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Coastal Megacities vs. the Sea: Climate and Security in Urban Spaces

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Introduction

Cities are on the sharp end of a range of risks from criminal violence, terrorism and war to demographic pressures, to climate and environmental change. Coastal megacities, are especially at risk given the specific impacts of climate change they face, including accelerated global sea-level rise, increased storm frequency and severity, and destruction to critical infrastructure such as port facilities, rail and road linkages, and energy installations, all of which are amplified as urban populations become ever larger. All these risks can lead to the loss of livelihoods as well as significant loss of life itself. Furthermore, the interaction of these risks could exceed the existing coping capacity of communities and governments and contribute to an increase in insecurity and possibly violent conflict.

This paper will look at how climate change impacts upon coastal megacities affect national and international security as well as the opportunities presented by cities to mitigate these risks. Since the implications of climate change for each coastal megacity will vary significantly, each city requires its own contextual analysis. However, in looking at two illustrative examples, Karachi and Lagos, we identify some of the challenges from these specific contexts which may be relevant in other locales. The ways in which cities are particularly vulnerable or resilient to climate impacts are, we believe, essential for understanding how climate risks link to political and security risks. We find that the nexus of risk need not hinge on a dramatic climate shock to breed security problems. The failure of service delivery, economic loss (especially unemployment) from disasters or resource security, failure to effectively manage migration and marginalization of communities, all mean that even low level climate change impacts can all contribute to human insecurity in megacities. Based on this analysis, we describe the scope of the problem and how to think about workable solutions, especially with regard to governance of climate risks and migration.

Climate Change, Cities and Compound Risks

The latter of half of the twentieth century and first half of the twenty-first will see an unprecedented period of urbanization.[1] Urban centers in South Asia, the Middle East and North Africa are expected to see its

[1]United Nations Population Division, *World Urbanization Prospects (2014 Revision)*, https://esa.un.org/unpd/wup/, accessed 14 November 2016.

urban population double by 2050. Most urbanization will occur in lower-income countries. In 2014, the proportion of the population living in urban areas was 39 per cent in lower-middle-income countries and 30 per cent in low-income countries. By 2050, these countries are expected to reach, on average, 57 per cent and 48 per cent urban, respectively.[2]

The IPCC's latest assessment states that climate change will have profound impacts on a broad spectrum of city functions, infrastructure, and services and will interact with and may exacerbate many existing stresses.[3] These impacts can occur both *in situ* and through long-distance connections with other cities and rural sites of resource production and extraction. It also says that climate change could potentially contribute to violent conflicts and spur migration from highly vulnerable sites in cities or increasingly environmentally stressed locales. Two specific issues which characterise both urban resilience and vulnerability is the highly heterogeneous and mobile nature of communities. This poses unique challenges to policy and governance which need to take account of potentially weak social cohesion and governance capacity when considering any intervention. However, due to the lack of research on the issue, the IPCC qualifies this by stating that there is considerable uncertainty regarding projections.[4]

The concerns raised by the IPCC add to the growing literature exploring the political instability and complex security dynamics of urban areas, and how urban planning and operation can, in certain contexts, contribute to instability. There has also been increased attention from the security community of the growing importance of urban areas as concentrating a whole host of human security challenges. For example, a recent assessment by the U.S. Army found that "megacities are rapidly becoming the epicentres of human activity on the planet and, as such, they will generate most of the friction which compels future military intervention."[5]

Whilst the U.S. Army analysis above may be somewhat overly deterministic, the compound nature of climate and security risks in cities are pertinent. And it must be stressed that the existing urban adaptation agenda currently lacks specific attention to capacity-building in institutionally fragile and conflict-affected contexts where existing approaches may not be fit for purpose. Managing the nexus of food, water, and energy in urban areas will contribute to the human and economic security goals of low- and middle-income countries. Failure to do so, conversely, will act as a net drag on productivity and could, in extreme situations, lead to political instability and civil conflict.

The Rise of Megacities: Fragility vs Resilience

The growth of megacities of course is not to be viewed simplistically as a driver of fragility. Cities can offer financial, social and cultural opportunities to its inhabitants. They can also bring economic risks and a breakdown in the traditional social and cultural behaviour patterns that traditionally supported less urbanised populations.

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[2] *Ibid.*

[3] Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White (eds.)]. Cambridge University Press (New York, 2016), accessed 21 September 2016, 556.

[4] Nevertheless, those concerned with international security should not wait for the absolute certainty of projections to be confirmed before adopting policies needed to mitigate those impacts. If climate change even has a ten percent chance of making living in a city more expensive and more dangerous, then it is worth investing time and capital in preventing it.

[5] Chief of Staff of the Army, Strategic Studies Group, Megacities Concept Team, "Megacities and the United States Army Preparing for a Complex and Uncertain Future", accessed 21 September 2016.

Problems common to megacities, particularly in developing countries, include inadequate land for development, unclear land tenure rights and legislation, underdeveloped infrastructure, water shortages, poor sanitation, air pollution and traffic congestion. Coastal megacities experience these as well as other special problems related to their coastal location, e.g. coastal erosion, the potential impact of sea water intrusion to freshwater supply, the loss of habitat for birds, fish and other wild life, the depletion of fishery resources as a food supply and public health problems related to sea food contamination, land subsidence due to construction and water extraction, the deterioration of marine environment as an area for amenity due to marine pollution and its threat to fisheries and tourism, natural disasters including extreme weather, and sea – level rise and its impact on critical maritime transportation infrastructure, and conflicting uses of increasingly fragile coastal areas.

Coastal megacities such as Karachi and Lagos are vulnerable to sea-level rise even under the best-case mitigation scenarios. Additionally, a combination of climate change, multiyear variability (El Nino), and short-lived climate pollutants is already contributing to an increased risk for natural disasters (cyclones and extreme weather scenarios like droughts and heat waves), which have profound human security implications.

These challenges run headlong into a governance context where resource and expertise needs are already stretched. Given demographic trends of both urbanisation and urban growth, these megacities are likely to come under increasing pressure, and only very few of them are equipped with the governance mechanisms to deal with the risks they are highly likely to encounter. Many of these cities will experience risks which induce fragility – thus limiting their capacity to fulfil their core functions, namely ensuring the physical security and safety of the population, infrastructure, delivering basic services such as water, sanitation and electricity, and safeguarding rights[6]. Balancing rapid economic growth, the preservation of coastal environment for sustainable development, and managing relations and service provision between residents and incomers are thus core governance challenges facing coastal municipal authorities.

It must be noted however that megacities and large cities are not necessarily the most at risk of fragility**.** Indeed it is the smaller second cities which are growing most perilously quickly and which lack the investment, institutional mechanisms and infrastructure to manage this growth. However, certain coastal megacities such as Karachi and Lagos face a particular set of risks given their pre-existing levels of fragility and thus merit special attention from a security perspective.

Understanding migration

Understanding the role of migration to megacities is essential for understanding how climate risks can become political and security risks. Peaceful urban governance is difficult if large scale urban migration isn't anticipated, planned for and managed. Of particular importance is understanding current and future patterns of migration from rural to urban areas and the reasons behind these trends in human mobility. Climate change adds another impetus for the growth of large urban areas, particularly in low-income countries. Emerging research indicates that we will see increased rural-urban movement within countries, more labor migration, and more frequent or longer lasting circular migration patterns, particularly as the agriculture sector becomes more volatile due to projected climate impacts. With more people moving to cities, and with many cities already facing increased vulnerability to climate and disaster risks as well experiencing existing social, economic and political fragility, these dynamics will be a major determinant of urban resilience.

[6] Conceptualising City Fragility and Resilience, de Boer et al, UNU Centre for Policy Research, Working Paper 5, 2016

Climate impacts vary considerably in their potential to instigate migration. Climate change can affect migration directly or indirectly, but causality is never singular. Direct impacts such as quick-onset and slow-onset hazards intensive and extensive risks can lead to short-term or distress migration. Indirect impacts such as climatic shocks to markets (food, construction materials, energy supply) will have knock-on implications on people's decisions to move. Both are complex, nuances and vary according to the particular context, and need to be better understood. Moreover, individual, community and national vulnerabilities shape responses as much as disaster effects do. Focussing on how people are vulnerable as a function of political, economic and social forces can enable a more nuanced and in-depth understanding of post-disaster human security.

Many challenges and opportunities posed by migration into cities relate to informality. Some notable challenges exist around adequate policies to deal with undocumented migrants, how to balance the needs of urban and rural livelihood security, access to capital for poor, informal settlers, and the ways to engage non-state actors in urban governance. Informal social capital networks can also be a significant component of resilience through the social cohesion and safety nets which these networks can provide.

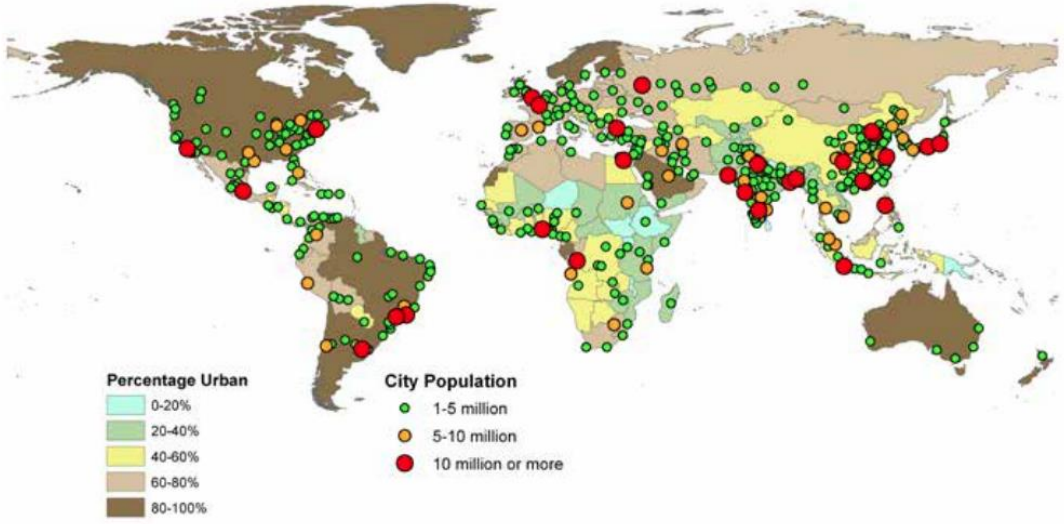
It is unlikely that climate stresses will lead to large-scale migration, conflict or instability in megacities in the short-run, but there are already signs of increased crime and political grievances in these urban hubs which could intensify and escalate over time or suddenly in the face of a sudden shock. As outlined above, early signs of social discontent linked to climate change are visible in contexts such as Karachi and Lagos, although interwoven with economic, social, and political grievances. Whether these complaints evolve over time into scenarios more ripe for conflict or can be resolved without recourse to violence will hinge on the effectiveness of government actions to reduce vulnerability and alleviate the sense of injustice already felt by climate-affected communities. This is the case not just in megacities, but also in the regions from which people migrate from.

Addressing the Governance Gap

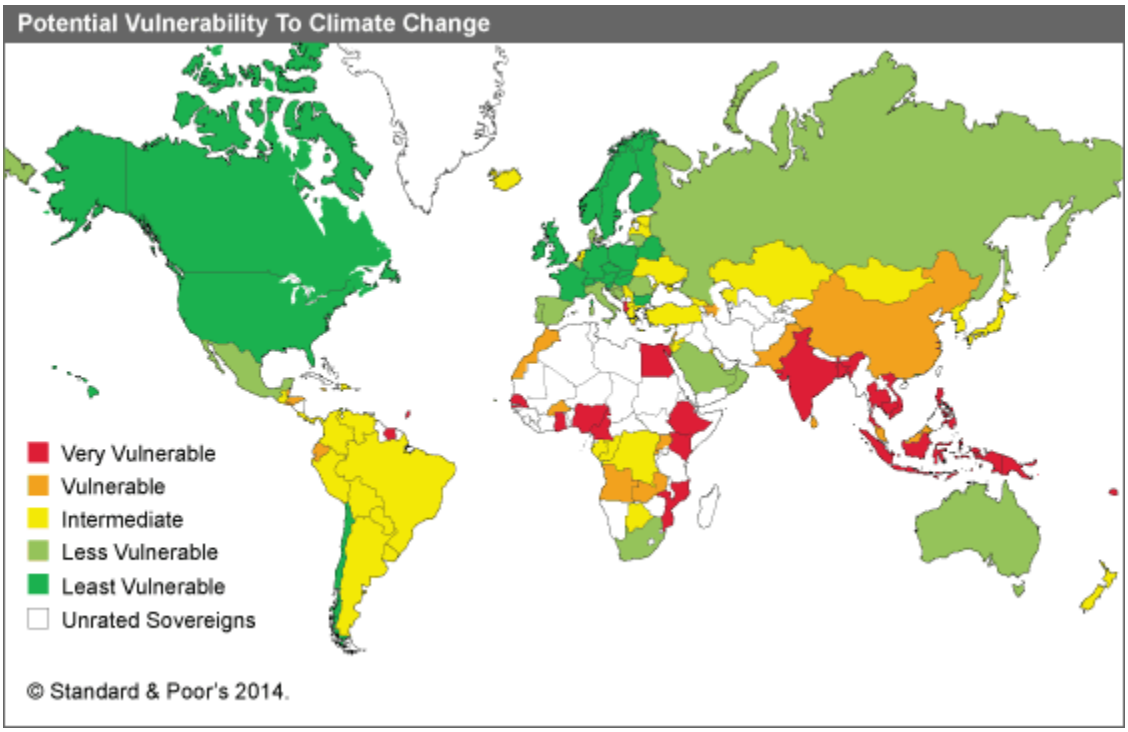
There is a significant overlap between these global urbanization trends and a wider governmental difficulty in dealing with climate change impacts. This becomes clearer when comparing the three graphics below:

Figure 1.3: **Global patterns of urbanization, 2015**

Source: Based on United Nations, 2014b.



Credit: https://www.weforum.org/agenda/2016/07/this-map-shows-the-incredible-growth-of-megacities/



Credit: Standard & Poor's 2014

Credit:
http://www.citylab.com/housing/2016/09/where-the-fragile-cities-are/501233/

The first maps the growth and distribution of urban areas. The second maps the credit rating agency Standard and Poor's assessment of state-level climate vulnerability, based on three criteria (share of the population living in coastal areas below five meters of altitude; share of agriculture in national GDP[7]; and the vulnerability index compiled by Notre Dame University Global Adaptation Index [ND-GAIN] which measures the human and financial capital of national governments to adapt to climate impacts). The third penetrates more concretely to city-level measurements of vulnerability. In many cases, the three vulnerabilities overlap significantly, so that many large cities are burdened with local vulnerabilities (often because they are in conflict areas), which are compounded by national-level vulnerabilities, making any federal government response to future disaster risk sub-optimal.

Cities are not standing still in the face of these challenges. There are many examples of cities are stepping-up to solve major global challenges. City leaders are forging networks within and across international boundaries to address shared problems, including climate change. However, national governments and multilateral agencies such as the World Bank and UN system are not organized to work with city-level governance mechanisms. They are still organized around servicing nation states which restricts scope for devolved decision making and consultative engagement at city level.

Some cities have good connections to central governments and other city networks and are thriving, whilst others are failing to keep up with the challenge of climate change and demographic pressures. In a number of cases, the social contract binding urban authorities and citizens has unravelled. When expectations of urban residents and municipal leaders are not matched, cities become fragile. It is possible to empirically measure the extent of fragility by examining the quantity and quality of basic urban service pro-

[7] Standard and Poor's 2014 https://www.globalcreditportal.com/ratingsdirect/renderArticle.do?articleId=1318252&SctArtId=236925&from=CM&nsl_code=LIME&sourceObjectId=8606813&sourceRevId=1&fee_ind=N&exp_date=20240514-20:34:43 (@Neil – can you add full ref please?)

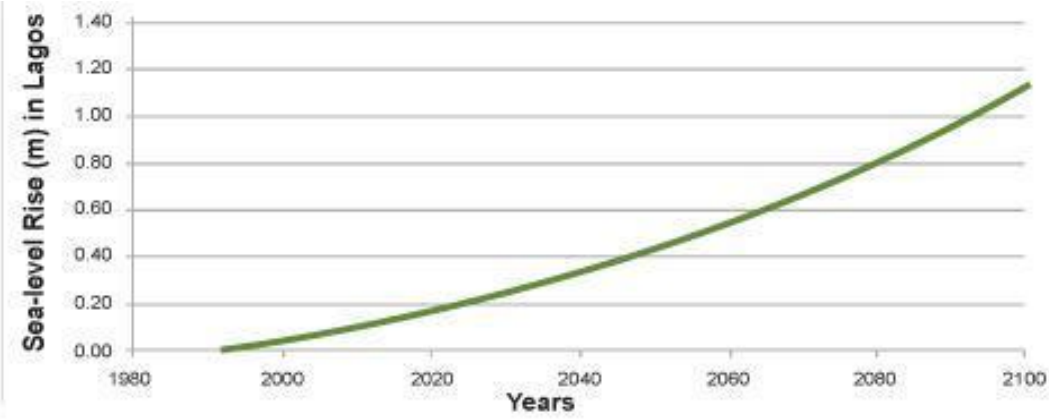
vision and access – whether to public security, basic health, transportation or electricity.[8] And where the social contract is weakened, the risk of social unrest or conflict increases.

While a general discussion of urban fragility and resilience is useful to bring attention to the compound nature of the issue, an exploration of two specific case studies[9] offer a contextual insight which can support more empirically grounded conclusions.

Spotlight on Karachi and Lagos

Lagos

Lagos is the fifth largest city in the world with a population 17.9 million inhabitants[10] which is set to double by 2050 according to some predictions.[11] The foremost manufacturing and port city in West Africa, it accounts for 65% of Nigeria's commercial and industrial activities, with a GDP of an estimated $30 billion USD.[12] Yet with its vast coastline, low-lying topography and dense and growing population, Nigeria's commercial capital is particularly vulnerable to flooding from rising sea levels, more intense rainfall and increasing storms which pose a serious risk to the city, causing loss of life and property and devastating infrastructure.[13] Both riverine floods, common during the city's two rainy seasons, from April to July and October and November, and risk of inundation due to sea level rise, are projected to increase.



Projection based on future scenario of rapid, fossil-fuel intensive economic growth.
Source: UNIDO

[8] Conceptualising City Fragility and Resilience, de Boer et al, UNU Centre for Policy Research, Working Paper 5, 2016

[9] Lagos and Karachi were selected as both coastal megacities present significant climate-security challenges of international concern.

[10] Lagos State Governemnt figures, available at: http://www.lagosstate.gov.ng Accessed on 5 September 2016

[11] 2015 Population Datasheet, Population Reference Bureau, Available at: http://www.prb.org/pdf15/2015-world-population-data-sheet_eng.pdf Accessed on 5 September 2016

[12] World Bank and CDP Global Cities Report 2015, available at: https://www.cdp.net/cities Accessed on 7 September 2016

[13] CDP Global Cities Report 2015, available at: https://www.cdp.net/cities Accessed on 7 September 2016

70 percent of Lagos's population live in overcrowded informal settlements, many of which are built in wetlands and swampy areas most prone to flooding.[14] A quarter of the city's population have no access to adequate sanitation.[15] Lagos was recorded as having a Gini coefficient of 0.64, making it among the most unequal cities in Sub-Saharan Africa.[16] Floods already have a significant social and economic impact: 91 percent of slum dwellers report harm to health caused by lack of clean water due to inundation, and 85.6 percent report an adverse impact on economic opportunity.[17] The consequences of flooding in Lagos will thus playout against a backdrop of poverty and inequality, compounding the implications of both.

One knock-on consequence of increased poverty and inequality is increased crime, violence and instability. At the national level, Nigeria's federal government faces serious threats to stability from political struggles between a predominantly Muslim north and a predominantly Christian south, conflict over oil revenues in the Niger Delta, and the rise of violent Islamic extremist groups such as Boko Haram. Lagos in particular sees a high level of political demonstrating – some of which has turned violent. It is also a locus of crime – including organised crime, and is the second most violent state in Nigeria.[18]Economic difficulties and inequality contribute heavily to the incidence of armed violence in Lagos. The main actors involved in armed violence in Lagos include ethnic militia, so-called Area Boys, youth, criminal gangs and the security forces themselves. 'Area boys' are the unemployed people – mostly young men – who engage in opportunistic violence in the city. They are easily mobilised for armed violence.

To fully understand the knock-on social and economic pressures confronting Lagos in the face of climate change, it is necessary to appreciate the rate of population growth due to in-migration. An estimated 3,000 migrants enter Lagos every day, most coming from neighbouring, rural areas, making it one of the fastest growing cities in the world.[19]

One particular factor which will have major implications on livelihoods and thus migration into Lagos is the impact of sea level rise on Nigeria's onshore oil fields. Nigeria's significant oil wealth concentrated in the Niger Delta, south east of Lagos. An estimated 80 percent of all government revenues and 97 percent of Nigerian foreign exchange come from Niger Delta oil.[20] Some hydrological models indicate that sea level rise of three feet would submerge nearly all of the Delta's onshore oil fields.[21] Port Harcourt is the economic hub of the oil sector and is both highly vulnerable to sea level rise and faces major risks of vio-

[14] Adelekan, Ibidun O. (2010), 'Vulnerability of poor urban coastal communities to flooding in Lagos, Nigeria', Environment and Urbanization 22:2, 433–50.

[15] UNHABITAT, State of the World's Cities 2012/2013, 2013, p. 80

[16] UN Habitat, State of the World's Cities 2010-11

[17] Adelekan, Ibidun O. (2010), 'Vulnerability of poor urban coastal communities to flooding in Lagos, Nigeria', Environment and Urbanization 22:2, 433–50.

[18] Armed Conflict Location & Event Dataset (ACLED), Available at: www.acleddata.com Accessed on 9 September 2016

[19] http://www.population.gov.ng/index.php/lagos-state Accessed on 10 September 2016

[20] Oviasuyi, P. O. & Uwadiae, J., 2010, The Dilemma of Niger-Delta Region as Oil Producing States of Nigeria, Journal of Peace, Conflict and Development, Issue 16, November 2010, Bradford.

[21] Oviasuyi, P. O. & Uwadiae, J., 2010, The Dilemma of Niger-Delta Region as Oil Producing States of Nigeria,

Journal of Peace, Conflict and Development, Issue 16, November 2010, Bradford.

lent conflict, primarily linked to criminal gangs which have grown up to exploit the protection market around the oil industry. In the face of migration, criminality and gang dynamics are also highly likely to be relocated from the Delta to Lagos.

The pressures of in-migration are felt keenly by the Lagos State government, although state responses are ill-planned and problematic. For example, in August 2013, the government escorted around 70 Igbos from Anambra State across the state border and left them along the Niger River, provoking major criticisms that the government could forcibly 'deport' a Nigerian citizens from one state to another.[22] This raises concerns about the ability and responsibility of other Nigerian states to provide for their citizens, and the potential exists for even higher levels of resentment or rejection of migrants to the city, whether they are driven by climate stresses or by other factors.

The federal government response to address climate risks has also been poor. Lagos ranks among the lowest with the regard to spending on climate change adaptation by leading global mega-cities. [23]What is spent is predominantly channelled to addressing the physical hazards presented by climate change, such as the public-private Eko Atlantic project which proposes to build a 12 meter high 6.5 kilometre sea barrier around the coast Lagos which will safeguard.[24] There are few provisions to address the structural vulnerabilities to potential climate risks – such as the endemic poverty in informal settlements, the poor sanitation and waste disposal provisions in the city, adverse effects of urbanisation and the infrastructural deficit. Government responses to political protests against perceived poor policy planning, such as proposed cuts to fuel subsidies in 2012, have been heavy handed, with security forces accused of responding with excessive force against demonstrators.

Karachi

Karachi is the most populous city in Pakistan, the most populous majority Muslim city, and one of the largest and population dense urban areas in the world.[25] Originally the first capital of the independent Pakistani state, its demographic profile has been marked by waves of migration, first from Muslim refugees fleeing partition violence in northern India (known as Muhajirs), as well as Pashtuns fleeing violence from Afghanistan (Karachi is the largest Pashtun city in the world, containing more Pashtuns than Kabul, Afghanistan's capital).

Under the best of circumstances Karachi is a difficult-to-manage megacity. Karachi and Sindh province are the most-violent prone of the country, with conflict emanating from terrorist, sectarian, and criminal outfits. Karachi's largest political party, the Muttahida Qaumi Movement (MQM), is in the midst of seri-

[22] Climate Change and Conflict in West African Cities: A Policy Brief on Findings from Lagos, Nigeria and Accra, Ghana, November 2013, USAID available at http://community.eldis.org/.5b9bfce3/FESS_Policy_Brief_CITIES.pdf Accessed on 5 September 2016

[23] Lagos' spending on climate change adaptation in 215 was $72.3 million, in comparison to the $2.3 billion spent by New York on adapting to climate change. See: Lucien Georgeson et al. Adaptation responses to climate change differ between global megacities, Nature Climate Change (2016). DOI: 10.1038/nclimate2944

[24] See: http://www.ekoatlantic.com/about-us/

[25] Because Pakistan has not held a formal census since 1998, exact population and demographic figures from the Pakistani state are woefully outdated. The 1998 census for the Karachi city district lists close to ten million people. Most outside estimates place the population of the wider Karachi metropolitan area at twenty to twenty-four million people.. Murtaza Haider, "17 years and no census in Pakistan - A country running on guesswork," *Dawn*, 7 September 2015, http://www.dawn.com/news/1204917, accessed 21 September 2016.

ous internal schism.[26] The provincial government has extended the presence and powers of the paramilitary Rangers in an effort to keep order.[27] A Working Group convened by the Century Foundation concluded that, despite the efforts of the Sharif government, "Karachi remains a nexus for criminal and terrorist activity with several sections of the city no-go zones and government largely invisible in many others."[28] Despite these problems, Karachi is a crucial city for the prosperity of wider Pakistan.

Climate change represents a new layer of risk for the city, one that is emblematic of the wider context of climate change in South Asia, especially in fast-growing urban areas. Climate change also intersects with regional environmental patterns to increase the probability of future climate change-related problems. As a coastal city, Karachi is vulnerable to typhoons (which may be getting stronger thanks to climate change) and sea-level rise.[29] As a megacity with a large industrial base, there is a complex calculus driving demand for precious water resources, and food security is dependent on how well the agricultural sector throughout the country does.[30] Any of these factors, added to Karachi's pre-existing political and social cleavages, could be a textbook case of climate change as a "threat multiplier."

Natural disasters can of course cause immediate financial losses through property damage, forced relocation of affected populations, and lost productivity from people who can no longer work. For a city with a long history of violence, resource security concerns would be added to the list of grievances. Beyond those impacts, which are chronologically close to the disaster event, there is growing evidence that the long-term impact may be more robust than previously appreciated.

In particular, there is some evidence to suggest that catastrophic disasters may have a lasting impact on foreign investment flows. Recent research on natural disasters in Japan demonstrate natural disasters can sever a smooth working relationship between banks and the firms they serve, causing negative feedback loops through the wider economy.[31] Damaged firms can find difficulty in servicing existing loans, while damaged banks cannot originate new loans or verify the creditworthiness of new firms approaching them for credit.

While an industrialized country like Japan can recover from these downturns quite rapidly, generally through expansion of credit, there are reasons to conclude that the impacts would be more severe and long lasting in a country like Pakistan. The banking sector is concentrated in Karachi (including the location of

[26]Maria Kari, "The Bizarre World of Karachi Politics," *The Diplomat*, 1 September 2016, http://thediplomat.com/2016/09/the-bizarre-world-of-karachi-politics/, accessed 21 September 2016.

[27]Hasan Mansoor, "Sindh likely to extend Rangers' stay, special powers today," *Dawn*, 1 August 2016, http://www.dawn.com/news/1274543, accessed 21 September 2016.

[28]Century Foundation International Working Group on Pakistan, *Wake Up, Pakistan*, May 2015, 39.

[29]Joseph Dussault, "Is climate change generating stronger, more frequent typhoons?" *Christian Science Monitor*, 6 September 2016, http://www.csmonitor.com/Science/2016/0906/Is-climate-change-generating-stronger-more-frequent-typhoons, accessed 21 September 2016; A 2015 report by the Pakistani Senate's Standing Committee on Science and Technology wrote to Prime Minister Sharif warning about the risk to coastal areas, including Karachi which could "sink" by 2060. Atif Butt, Karachi may sink into the ocean by 2060, Senate warns," 13 March 2015, http://www.dawn.com/news/1169339, accessed 21 September 2016..

[30]Hina Lotia, Basharat Saeed, and Areej Riaz, "Climate change-induced loss and damage in Pakistan: An investigation of Impacts on Society and the Economy," LEAD Pakistan, June 2016, http://www.icccad.net/wp-content/uploads/2016/07/Pakistan-LD-Policy-Brief-July-2016.pdf, accessed 21 September 2016.

[31]Kaoru Hosono and Daisuke Miyakawa, "Natural disasters, firm activity, and damage to banks," VoxEU, 13 August 2014, http://voxeu.org/article/natural-disasters-firm-activity-and-damage-banks, accessed 6 September 2016; see also Tara Collins, "Great East Japanese Earthquake," Department of Foreign Affairs and Trade, n.d., https://dfat.gov.au/news/news/Documents/great-east-japan-earthquake-economic-and-trade-impact.pdf, accessed 12 September 2016.

the State Bank of Pakistan), in addition to being its main import/export hub. A natural disaster, especially one strengthened by climate change, could devastate the source of nearly 20% of Pakistan's GDP and 50% of the tax revenue for the Federal Board of Revenue. We are already seeing the social and political implications of an economic downturn playing out in Brexit UK and the US, which give reasons to conclude that the impacts would be even more severe, long-lasting and potentially violent in a country like Pakistan.

The governance capacity of the Pakistani state is weak with respect to managing climate change, resource security, and disaster risk. While Pakistan has an established Climate Change Ministry which oversees a National Disaster Management Authority, there are questions over how well-resourced that effort is.[32] Additionally, the passing of the 18th Amendment in Pakistan has devolved a lot of responsibility to the provincial level, which also raises questions about human and financial capital needs. A combination of factors previously mentioned will continue to undermine preparedness in the years to come: religious conflict, lack of legitimacy and effectiveness of the *de jure* civilian leadership of the city, and a dearth of financial resources from a cash-strapped Pakistani state.

Analysis

Despite the growing importance of megacities as a unit of analysis in international security and politics, as well as the threat posed by flooding and sea-level rise, relatively little attention has been paid to the potential for environmentally induced instability in coastal megacities. Current trends, including rapid population growth, land use patterns, and increasing climate impacts, suggest the costs of inaction in these urban areas are rising.

Both Karachi and Lagos are emblematic examples of how our new urban reality is made more precarious by a nexus of population growth without land-use enforcement and basic public services, intensifying climate impacts, and divisive politics has the potential to undermine their aspirations to be regional economic hubs, and could, over time, lead to conflict.

Based on the present socio-political and economic risks faced by Lagos and Karachi, the impact of climate change could lead to violence through a three indirect pathways:

- The adverse impacts of climate change on livelihoods in other parts of the country such as drought in the agricultural belt and more frequent storm surges and sea level rise along the southern coastline will lead to resource shortages, make livelihoods less viable and will lead to increased migration to urban hubs.
- Both cities are highly vulnerable to climate change-related flooding yet have inadequate provisions for their rapidly growing populations and do not have the governance capacity or political will to make appropriate plans to cope with the dual challenge of storm and migrant surges.
- Poor responses to environmental risk in both contexts, particularly to those in informal settlements, increases grievances between communities and service providers – namely local and national government.

In the short term, it is unlikely that climate stresses will lead to large scale conflict or instability in either city, but there are already signs of increased crime and political grievances in urban hubs which could intensify and escalate over time or suddenly in the face of a sudden shock. Early signs of social discontent linked to climate change are visible, although interwoven with economic, social, and political grievances.

[32] Zofeen T. Ebrahim, "Pakistan's new climate change ministry merely 'cosmetic'," *Dawn,* 6 February 2015, http://www.dawn.com/news/1161895, accessed 21 September 2015.

Whether these complaints evolve over time into scenarios more ripe for conflict or can be resolved without recourse to violence will hinge on the effectiveness of government actions to reduce vulnerability and alleviate the sense of injustice already felt by climate-affected communities. This is the case not just in megacities, but also in the regions from which people migrate from.

Conclusion

Megacities face both challenges and opportunities presented by urbanization and urban growth. While cities can absorb new entrants and provide them in many cases with employment, the informal nature of those economies does not provide much in the way of governance, stability or predictability. Governments which were designed to rule over cities of one size were overwhelmed by in-migration and reproduction. Where the government was absent or incompetent, local groups, from the benign (labor unions, charities, particularly the mutual benefit societies of ethnic and religious minorities) to the malignant (crime syndicates and terrorist organizations), stepped into the void. These informal associations fought against and cooperated each other and the formal governments who maintained *de jure* sovereignty over them.

From the perspective of risk management and future urban planning in megacities, it is essential to understand the particular dynamic and risks relating to climate change and urban resilience. Climate change will present a profound challenge to urban areas well into the twenty-first century. Facing that challenge will require resources and political will well in excess of what has been deployed to-date. It will also require innovations in governance, as the international system is built to conduct relations on a state-to-state basis. That orientation is slowly beginning to change, as new work in transnational climate change governance has demonstrated. But this process will require a lot of trial-and-error, much to the detriment of the economic and personal security of tens of millions of city dwellers.

There are reasons for cautious optimism: many cities have the power, the expertise and the resourcefulness to continue to take meaningful climate action. More than ever before, they are at the forefront of the issue of climate change as leaders, innovators and practitioners. However, in already fragile contexts, this dynamism and scope for engagement to address climate risks is hindered by weak capacity, lack of political will and the perception that climate change is not a priority.

In terms of practical responses, physical efforts to address climate impacts such as sea level rise need to be coupled with attention to socio-economic factors such as social networks, livelihoods and efforts to enhance governance. It is also critical to ensure support for rural as well as urban informal livelihoods. Rural livelihoods are where many of the most vulnerable earn their living and where economic stress and the push to migrate to urban centres is first felt. Any strategy must ultimately encompass grievances such as inequality, marginalisation and the disenfranchisement of youth – especially men.

But to ensure that policy responses genuinely address the complex risks posed to megacities by climate change, we urgently need a better understanding the links between migration, urban resilience, climate change and fragility. This issue is a major lacuna within the research community and as such is largely overlooked in policy and programming. Whilst there is increased focus on the perceived negative implications of migration on national security, the relationship between climate change, migration, cities and conflict needs to be understood if attempts to promote sustainable urban development are to build resilience to climate change and to conflict in an increasingly mobile and urban world.

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