settlements located in relatively low-risk areas. If upgrading and services are provided for informal settlements in high-risk areas, they will likely attract more inhabitants, in turn exposing them to a high risk of extreme events.<sup>137</sup> Classification of high- and low-risk areas involves a decision on acceptable risk, which should be a decision made while those to be affected are included. When *in-situ* solutions are unrealistic and relocation is inevitable, researchers have called for participatory processes that seeks free, prior, and informed consent (FPIC) of those to be relocated.<sup>138</sup> They should be given compensation and access to affordable and reasonably conveniently-located land that provides for social cohesion and integration.<sup>139</sup> Text Box 5 shows an example of inclusive approach to relocation, although the example showed no evidence on the obtaining of FPIC or effort to minimize the damage to the social cohesion in the communities to be relocated.

In Phnom Penh, representatives of the urban poor were involved in citywide surveys that identified the scale and location of low-income communities and any vacant land where they might be housed. The mapping exercise was followed by the municipality's development of an Urban Poor Development Fund that provides low-interest loans to communities to support their relocation from a forthcoming inner-city development project.

*Text Box 5. Relocation of the urban poor in Phnom Penh.*<sup>140</sup>

The fourth characteristic is *including the needs of the urban poor in mitigation and adaptation strategies*. The urban poor should not be excluded from the benefits of mitigation and adaptation or burdened disproportionately. In cities, obtaining benefits is oftentimes tied to tenure security. Where it is difficult to enforce land tenure, there are alternatives to private land ownership, such as community leases, occupancy rights, rental and usufruct arrangements used in the Philippines to regularize untenured communities.<sup>141</sup> The regularization has led to the provision of services by the government, utility companies and civil organizations.<sup>142</sup> Regarding disproportionate burdens, an example is the exposure to risk of climate change impacts. As cities expand rapidly, one way to increase land availability is to allow construction on medium-risk areas through applying higher building standards, using more resilient materials and higher first floors. This is a political decision involving what

<sup>134</sup> Tran Tuan Anh et al., *Community Consultation for Long-Term Climate-Resilient Housing in Vietnamese Cities: A Comparative Case Study between Hue and Da Nang*, Working Paper Series 2: 2013, Asian Cities Climate Resilience (London: International Institute for Environment and Development, October 2013).

<sup>135</sup> UN Habitat, *Promoting Resilient Housing and Secure Tenure in a Changing Climate*.

<sup>136</sup> *Ibid.*

<sup>137</sup> Baker, *Climate Change, Disaster Risk, and the Urban Poor*.

<sup>138</sup> UN Habitat, *Addressing Urban Issues in National Climate Change Policies*.

<sup>139</sup> *Ibid.*

<sup>140</sup> UN Habitat, *The State of Asian Cities 2010/11*; Somsak Phonphakdee, Sok Visal, and Gabriela Sauter, "The Urban Poor Development Fund in Cambodia: Supporting Local and Citywide Development," *Environment and Urbanization* 21, no. 2 (2009): 569–86.

<sup>141</sup> UN Habitat, *Innovative Urban Tenure in the Philippines: Challenges, Approaches and Institutionalization* (Nairobi, Kenya: UN Habitat, 2011).

<sup>142</sup> *Ibid.*

constitutes reasonable risk and what the future level of risk is.<sup>143</sup> This decision should not sideline the poor to benefit more powerful groups.

To go beyond the bare minimum, benefits such as employment opportunities related to mitigation and adaptation should accrue to the urban poor. Employment provision cannot be separated from recognition of the informal sector, which provides a large proportion of employment opportunities for the urban poor.<sup>144</sup> Informal water vendors are often seen as opportunists that exploit people's need for water.<sup>145</sup> Their advantages are hardly recognized, including serving areas without formal infrastructure.<sup>146</sup> In times of extreme weather, they can assist with the urban poor's adaptation, as they appear to be more robust than piped systems in developing countries.<sup>147</sup> Simultaneously, the informal water market is a more important source of employment generation than the water utility (see Text Box 6).<sup>148</sup>

In Phnom Penh, the informal water sector offers employment for thousands of informal workers, most of whom live in informal settlements. They purportedly earn an average income twice as much as a government salary. The formal and informal waste sectors in Quezon City mutually benefit each other resulting in improved overall waste management, better livelihoods for the poor, a cleaner environment, and reduced greenhouse gas emissions. While a fourth of the recyclables collection is done by private contractors, that which remains is carried out by informal waste-pickers who sell their collection to private contractors. Informal waste-pickers reach households not covered by municipal waste management services. The multi-win potential is also realized in the form of money-saving for urban authorities. In Hanoi, informal waste-pickers collect 18 to 22 percent of solid waste, with estimated savings for the city between US \$2.5 and 3.1 million per year.

*Text Box 6. The informal water and waste sectors in Phnom Penh, Quezon City, and Hanoi.*<sup>149</sup>

These two examples show that relevant informal sectors, if encouraged with incentives and presented with collaboration opportunities with the formal sectors, can contribute to the city's mitigation and adaptation efforts. Kjellen and McGranahan made several recommendations regarding how authorities could work with informal water vendors to improve their services to the poor in areas that cannot (yet) be served by piped infrastructure. Viewing vendors as an integral part of the water system may help design and implement more comprehensive policies that better serve end-users, build trust and accountability, and improve legal protection of vendors.<sup>150</sup> Authorities should also help promote water vending in these areas through the removal of legal constraints such as high taxes, expensive business licenses and difficult-to-attain standards.<sup>151</sup> These arguably also apply to the waste sector.

<sup>143</sup> UN Habitat, *Addressing Urban Issues in National Climate Change Policies*.

<sup>144</sup> Laquian, "Who Are the Poor and How Are They Being Served in Asian Cities?"

<sup>145</sup> Marianne Kjellén and Gordon McGranahan, *Informal Water Vendors and the Urban Poor*, Human Settlements Discussion Paper Series, Theme: Water-3 (London: International Institute for Environment and Development, 2006).

<sup>146</sup> *Ibid.*

<sup>147</sup> *Ibid.*

<sup>148</sup> *Ibid.*

<sup>149</sup> Ulla Heinonen, "The Hidden Role of Informal Economy: Is Informal Economy Insignificant for Phnom Penh's Development?," in *Modern Myths of the Mekong*, Kumm, M., Keskinen, M. and Varis, O. (Espoo: Helsinki University of Technology, 2008), 123–32; UN Habitat, *Providing Basic Services Sustainably and Equitably in Urban Areas*, Asia-Pacific Issue Brief Series on Urbanization and Climate Change (Bangkok: UN Habitat and UNDP, March 2014); Virginia W. Maclaren, Nazrul Islam, and Salma A. Shafi, "Solid Waste Management in Asian Cities: Implications for the Urban Poor," in *The Inclusive City: Infrastructure and Public Services for the Urban Poor in Asia*, Woodrow Wilson Center Press (Johns Hopkins University Press, 2007).

<sup>150</sup> Kjellén and McGranahan, *Informal Water Vendors and the Urban Poor*.

<sup>151</sup> *Ibid.*

In terms of transport, Bus Rapid Transit (BRT) is a system that has been deployed in many developing country cities and has provided similar benefits to the subway at a fraction of the costs.<sup>152</sup> As of 2006, BRTs were planned or under construction in eighteen cities and under consideration in five cities in the Asia-Pacific (see examples in Text Box 7).<sup>153</sup> BRTs in the Asia-Pacific reduced not only carbon emissions, but also the gap between the have and have-nots of cars. Alternative transport systems in Text Box 7 shared the commonality of an ‘illicit’ origin, emerging from a demand-supply mismatch in the formal sector. Authorities in these cities underwent an attitude change from negative reception and thus the perceived need to get rid of them to recognition of the importance of their role in fulfilling needs of the urban poor and the possibility of incorporating them into the city’s transportation network. By some form of (minimal) regulation with regard to, for instance, safety, fuel type, and zoning, these cities have achieved benefits through these alternative modes such as reduced congestion, income provision and increased mobility for the urban poor, complementarity to the formal transport system, safer journeys, and reduction of emissions.<sup>154</sup> The lessons learnt from these cases are similar to those of the informal water and waste sectors.

Jakarta’s BRT, ‘TransJakarta’, services 39 million people, with routes spatially catered to the low-income areas. The fares are lower than other public transport, being heavily subsidized by the Indonesian Government. Pedestrian facilities were also improved. By shifting private car passengers to the BRT, the annual CO<sub>2</sub> emissions reduction of TransJakarta amounted to 120,000 tons. In the Chinese megacity of Guangzhou, BRT is transporting more passengers than any other mode of transport. The system is also supported by inter-modal connection points, bike lanes and green (walkable) areas along the BRT. In addition to these formal systems in the Asia-Pacific, there are also transport provided by individuals or small-scale private groups, such as the van transit system in the Bangkok Metropolitan Region, mini-van, motorcycle or non-motorized taxis in Indonesia, and jeeps in Manila.

*Text Box 7. BRT and alternative transport systems in Asian-Pacific cities.*<sup>155</sup>

## 6. Conclusion

The paper began by clarifying the need for conflict-sensitive mitigation and adaptation to climate change in cities, which have not been extensively studied in literature. It made the connection between inequality and urban violence and the case that mitigation and adaptation lead to urban violence through the channel of inequality, albeit mostly unintentionally. The paper went on to presenting common characteristics of some best practices from the Asia-Pacific: horizontal coordination, vertical coordination, collaboration with non-state actors, and inclusivity of the needs of the poor. The former three are also identified as elements of better integrated cooperation structures, which is an important factor to develop more advanced adaptation strategies.<sup>156</sup> Best practices show that participatory approaches have

<sup>152</sup> UN Habitat, *Addressing Urban Issues in National Climate Change Policies*.

<sup>153</sup> C40Cities, *Case Study: A 12.9 Km Bus Rapid Transport System Built in Just 9 Months at a Cost of \$2 Million/km* (C40 Cities, January 17, 2012), [http://www.c40.org/case\\_studies/a-129-km-bus-rapid-transport-system-built-in-just-9-months-at-a-cost-of-2-millionkm](http://www.c40.org/case_studies/a-129-km-bus-rapid-transport-system-built-in-just-9-months-at-a-cost-of-2-millionkm).

<sup>154</sup> Akshima Tejas Ghate et al., *Pro-Poor Mobility: Policy Guidelines and Case Studies* (New Delhi, India: The Energy and Resources Institute, 2013).

<sup>155</sup> C40Cities, *Case Study: A 12.9 Km Bus Rapid Transport System Built in Just 9 Months at a Cost of \$2 Million/km*, 40; Ghate et al., *Pro-Poor Mobility: Policy Guidelines and Case Studies*.

<sup>156</sup> Huntjens, Patrick et al., “Adaptive Water Management and Policy Learning in a Changing Climate: A Formal Comparative Analysis of Eight Water Management Regimes in Europe, Africa and Asia,” *Environmental Policy and Governance* 21 (2011): 145–63. According to the authors, advanced adaptation

achieved reduction in greenhouse gas emissions, resilience building, and adapting to the impacts of a changing climate. One common theme among all examples is that they did not only brand the urban poor as ‘victims’, but also empower them as ‘solution owners’, which is an important policy implication for urban actors. Urban actors should ensure that mitigation and adaptation can both tackle climate change and reduce inequalities in cities. In this way they can create a win-win situation where the effectiveness in both domains can be strengthened by one another. Urban actors will find that conflict prevention as well as mitigation and adaptation essentially use similar tools, such as research, education, dialogue, participatory planning, and targeted investment.<sup>157</sup> Mitigation and adaptation could even reconcile divided groups by offering a common enemy, namely the negative impacts of climate change, and a shared set of tasks.<sup>158</sup> While this reconciliation potential is often not at the fore when devising strategies to address climate change, urban actors should emphasize it more in the future.

Much remains to be examined in this relatively new domain. This paper focused on a narrowly-defined ‘Asia-Pacific’ and on large urban agglomerates in countries with similar characteristics, in order to increase its internal validity. Future research could conduct in-depth case studies on selected cities in the same region, controlling for potential confounding citywide or nationwide variables. Using mixed methods research design, the case studies could also enable an analysis of the relationship between mitigation and adaptation and urban violence, which is presented as an indirect link via inequalities in this paper. Field research can also help diminish the reliance on existing literature available in English, which has prevented this study from including sources that are beyond those of UN reports and other well-researched areas in the Asia-Pacific.

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strategies are characterized by a robust and flexible process, polycentric, broad and horizontal stakeholder participation, climate change scenario analysis, risk assessment, high diversity in management and physical intervention, and dealing with structural constraints of the management system itself.

<sup>157</sup> *Ibid.*

<sup>158</sup> *Ibid.*

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