



Review

Multi-Level Climate Governance in Bangladesh via Climate Change Mainstreaming: Lessons for Local Climate Action in Dhaka City

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Abstract: Over the last three decades, Bangladesh has implemented various initiatives to address different climate change impacts. In a multi-level governance arrangement, addressing climate change impacts is often constrained by climate change mainstreaming. In Bangladesh, a crucial question that arises is how mitigation and adaptation efforts are addressed at both national and sub-national levels. This paper examines the integration of climate change issues into national, sectoral, and city development plans with a particular focus on Dhaka using a framework developed based on the United Nations Development Program's (UNDP) climate change mainstreaming guidelines for national development processes. The review finds evidence that mainstreaming of climate change is strong in national and sectoral development plans and has been incremental since 2002. However, climate change mainstreaming in Dhaka city development plans is moderate, especially in terms of climate risk and opportunity assessment, institutional arrangement, and capacity building for climate action. To augment existing efforts at mainstreaming at the sub-national level, the paper suggests the need to build sub-national level climate capacity with particular attention to institutional coordination and cooperation among agencies at different levels of development planning and to establish a national financing arrangement that allows sub-national agencies to harness climate finance.

Keywords: climate change mainstreaming; development plans; multi-level governance; Bangladesh; Dhaka

1. Introduction

Climate change mainstreaming in a country's development agenda is critical for building resilience at the national and sub-national levels. The Intergovernmental Panel on Climate Change (IPCC) emphasizes the need for national-level efforts to mainstream climate change into the entire scope of human development, such as human settlements, natural resource, environmental management, and social systems [1,2]. For the so-called least developed countries, this is an urgent matter as they are areas where climate change impacts are severe and with woefully inadequate capacities to tackle such impacts [3–6]. Without effective climate action, climate change is and will adversely affect their development and poverty reduction efforts, hence the need to consolidate development progress that has already been achieved [7].

In the climate change literature, the integration of climate change issues into different levels of decision-making processes is referred to as mainstreaming [4,7,8]. This has received significant attention in the literature [6,9–13]. Mainstreaming involves the inclusion of different climate change goals, objectives, and strategies into existing policy domains and governance arrangements [14,15]. Climate

change mainstreaming can be horizontal, where climate change issues are integrated into different policy sectors or departments, such as in ministries of agriculture or economic development. Mainstreaming can also be vertical, where integration is carried out at different hierarchical administrative levels. It can also be international, which embodies the relationships between donor countries and their partner country [16,17].

For all these types of mainstreaming, climate change-related risks and vulnerabilities are identified, a shared understanding of climate change impacts is encouraged, climate change issues are prioritized, and strategies and institutional arrangements to tackle climate change impacts are identified for implementation [18]. This allows climate change issues to become part of and consistent with other well-established development interventions [3]. For most developing countries and cities, however, climate change mainstreaming at both the national and sub-national levels is lacking [19–21]. For instance, many least developed countries have prepared National Adaptation Program of Action (NAPAs) or National Climate Change Response Strategies (NCCRS) with funding from the international development community [13,17] in line with the Cancun Agreements from the 2010 Climate Change Conference held in Cancun, Mexico. This conference called for increased attention to adaptation in addition to mitigation at all levels of national development [22]. However, climate change mainstreaming into national and sub-national plans has been inadequate and, for some countries, absent [7,11,23,24] and often treated as a normal planning issue or business [17]. In a study of '41 NAPAs' submitted to the UNFCCC, Hardee and Mutunga [23] revealed that the mainstreaming of climate change issues in NAPAs into national development planning was inadequate due to poor policy alignment and structural differences between NAPAs and national and sectoral development plans. In a similar study, Saito [24] studied the mainstreaming of climate change issues into national development plans through NAPA in six south and southeastern countries and concluded that more efforts are needed in climate change mainstreaming at all levels of national development. In Lesotho, mainstreaming climate change issues into sectoral development plans of government ministries was absent and climate actions being implemented were uncoordinated [13]. At the city or municipal level, evidence from India reveals that climate change is not considered a priority due to infrastructure deficits and socio-economic goals. At the same time, the absence of project funding, a clear institutional arrangement and the needed coordination and cooperation for climate action have resulted in low climate change mainstreaming in Indian cities [25]. While reviewing municipal integrated plans in six districts in South Africa, Santhia et al. [26] also observed that these plans hardly mentioned climate change. They further noted that there were no connections made between climate change and social development issues, context-specific information about climate change was inadequate and sometimes absent despite the identification of some mitigation and adaptation strategies, and the objectives of climate change mainstreaming had not been attained. Hence, for meaningful and effective climate action, climate change needs to be properly mainstreamed at all levels of development planning [7,24].

Nonetheless, in many countries, climate change mainstreaming into national and sub-national development frameworks is far from deterministic. Rather, it is layered on the complexity of governance systems, institutional arrangements, and development priorities at national and sub-national levels. Additionally, literature [20,27] points to the role of national-level actors with vested interests shaping the framing and integration of policy and program responses to climate change impacts. To this end, climate change literature emphasizes the need to critically examine efforts and gaps of climate change mainstreaming at the national and sub-national levels [20].

In line with this, this paper seeks to contribute to the growing discourse of climate change mainstreaming at the sub-national level through the lens of the Bangladesh experience. Like many countries and cities in Asia, Bangladesh is severely vulnerable to various forms of climate-induced disasters, such as floods, droughts, and cyclones. In both its rural and urban areas, the frequency and intensity of disaster risks and hazards have been pronounced [28]. Bangladesh's perennial flooding remains a daunting challenge and exerts devastating effects on social conditions, economic infrastructure, and livelihoods. Because of its particular climate risks and vulnerabilities, Bangladesh has

designed and implemented various programs to systematically reduce climate change impacts, mostly underlined by 'climate policy paradigms' [29] (p. 1). These are usually influenced by international development agenda from international organizations, bilateral and donor agencies [29,30] and organized within the institutional framework of development planning in the country. To understand climate change mainstreaming in Bangladesh, this paper draws on development plans prepared between 1997 and 2016 to examine the integration of climate change issues at national and sub-national levels; Dhaka is the city of focus at the sub-national level. The significance of this contribution is, therefore, framed around the principle that policy convergence is fundamental to ensure that initiatives against climate change impacts are actualized at the local level where the real battles are not only being fought but severely experienced.

The next section elucidates the research context, followed by the study's research methods. Section 4 provides a brief overview of the national, sectoral and Dhaka city development plans reviewed. It also analyzes climate change mainstreaming in the selected development plans through a framework developed based on the UNDP guidelines for climate change mainstreaming. Section 5 presents the similarities and differences between the reviewed plans. Discussions and policy insights then follow in Section 6.

2. Research Context

This paper examines climate change mainstreaming by comparing national and sectoral climate change issues for Bangladesh and their integration into local plans for the city of Dhaka. In Dhaka, climate change impacts include variations in temperature, heat and cold waves, excessive and erratic rainfall, waterlogging, flooding, and cyclones [31]. The city is surrounded by tributaries and distributaries of the great rivers of the Bengal Delta. While these rivers are responsible for the strategic location and the fertile soils of the region, they also carry with them climate change impacts for the city [32]. The city's susceptibility to climate change impacts, compounded by lack of compliance with national policies, rules, and regulations, as well as resource constraints to implementing different measures [33], makes it appropriate for this study. Dhaka, with a population of 19.58 million people, is one of the fastest-growing cities (4% annually) in Southern Asia. It is also projected to accommodate more than 25 million by 2025 [34]. The sheer number of people living in the city means that the negative consequences of climate change are likely to be felt extensively, especially by the urban poor who live in flood-prone and water-logged areas [35].

3. Research Method

This paper examines the mainstreaming of climate change at the national and sub-national levels using national and sub-national development plans as the basis of the analysis. It addresses the research question: (i) How are climate change issues mainstreamed into national, sectoral, and local development plans, and (ii) what are the differences and similarities between climate change mainstreaming in national and sectoral plans and local development plans in Bangladesh?

The review of climate change issues at the national level was based on four national development planning documents namely: (i) The Fifth Five-Year Plan (FYP, 1997–2002), (ii) the Sixth Five-Year Plan (FYP) (2011–2015), (iii) the Seventh Five-Year Plan (FYP) (2016–2020), and (iv) the Perspective Plan (2010–2021). The study also reviewed two sectoral plans on climate change: (i) the National Adaptation Program of Action (NAPA) and (ii) the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), and two local development plans for Dhaka city: (i) Detailed Area Plan (DAP 2010) and (ii) Dhaka Structure Plan (DSP, 2016–2035). All these plans were prepared between 1997 and 2016; and they were selected for review in this study because climate change-related issues in planning documents started from the Fifth FYP (1997–2002). The review process was undertaken in three stages: (i) Review of national and sectoral plans to understand their climate change framings, (ii) review of sub-national plans (Dhaka City Plans) to understanding their climate change framings, and (iii) examination of similarities and differences between these set of plans to appreciate how national- and

sectoral-level climate change policies manifest at the city of Dhaka. In this paper, climate change mainstreaming at different levels of governance in Bangladesh— conceptualized in Figure 1— has been analyzed using the UNDP framework for mainstreaming climate change in national development processes [36].

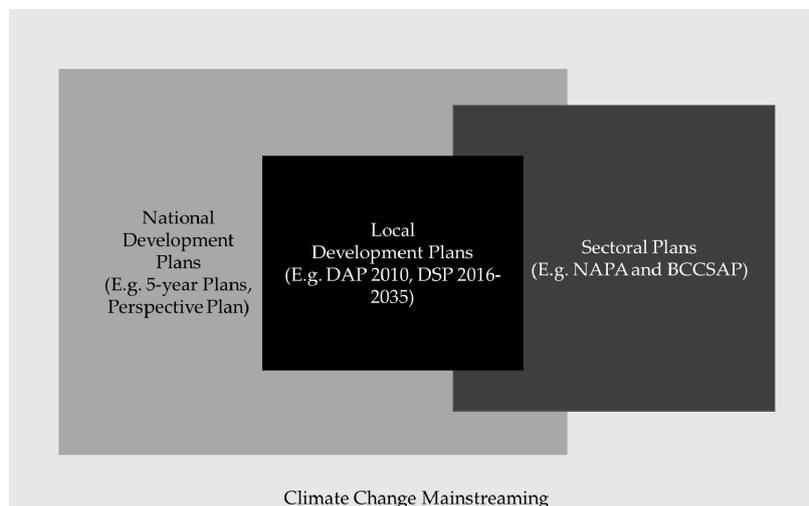


Figure 1. Multi-level climate governance and climate change mainstreaming for Bangladesh.

3.1. Research Strategy

This paper employed both qualitative and quantitative content analysis of national and sub-national development plans to unravel climate change mainstreaming in Bangladesh. A content analysis helps researchers to examine text data to identify and aggregate framings, patterns, and themes into discernible constructs to address a research question or problem [37,38]. Since the sources of data for the analysis were primary from documents, the content analysis provided a systematic process to objectively examine the various development plans for important framings, patterns, categories, and constructs [37,39,40] on climate change in Bangladesh.

The quantitative content analysis involved a scoring matrix developed based on the UNDP guidelines for mainstreaming climate change into national development processes. The guidelines recommend six steps: (1) Create a country climate profile, (2) prepare an institutional map, (3) engage stakeholders and select the document to be assessed for climate risks and opportunities, (4) assess climate change risks and opportunities, (5) build the capacity of stakeholders, and (6) mainstream climate change into the revised document [36] (p. 3). Under each of these steps are specific expectations, which this paper identified as mainstreaming criteria in the analytical framework developed for this study (Figure 2). This framework does not include the sixth step as it is not relevant for this analysis.

STEPS	Climate Profile	Institutional Mapping	Stakeholder Engagement and Documents Selection	Climate Change Risk and Opportunities' Assessment	Capacity Building
MAINSTREAMING CRITERIA	<ul style="list-style-type: none"> •Climate Change Trends •Potential Climate Change Impact (Maximum Score = 6)	<ul style="list-style-type: none"> •Institutional and Regulatory Frameworks •Institutional Cooperation and Coordination •Climate Finance (Maximum Score = 9)	<ul style="list-style-type: none"> •Relevance and Priority for Engagement •Active Participation of the Stakeholders (Maximum Score = 6)	<ul style="list-style-type: none"> •Climate Vulnerability and Risks •Climate Change Adaptation Opportunities •Climate Change Implementation Strategy (Maximum Score = 9)	<ul style="list-style-type: none"> •Identification of Key Institutions •Recognition of Capacity Building Needs •Capacity Building Strategies (Maximum Score = 9)

Figure 2. Analytical framework for the quantitative content analysis.

3.2. Scoring Criteria

The scoring approach of the various criteria under the steps is based on Godschalk and Rouse [41] (p. 21,22). In the analytical framework, the mainstreaming criteria are scored between zero (0) and three (3). The scores are informed by specific text data that relate to the mainstreaming criteria from the plans reviewed.

- Not Applicable: This is assigned if the mainstreaming criteria have been omitted from the plans contextually.
- Not Present (0 points): Assigned in situations where the mainstreaming criterion is applicable, but the plan does not reference or include it.
- Low (1 point): A point is assigned if the plan mentions a mainstreaming criterion at a basic level without evidence, and the criterion is also not discussed in other sections of the plan.
- Medium (2 points): This is awarded in a situation where the mainstreaming criterion is discussed in the narrative, goals, and policies of the plan without adequate data analysis or if there is a missing link between the narrative, goals, and policies and implementation strategy.
- High (3 points): This score is awarded if the mainstreaming criterion is clearly defined and addressed with adequate and reliable data, analysis supports and informs the plan narrative, goals, policies, as well as a clear transition between plan narrative, goals, policies and implementation strategies of the plan.

The total possible score for the quantitative content analysis is 39. The scores are standardized using percentage scores for each mainstreaming step as well as the score for the overall plan: Poor Mainstreaming = Less than 50%, Weak Mainstreaming = 50–59.9%, Moderate Mainstreaming = 60–79.9%, and Strong Mainstreaming = 80–100%. Akin to Godschalk and Rouse [41], the aim of this scoring is not to rank the plans but to help identify mainstreaming gaps and areas for improvement. The quantitative analysis is followed by a qualitative content analysis, which provided evidence for the scoring via text quotations. It also helped identify and explain emerging themes in the plan review process [42–44].

4. Results

4.1. Overview of the Plans

4.1.1. National Development Plans

Since Bangladesh attained independence in 1971, the Bangladesh Planning Commission (BPC) has coordinated and formulated seven Five-Year Plans (FYP) known as National Development Plans (NDP), beginning with the first plan prepared in 1973 for the 1973–1978 period (Figure 3).

From 1978 to 2002, BPC implemented five successive Five-Year Plans along with an interim Two-Year Plan (1978–1980). Between 2003 and 2010, there was a shift from the Five-Year Plan to short-term plans (e.g., Poverty Reduction Strategy Paper (PRSP 2005). This was because the ‘caretaker government’ during this period did not have the constitutional mandate to prepare medium to long-term plans. However, the newly elected government in 2008 resumed medium to long-term planning, starting with the Vision 2021. The Vision 2021 developed a charter for a prosperous future which was earmarked to coincide with the country’s Golden Jubilee Year (2021). The Vision 2021 provided the basis for the first-ever long-term Plan, the ‘Perspective Plan 2010–2021’. Following the Perspective Plan, two consecutive Five-Year Plans, (the Sixth Five-Year Plan, 2011–2015 and the Seventh Five-Year Plan, 2016–2020) have been prepared, incorporating the goals and objectives formulated in the Perspective Plan. These NDPs provide a national framework that determines the goals, objectives and strategies for development, of which climate change has become an important component.

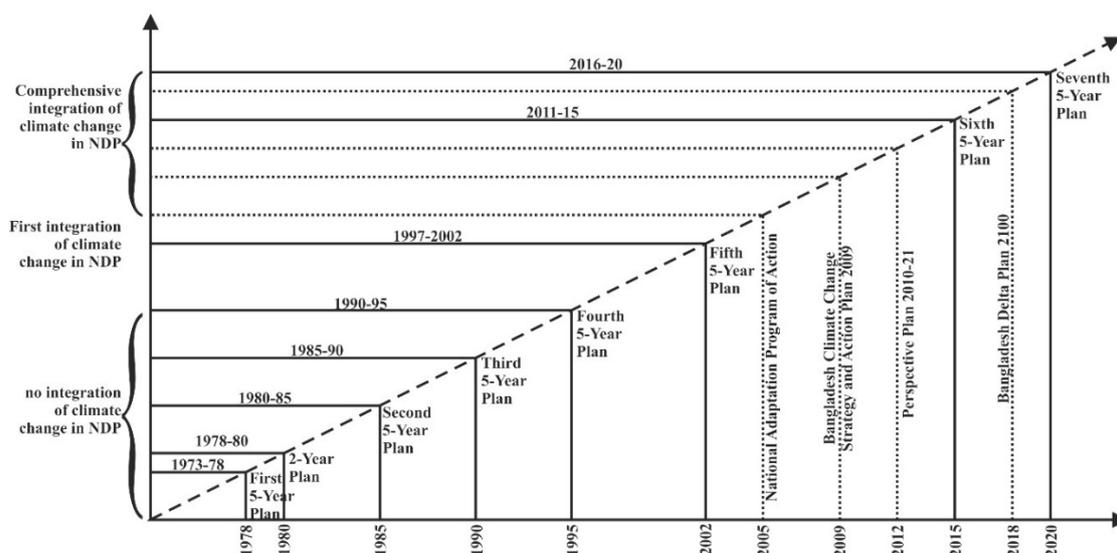


Figure 3. NDPs and sectoral plans implementation period (Authors' elaboration after Diko [20]).

4.1.2. Sectoral Development Plans

As the NDPs take a comprehensive, albeit general outlook, sectoral development plans are also prepared to cater to sector perspective issues by relevant agencies. This is the premise for the formation of the Climate Change Trust (BCCT) in 2010. Together with the Ministry of Environment, Forest and Climate Change, the Commission facilitated efforts on climate change mainstreaming in national development, which resulted in two national climate change specific policy frameworks: (i) National Adaptation Plans of Action (NAPA, 2005)—updated in 2009 following criticism from several stakeholders that it was insufficient to tackle climate change impacts [45], and (ii) Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2008), which was also revised in 2009 (see Figure 3). In these climate change documents, the government of Bangladesh identified climate change as a key development issue needing urgent attention and integration into the national development efforts.

4.1.3. Dhaka City Development Plans

The first planning document for Dhaka was prepared by a British town planner Patrick Geddes in 1917. This plan was not adopted by the British colonial government. Long after, Dacca (the previous name for Dhaka) Improvement Trust (DIT) was established in 1956 under the Town Improvement Act, 1953 (during the Pakistani Period) to guide the planning and development of the city. In 1959, DIT formulated the first comprehensive master plan for Dhaka, 'Dacca Master Plan 1959 (DMP)', which was also the first functional physical plan of the country prepared in response to the devastating floods of 1954/5.

After Bangladesh's Independence, Dhaka Metropolitan Development Authority was established with a mandate to formulate their development plans such as Dhaka Metropolitan Area Integrated Urban Development Project (DMAIUDP, 1981) and the Dhaka Metropolitan Development Plan (DMDP, 1995–2015)—a three-tier plan package, viz. Dhaka Structure Plan (DSP 1995–2015), Urban Area Plans (UAP 1995–2009) and Detailed Area Plans (DAP 2010) (Figure 4). Until the recent DSP (2016–035), none of the previous city development plans addressed climate change issues in the city.

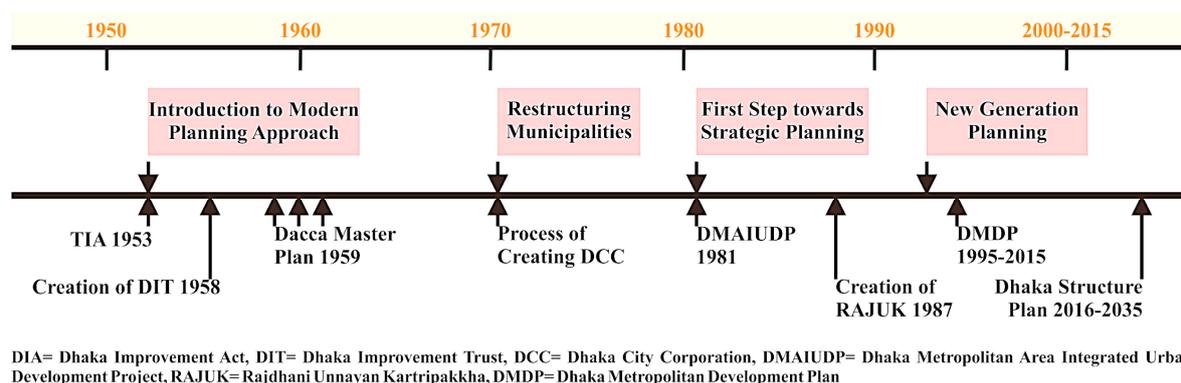


Figure 4. History of Dhaka city development plans.

4.2. Preparation of the Plans

4.2.1. National Development Plans (NDP)

In Bangladesh, several government organizations are responsible for planning and development management, such as the National Parliament, National Economic Council (NEC), Executive Committee of the National Economic Council (ECNEC), and Ministry of Planning [46]. First, an initial draft of the national plan is approved by the National Parliament and then referred to the NEC. After finalization and approval of a plan by NEC, it is submitted to ECNEC for ultimate approval. From ECNEC, the plan transfers to the Ministry of Planning, which formulates and implements the policies and also reviews the impact on the economy. The Ministry of Planning has four divisions: Economic Relations Division (ERD), Planning Commission (BPC), Implementation Monitoring and Evaluation Division (IMED), and the Statistical Division, which includes Bangladesh Institute of Development Studies (BIDS). BPC is entrusted with the functions of preparing national plans and programs according to the directives of the NEC [47]. Table 1 presents the institutions responsible for preparing the different development plans in Bangladesh.

Table 1. The Preparation of selected National, Sectoral, and Dhaka City Development Plans.

Plans	Publication Period	Period of Implementation	Institution(s) Responsible for Preparation
National Development Plans			
5 th FYP	July 1997	1997–2002	Bangladesh Planning Commission (BPC), Dhaka, Bangladesh
Perspective Plan	April 2012	2010–2021	
6 th FYP	July 2011	2011–2015	
7 th FYP	December 2015	2016–2020	
Sectoral Development Plans			
NAPA	June 2009	From 2009	Ministry of Environment and Forests (MoEF), Dhaka, Bangladesh
BCCSAP	September, 2009	From 2009	
Dhaka City Development Plans			
DAP 2010	June 2010	1995–2015	Rajdhani Unnayan Kartripakkha (RAJUK), Dhaka, Bangladesh
DSP 2016–2035	September 2015	2016–2035	

4.2.2. Sectoral Development Plans (SDP)

The National Adaptation Program of Action (NAPA) and the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) were prepared by the Ministry of Environment and Forest (MoEF) (Table 1). The Ministry of Environment and Forests engaged six Sectoral Working Groups (SWG) to prepare (in 2005) and update (in 2009) the NAPA. The six SWG are Bangladesh Agricultural Research Council (BARC), The World Conservation Union (IUCN), Bangladesh, Water Resources Planning organization (WARPO), Bangladesh Institute for Development Studies (BIDS), Department of Environment (DoE),

and Bangladesh Centre for Advanced Studies (BCAS). Involvement of different stakeholders such as policymakers of Government, local government representatives, scientific community members, professionals, ethnic groups, media, civil society representatives, and indigenous women were an integral part of the preparation process for assessing impacts, vulnerabilities, adaptation measures in line with the plan's urgency and immediacy principle of the NAPA [48]. Similarly, the MoEF prepared the BCCSAP in 2008 and updated it in 2009.

4.2.3. Dhaka City Development Plans (DCDP)

The Detailed Area Plan (DAP 2010) was prepared by Rajdhani Unnayan Kartripakkha (RAJUK), the urban planning authority for Dhaka (Table 1). This was managed by an Inter-Ministerial Steering Committee, a Technical Management Committee and a Technical Management Sub-Committee. The plan document reveals that a series of consultative meetings were held with local government authorities, policymakers, concerned development agencies, academics, professionals, socially concerned groups, business groups, etc. The public hearing was carried out through media coverage, press conference, web-based publication, and exhibition of maps. The comments given by stakeholders were documented and addressed in the prescribed format according to the project report. National seminars and round table conferences were also organized. The draft plan was reviewed by the Ministry of Housing and Public Works, approved by the Cabinet, and published by RAJUK [49] (p. xi-xii). The DAP project started in August 2004 and was completed in 2010. While the Dhaka Structure Plan (2016-2035) was prepared by RAJUK through the same process, its preparation started in 2012 with the final draft approved in 2015.

4.3. Climate Change issues in the National Development Plans

4.3.1. Fifth Five-Year Plan (FYP, 1997–2002)

The term 'climate change' first appeared in the Fifth FYP (Figure 3), which was guided by recommendations on mainstreaming from the United Nations Framework on Climate Change and also by 21 international conventions, treaties, and protocols related to the environment signed by Bangladesh. This was in line with the vision to attain 'sustainable development' [50] (p. 43). For example, the Fifth FYP referred to environmental challenges such as: 'Frequent natural disasters, deforestation, desertification, loss of wetlands, changes in climatic conditions and salinity' [50] (p. 180–183). The plan further recognized the interconnections between environmental challenges and social development issues by acknowledging that 'poverty, environmental degradation, and sustainable livelihood, all interact in a complex way; [thus] a comprehensive approach is also needed for implementation of policy measures.' [50] (p. 187). It also pointed to the need for shared responsibility by all partners in development (e.g., state agencies, local government bodies, NGOs, research and training institutes) for environmental improvement and financial management. Results from the scoring matrix (Table 2) show that all the climate mainstreaming steps such as 'climate profile' (33.3%, two out of six), institutional mapping (44.4%, four out of nine), climate change risk and opportunities' assessment (22.2%, two out of nine), stakeholder engagement (33.3%, three out of nine) were poorly integrated.

4.3.2. Perspective Plan (2010–2021)

The Perspective Plan makes references to climate change and identifies climate change as an additional threat to achieving the country's development goals. In fact, "mitigating the impacts of climate change" is part of its nine articulated development priorities, in addition to promoting adaptation to climate change [51] (p. 95). However, these priorities have not translated into climate change projects and programs in the plan. It envisions taking effective measures to protect people and places from the adverse effects of climate change. There was a clear indication of a commitment to climate finance from the government (US\$100 million in 2009-10 financial year) and an expected increase in future budget allocations to support climate change activities [51] (p. 107). Moreover,

regional cooperation and capacity building between the Planning Commission and relevant agencies are mentioned without defining a clear institutional and regulatory framework and processes for their realization [51] (p. 107). While climate change is mentioned throughout the plan, the discussions are not supported by contextual, historic, and future analysis of climate change impacts. The scoring matrix for the Perspective Plan reveals that ‘climate profile’ (33.3%, two out of six), stakeholder engagement (16.7%, one out of six), and capacity building (33.3%, three out of nine) were poorly mainstreamed, whereas institutional mapping (55.6%, five out of nine) was weakly integrated and climate change risk and opportunities’ assessment (66.7%, six out of nine) was moderately integrated (Table 2).

4.3.3. Sixth Five-Year Plans (FYP) (2011–2015)

In the Sixth FYP, there was a call for ‘environmental sustainability as well as considering the environmental, climate change and disaster risk reduction to be integrated into project design, budgetary allocations and implementation process’ [52] (p. 22). Climate change was a central issue in the policy goals, objectives, and strategies of the plan. The Sixth FYP comprises eight adaptation strategies and four mitigation strategies. It also includes investments in adaptation measures such as flood defense projects in urban and coastal areas, comprehensive disaster management projects, coastal ‘greenbelt’ projects. Mitigation projects like development of renewable energy, a nationwide program on social forestry, reducing GHG emissions from agriculture and urban waste management, and the mechanisms under REDD (Reducing Emission from Deforestation and Forest Degradation) are mentioned. The scoring matrix (Table 2) shows that climate profile (83.3%, five out of six) and climate change risk and opportunities’ assessment (88.9%, eight out of nine) were strongly integrated, stakeholder engagement (66.7%, four out of six) was moderately integrated, capacity building (55.6%, five out of nine) was weakly integrated, and institutional mapping (22.2%, two out of nine) was poorly integrated. The document reviews show that the Sixth 5YP is an improvement in climate change mainstreaming from the previous national plans due to its moderate alignment to key steps in climate mainstreaming into development plans.

4.3.4. Seventh Five-Year Plans (FYP) (2016–2020)

The Seventh FYP stressed on sustainable development involving an array of actions under three key themes: (i) Climate change management and resilience, (ii) environmental management, and (iii) disaster management [53] (p. 402). This plan also addresses climate change impacts on two fronts: Adaptation and mitigation. The Seventh FYP comprises ten adaptation and six mitigation strategies. The adaptation strategy encompasses various interventions to prepare Bangladesh for climate change impacts, whereas mitigation efforts cover activities to reduce the country’s carbon footprint. The adaptation strategies [53] (p. 415–416) include the need to ‘promote a holistic government approach to climate change readiness; enhance understanding, . . . improve implementation, monitoring and shared learning; enhance adaptation financing’. On the other hand, mitigation strategies sought to enhance understanding of ‘low carbon development’, ‘improve capacity in analyzing available opportunities’, ‘enhance the capacity of energy-saving sectors’, and increase efforts to ‘reduce greenhouse gases’ [53] (p. 421) among others. The plan also outlines some climate financing arrangements through the establishment of a ‘National Implementation Entity’ that will be responsible for targeting Adaptation Fund and Green Climate Fund and recognizes its limited capacity in accessing and utilizing development aid to support national and sub-national climate actions [53] (p. 416). In view of the aforementioned, the scoring matrix (Table 2) results reveal a strong focus on climate change mainstreaming in the Seventh FYP (87.2%). Steps such as climate profile (100%, six out of six), institutional mapping (88.9%, eight out of nine), stakeholder engagement (83.3%, five out of six), climate change risk and opportunities’ assessment (88.9%, eight out of nine), and capacity building (77.8%, seven out of nine) are better integrated compared to earlier FYPs [53] (p. 401). From a historical perspective, it appears that each subsequent national development plan performs better (higher scoring

matrix) at integrating the key issues of climate change. This momentum increased, especially after 2005, with the preparation of sectoral plans on climate change, which are discussed in the next section.

4.4. Climate Change issues in the Sectoral Development Plans

4.4.1. National Adaptation Program of Action (NAPA)

The NAPA observed ‘adverse effects of climate change and variability on biophysical and key sectors, . . . actual and potential adverse effects of climate change’, [48] (p. 14), and drew linkages with other development goals, adaptation needs, priority and intervention measures. The updated NAPA aims to ‘incorporate potential adaptation measures into overall development planning processes, make development resilient to climate change, and promote sustainable development of Bangladesh’ [48] [p. i]. It has priority projects under eight thematic areas on climate change adaptation dealing with: Research and knowledge management, building climate-resilient infrastructure, disaster management, livelihoods, biodiversity, and policy and institutional capacity building [48]. NAPA was the first ground-shifting sector-specific document from which the idea of climate change integration into development plans commenced in Bangladesh. The scoring matrix (Table 2) illustrates that the NAPA, to a large extent, has strong climate change mainstreaming. Specifically, the mainstreaming steps scores are climate profile (100%, six out of six), climate change risk and opportunities’ assessment (100%, nine out of nine), and capacity building (100%, nine out of nine). However, institutional mapping (77.8%, seven out of nine) and stakeholder engagement (66.7%, four out of six) perform moderately in mainstreaming (Table 2).

4.4.2. Bangladesh Climate Change Strategy and Action Plan (BCCSAP)

The BCCSAP is a 10-year targeted climate change strategy outlining climate actions and their financial arrangements for Bangladesh. The content overlaps with some NAPA interventions. BCCSAP is now the main national planning document for dealing with climate change to build capacity and resilience to climate change impacts within its vision 2021 goals, which encompass low carbon development and capacity building, food security, social protection and health, comprehensive disaster management, infrastructure, and research and knowledge management [54]. Like the NAPA, the scoring matrix (Table 2) results indicated a strong focus on climate change mainstreaming in BCCSAP (94.9%). Results show that climate profile (100%, six out of six), institutional mapping (88.9%, eight out of nine), stakeholder engagement (83.3%, five out of six), climate change risk and opportunities’ assessment (100%, nine out of nine), and capacity building (100%, nine out of nine) were strongly integrated.

4.5. Climate Change mainstreaming at the sub-national level: Focus on Dhaka city plans

4.5.1. Detailed Area Plan (DAP 2010)

Detailed Area Plan (DAP) is the concluding tier of DMDP 1995–2015. It includes the planning strategies for flood flow zone, water body and open spaces, and environmental management. It also proposed different land use zones indicating flood flow zones and also described the land use control procedures. Results (Table 2) show that the DAP’s integration of climate mainstreaming is poor (38.5%). For example, essential steps of mainstreaming such as climate profile (33.3%, two out of six), institutional mapping (11.1%, one out of nine), climate change risk and opportunities’ assessment (33.3%, three out of nine) and capacity building (33.3%, three out of nine) were weak except stakeholder engagement (100%, six out of six), which was strong. There is no consideration of climate finance in DAP. This may be explained through the historical context that climate-sensitive development plans in Bangladesh were sparse until the NAPA was introduced in 2009. Thus, the Dhaka DAP (prepared in 2004 but published in 2010) was drafted long before national development and sectoral plans actively reinforced climate change issues at both national and sub-national levels of development planning.

Table 2. The score matrix of selected Sectoral and Dhaka City Development Plans.

Mainstreaming Steps	Mainstreaming Criteria	National Development Plans				Sectoral Development Plan		Dhaka City Development Plan	
		5-FYP	Perspective Plan	6-FYP	7-FYP	NAPA	BCCSAP	DAP	DSP
		1997–2002	2010–2021	2011–2015	2016–2020	2009	2009	2000–2010	2016–2035
1. Climate Profile	Climate Change Trends	2	1	2	3	3	3	2	3
	Potential Climate Change Impact	0	1	3	3	3	3	0	3
	Sub-total (6)	2 (33.3%)	2 (33.3%)	5 (83.3%)	6 (100%)	6 (100%)	6 (100%)	2 (33.3%)	6 (100%)
2. Institutional Mapping	Institutional and Regulatory Frameworks	1	1	0	2	3	3	0	2
	Institutional Cooperation and Coordination	2	1	1	3	1	2	1	0
	Climate Finance	1	3	1	3	3	3	0	0
	Sub-total (9)	4 (44.4%)	5 (55.6%)	2 (22.8%)	8 (88.9%)	7 (77.7%)	8 (88.9%)	1 (11.1%)	2 (22.2%)
3. Stakeholder Engagement	Relevance and Priority of Engagement	0	1	3	3	1	2	3	2
	Active Participation of the Stakeholders	0	0	1	2	3	3	3	2
	Sub-total (6)	0 (0%)	1 (16.7%)	4 (66.7%)	5 (83.3%)	4 (66.7%)	5 (83.3%)	6 (100%)	4 (66.7%)
4. Climate Change Risk & Opportunities' Assessment	Climate Change Vulnerability and Risk	0	2	2	2	3	3	0	2
	Climate Change Opportunities	0	2	3	3	3	3	0	1
	Climate Change Implementation Strategy	2	2	3	3	3	3	3	3
	Sub-total (9)	2 (22.2%)	6 (66.7%)	8 (88.9%)	8 (88.9%)	9 (100%)	9 (100%)	3 (33.3%)	6 (66.7%)
5. Capacity Building	Identification of Key Institutions	0	0	1	3	3	3	3	3
	Capacity Needs Assessment	2	2	2	2	3	3	0	1
	Strategies for Capacity Building	1	1	2	2	3	3	0	2
	Sub-total (9)	3 (33.3%)	3 (33.3%)	5 (55.6%)	7 (77.8%)	9 (100%)	9 (100%)	3 (33.3%)	6 (66.7%)
Total Score (39)		11	17	24	34	35	37	15	24
Total Percentage		28.2%	43.6%	61.5%	87.2%	89.7%	94.9%	38.5%	61.5%
Mainstreaming Condition		Poor	Poor	Moderate	Strong	Strong	Strong	Poor	Moderate

Key: Poor Mainstreaming = Less than 50%, Weak Mainstreaming = 50–59.9%, Moderate Mainstreaming = 60–79.9%, and Strong Mainstreaming = 80–100%.

4.5.2. Dhaka Structure Plan (DSP, 2016-2035)

The latest Dhaka Structure Plan seeks to ‘make Dhaka a livable, functional, and resilient metropolis respecting local socio-cultural fabric and environmental sustainability’ [55] (p. 3). The DSP problematizes climate change impacts in Dhaka around ‘increased frequency of flood flows, drainage congestion, and heat stress’ [55] (p. 154). Thus, it seeks to make the city resilient to natural and anthropogenic hazards and climate change impacts [55] (p. 3). The plan proposes the development of programs that accounts for climate change impact and adaptation measures conforming to future urban development plans [55] (p. 161) such as reducing the level of Green House Gas (GHG) emission, keeping the level of air pollution at the acceptable level, and keeping natural areas like rivers, canals, forests, parks as conservation areas [55] (pp. 196–206). Based on the scoring matrix (Table 2), the plan records moderate climate change mainstreaming (61.5%). Although climate profiling is well considered in the plan, (climate profile 100%, six out of six), institutional mapping (22.2%, two out of nine), stakeholder engagement (66.7%, four out of six), climate change risk and opportunities’ assessment (66.7%, six out of nine), and capacity building (55.6%, five out of nine) are not strongly integrated. The plan does not consider climate finance.

5. Similarities and Differences in the Development Plans

Based on the foregoing results, this section identifies similarities and differences between the national, sectoral, and city development plans (Table 3). In relation to planning approach, it is apparent that the NDPs followed a top-down approach in which central authorities (the National Parliament, NEC, and Ministry of Planning’s Planning Commission) focused on the larger goals to devise, plan, and direct climate change policies. Sectoral Development Plans and Dhaka City Development Plans took a participatory approach that included specialized agencies and local institutions. With regards to engagement in the plan preparation process, NDPs prioritized state agencies, whereas sectoral plans included both state agencies and professional bodies. However, Dhaka city development plans engaged diverse stakeholders, including typically underrepresented groups (ethnic groups, women, indigenous people, etc.).

Table 3. The similarities and dissimilarities of selected National, Sectoral, and Dhaka City Development Plans.

Variables	National Development Plans	Sectoral Development Plans	Dhaka City Development Plans
Planning Approach	Top-down	Participatory	Participatory
Involvement in Preparation	State Agencies	State Agencies and Local People (Civic society, gender, etc.)	State Agencies and Local People (Civic society, gender, etc.)
Priority	Climate Profile	Climate Profile, Capacity Building	Stakeholder Engagement
Problematization	Adaptation, Mitigation	Adaptation	Adaptation
Financial Management	Public, Private and International	International, Climate Fund	Not Clear
Capacity Building	Institutional (National and Local level)	Institutional and Human resource	Institutional (Specifically RAJUK)

Moreover, the problematization and prioritization of climate change issues are delineated between national and sectoral development plans and Dhaka city development plans. For instance, national development plans focus on profiling climate change issues and impact. In doing so, it plays a crucial role in establishing the core problems of adaptation and mitigation based on climate change risks. Dhaka city development plans (especially the DSP) are directed towards stakeholder engagement to

adapt to climate change impacts. Put differently, the Dhaka city development plans are oriented, in terms of scale, to respond to local climate change challenges.

Some allocations have been made towards climate financing for the implementation of policies and programs at both the national and sectoral level, with examples of climate finance sources. However, how these funds will be allocated to sub-national levels is not articulated. This is evident in Dhaka city development plans as climate finance arrangements are not identified in the plans. As a result, it is unclear how resources will be mobilized towards the operationalization of city-level climate actions. This is a major setback that might potentially stifle progress at achieving the DSP goal of building a resilient and responsive Dhaka.

Generally, NDPs perform better at integrating the first step of climate change mainstreaming (climate profiling) but poorly consider the other four steps, especially stakeholder engagement and capacity building. Perhaps, their centralized focus explains this situation. Sectoral development plans, because of their specific focus on climate change, strongly address the climate change mainstreaming steps, especially the BCCSAP. Compared to national and sectoral development plans, Dhaka city development plans have more mainstreaming gaps that either need to be filled or enhanced.

6. Discussion

At the national level, it is clear that climate change is embedded in the different NDPs of Bangladesh. Several studies have identified Bangladesh as a successful case concerning the mainstreaming of climate change issues into national development planning [7,24]. Among South and South-Eastern Asian countries that had prepared and submitted NAPA to the UNFCCC, it was only Bangladesh that had effectively mainstreamed climate change into national development planning [24]. After the preparation of NAPA for Bangladesh, the review shows that climate change mainstreaming in NDPs progressed incrementally, that is, each subsequent development plan performs better at climate change mainstreaming than the previous plan, starting with the Fifth FYP (28.2%), Perspective Plan (43.6%), Sixth FYP (61.5%), and Seventh FYP (87.2%) (Table 2). Bangladesh seems to have avoided the lack of continuity in climate change mainstreaming that has been identified as a common challenge in other developing countries [24,26,56]. This is crucial in that while climate change plans, such as NAPA, and climate action plans are fundamental for commencing mainstreaming efforts at all levels of development planning [20,57], much effort is needed to ensure effective mainstreaming beyond having such plans. Indeed, not all countries that have prepared NAPA have ensured climate change mainstreaming into national development planning [23,24].

Progressive improvement in climate change mainstreaming could also be an indicator of international climate change influence: increasing international attention on climate change, their accompanying frameworks, and alerts on the urgent need for addressing climate change adaptation and mitigation, especially in developing countries (e.g., IPCC [1,2]). The Paris Declaration on Climate Change, the Cancun Agreement, and most recently, the UN Sustainable Development Goals (SDG) emphasize the urgency for climate action at all levels of development planning. For instance, SDG 13 Target 2 expects UN member countries to ‘integrate climate change measures into national policies, strategies, and planning’ [58] (p. 23). Subsequent to the adoption of the SDG in 2015, development aid for many countries was tied to how well countries were focusing on attaining the SDGs. Least developed countries like Bangladesh, which rely on development aid for national development, thus needed to demonstrate climate change mainstreaming in their national development planning processes since it had become a condition for receiving development aid [17,59].

Nonetheless, climate change mainstreaming is not a guarantee for accessing and utilizing climate finance from development aid. Countries need to have the capacity to mobilize financial resources for the implementation and realization of their development goals linked to climate change mitigation and adaptation [60]. The review of Dhaka city development plans found no clear stipulation of climate finance arrangements. This can debilitate local climate action as they require the provision of sustainable finance. As explained by Diko [20], merely integrating climate change into city development

plans will be inadequate if other challenges, such as climate finance and resource capacity, are not addressed. Colenbrander et al. [61] (p. 902) observe that climate finance architecture operates based on financial allocation ‘to multilateral entities and national governments, rather than local organizations.’ Thus, an absence of an explicit financial arrangement by national governments and multilateral entities to channel climate finance to the local level will undermine climate change mainstreaming efforts and actions at the local level [20]. Indeed, the Government of Bangladesh seeks to access international climate finance such as the Adaptation Fund and Green Climate Fund and also aims to allocate ‘US\$ 100 million to begin implementation of the strategy and action plans’ in NAPA and estimate about \$5 billion in program expenditure in the BCCSAP. However, it is unclear which finance arrangements exist to facilitate the allocation of climate finance to the different levels of government. The only indication of a climate financial arrangement is the establishment of the National Implementation Entity that focuses on attracting international climate finance without a clear articulation of climate finance distribution across the various levels of development planning. In Dhaka, the DSP and DAP both did not identify any climate finance arrangement. Hence, in the absence of an arrangement that outlines climate finance allocation and distribution across different sectors and planning levels, Diko [20] observes that local plans will not be able to link climate actions with national and international climate finance arrangements. Although Bangladesh has performed well in many aspects of climate change mainstreaming, climate finance is an area that needs tremendous capacity building—where the national governments need to perform its regulatory and facilitation functions by negotiating with agents of climate finance and provide pathways to channel these funds from the central government to local governments [61,62].

In addition, climate change mainstreaming in Dhaka city development plans (e.g., DAP and DSP) was not strong compared to the evidence at the national level. The DAP performs well in terms of presenting the climate trends for the city and the implementation strategies for tackling climate change impacts. However, the plan does not articulate the institutions responsible for climate action and efforts towards climate capacity building. This emerges as a result of poor institutional capacity at the local level, which is typical in most Asian countries, including Bangladesh [9,25]. Hence, while it is important to mainstream climate change at the local level [63], it is equally important to have the capacity and framework to comprehensively and effectively implement interventions to tackle climate change impacts [10]. This is a critical point as the real impacts of climate change and their mediation are felt at the local level and thus, necessitates an adequate understanding of current risks and opportunities, as well as strong institutions for implementing climate goals [4,64]. For the city of Dhaka, it does appear that there is a need to systematically address the challenges of institutional coordination and cooperation, identify and harness climate finance opportunities, explore climate change opportunities and not only risks, and examine the capacity needs of local institutions to adequately inform climate capacity-building strategies.

Overall, the findings from this study contribute to the ongoing literature on climate change mainstreaming at different levels of governance, especially in terms of how mainstreaming have manifested in different national and sub-national plans (see Hardee and Mutunge [23], Saito [24], Cuevas et al. [65], Gwimbi [13], Huq et al., [9], Santhia et al. [26]). These studies demonstrate that climate change mainstreaming remains a challenge globally despite the awareness of its relevance for effective climate action. The existing literature identifies Bangladesh as a good case for climate change mainstreaming at the national level [7,9,66]. Nonetheless, this paper, while confirming a strong climate change mainstreaming in NDPs for Bangladesh, also points to some gaps that need to be addressed at the national level. It also emphasizes a critical need for climate change mainstreaming at the local level since the results for DSP and DAP were not as cogent as the national experience. Furthermore, the methodology adopted is unique as it employs both qualitative and quantitative methods to unravel mainstreaming gaps, as well as areas needing specific improvement, for climate change mainstreaming in national and local development planning. The validity of this approach lies with its ability to consolidate previous findings on climate change mainstreaming in Bangladesh’s

national planning processes, as well as its foundation on the UNDP mainstreaming guidelines. It also offers a mechanism for continuous learning and improvement in climate change mainstreaming as it provides an understanding of the gaps and challenges with climate mainstreaming at both the national and sub-national levels.

7. Conclusions

Given the attention to climate change in development planning in Bangladesh, this paper set out to review the outcomes of climate change mainstreaming at the national, sectoral, and city levels (Dhaka City). On a positive side, the paper provides evidence that national, sectoral and Dhaka city development plans are mainstreaming climate change issues on an incremental basis. On the negative side, however, Dhaka city development plans need improvements on climate change mainstreaming, although the recent DSP has improved on the previous DAP. Institutional mapping, climate risk and opportunity assessment, and capacity building are some key mainstreaming steps that are not adequately aligned to Dhaka city development plans.

For developing countries and cities to address the localized impacts of climate change, there is a need for comprehensive and coordinated efforts at climate change mainstreaming at all levels of planning and development. This requires building sub-national level capacity for climate change mainstreaming through skill training, professional development for staff and logistical support for institutions to carry out effective climate risks and opportunities assessments. Vertical and horizontal coordination between national, sectoral, and city agencies should be strengthened for sharing experiences, knowledge and building collective capacity for climate change mainstreaming into development plans. Support must include financing and budget allocation for climate change mainstreaming while enhancing the ability of city authorities to utilize international climate financing opportunities. However, given the recent uncertainties surrounding international climate agreements (e.g., Paris Climate Accord) and donor funds, developing countries, such as Bangladesh, may need to intensify efforts at mobilizing and utilizing alternative but sustainable local and private finance for climate action.

This paper, by including the sectoral and city development plans, extends the extant literature on climate change mainstreaming in Bangladesh. It also provides a methodological framework within which climate change mainstreaming can be examined and gaps identified for improving performance. This paper, however, does not consider how climate change mainstreaming manifests in real projects or the experiences of local staff in mainstreaming climate change at the sub-national level. Future studies will need to consider these to understand existential issues that can advance climate change sensitive development planning in local contexts.

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