

**LEGAL AND INSTITUTIONAL PRINCIPLES AND
GUIDELINES FOR STRENGTHENING THE ROLE OF LOCAL
GOVERNMENT IN BANGLADESH TO FACILITATE FOOD
SECURITY IMPACTED BY CLIMATE CHANGE**

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Dedicated to My Parents

Mr. ABM Rafiqul Hoque and Mrs. Siddika Begum,

you always inspired me to reach my dreams

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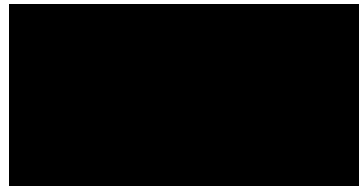
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DECLARATION

The work presented in this thesis is, to the best of my knowledge and belief,
original except as acknowledged in the text.

I hereby declare that I have not submitted this material, either in full or in part,
for a degree at this or any other institution.



Mohammad Azizul Haque

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ABBREVIATIONS

AG	Adaptive Governance
AR5	Fifth Assessment Report
AR4	Fourth Assessment Report
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BDA	Bangladesh Biological Diversity Act
CBD	Convention on Biological Diversity
CC	City Corporation
CCA	City Corporation Act
CCD	Convention to Combat Desertification
CCTA	Climate Change Trust Act (Bangladesh)
CCTF	Climate Change Trust Fund
CCRF	Climate Change Resilience Fund
CIP	Country Investment Plan (Bangladesh)
CO ₂	Carbon Dioxide
COP	Conference of the Parties
DPE	Department of Planning and Environment (NSW, Australia)
EIA	Environmental Impact Assessment
ENSO	El Nino Southern Oscillation
EP	Environmental Policy (Bangladesh)
EPA	Environmental Planning and Assessment (NSW)
EPI	Environmental Planning Instrument (NSW)
EPM	Law on Environmental Protection and Management (Indonesia)
ESD	Ecologically Sustainable Development
EU	European Union
EWE	Extreme Weather Event
FAO	Food and Agriculture Organization

FSA	Food Safety Act (Bangladesh)
GHG	Greenhouse Gas
GDP	Gross Domestic Product
GoB	Government of Bangladesh
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
LEP	Local Environmental Plan
LG	Local Government
LGA	Local Government Act (NSW, Australia)
LGPA	Local Government Paurasava Act (Bangladesh)
LRA	Law of Regional Administration (Indonesia)
MDG	Millennium Development Goal
NAP	National Agriculture Policy (Bangladesh)
NAPA	National Adaptation Programme of Action (Bangladesh)
NAPCCA	National Action Plan for Climate Change Adaptation (Indonesia)
NBSAP	National Biodiversity Strategy and Action Plan of Bangladesh
NCRAS	National Climate Resilience and Adaptation Strategy (Australia)
NFP	National Food Policy (Bangladesh)
NGO	Non-government Organization
NRSD	National Report on Sustainable Development (Bangladesh)
NSC	National Steering Committee
NSDS	National Sustainable Development Strategy (Bangladesh)
NSW	New South Wales
NSWLG	New South Wales Local Government
NWP	National Water Policy (Bangladesh)
PoA	The National Food Policy Plan of Action
REP	Regional Environmental Plan (NSW)
SARD	Sustainable Agriculture and Rural Development

SDG	Sustainable Development Goal
SEPP	State Environmental Planning Policy (NSW)
SES	Socio Ecological State
SFIW	State of Food Insecurity of the World
SFYF	Sixth Five-Year-Plan
SIPLEP	Standard Instrument Principal Local Environment Plan (NSW)
SNCB	Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCED	United Nations Conference on Environment and Development
UNCHE	United Nations Conference on Human Environment
UNCSD	United Nations Conference on Sustainable Development
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UNSDS	United Nations Sustainable Development Summit
UP	Union Parishad
UpP	Upazila Parishad
UpPA	Upazila Parishad Act
UPA	Union Parishad Act
WCED	World Commission on Environment and Development
WSFS	World Summit on Food Security
WSSD	World Summit on Sustainable Development
ZP	Zila Parishad
ZPA	Zila Parishad Act

ABSTRACT

This research aims to identify legal and institutional principles and guidelines that could strengthen the role of Bangladesh local government to address food security impacted by climate change. Bangladesh has made some successes in improving food security, however, climate change impacts are threatening Bangladesh's successes, particularly at the local level. It is recommended, internationally, that local government has the potential to address the growing impacts of climate change at local level, such as impacts on local food security. Therefore, strengthening local government role in addressing climate impacted food security is necessary.

In order to improve local governance of climate change, many international policy responses have prescribed some future roles of local government and have suggested adopting some legal and institutional principles and guidelines to strengthen the roles. This research has developed a set of appropriate legal and institutional principles and guidelines for strengthening local governments' role in climate impacted food security by integrating the recommendations of international policy responses of environment and sustainable development, climate change, food security and good governance.

This research has also investigated relevant laws, policies and strategies of a developed country (Australia) and a developing country (Indonesia). Both Australia and Indonesia have a reputation for addressing climate change impacts on food security and a strong local government system. The research has identified some legal and institutional principles and guidelines in the relevant laws, policies and strategies of these two countries that are enabling local government to play an effective role in addressing climate change impacts on food security.

The existing food security, climate change and local government laws, policies and strategies of Bangladesh indicate some potential roles of local government in addressing climate change impacts on food security. However, the research has identified some weaknesses in Bangladesh approaches to involve local government effectively; such as inconsistencies in laws and policies to strengthen local government, lack of legal acknowledgement of the capacity of local government, lack of resources, lack of coordination mechanisms and lack of guidelines for carrying out their effective role.

This research, by considering the international recommendations and the experiences of comparative examples (Australia and Indonesia), recommends the adoption of some legal and institutional principles and guidelines to address the existing weaknesses and further strengthen Bangladesh local government roles in addressing climate impacted food security. The recommendations are:

1. Good local governance principles should be applied for strengthening local government
2. The importance of local government roles in addressing climate change impacts on food security should be acknowledged properly
3. Local government roles in climate impacted food security should be consistently reflected in climate change, food security and local government laws in Bangladesh
4. Capacity building and detailed guidelines to address climate change impacts on food security should be provided to local government.
5. Local government should have access to resources to facilitate local adaptation programs; and
6. Guideline for cooperation and coordination with other stakeholders should be provided.

CHAPTER 1: INTRODUCTION

I STATEMENT OF THE RESEARCH

Climate change is one of the major threats to Bangladesh food security particularly for the growing vulnerable population living in the rural areas of the country.¹ Despite some successes in improving food security in Bangladesh, climate change impacts are obscuring these successes and constraining future options. The local impacts of climate change and food security cannot be addressed without appropriate governance strategies that facilitate adaptation actions and empower local stakeholders, such as enabling their access to resources and expertise to develop and facilitate adaptation options suitable to their particular circumstances.² However, improving climate change governance for food security will be a complex and difficult challenge. This thesis cannot tackle every aspect of the integrated governance for this kind of sustainable development. Rather, it will focus on a neglected aspect relating to understanding the current and future role of the long established institution of local government. In particular, what legal and institutional principles and guidelines are likely to facilitate improved local government roles in developing local governance strategies for climate impacted food security³ in Bangladesh.

Bangladesh is dependent on agriculture for the food security of the country, while agriculture in Bangladesh is dependent on stable climate conditions.⁴ The instability in climate conditions due to climate change is impacting food security of Bangladesh,⁵ particularly on its four pillars (availability, access, utilization and stability).⁶ Domestic food production is one of the major

¹ See, eg, Government of Bangladesh, *Bangladesh Climate Change Strategy and Action Plan (BCCSAP)* (Ministry of Environment and Forests, 2009) 14-17; Government of Bangladesh, *National Food Policy Plan of Action and Country Investment Plan Monitoring Report 2013* (Ministry of Food, FPMU, June 2013) 16.

² Richard J. T. Klein et al, *Adaptation Opportunities, Constraints, and Limits*, in Christopher B Field et al (eds), *Climate Change 2014 Impacts Adaptation, and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University Press, 2014) 899, 908.

³ 'Climate impacted food security' refers to the impacts of climate change on food security such as impacts on food production, infrastructures important for food security, nutritional and food safety issues and livelihood concerns. Chapter 2 of this thesis has provided the various impacts of climate change on food security, particularly at local level. This thesis considers the impacts identified in chapter 2 while referring to 'climate impact food security'.

⁴ 'Agriculture, Food Security and Climate Compatible Development – Case Studies' (Synthesis paper, German Watch, African Centre for Technological Studies, Bangladesh Centre for Advanced Studies and Fundacion Vida, 4 June 2012) 4 <<https://germanwatch.org/en/download/8346.pdf>>.

⁵ BCCSAP, above n 1.

⁶ Food security is generally described through its four pillars; availability, access, utilization and stability. *The World Summit on Food Security 2009* adopted the *Declaration of the World Summit on Food Security* that defined food security and its four pillars; see World Summit on Food Security 'Declaration of the World Summit on Food Security' WSFS 2009/2 (November 2009) para 2 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

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means of food availability in Bangladesh.⁷ Climate change induced hazards like flood, drought, salinity intrusion due to sea level rise, and changes in precipitation and temperature patterns have been damaging crop production as well as causing seasonal fluctuations of food production in Bangladesh.⁸ As a result of less food production and seasonal fluctuations of food supply, access to food by the poor becomes more difficult.⁹ Moreover, climate change impacts are reducing livelihood options of local farmers in Bangladesh¹⁰ causing further impacts on food access. Climate change is also impacting food utilization in Bangladesh. Droughts are causing shortages of drinking water while floods, salinity intrusion and other impacts of climate change are influencing outbreak of diseases such as malaria and dengue fever.¹¹ Infrastructure, such as roads, embankments and markets, are important for food security, particularly for food stability.¹² Climate change hazards in Bangladesh are damaging infrastructure necessary for food security and thus making the overall food stability vulnerable.¹³

Leading international organizations of food security and climate change, such as the Food and Agriculture Organization (FAO) of the United Nations (UN) and the Intergovernmental Panel on Climate Change (IPCC) have suggested both adaptation and mitigation to address food security.¹⁴ The *United Nations Framework Convention on Climate Change (UNFCCC)*¹⁵ in its 21st meeting (Conference of the Parties or COP 21) has put emphasis on adaptation action, particularly for the

⁷ See Government of Bangladesh, *National Food Policy 2006 (NFP)* (Ministry of Food, Dhaka) section c <<http://www.mofood.gov.bd/site/view/policies>>.

⁸ See Government of Bangladesh, *Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change (SNCB)* (Ministry of Environment and Forests, Bangladesh 2012); See also Ranjan Roy et al, 'The Vision of Agri-Environmental Sustainability in Bangladesh: How the Policies, Strategies and Institutions Delivered?' (2013) 4 *Journal of Environmental Protection* 40; *National Food Policy Plan of Action and Country Investment Plan: Monitoring Report 2013* above n 1.

⁹ Dwijen Mallick, Ashraful Amin and Atiq Rahman, 'Case Study on Climate Compatible Development in Agriculture for Food Security in Bangladesh' (Research report, Bangladesh Centre for Advanced Studies, Dhaka, September 2012) 21-24.

¹⁰ BCCSAP, above n 1.

¹¹ SNCB, above n 8, xi; Government of Bangladesh, *Rio+20: National Report on Sustainable Development (NRSD)* (Ministry of Environment and Forests, Bangladesh 2012) 57.

¹² Andre M. N. Renzaho and David Mellor, 'Food Security Measurement in Cultural Pluralism: Missing the Point or Conceptual Misunderstanding?' (2010) 26(1) (Jan 2010) *Nutrition* 1, 6.

¹³ BCCSAP, above n 1.

¹⁴ See Christopher B Field et al, Summary for Policymakers, in Christopher B Field et al (eds), *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* (Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA) 1-32; Food and Agriculture Organization, '*Climate Change and Food Security: A Framework Document*' (FAO, Rome, 2008) <<ftp://ftp.fao.org/docrep/fao/010/k2595e/k2595e00.pdf>>.

¹⁵ *United Nations Framework Convention on Climate Change* U.N. Doc. A/AC.237/18 (Part II)/Add.1 (21 March 1994).

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developing countries.¹⁶ The COP 21 acknowledged the importance of adaptation to address the impacts of climate change on food security.¹⁷

However, adaptation to the impacts of climate change on food security can be constrained by a number of factors such as a lack of climate information about potential risks and options for adaptation, deficiency in adaptive capacities, insufficient extension services, institutional inefficiencies, lack of infrastructure, degraded natural resources and a lack of access to financial resources.¹⁸ Maladaptation may also have negative impacts such as adaptation practices producing greenhouse gases (GHGs), decreasing soil nutrients and involving huge opportunity costs.¹⁹ In order to address the barriers to climate adaptation on food security, the IPCC Fifth Assessment Report (AR5) stressed the importance of engaging all stakeholders in adaptation decision making, planning and implementation processes and strengthening their respective roles.²⁰ According to the AR5 ‘[b]uilding adaptive capacity by decision makers at all scales is an increasingly important part of the adaptation discourse’.²¹ Hence, measures to improve the adaptive capacity of stakeholders are important for addressing climate impacted food security.

The objectives of food security governance are basically aimed at preparing effective food security policies, strategies and laws and their efficient implementation by ensuring accountability, transparency and participation of stakeholders.²² A number of stakeholders such as governments of various levels, farmers, local communities, businesses and private organizations are involved in addressing the objectives of food security governance. Among the stakeholders, the role of government is significant because government policies regarding development of rural roads, irrigation, the credit system, and agricultural research and extension play an important role in

¹⁶ Conference of the Parties, United Nations Framework Convention on Climate Change, *Adoption of the Paris Agreement*, UN Doc FCCC/CP.2015/L.9/Rev.1 (12 December 2015) annex, art 7.

¹⁷ *Ibid*, art 2(b).

¹⁸ John R Porter et al., ‘Food Security and Food Production Systems’ in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)485, 518.

¹⁹ *Ibid*.

²⁰ Field et al, above n 14.

²¹ Porter et al, above n 18, 514.

²² ‘Good Food Security Governance: The Crucial Premise to the Twin-Track Approach’ (Background paper of ESA Workshop, The FAO, Rome, December, 2011) 19 <<http://www.fao.org/fileadmin/templates/righttofood/>>.

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increasing food production and food availability.²³ Many international policy responses,²⁴ while suggesting strategies for improving food security governance, have basically stressed the role of governments at various levels.²⁵ Similar emphasis on the role of government is also evident in international policy responses recommending climate adaptation strategies.²⁶ In developing countries, such as Bangladesh, national governments are generally responsible for managing climate impacted food security issues by providing policies and implementing the actions.²⁷

It is noteworthy that food security governance at national level usually follows the ‘top-down’ governance system and is generally dominated by national governments. This traditional governance approach to address food security is increasingly seen as a failure in responding to the growing impacts of climate change on local food security.²⁸ Similarly, inefficiency of traditional institutional characteristics and roles have been recognized as a barrier to effective adaptation against the impacts of climate change.²⁹ In Bangladesh, the centralized governance system in food security and agriculture has been criticized for its failure to address local food security problems.³⁰

The failure of the traditional governance approach to address food security and climate change impacts has propelled the need for a change in governance approach. There is a growing demand

²³ Thomas P. Redick, 'Sustainability Standards' in David D. Songstad, Jerry L. Hatfield and Dwight T. Tomes (eds), *Convergence of Food Security, Energy Security and Sustainable Agriculture* (Springer, 2014) 31, 31.

²⁴ ‘International Policy Response’ refers to both international ‘soft’ and ‘hard’ laws such as the outcomes of international conventions, conferences and summits (particularly organized by the United Nations and organizations and bodies governed by the United Nations such as the FAO and the IPCC) on food security, climate change (adaptation and mitigation), sustainable development and local governance. This thesis intentionally avoids the contemporary debates on the nature of international ‘soft’ and ‘hard’ law in order to keep the focus on the outcomes of the laws such as the guidelines and principles for strengthening local government role in climate impacted food security.

²⁵ See, eg, *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, chapter 5[48] <<http://www.un-documents.net/ocf-05.htm#IV>>; *Agenda 21: Programme of Action for Sustainable Development*, U.N. GAOR, 46th Sess., Agenda Item 21, UN Doc A/Conf.151/26 (1992) <<http://www.un.org/geninfo/bp/envirp2.html>>.

²⁶ Klein et al, above n 2, 899.

²⁷ NFP, above n 7.

²⁸ Ian R Noble et al., ‘Adaptation Needs and Options’, in Christopher B Field et al. (eds), *Climate Change 2014 Impacts Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University Press, 2014) 833, 842; See eg, *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, chapter 12, para 10 <<http://www.un-documents.net/ocf-05.htm#IV>>;

²⁹ Klein et al, above n 2, 902.

³⁰ Roy et al, above n 8, 49 ; S Rizwana Hassan, ‘Environmental Governance in Bangladesh: An Assessment of Access to Info, Participation and Justice in Environmental Decision Making’ (The Access Initiative Bangladesh Coalition) 5-6 <[www.apfedshowcase.net/sites/default/.../2006_BELA_Final_Report\[1\].pd](http://www.apfedshowcase.net/sites/default/.../2006_BELA_Final_Report[1].pd)>; see also Junayed Ahmed Chowdhury, ‘Public participation in Bangladesh response to climate change issue’ (Advocates for International Development, June 2012)1 <<http://a4id.org/sites/default/files/...>>.

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that future food security governance shall incorporate coordinated and participatory governance systems by involving all stakeholders and strengthening their respective roles.³¹ There is also a demand for a strong local governance system that will be capable of addressing local problems such as impacts of climate change on local food security.³² The role of local government, within this coordinated and participatory governance system is increasingly recognized as being important.³³ Many international policy responses have suggested that improving local governance, as well as involving local governments, will be vital for climate adaptation.³⁴ A changed and enhanced future role for local government, as a stakeholder and climate adaptation institution, has also been recommended in this context.³⁵ Therefore, understanding the future roles of local government in addressing climate impacted food security is an important task to improve local governance of food security.

The future roles of local government to address climate impacted food security face some barriers and complexities due to the deficiencies in legal and institutional capacities of local government. Some of the legal and institutional deficiencies are linked to lack of information about climate risks and impacts, inefficiency in planning effective adaptation strategies, inadequacy of resources to implement adaptation actions and lack of good governance at local level.³⁶ It has been argued that weaknesses in legal and institutional frameworks are a major barrier to improving governance at local level in developing countries including Bangladesh.³⁷

³¹ Hans Page, *Global Governance and Food Security as Global Public Good* (Research Report, Center on International Cooperation, New York University, August 2013) 11-12 < http://cic.nyu.edu/sites/default/files/page_global_governance_public_good.pdf >.

³² See eg, *Agenda 21: Programme of Action for Sustainable Development*, U.N. GAOR, 46th Sess., Agenda Item 21, UN Doc A/Conf.151/26 (1992) <<http://www.un.org/geninfo/bp/envirp2.html>>; Klein et al, above n 2, 908.

³³ A Agrawal, 'The Role of Local Institutions in Adaptation to Climate Change' (Papers of the Social Dimensions of Climate Change Workshop. The World Bank, Washington DC, March 5–6, 2008).

³⁴ See, eg, *Agenda 21: Programme of Action for Sustainable Development*, U.N. GAOR, 46th Sess., Agenda Item 21, UN Doc A/Conf.151/26 (1992) <<http://www.un.org/geninfo/bp/envirp2.html>>; Klein et al, above n 2, 908.

³⁵ See, eg, *Agenda 21: Programme of Action for Sustainable Development*, U.N. GAOR, 46th Sess., Agenda Item 21, UN Doc A/Conf.151/26 (1992) <<http://www.un.org/geninfo/bp/envirp2.html>>. ; Jolene Lin, 'Supporting adaptation in developing countries at the national and global levels' in Yves Le Bouthillier et al (eds), *Climate law and developing countries* (Edward Elgar Publishing Limited, 2009) 140; Agrawal, above n 33; Norman Uphoff and Louise Buck, *Strengthening Rural Local Institutional Capacities for Sustainable Livelihoods and Equitable Development* (Colonel International Institute for Food, Agriculture and Development, Paper no 69385, Social Development Department, The World Bank)11.

³⁶ See, eg, Benjamin J Richardson et al., 'Introduction: Climate Law and Developing Countries' in Yves Le Bouthillier et al.(ed), *Climate Law and Developing Countries* (Edward Elgar Publishing Inc., 2009)10; Thomas G. Measham et al, 'Adapting to Climate Change Through Local Municipal Planning: Barriers and Challenges' (2011) (16) *Mitigation and Adaptation Strategies for Global Change* 889, 892.

³⁷ Noble et al, above n 28, 842; see *ibid*, 10.

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Addressing legal and institutional challenges and barriers to future local government roles for food security, climate change and sustainable development will require an integrated process guided by appropriate principles and guidelines. Many international policy responses have provided legal and institutional principles and guidelines for improving governance approaches to address environment and sustainable development, food security, climate change and good governance.³⁸ The principles and guidelines developed in international policy responses provide ways to address legal and institutional barriers in the respective areas of international policies such as climate change, sustainable development, food security and good governance. As the future roles of local government in addressing climate change impacts on food security also encompass the local governance issues related to climate change, food security, sustainable development and good governance, therefore, principles and guidelines of the abovementioned areas together may provide directions for strengthening local government roles in addressing climate change impacts on food security. However, there is little current experience with this approach of integrating internationally recommended legal and institutional principles and guidelines of different areas,³⁹ particularly to benefit local government roles in climate impacted food security.

This research seeks to provide a strong foundation for evolving local government institutions and their roles in developing adaptation strategies for climate impacted food security by providing appropriate legal and institutional principles and guidelines. This research reviews interdisciplinary literature, scientific and adaptation research in the public domain (particularly the work of IPCC) as well as the outcomes of international policy responses in the related fields. It reviews important international principles, guidelines and institutional strategies on food security, environmental governance and roles of local government. In order to develop a more coherent and integrated approach, the research proceeds to discuss the characteristics of the identified principles and guidelines and necessary mechanisms for incorporating them into legal and institutional

³⁸ Chapter 3 has provided a detailed discussion of the relevant International Policy Responses.

³⁹ See, eg, Donna G. Craig, 'Legal Strategies to Expand Indigenous Governance in Climate Change Adaptation: Opportunities and Barriers' (Paper presented at 2013 IUCN Academy of Environmental Law Colloquium, University of Waikato, Hamilton, New Zealand, 24-28 June 2013) 8; K Brown, 'Human Development and Environmental Governance' in Adger, W.N and Jordan, A, *Governing Sustainability*, (Cambridge, Cambridge University Press) 47; D. K. Anton, 'The 2012 United Nations Conference on Sustainable Development and the Future of International Environmental Protection' (2012) 7(1) *Consilience: The Journal of Sustainable Development* 64.

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frameworks that would both strengthen the role of local government and address climate impacted food security.

The thesis then examines relevant legal and institutional frameworks of a developed country (Australia) and developing countries (Indonesia) that have well established local government institutions with evolving roles in food security. The purpose is to gain a deeper understanding of the adequacy of current legal and institutional local government frameworks for governance of climate impacted food security having regard to the identified principles and guidelines.

The international legal and institutional principles and guidelines for strengthening local government and comparative experiences highlight a number of gaps and uncertainties in this under-researched area of governance. However, some key principles and guidelines for improving local government institutions can also be identified from existing research. Building upon the international framework and comparative experiences, it is also possible to identify some important characteristics and roles for local government integrating climate change and food security in the future.

Finally, the thesis applies legal and institutional principles and guidelines derived from international policy responses and comparative examples to the current and future role of local government in Bangladesh. This is an important project because the current role of local government in climate change and food security is not well developed in the legal and institutional frameworks of Bangladesh.⁴⁰ A critique is undertaken of existing legal and institutional frameworks and recommendations are made for change that may empower local government. Bangladesh has significant strategies and policies in place that recognize the rapid and severe potential impacts of climate change on food security in the short and medium term. However, national implementation urgently requires a deeper understanding of the potential role that local government can play and what legal and institutional principles and guidelines are likely to facilitate the transition to improved and integrated governance that focuses on food security outcomes for rural and vulnerable communities. Obviously, there are significant limits to the extent that laws and institutions can effect social and political change. The proposed improvements in

⁴⁰ Noble et al, above n 28, 842; Hassan, above n 30; see also Chowdhury, above n 30.

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Bangladesh local government are heavily dependent on significant improvements in democratic and transparent governance at all levels, political will, resources and capacity building.

II RESEARCH QUESTIONS

1. What are the future roles of local government to address climate impacted food security? What international legal and institutional principles and guidelines have been recommended to strengthen the future roles?
2. What current legal and institutional principles and guidelines have been adopted by local government to address food security impacted by climate change in a selected developed country (Australia) and developing countries (Indonesia and Bangladesh)?
3. What legal and institutional principles and guidelines would strengthen the role of Bangladesh local government in addressing food security impacted by climate change?

III BACKGROUND AND IMPORTANCE OF THE RESEARCH

A Food Security and Climate Change Impact: Bangladesh Perspective

Bangladesh is a tropical country and is located between 20°34' to 26°38' north latitude and 88°01' to 92°42' east longitude. The total land area of the country is 147,570 sq. km. Bangladesh is one of the largest deltas in the world, formed by the dense network of the distributaries of some of the greatest rivers in the world namely the *Ganges*, the *Brahmaputra* and the *Meghna*. A network of more than 230 major rivers with their tributaries and distributaries crisscross the country.⁴¹ Most of the land area of the country is flat (around one meter above sea level) with some hilly regions at the northeast and southeast regions and some terraces at the central and northwest region of the country.

Agriculture is the mainstay of the majority of people living in Bangladesh and accounts for about 20 per cent of the country's gross domestic product (GDP).⁴² Since independence in 1971, the GDP of Bangladesh has increased threefold. The food and agriculture sector has contributed a lot to this

⁴¹ Government of Bangladesh, *National Adaptation Programme of Action 2005 (NAPA)* (Ministry of Environment and Forest) 1<<http://UNFCCC.int/resource/docs/napa/ban01.pdf>>.

⁴² 'Agriculture, Food Security and Climate Compatible Development – Case Studies', above n 4; see also BCCSAP, above n 1.

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growth. Bangladesh now grows three times more food than it produced during the 1970's.⁴³ According to the Bangladesh Population and Housing Census 2011, around 80 per cent of households of the country are located in rural areas⁴⁴. Most of these households are dependent on agriculture for their livelihood and a large portion (around 84 per cent) of them, are small holder farmers (farm holding of about 0.5-2.49 acres in size).⁴⁵

Bangladesh agriculture is dominated by crops with a contribution of more than 50 per cent of the total agricultural GDP. Fisheries & livestock sectors also make significant contribution as well.⁴⁶ Rice is the main crop of Bangladesh covering more than 80 per cent of the cultivated land area⁴⁷ and over 95 per cent to the total food grain production.⁴⁸ Other crops are wheat, pulses, oilseeds, potato, jute, fruits, sugarcane, tea, spices and condiments, and vegetables.

Bangladesh food security has multiple challenges such as population growth (Bangladesh is one of the most densely populated countries in the world and its population is still growing by over two million people per year); climate change (floods, droughts, cyclones, sea intrusion, natural disasters, increasing salinity); deteriorating access to increasingly scarce natural resources (water, land); vulnerability to price shocks, (as shown in 2008); persistent poverty (leading to poor access to food); and one of the highest malnutrition rates in the world.⁴⁹ Among these challenges, the impacts of climate change on food security are an important priority in national policies and climate change strategy papers because of their wide spread impact on the total food security system of the country.⁵⁰

Food security in Bangladesh, like many countries, is under the potential threat of climate change.⁵¹ Bangladesh is highly dependent on its agriculture production for food security and the livelihoods

⁴³ BCCSAP, above n 1, 1.

⁴⁴ Government of Bangladesh, *Bangladesh Population and Housing Census 2011* (National Report, Volume 4' (Bangladesh Bureau of Statistics, December 2012) 19 <www.bbs.gov.bd>.

⁴⁵ Government of Bangladesh, *Census of Agriculture 2008* (National Series, Volume 1, Bangladesh Bureau of Statistics, November 2010) xv <<http://www.bbs.gov.bd/Census.aspx?MenuKey=90>>.

⁴⁶ Government of Bangladesh, *Towards a Food Secure Bangladesh: Country Programming Framework 2010-2015* (Ministry of Agriculture Bangladesh and FAO, 2011)3 <http://www.fao.org/fileadmin/user_upload/faobd/docs/Priorities/Bangladesh_CPF_Final_22_May_2011.pdf>.

⁴⁷ Ibid 4.

⁴⁸ Agriculture, Food Security and Climate Compatible Development – Case Studies', above n 4.

⁴⁹ Government of Bangladesh, *Bangladesh Country Investment Plan: A Roadmap Towards Investment in Agriculture, Food Security and Nutrition (CIP)* (FPMU, Food Division, Ministry of Food and Disaster Management, June 2011) 7<<http://www.mofood.gov.bd/site/page/74fcfc3-0c9b-42bd-baed-797f5cf15991>>.

⁵⁰ See, eg, SNCB, above n 8.

⁵¹ See, BCCSAP, above n 1.

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of about half of its workforce is dependent on agriculture.⁵² Sustainable agricultural production is therefore very important for the country's survival. But climate change has been impacting the growth of agriculture in Bangladesh.⁵³ A number of climate induced hazards like flood, drought, sea level rise and corresponding salinity intrusion are regularly affecting the country. All these hazards along with changes in precipitation pattern and temperature have been damaging crop production.⁵⁴ There are predictions of future climate change impacts on Bangladesh agriculture as well. Bangladesh has also been facing persistent challenges like poverty, seasonal fluctuation of food supply and seasonality of prices that are leading to stresses in access to food by the poor and vulnerable sections of the population.⁵⁵ Climatic events like flood, drought and cyclone are further deteriorating food access by eliminating livelihood options; particularly of the rural poor whose livelihood solely depends on agriculture.⁵⁶

The nutritional aspects of food security in Bangladesh are not also very pleasant. Nearly half of Bangladesh's children are underweight and two in every five children are stunted,⁵⁷ making it one of the most severe cases of malnutrition in the world.⁵⁸ Climate change may further deteriorate the nutritional conditions of Bangladesh by decreasing crop, fish and meat production of the country.⁵⁹

Climate change will also impact on human health in Bangladesh. Evidence shows that the spatial distribution of some diseases such as malaria and dengue fever will increase due to climate change.⁶⁰ The availability of pure drinking water is also becoming a major concern for Bangladesh food security. Salinity intrusion due to sea level rise as well as increased summer temperature that

⁵² Government of Bangladesh, *Yearbook of Agricultural Statistics 2012* (Bangladesh Bureau of Statistics, Dhaka, 2014) 3 < <http://www.bbs.gov.bd/WebTestApplication/userfiles/Image/LatestReports/AgriYearbook-2012.pdf>>.

⁵³ SNCB, above n 8, 134-142.

⁵⁴ See SNCB, above n 8; See also Roy et al, above n 8; National Food Policy Plan of Action and Country Investment Plan: Monitoring Report 2013, above n 1; Poh Poh Wong et al., 'Coastal Systems and Low-Lying Areas' in Christopher B Field et al (eds), *Climate Change 2014 Impacts Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University Press, 2014) 361, 384; Mallick, Amin and Rahman, above n 9.

⁵⁵ Mallick, Amin and Rahman, above n 9.

⁵⁶ BCCSAP, above n 1.

⁵⁷ National Food Policy Plan of Action and Country Investment Plan Monitoring Report 2013, above n 1.

⁵⁸ M A Kashem and M A A Faroque, 'A Country Scenarios of Food Security and Governance in Bangladesh' (2011) 9(1 & 2) *Journal of Science Foundation* 41; see also Bangladesh Country Investment Plan: A Roadmap Towards Investment in Agriculture, Food Security and Nutrition, above n 49.

⁵⁹ SNCB, above n 8, ix-xi.

⁶⁰ SNCB, above n 8, xi.

results in extended drought particularly at the south western part of the country has been constraining the availability of pure drinking water in the country.⁶¹

Infrastructure such as roads, markets, storage facilities and embankments are important for food security.⁶² In Bangladesh, climate change impacts such as floods, river erosions, excessive rainfall and sea storms are damaging such infrastructures⁶³ and thus putting stress on food security.

The impacts of climate change on food security, that are growing in Bangladesh, require action. The *World Summit on Food Security 2009* emphasized both mitigation of GHG emissions and adaptation strategies for responding to climate change impacts in order to improve food security.⁶⁴ However, adaptation strategies are gaining importance in international policy responses for responding to climate change impacts on food security. The following section will focus on the reasons for the growing importance of adaptation actions, particularly to improve food security.

B Responses to Climate Impacted Food Security: Importance of Adaptation

Responses to addressing vulnerability caused by climate change are basically divided into two areas. The responses that aim to reduce GHG emission are known as ‘mitigation’ actions⁶⁵ and the actions that aim to the ‘adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities’⁶⁶ are known as ‘adaptation’ actions. The *World Summit on Food Security 2009* (WSFS) emphasized both mitigation and adaptation actions for reducing vulnerability and increasing resilience in food security.⁶⁷

⁶¹NRSD, above n 11, 57; SNCB, above n 8, viii.

⁶² Renzaho and Mellor, above n 12.

⁶³ BCCSAP, above n 1.

⁶⁴ See, eg, World Summit on Food Security *Declaration of the World Summit on Food Security* WSFS 2009/2 (November 2009) para 2 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

⁶⁵ *Climate Change Mitigation* United Nations Environment Programme <<http://www.unep.org/climatechange/mitigation/>>.

⁶⁶ M.L Parry et al., *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, Cambridge, UK).

⁶⁷ The Declaration of the World Summit on Food Security (WSFS) 2009 stated that ‘Any recipe for confronting the challenges of climate change must allow for mitigation options and a firm commitment to the adaptation of agriculture, including through conservation and sustainable use of genetic resources for food and agriculture’; see *Declaration of the World Summit on Food Security*’ WSFS 2009/2 (November 2009) para 5 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

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There is a growing international consensus that unsustainable GHG concentrations, due to anthropogenic activities, are responsible for climate change.⁶⁸ Agriculture is responsible for around 24 per cent of total GHG emissions which is one of the largest sectors of GHG emitters.⁶⁹ Therefore, mitigation actions in agriculture would eventually contribute to reducing GHG concentration in the atmosphere. According to this logic, mitigation is the preferred response to reduce climate change impacts. *The United Nations Framework Convention on Climate Change (UNFCCC)* is dedicated to minimizing global GHG emissions through negotiation processes.⁷⁰ The 21st Conference of the Parties (COP 21) of the *UNFCCC* in Paris in 2015 has reached to an agreement (known as the *Paris Agreement*⁷¹) to aim to reduce GHG emissions so that earth's average temperature remains within 2^oC above preindustrial levels.⁷² The *Paris Agreement* also suggested adaptation actions for addressing the adverse impacts of climate change, particularly to address the threats on food production.⁷³

The *Paris Agreement* requires each party to submit respective GHG mitigation target (known as Intended Nationally Determined Contribution or INDC).⁷⁴ However, there are concerns over success in mitigating GHG emission to keep the global average temperature rise within 2^oC above preindustrial levels.⁷⁵ It is argued that INDCs do not set any specific target for reducing GHG, rather the success of *Paris Agreement* will mostly depend on the 'will' of the major GHG emitting

⁶⁸ Lisa V Alexander et al, 'Summary for Policymakers' in T.F. Stocker et al (eds), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA) 3, 4.

⁶⁹ Ottmar Edenhofer et al, 'Summary for Policymakers' in Ottmar Edenhofer et al (eds), *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA) 1, 9.

⁷⁰ *United Nations Framework Convention on Climate Change* U.N. Doc. A/AC.237/18 (Part II)/Add.1 (21 March 1994); The *UNFCCC* is one of the major outcomes of the 1992 United Nations Conference on Environment and Development (UNCED) also known as the first Earth Summit. The Parties to the *UNFCCC* are involved in negotiation process to reduce global greenhouse gas emission. In 2015, the parties met at the 21st conference of the parties (COP21) held in Paris, France and reached an agreement to reduce GHG emission (also known as *Paris Agreement*). See, eg, *Background of the UNFCCC: The International Response to Climate Change (United Nations Framework Convention on Climate Change)* <http://UNFCCC.int/essential_background/items/6031.php>.

⁷¹ Conference of the Parties, United Nations Framework Convention on Climate Change, *Adoption of the Paris Agreement*, UN Doc FCCC/CP.2015/L.9/Rev.1 (12 December 2015).

⁷² *Ibid* annex article 2.

⁷³ *Ibid* annex article 2b.

⁷⁴ *Ibid* para 12-21.

⁷⁵ See, e.g. Jean-Charles Hourcade and P.-R. Shukla, 'Cancun's Paradigm Shift and COP 21: To Go Beyond Rhetoric' (2015) 15(4) *International Environmental Agreements: Politics, Law and Economics* 34.

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countries in future to reduce GHG emissions.⁷⁶ It is noteworthy that the current business as usual scenario of GHG emissions in the world is likely to increase the average global temperature over 3⁰C above preindustrial levels which may bring catastrophe in near future.⁷⁷ Successful implementation of the *Paris Agreement* will require time to develop consensus among parties and implementing plans to reduce GHG emission. Given this situation it is logical to assume that global warming and the impacts of climate change will keep increasing in future until the current global mitigation strategies start providing effective results. Such uncertainties in global mitigation actions and the continuing impacts of climate change has increased the focus on adaptation.

Adaptation is defined as ‘reductions in risk and vulnerability through the actions of adjusting practices, processes, and capital in response to the actuality or threat of climate change’.⁷⁸ The definition indicates the focus of adaptation on addressing the current impacts through various adjustment procedures which will be essential before mitigation effectively reduces global warming. The *Paris Agreement* stated that

adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.⁷⁹

The above statement provides a guideline of effective adaptation for the parties where the importance of the participation of local people, local knowledge and local adaptation are significant. As mentioned before that addressing food security through adaptation is one of the objectives of the *Paris Agreement*,⁸⁰ therefore, above statement indicates the preferred guidelines for addressing the impacts of climate change on food security.

⁷⁶ See, eg, Elisa Calliari, Aurora D'Aprile and Marinella Davide, 'Paris Agreement: Strengths and Weaknesses Behind a Diplomatic Success' (2016) *Review of Environment, Energy and Economics* (Re3), Forthcoming.

⁷⁷ Christopher J. Rhodes, 'The 2015 Paris Climate Change Conference: COP21' (2016) 99(1) *Science Progress* 97, 100.

⁷⁸ Porter et al, above n 18, 513; This definition is adopted by the IPCC in relation to food security impacted by climate change.

⁷⁹ Conference of the Parties, United Nations Framework Convention on Climate Change, *Adoption of the Paris Agreement*, UN Doc FCCC/CP.2015/L.9/Rev.1 (12 December 2015) annex article 7(5).

⁸⁰ Ibid article 2(b).

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The importance of adaptation in climate impacted food security is also evident in the Sustainable Development Goals (SDGs) set at the United Nations Sustainable Development Summit in 2015 (UNSDS).⁸¹ The UNSDS sets 17 SDGs that should be achieved for global sustainable development by 2030.⁸² Goal 13 of the SDGs requires urgent action to address climate change impacts.⁸³ The UNSDS, by setting the goal for taking actions against climate change, has recommended adaptation actions for achieving the goals.⁸⁴ Some of the recommendations include strengthening adaptation action for achieving food security (goal 2),⁸⁵ sustainable human settlement (goal 11)⁸⁶ and climate change impacts (goal 13).⁸⁷

The IPCC AR5 report has stated that food security, both global and local, will be highly impacted without adaptation actions.⁸⁸ The IPCC stated that effective adaptation should consider ‘the dynamics of vulnerability and exposure and their linkages with socioeconomic processes, sustainable development, and climate change.’⁸⁹ Therefore effective adaptation not only provides relief against the impacts of climate change but also improves the overall condition from the adverse effects of non-climatic factors. This characteristic of adaptation increases its viability as a preferable mode of action against the impacts of climate change.

However, Adger et al stated that the effectiveness of adaptation in responses to climate change impacts will be dependent on ‘find[ing] opportunities to transform social-ecological systems into development pathways that may improve human conditions.’⁹⁰ The ability of ‘finding such opportunities’ are referred to as the ‘adaptive capacity’ of a system, which is represented by a set of resources and their capacity to effectively respond to the adverse impacts of climate change.⁹¹

⁸¹ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015).

⁸² *Draft Outcome Document of the United Nations Summit for the Adoption of the Post-2015 Development Agenda*, 69th sess, Agenda Item 13 (a) and 115, UN Doc A/69/L.85 (12 August 2015, adopted 25 September 2015) para 54-59.

⁸³ *Ibid.*

⁸⁴ *Ibid* para 31-32.

⁸⁵ *Ibid* para 54-59, goal 2 target 2.4.

⁸⁶ *Ibid* para 54-59 goal 11 target 11b.

⁸⁷ *Ibid*, para 54-59 goal 13 target 13.3.

⁸⁸ Field et al, above n 14, 1-32.

⁸⁹ *Ibid* 25.

⁹⁰ W. Neil Adger, et al, 'Resilience Implications of Policy Responses to Climate Change' (2011) 2(5) *Wiley Interdisciplinary Reviews: Climate Change* 757, 765.

⁹¹ 'Adaptive Capacity refers to the pre-conditions necessary to enable adaptation and the ability to mobilise these elements. It is represented by the set of available resources and the ability of the system to respond to disturbances and includes the capacity to design and implement effective adaptation strategies to cope with current or future

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Adaptation may take place at various levels. Natural environments may adapt (or fail to adapt) to the impacts of climate change depending on the health, diversity and resilience of ecosystems. For food security, adaptation at individual and community levels is not new. Many farmers use their own adaptation strategies to address the impacts of climate change.⁹² However, the growing severity of climate change is limiting the capacity of individual and community level adaptation and increasing their dependency on government assistance.⁹³ The role of government in facilitating local adaptation, and as a key stakeholder in locally specific strategies is increasingly important.

C Bangladesh Adaptation Strategies Against the Impacts of Climate Change on Food Security and Emerging Problems

Bangladesh response to climate induced disasters, disaster risk mitigation and building resilience have been well acknowledged by the AR5 of the IPCC.⁹⁴ Bangladesh, under the guidelines of *UNFCCC*, has adopted various adaptation strategies to combat climate change impacts. Bangladesh prepared its National Adaptation Program of Action (NAPA) in 2005 under the guidelines provided by the *UNFCCC*.⁹⁵ The NAPA provided general guidelines for addressing climate change impacts on different sectors including food security and suggestions for future adaptation strategies. Subsequently, Bangladesh also prepared the 'Bangladesh Climate Change Strategy and Action Plan' (BCCSAP) in 2009.⁹⁶ The BCCSAP is a more comprehensive strategic plan for combating climate change impacts. The document has six thematic areas; food security is one of those areas.⁹⁷ Both the NAPA and the BCCSAP have focused on the role of different ministries and government departments to address the problem.

events. Resources include physical capital, technology and infrastructure, information, knowledge, institutions, the capacity to learn and social capital'; see Ibid 758-759;

⁹² Hannah Reid, Muyeye Chambwera and Laurel Murray, 'Tried and Tested: Learning from Farmers on Adaptation to Climate Change' (IIED, 2013)3.

⁹³ Ibid 9.

⁹⁴ Klein et al, above n 2, 910.

⁹⁵The National Adaptation Programme of Action (NAPA) is prepared by the Ministry of Environment and Forest (MOEF), Government of the People's Republic of Bangladesh as a response to the decision of the Seventh Session of the Conference of the Parties (COP7) of the *United Nations Framework Convention on Climate Change (UNFCCC)*. The preparation process followed the generic guiding principles outlined in the annotated guideline prepared by LDC Expert Group (LEG); see NAPA, above n 41.

⁹⁶ As an outcome of the COP13 of the *UNFCCC* (Bali conference) Bangladesh prepared the BCCSAP. The document consists of two parts; the first part provides background of climate change impacts, rationale for strategy and major areas for intervention; and the second part consists of a set of programmes to address the strategies. See BCCSAP, above n 1, 1-76.

⁹⁷ See BCCSAP, above n 1, xvii.

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The Government of Bangladesh (GoB) prepared the National Food Policy (NFP, 2006), aiming to enhance food availability, access and utilization.⁹⁸ The GoB has also prepared the Plan of Action (PoA, 2008-2015) that specified the necessary interventions required for the successful implementation of the NFP⁹⁹ and the multi-billion-dollar Country Investment Plan (CIP, 2011-2015) for improving food security.¹⁰⁰ These GoB food security strategy papers have acknowledged the impacts of climate change on food security and emphasized adaptation strategies.

Bangladesh has made some remarkable progress in agriculture and food security over the last few decades; total rice production has increased 243 per cent, rice production has intensified making the country self-sufficient, purchasing power has increased, people are consuming a broader range of foods, and exclusive breastfeeding has dramatically increased.¹⁰¹ Bangladesh has significantly reduced poverty over the last few decades and has also met the ‘target 1A’ of the ‘goal one’ of the Millennium Development Goals (MDG).¹⁰² The achievement reflects the improving trend of reducing poverty conditions in Bangladesh. This was achieved by ‘a combination of factors including macroeconomic stability, liberalization of input markets and opening up of the economy.’¹⁰³ In recognition of these achievements, Bangladesh was awarded by the FAO of the UN for the country’s outstanding progress in fighting hunger and ensuring food security.¹⁰⁴

Despite the progress made by Bangladesh in addressing climate change and food security, some problems still persist, particularly at the local level. The rural communities are facing many challenges like shortages of natural resources, lack of modern cultivation knowledge and technologies, lack of grower’s awareness,¹⁰⁵ lack of transport and communication infrastructure,

⁹⁸ NFP, above n 7, 2.

⁹⁹ Government of Bangladesh, *National Food Policy Plan of Action 2008-2015* (FPMU, 5 August 2008) 9 <<http://www.mofood.gov.bd/>>.

¹⁰⁰ CIP, above n 49.

¹⁰¹ National Food Policy Plan of Action and Country Investment Plan: Monitoring Report 2013, above n 1.

¹⁰² The MDG Goal One was set to eradicate worldwide extreme poverty and hunger. Target 1A of the ‘Goal One’ requires countries to halve the proportion of people whose income is less than one US Dollar a day. Bangladesh achieved the target by 2012. See especially Government of Bangladesh, *Millennium Development Goals: Bangladesh Progress Report 2015* (Ministry of Planning, General Economic Division, Dhaka, and UNDP, September 2015) 20 <<http://www.bd.undp.org/content/bangladesh/en/home/library/mdg/mdg-progress-report-2015.html>>.

¹⁰³ Food and Agriculture Organization, ‘The State of Food Insecurity in the World: The Multiple Dimensions of Food Security’ (FAO, 2013) 29 <<http://www.fao.org/docrep/018/i3434e/i3434e00.htm>>.

¹⁰⁴ Bangladesh was awarded ‘The Achievement Award’ by the FAO for achieving the target 1c of the MDG; See *Progress is Proof that Hunger can be Eliminated* (Food and Agriculture Organization) <<http://www.fao.org/news/story/en/item/178065/icode/>>; National Food Policy Plan of Action and Country Investment Plan: Monitoring Report 2013, above n 1, forward.

¹⁰⁵ Roy et al, above n 8.

particularly in remote coastal and inland *char* areas,¹⁰⁶ vulnerability to price shocks and persistent poverty,¹⁰⁷ deteriorating livelihood conditions at the coastal communities,¹⁰⁸ lack of awareness at the community level about the solution of the problem,¹⁰⁹ insufficient income levels of the poor people to purchase necessary food from the market at the ruling prices, lack of assets and access to credit to overcome problems,¹¹⁰ and increased mortality in rural areas that are affected by flood events.¹¹¹ In 2007 and 2008, many poor people suffered from food insecurity since agricultural practices and productivity was greatly hampered by prolonged flooding and a super cyclone called *Sidr*.¹¹²

The persisting problems in local food security have led to criticism about the Bangladesh approach to the problem. There are unresolved issues related to centralized food security policy formulation, and implementation mechanisms, that have not adequately taken into account food security problems of the local communities and lack of local stakeholder participation into the decision making process.¹¹³ The agriculture sector of the country has been reported as suffering from poor policy implementation due to failures in decentralizing food security governance, lack of capacity of the central government agencies, poor institutional framework and policy support.¹¹⁴

D Problems in the Governance of Food Security: Demand for Change

The emerging problems in the governance of climate impacted food security that are evident in Bangladesh were also acknowledged in international policy responses. The World Commission on Environment and Development (WCED) in its popular report 'Our Common Future'¹¹⁵ identified some problems associated in existing government approaches towards food security issues. Lack

¹⁰⁶ Agriculture, Food Security and Climate Compatible Development – Case Studies, above n 4; a low lying river island is locally known as *Char* area in Bangladesh.

¹⁰⁷ CIP, above n 49.

¹⁰⁸ Wong et al, above n 54, 366.

¹⁰⁹ Mallick, Amin and Rahman, above n 9, 43.

¹¹⁰ Kashem and Faroque, above n 58, 42.

¹¹¹ Kirk R Smith et al, 'Human Health: Impacts, Adaptation, and Co-Benefits' in Christopher B Field et al (eds) *Climate Change 2014 Impacts Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University Press, 2014) 709, 722.

¹¹² Mallick, Amin and Rahman, above n 9, 20-21.

¹¹³ Noble et al, above n 28, 842; Hassan, above n 30, 5-6; see also Chowdhury, above n 30, 1.

¹¹⁴ Roy et al, above n 8, 44.

¹¹⁵ 'Our Common Future' discussed about the future challenges in different sectors including food security. The Report is based on the concept that human development and natural environment is interlinked and mutually dependent for sustainability; see *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, Chapter 5[44] < <http://www.un-documents.net/ocf-05.htm#IV>>.

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of ecological orientation in agricultural policies is causing the problems and in many cases the policies are not environment friendly.¹¹⁶ It is also stated that defective incentive structures that are not farmer friendly, only support a few major crops and helps more urban dwellers than the rural poor and therefore cause long term food insecurity in many developing countries.¹¹⁷ The report also identified problems in national legal frameworks that fail to address local agricultural needs. The Report stated that,

‘[existing] agricultural policy tends to operate within a national framework with uniform prices and subsidies, standardized criteria for the provision of support services, indiscriminate financing of infrastructure investments, and so forth. Policies that vary from region to region are needed to reflect different regional needs, encouraging farmers to adopt practices that are ecologically sustainable in their own areas.’¹¹⁸

In other words, emphasis needs to be given to adopting policies that can address local agricultural needs for ensuring local food security. Traditional institutional characteristics are limiting the potential of adaptation actions in response to climate change.¹¹⁹ According to the IPCC AR5 report, weaknesses in institutional settings, absence of coordination among institutions working for facilitating adaptation, absence of coherence among institutional objective as well as absence of legal and procedural instruments in the traditional governance systems is restraining effective adaptation actions that are required to address climate change impacts.¹²⁰ The AR5 suggests that the complex impacts of climate change and the failure of traditional governance to address the problem invite challenges for governing adaptation actions and promote the necessity of considering new institutional settings to address such challenge.¹²¹

The demand for changes in governance also needs to be inclusive of climate change impacts on food security. ‘Our Common Future’ stated that the existing governance strategies are disjointed

¹¹⁶ See *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, < <http://www.un-documents.net/ocf-05.htm#IV>>.

¹¹⁷ Ibid chapter 5 para 45-49.

¹¹⁸ Ibid chapter 5 para 48.

¹¹⁹ Klein et al, above n 2, 907.

¹²⁰ Ibid.

¹²¹ Ibid.

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and fragmented and need to shift towards an integrated and interdependent approach.¹²² WCED also stated that the challenges for sustainable development in all sectors (including food security) are interconnected together with environment and development irrespective of geographic location.¹²³ It follows that changes are required in existing governance and legal and institutional strategies to address adaptation actions for achieving sustainable food security threatened by climate change impacts. Integration of governance strategies, laws and policies to effectively implement sustainable development are crucial for achieving the goals of Agenda 21.¹²⁴ It is also said that the complexities that climatic and non-climatic drivers are imposing upon managing food security requires an integrated approach by involving all stakeholders in the governance process of food security.¹²⁵

Growing environmental degradation, as well as decreasing and deteriorating natural resource stock due to anthropogenic activities (i.e. increased human consumption), have disclosed the fact that social/human systems and ecological systems are inherently interlinked and complex and cannot be managed in isolation.¹²⁶ The concerns on environmental degradation, including climate change and associated uncertainties, have propelled the necessity of developing governance strategies that are local and adaptive in nature.¹²⁷ Traditional governance systems that follow the ‘top-down’ governance approach, and are state-centric in decision making, struggle to meet this emerging need to adapt with the social-ecological complexities.¹²⁸ Legal and institutional settings based upon this traditional governance approach are inadequate to address climate change induced environmental degradations.¹²⁹

¹²² *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, chapter 12, para 10 < <http://www.un-documents.net/ocf-05.htm#IV>>.

¹²³ *Ibid* chapter 12.

¹²⁴ *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992), chapter 1, preamble, para 1.3.

¹²⁵ ‘CGIAR Challenge Program on Climate Change, Agriculture and Food Security’ (CCAFS Report no 1, The Alliance of the CGIAR Centers and ESSP, Rome and Paris, November 2008) 7 < <https://ccafs.cgiar.org/publications/program-plan-cgiar-challenge-program-climate-change-agriculture-and-food-security>>.

¹²⁶ Brian C. Chaffin, Hannah Gosnell and Barbara A. Cosens, ‘A Decade of Adaptive Governance Scholarship: Synthesis and Future Directions’ (2014) 19(3) *Ecology and Society* 56.

¹²⁷ *Ibid*.

¹²⁸ Oran R Young, *The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale* (MIT Press, Cambridge, Massachusetts, USA, 2002).

¹²⁹ See, e.g., M. C. Lemos and A. Agrawal, ‘Environmental Governance’ (2006) (31) *Annual Review of Environment and Resources* 297

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The failure of centralized governance and policy approach, in the midst of growing environmental degradation as well as deteriorating food security conditions at local level and associated uncertainties, has resulted in calls for shifting the approach to the problem.¹³⁰ It is said that

‘a systematic understanding of food security includes not only the production and consumption of food but also processes within the environment in which the activities related to food take place, and interaction between those activities and the environment’¹³¹

Therefore, understanding local food security requires understanding of the local processes and actions that take place at the local level. Such local processes and actions could be understood under the institutional framework that enables local communities and local level institutions to interact. But the existing institutional framework, particularly in developing countries to combat climate change impacts, has been criticized. The IPCC AR5 report has identified traditional institutional characteristics as one of the barriers to climate adaptation actions.¹³² The AR5 states that the complexities in the governance system i.e. the network of the institutions and agencies may constrain adaptation if effective coordination among the existing institutions (from local to central) is absent.¹³³ The IPCC also finds that many adaptation actions at the local level fail due to excessive involvement of higher level government institutions. AR5 suggests that a focus on local process to address local problems and adaptation options would work well at the local level.¹³⁴

Therefore, the demand for changes in governance is growing and this also applies to local governance of climate impacted food security. Traditional legal and institutional settings for agriculture operate within a few defined conditions and are incapable of addressing challenges like climate change that are uncertain,¹³⁵ and require an integrated approach in governance by considering the strategies of sustainable development, climate change and food security together as well as effective participation of stakeholders.

¹³⁰ Sirkku Juhola, 'Food Systems and Adaptive Governance: Food Crisis in Niger' in Emily Boyd and Carl Folke (eds), *Adaptive Institutions: Governance, Complexities and Social-Ecological Resilience* (Cambridge University Press, 2012) 148; see also Chaffin, Gosnell and Cosens, above n 126, 56.

¹³¹ Juhola, above n 130, 148.

¹³² Klein et al, above n 2, 907.

¹³³ Ibid.

¹³⁴ Klein et al, above n 2, 908.

¹³⁵ 'Designing Policies in a World of Uncertainty, Change, and Surprise Adaptive Policy-making for Agriculture and Water Resources in the Face of Climate Change' (Research Report, International Institute for Sustainable Development, Rome, 2006) 4 < https://www.iisd.org/pdf/2006/climate_designing_policies.pdf >.

E The Importance of Local Government in Addressing Climate Impacted Food Security

It is also argued that good food security governance, at any level, requires active participation of all stakeholders in the governance process.¹³⁶ Such an argument endorses the importance of involving local stakeholders in food security governance as a means to establish good food security governance. The importance of local stakeholder involvement in the decision making process, particularly in addressing climate change impacts, has also been voiced in ‘Agenda 21’¹³⁷ where the importance of local stakeholder participation in a climate change context was well articulated. Agenda 21 stated:

Because so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities, the participation and cooperation of local authorities will be a determining factor in fulfilling its objectives. Local authorities construct, operate and maintain economic, social and environmental infrastructure, oversee planning processes, establish local environmental policies and regulations, and assist in implementing national and subnational environmental policies. As the level of governance closest to the people, they play a vital role in educating, mobilizing and responding to the public to promote sustainable development.¹³⁸

Agenda 21 places importance on the ability of local authorities in addressing local problems like food security by strengthening their role in agricultural decision making.¹³⁹ Local government is a local level authority that is elected by the local people and mandated by law to address local problems and serve the local people. It is argued that local government, because of its closeness with local communities and farmers as well as with local environment, is more likely to understand local concerns and needs¹⁴⁰ arising from climate change and food security. Moreover, the local nature of climate impacts, particularly on agricultural production and local livelihoods, requires immediate and close intervention at the local level for which local government is in a ‘suitable’

¹³⁶ Page, above n 31.

¹³⁷ Agenda 21 is a product of the 1992 *United Nations Conference on Environment and Development* which refers to an action plan for the participating countries of the conference for sustainable development.

¹³⁸ See *Agenda 21: Programme of Action for Sustainable Development*, U.N. GAOR, 46th Sess., Agenda Item 21, UN Doc A/Conf.151/26 (1992) <<http://www.un.org/geninfo/bp/envirp2.html>>.

¹³⁹ *Ibid* chapter 32, 28. Chapter 28 of the Agenda 21 articulates the roles and responsibilities of local authorities in the context of environmental and sustainable development.

¹⁴⁰ Lin, above n 35, 140.

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place to address the problem.¹⁴¹ Arun Agrawal argues that local institutions can effectively structure the responses to local impacts, facilitate individual and collective responses to vulnerability as well as administer resource mobilization for appropriate adaptation.¹⁴²

The relationship between the strengthening of local government and improving food security is also evident in different countries. Indonesia, in particular, has improved food security through accelerating a decentralization process and empowering local government which has been well acknowledged by the FAO of the UN.¹⁴³ The Australian local government also has an active role in food security and addressing climate change impacts.¹⁴⁴

F The Role of Local Government and Challenges to Address Climate Impacted Food Security

The role of local government is generally related to essential services to the local community such as waste management, building and maintenance of local infrastructure, providing local health services and regulatory functions to ensure proper delivery of services.¹⁴⁵ Many contemporary functions of local government are related to local food security and have implications for climate adaptation. Local government organizations in New South Wales (NSW) in Australia provide services that are important for local food security such as public health services and facilities, environment conservation, protection and improvement services and facilities, waste removal, treatment and disposal services and facilities, pest eradication and control services and facilities, public transport services and facilities, water, sewerage and drainage works and facilities, storm water drainage and flood prevention, protection and mitigation services and facilities, fire prevention and land and property development.¹⁴⁶ These services have important implications for

¹⁴¹ 'Suitability' refers to the legitimacy, acceptability (arising from representation from the local people) and capacity of local government to address local problem. See, e.g., B L Preston et al, 'Igniting Change in Local Government: Lessons Learned from a Bushfire Vulnerability Assessment' (2009) (14) *Mitigation and Adaptation Strategies for Global Change* 251,252. Here, suitability may refer to the legitimacy, acceptability (arising from representation from the local people) and capacity of local government to address local problem.

¹⁴² Agrawal, above n 33.

¹⁴³ Food and Agriculture Organization, 'The State of Food Insecurity in the World 2014: Strengthening the Enabling Government to Improve Food Security and Nutrition' (Rome, 2014) 16, 20 <<http://www.fao.org/publications/sofi/2014/en/>>.

¹⁴⁴ Chapter 4 has discussed about the role of local government in Australia for addressing food security impacted by climate change.

¹⁴⁵ See, eg, 'Transforming Rural Institutions: In Order to Reach the Millennium Development Goal' (IFAD, February 2003) 8-9 <<http://www.ifad.org/gbdocs/gc/26/e/rural.pdf>>; Judith Preston and Jennifer Scott, 'Meeting the Climate Change Challenge in Local Government Decision-making With The Use of Sustainable Climate Change Adaptation Modelling' (2012) 17 *Local Government Law Journal* 135, 137-138.

¹⁴⁶ *Local Government Act 1993* (NSW) ch 6; Preston and Scott, above n 145, 137-138.

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adaptation responses to the impacts of climate change.¹⁴⁷ Similarly, local government organizations in Bangladesh and Indonesia are responsible for providing services such as building local infrastructure, addressing local health issues, providing agricultural services, human resource development, conserving environment, local planning and responses against natural disasters¹⁴⁸ which are related to food security and climate adaptation.

A number of future adaptation roles of local government, given the growing impacts of climate change on sustainable development and food security, have also been recommended by international policy responses. Some future roles of local government such as facilitating local public participation and adopting 'Local Agenda 21' for sustainable development,¹⁴⁹ translating goals, policies, strategies and investments between higher level of national governments, international organizations and the many institutions working with local communities,¹⁵⁰ roles in conserving local biodiversity,¹⁵¹ strengthening of drought preparedness and management,¹⁵² and roles in improving human settlement issues.¹⁵³

However, the uncertainties and impacts that climate change is imposing at local level have challenged the current and future roles of local government. Local government institutions struggle to devise strategies by analyzing past and future trends of climate change impact into decision making, particularly while preparing local development plans.¹⁵⁴ Local government institutions suffer from lack of proper legislative directives, knowledge and training to incorporate climate change risks into local decision making.¹⁵⁵ One of the reasons for such difficulties has been

¹⁴⁷ Measham et al, above n 36, 892.

¹⁴⁸ See, *Law 32/2004 on Regional Administration (Indonesia)* art 22; *Local Government (Union Parishad) Act 2009 (Bangladesh)* sch 2; *Upazila Parishad Act 1998 (Bangladesh)* sch 2; *Local Government (Paurashava) Act 2009 (Bangladesh)* sch 2; *Zila Parishad Act 2009 (Bangladesh)* sch 1.

¹⁴⁹ *Agenda 21: Programme of Action for Sustainable Development*, UN GAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992), para 28.1.

¹⁵⁰ Anokhin Yury et al, 'Adaptation Needs and Options' in Christopher B. Field et al (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability Part A Global and Sectoral Aspects Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013) 9.

¹⁵¹ *United Nations Convention on Biological Diversity*, 1760 UNTS 79; 31 ILM 818 (29 December 1993)

¹⁵² *United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa*, UN Doc No. A/AC.241/27 (12 September 1994)

¹⁵³ *United Nations Conference on Human Settlements (HABITAT II)*, UN Doc A/Conf. 165/14 (7 August, 1996).

¹⁵⁴ Measham et al, above n 36, 892.

¹⁵⁵ *Ibid.*

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described as the dependency of local government role on legislative directives from higher authority which itself fail to incorporate climate change impacts.¹⁵⁶

Measham et al identified three basic challenges that local government face while adapting to the impacts of climate change; these are lack of information, institutional limitations and resource constraint.¹⁵⁷ Local government institutions may be reluctant to take decision about climate change impacts because of the scarcity of appropriate information about past, current and future trends of climate change impacts at the local level.¹⁵⁸ Local politicians, policy makers and managers struggle to understand the meaning, scale and timeframe of scientific information about climate change impacts. There is also lack of institutional autonomy for local government to support and safeguard its role and interest in adaptation to climate change.¹⁵⁹ This is common in the legal and institutional frameworks of many countries which keep the local government as an implementing body of the decisions of higher levels of government.¹⁶⁰ Many local government institutions are overburdened with the implementation tasks imposed upon them by higher levels of government within the limited allocated resources. Lack of flexibility in using resources to plan and implement local adaptation actions also impedes local government capacity to address the impacts of climate change.¹⁶¹

Preston and Scott stated that local government in Australia may face legal challenges arise from its functions to address climate change impacts.¹⁶² The functions of local government particularly in relation to local development and environmental protection for addressing climate change impacts and failure to forecast the risks involved in climate change impacts may lead to civil litigations and may also bring additional challenges of the financial burden that courts may put on local government.¹⁶³ Resource scarcity as well as lack of information and knowledge about climate change impacts may put local government in a more vulnerable situation with the increase of such litigation.

¹⁵⁶ Ibid 893.

¹⁵⁷ Ibid 893-894

¹⁵⁸ Ibid 893; Jennifer Scott and Judith Preston, 'When is a Climate Change Adaptation Model Good Enough to Inform Public Policy? Climate Change Adaptation Risk Management in Local Government' (2011) 16 *Local Government Law Journal* 152, 160.

¹⁵⁹ Measham et al, above n 36, 893; Ibid.

¹⁶⁰ Measham et al, above n 36, 893.

¹⁶¹ Ibid 893-894.

¹⁶² Scott and Preston, above n 158.

¹⁶³ Ibid 160-161.

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The capacity of local governments, especially in developing countries, to efficiently facilitate adaptation and food security processes is questioned due to the scarcity of resources as well as weaknesses in legal frameworks.¹⁶⁴ In Bangladesh, lack of institutional capacity, particularly by the local government, limits local actions to address climate change impacts.¹⁶⁵ The existing legal framework of Bangladesh also struggles to ensure public participation of local level institutions in environmental decision making.¹⁶⁶ The Sixth Five-Year-Plan (SFYP) of Bangladesh¹⁶⁷ identified a number of governance problems in Bangladesh that are constraining sustainable development in the country that includes weaknesses in public administration and economic management as well as corruption.¹⁶⁸ One of the recommendations that the SFYP made was strengthening local government institutions through promoting devolution.¹⁶⁹ Therefore, the urge to strengthen local government has already been reflected in Bangladesh policy and planning documents. The SFYP also emphasized reforming the existing legal structures that govern the role of local government in Bangladesh.¹⁷⁰

Weak legal and institutional framework, as well as a centralized approach to environmental issues in many developing countries, has resulted in poor compliance with laws and policies.¹⁷¹ The IPCC AR5 report has placed importance on providing policy and legal frameworks for supporting the role of local government in this respect.¹⁷² The AR5 suggests that the efficient role of institutions in climate change context depends on the legal frameworks that authorizes and regulates institutions actions.¹⁷³ Similar emphasis has also been given by a World Bank study that suggests developing local government legal framework for enhancing local government capacity to facilitate local economic activities.¹⁷⁴ However, little attention has been given to improving the

¹⁶⁴ See Richardson et al, above n 36, 10.

¹⁶⁵ Noble et al, above n 28, 842.

¹⁶⁶ Hassan, above n 30, 5-6; see also Chowdhury, above n 30, 1.

¹⁶⁷ Sixth Five Year Plan (SFYP) is a medium term development plan of Bangladesh for the financial years 2011-2015. The purpose of the SFYP is to provide policy guideline for achieving the development targets set in Vision 2021 of the country.

¹⁶⁸ Government of Bangladesh, *Sixth Five Year Plan: Accelerating Growth and Reducing Poverty Part 1* (General Economic Division, Ministry of Planning, Dhaka, 2011) < <http://www.plancomm.gov.bd/sixth-five-year-plan/> >

¹⁶⁹ Ibid 9.

¹⁷⁰ Ibid, 31.

¹⁷¹ Lin, above n 35, 141.

¹⁷² Field et al, above n 14, 25-29.

¹⁷³ Klein et al, above n 2, 907.

¹⁷⁴ Uphoff and Buck, above n 35, 11.

capacity of existing legal frameworks in developing countries, to address climate adaptation¹⁷⁵ and food security, especially in strengthening the role of local governments.

G Research Gap and the Contribution of this Research

Governance of food security is complex due to the involvement of various social, political, economic, cultural and environmental factors and their differentiated influence at the local level.¹⁷⁶ Therefore, the impacts of climate change on food security at local level, and possible adaptation actions for local government, cannot be understood in isolation without considering the influence of the other factors. Adaptation to the impacts of climate change is also dependent on diverse factors like goals of adaptation, social values, amount of uncertainties associated with particular climate change impact, social and behavioral characteristics and amount of loss that climate change could incur in a given place.¹⁷⁷ On the other hand, local government institutions in developing countries face a number of challenges arising from the different political, democratic and administrative culture of a society.¹⁷⁸ It should also be noted that the effective role of local government in national climate change and food security policies depends on the willingness of actors such as politicians in the governance networks.¹⁷⁹ Thus the issues of strengthening local government are complex and challenging. Strengthening local government to facilitate climate adaptation in food security should consider strategies that could address climate change impacts and the influence of other factors of food security, adaptation and local government and their interaction.

International policy responses require new local level governance for climate change, food security influenced by rapidly evolving international principles and guidelines. In Bangladesh, the National Adaptation Programmes of Action (NAPA) was prepared under the guidelines provided by the *UNFCCC*,¹⁸⁰ the National Food Policy 2006 was prepared in accordance with the principles and

¹⁷⁵ See Richardson et al, above n 36, 10.

¹⁷⁶ Laura M Pereira and Shaun Ruysenaar, 'Moving From Traditional Government to New Adaptive Governance: The Changing Face of Food Security Responses in South Africa' (2012) 4 *Food Security* 41.

¹⁷⁷ M Hulme et al, 'Limits and Barriers to Adaptation: Four Propositions' (Tyndall Briefing Note No. 20, July 2007, Tyndall Centre for Climate Change Research, University of East Anglia: Norwich) 1

¹⁷⁸ Transforming Rural Institutions: In Order to Reach the Millennium Development Goal, above n 145.

¹⁷⁹ Measham et al, above n 36, 891.

¹⁸⁰ The COP 7 of the *UNFCCC* (held at Marrakesh in 2001) established LDC work program that developed a guideline for the LDC countries to identify priority areas for intervention against climate change impacts, developing action programs and calculating the needs. The entire process is known as NAPA. Preparation of NAPA was mandatory for accessing Least Developed Countries Fund (LDCF). Bangladesh prepared the NAPA in 2005;

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guidelines developed in several international declarations and agreements regarding food security and sustainable development such as the World Food Summit Declaration of 1996, the Millennium Development Goals set in 2000 by the United Nations and the 1994 *General Agreement on Tariffs and Trade (GATT)* Uruguay Round Agreement.¹⁸¹ In Australia, international environmental laws have influenced a range of domestic environmental laws.¹⁸² The sustainable development goals and targets set in the 2015 United Nations Sustainable Development Summit and the ‘*Paris Agreement*’ developed by the COP 21 of the *UNFCCC* are the latest two major international policy instruments that will have significant influence on domestic strategies for combating challenges in sustainable development and climate change impact. These international policy responses include principles and guidelines that will have significant influence on developing domestic governance approaches for climate impacted food security. This is particularly the case for developing countries such as Bangladesh that are heavily dependent on international aid organizations.

However, there is a deficit in research to inform the implications of these internationally recommended governance strategies at different levels of governance including the local level.¹⁸³ There are currently major national deficits in the powers, roles and resources of local governments compared to the recommendations by international principles and guidelines. There may also be significant trade-offs and conflicts between climate change adaptation and sustainable development governance¹⁸⁴ and also a lack of integrated and equitable approaches to address these trade-offs and conflicts.¹⁸⁵ There is also a mismatch between political and ecological scale and difficulties in designing integrated approaches for local level.¹⁸⁶

Considering all challenges (both climate induced and others) and developing a comprehensive integrated governance approach for local government is beyond the scope of this research.

See *National Adaptation Programmes of Action (The United Nations Framework Convention on Climate Change)* <http://UNFCCC.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/7567.php>; NAPA, above n 41.

¹⁸¹ NFP, above n 7, 1, section A, preamble.

¹⁸² Guy J Dwyer and Judith A Preston, 'Striving for Best Practice in Environmental Governance and Justice: Reporting on the Inaugural Environmental Democracy Index for Australia' (2015) 32 *Environmental and Planning Law Journal* 202, 202.

¹⁸³ Craig, above n 39, 4.

¹⁸⁴ Ibid 8.

¹⁸⁵ K Brown, 'Human Development and Environmental Governance' in W.N Adger, and A Jordan (eds), *Governing Sustainability*, (Cambridge, Cambridge University Press) 47; D. K. Anton, 'The 2012 United Nations Conference on Sustainable Development and the Future of International Environmental Protection' (2012) 7(1) *Consilience: The Journal of Sustainable Development* 64

¹⁸⁶ J.P Evans, *Environmental Governance* (Routledge, Taylor and Francis, London, 2012)59.

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However, this research will seek to provide a foundation for local government institutions in developing these new local level governance approaches through identifying and applying legal and institutional principles and guidelines applicable to climate impacted food security. Identifying and understanding appropriate principles and guidelines for strengthening local governance needs consideration of the principles and guidelines in the areas of food security, climate change and local governance together. These will provide a foundation for a broader role for local government to provide leadership, continuous learning and capacity building for the difficult tasks ahead associated with developing locally specific climate adaptation approaches to food security.

There is much research available about strengthening local government of Bangladesh.¹⁸⁷ However, most of this research has focused on problems in decentralization and public administration. Research on strengthening the local government legal framework of Bangladesh in the context of climate change and food security is relatively scarce. This research will also contribute to the existing scholarship of strengthening the local government of Bangladesh by providing appropriate legal and institutional principles and guidelines to a specific area of climate impacted food security based on major international policy recommendations.

IV METHODOLOGY

Social science research methods help to understand effectiveness of law and policy.¹⁸⁸ Qualitative research methods are appropriate to the legal and institutional reform research questions addressed in this thesis.¹⁸⁹ The nature of adaptation to climate change in food security is such that there is no

¹⁸⁷ See, e.g. Zayeda Sharmin, Md. Amdadul Haque and Fakhru Islam, 'Problems of Strengthening Local Government in Bangladesh: Towards a Comprehensive Solution' (2011) 15(1) *SUST Studies* 76; Salahuddin M Aminuzzaman, 'Governance at Grassroots- Rhetoric and Reality: A Study of the Union Parishad in Bangladesh' in Ishtiaq Jamil, Steinar Askvik and Tek Nath Dhakal (eds), *In Search of Better Governance in South Asia and Beyond* (Springer, 2013) 201; Mohammad Shahjahan Chowdhury and Chowdhury Abdullah Al-Hossienie, 'Quest for an Effective and Efficient Local Government: Local Government in Japan and Policy Implication for Local Government in Bangladesh' (2012) 10(3) *Lex Localis* 247; Maitreyi Bordia Das and Vivek Maru, 'Framing Local Conflict and Justice in Bangladesh' (The World Bank, 2011) <<https://openknowledge.worldbank.org/handle/10986/3545>>; Panday, Pranab Kumar, 'Local Government System in Bangladesh: How Far is it Decentralised?' (2011) 9(3) (Jul 2011) *Lex Localis* 205; The World Bank, 'Strengthening Local Governance: Defining the Role of Upazila and Union Parishads' (The World Bank, 2012) <<https://openknowledge.worldbank.org/handle/10986/12400>>.

¹⁸⁸ Terry Hutchinson, *Researching and writing in law* (Thomson Reuters Professional Australia Limited, 3rd ed, 2010)100.

¹⁸⁹ See, e.g. Lisa Webley, 'Qualitative Approaches to Empirical Legal Research' in Peter Cane and Herbert M Kritzer (eds), *The Oxford Handbook of Empirical Legal Research* (Oxford University Press, 2010) 926.

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single solution and qualitative research addresses such problems where ‘the reality is situational’.¹⁹⁰ Moreover, the research will explore the adequacy of domestic law and policies relevant to the role of local government in responding to climate impacted food security and the development of principles and guidelines for improved future governance, particularly in Bangladesh. In this given context, the research also falls within the area of doctrinal research.¹⁹¹

Sources of data will be secondary in nature. International treaties, soft laws, principles and guidelines, reports of international organizations, governance theories, and national law, policies, strategies and guidelines will be the source of most of the data for this research. Therefore, the data collection method will be ‘qualitative document analysis.’¹⁹²

A International Policy Responses Considered in this Research

International policy responses that provide legal and institutional principles and guidelines for improving local level governance in the areas of food security, climate change and sustainable development are the focus of this research. This research has considered the major international policy responses on the abovementioned areas since the *United Nations Conference on Human Environment (UNCHE)* that took place in Stockholm in 1972. The *UNCHE* is regarded as one of the foundational international policy responses that have provided a number of principles for environment and development.¹⁹³ The *UNCHE* recognized the severity of pollution in the biosphere due to anthropogenic activities¹⁹⁴ and provided 26 principles that are considered as essential guidelines for international, national and local level governance strategies for environmental development.¹⁹⁵ Examples include principles 13 and 17 of the declaration of

¹⁹⁰ Hutchinson, above n 188, 106.

¹⁹¹ Doctrinal Research is a type of research which provides a systematic exposition of the rules, governing a particular legal category, analyses the relationship between rules, explains areas of difficulty and, perhaps, predicts future developments. See Hutchinson, above n 188, 7.

¹⁹² Webley, above n 189, 926.

¹⁹³ Pierre-Marie Dupuy and Jorge E. Vinuales, *International Environmental Law* (Cambridge University Press, 2015) 8.

¹⁹⁴ *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972).

¹⁹⁵ Dupuy and Vinuales, above n 193, 8-12; *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972).

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UNCHE that stressed an integrated and coordinated approach of the governments by involving institutions at all levels to address the problem.¹⁹⁶

The report of the World Commission on Environment and Development (WCED) in 1987 (known as ‘Our Common Future’) is another influential report on the environment and sustainable development that provides a number of recommendations regarding applicable governance strategies.¹⁹⁷ The report has an entire chapter on food security where it has elaborated the linkage between environmental degradation and food security. The report also criticized the capacity of the existing institutional arrangements to address the problem.¹⁹⁸ The report suggested a shift from traditional national policies that only sought general solutions to a more local level policy that is necessary to address local agriculture and farmer needs and found devolution of responsibility to local government as a way to address the local agriculture needs.¹⁹⁹

The 1992 United Nations Conference on Environment and Development (UNCED) was organized to examine the state of the environment and changes since *UNCHE*. The UNCED identified national and international strategies; particularly for developing countries and also identifying policy and legal initiatives required to address the needs and concerns.²⁰⁰ The UNCED adopted the ‘Rio Declaration on Environment and Development’, a comprehensive program of actions for global action in all areas of sustainable development.²⁰¹ The ‘Rio Declaration’ consisted of 27 principles; a number of the principles provided essential governance strategies like capacity building of institutions (principle 9), encouraging public participation (principle 10), polluter pay principle (principle 16) and environmental impact assessment (principle 17).²⁰²

The UNCED also adopted ‘Agenda 21’ that proposed a detailed plan for policy and action in social and economic aspects of human communities like poverty, population dynamics, production and consumption, and also for conserving and managing natural resources like protecting the

¹⁹⁶ *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972).

¹⁹⁷ *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, <<http://www.un-documents.net/ocf-05.htm#IV>>.

¹⁹⁸ *Ibid.*

¹⁹⁹ *Ibid* ch 5.

²⁰⁰ David Hunter, James Salzman and Durwood Zaelke, *International Environmental Law and Policy* (Foundation Press, Fourth ed, 2011) 187.

²⁰¹ *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26 (Vol. I) (12 August, 1992) Annex I <<http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>>.

²⁰² *Ibid.*

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atmosphere, oceans and biodiversity; preventing deforestation; and promoting sustainable agriculture.²⁰³ Agenda 21 recognized the role of local authorities like local government in the fulfilment of the agenda. Similarly, the *United Nations Convention to Combat Desertification* (CCD) and the *United Nations Convention on Biological Diversity* (CBD) in 1992 provided governance guidelines in addressing environmental concerns. The *UNFCCC* is another major UN convention that basically focuses on international responses to mitigate GHG emissions. However, various COPs of the *UNFCCC* have provided strategies for adaptation, The *Paris Agreement* of the COP 21 of *UNFCCC* acknowledged the importance of adaptation for securing food production. The recommendations of the *Paris Agreement* have provided important insight for this research.

The ‘Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters’, in 1998, popularly known as the ‘Aarhus Convention’ provides essential guidelines on legal and institutional measures for enhancing local stakeholder participation in environmental decision making, access to information and review of discussion.²⁰⁴

Some important international policy responses on sustainable development have taken place since the beginning of 21st century. The United Nations Millennium Declarations at the Millennium Summit in 2000²⁰⁵ set eight goals (known as the United Nations Millennium Development Goals or MDGs) for achieving global sustainable development by 2015. One of the goals of MDG was achieving food security through eradicating poverty and hunger. Good governance was considered as the essential mechanism for addressing poverty and hunger worldwide.²⁰⁶ The United Nations Conference on Sustainable Development (also known as Rio+20) in 2012 also stressed the participation in the decision making process for efficient sustainable development.²⁰⁷ The UNSDS in 2015 set 17 goals and 169 targets to be achieved by 2030 and provided necessary guidelines for setting governance strategies. It is noteworthy that addressing climate change impacts and food security problems are incorporated into the list of goals and targets in UNSDS. This research will

²⁰³ See *Agenda 21: Programme of Action for Sustainable Development*, U.N. GAOR, 46th Sess., Agenda Item 21, UN Doc A/Conf.151/26 (1992) <<http://www.un.org/geninfo/bp/envirp2.html>>.

²⁰⁴ *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001) general provisions, article 1, 3.

²⁰⁵ *United Nations Millennium Declaration*, GA/RES/55/2, 55th sess, Agenda Item 60(b), UN Doc A/RES/55/2 (18 September 2000).

²⁰⁶ *Ibid.*

²⁰⁷ *Report of the United Nations Conference on Sustainable Development*, UN Doc A/Conf.216/16 (20-22 June 2012) annex (The Future We Want)

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examine the recommendations of these international policy responses on sustainable development for identifying appropriate strategies for local government in the fields of climate impacted food security.

Food security was always a concern for both developed and developing countries. Various initiatives, from national to regional and international levels, so far have been taken to address food security. The *Universal Declaration of Human Rights* (UDHR) in 1948 by the UN, the World Food Conference in 1974 and the World Food Summit in 1996, organized by the FAO of the UN, were some of the major international initiatives that provided guidelines for legal and policy measures in food security worldwide. Article 25 of the UDHR included rights to food under the rights to standard living,²⁰⁸ which was also enlarged in Article 11 of the International Covenant on Economic, Social and Cultural Rights²⁰⁹, adopted by the UN General Assembly in 1966. The World Food Conference in 1974 adopted the *Universal Declaration on the Eradication of Hunger and Malnutrition*²¹⁰ which proclaimed the responsibility of governments to address the concerns of food security in accordance to respective legal frameworks. The 1996 World Food Summit adopted the ‘Rome Declaration’ which also stated the necessity of state intervention through legal and policy measures to ensure equity, equality, participation as well as sustainable development in the context of food security.²¹¹ One of the objectives of the ‘Rome Declaration’ was to formulate and implement rural development strategies for improving food security and livelihood options in rural areas. To achieve this objective the ‘Rome Declaration’ urged developing mechanisms for strengthening local government institutions with resources, decision-making authorities and participating abilities.²¹² The 2009 World Summit on Food Security adopted five principles for sustainable food security; one of the principles was to ensure rural development through ‘integrated actions addressing policy, institutions and people’.²¹³ These principles have been providing necessary guidelines for government actions in the related fields of food security. This

²⁰⁸ *The Universal Declaration of Human Rights*, GA Res 217A(III), UN GAOR, 3rd sess, U.N Doc. A/810 (Dec 10, 1948).

²⁰⁹ *International Covenant on Economic, Social and Cultural Rights*, GA Res. 2200A (XXI), 21 UN GAOR Supp no. 16 at 49, UN Doc. A/6316 (16 December 1966).

²¹⁰ *Universal Declaration on the Eradication of Hunger and Malnutrition*, GA Res 3180 (XXVIII).

²¹¹ World Food Summit, *Rome Declaration on World Food Security and World Food Summit Plan of Action* (13 November 1996) (Food and Agriculture Organization) <http://www.fao.org/wfs/index_en.htm>.

²¹² Ibid objective 3.5.

²¹³ ‘*Declaration of the World Summit on Food Security*’ WSFS 2009/2 (November 2009) para 2 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

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thesis will basically consider the recommendations made in the 1996 and 2009 summits on food security to identify the internationally agreed governance strategies for food security.

Similar to environmental and food security principles and guidelines, international policy responses have been providing guidelines for strengthening local governance. The Commonwealth Principles on Good Practice for Local Democracy and Good Governance provided at the Commonwealth Local Government Conference²¹⁴ in 2005 (also known as the Aberdeen Agenda), the Second United Nations Conference on Human Settlements (Habitat II)²¹⁵ as well as the ‘International Guidelines on Decentralization and the Strengthening of Local Authorities’²¹⁶ have provided guidelines for strengthening local governance.

The report of the IPCC (basically the AR5) and the FAO provide up-to-date information about the impacts of climate change on food security. Although there are other sources and much research available on the impacts of climate change, this research mainly refers to the AR5 for understanding the current and future impacts of climate change for its global popularity as a recognized source for climate change related information.

The international policy responses, described above, provides a basis for developing principles and guidelines for strengthening local government actions related to climate change and food security.

V CHAPTER OUTLINE

The thesis has seven chapters:

Chapter 1 gives an overview of the thesis by specifying the research questions, background, importance and methodology.

Chapter 2 addresses a part of the first research question what are the future roles of local government to address climate impacted food security? The future roles of local government will be extracted from the recommendations of the FAO, the AR5 of the IPCC and declarations of some

²¹⁴ In 2005 the Commonwealth Local Government Conference at Aberdeen, Scotland provided a set of principles for good local government for the Commonwealth member states that is known as ‘Commonwealth principles on good practice for local democracy and good governance’.

²¹⁵ *United Nations Conference on Human Settlements (HABITAT II)*, UN Doc A/Conf. 165/14 (7 August, 1996).

²¹⁶ ‘International Guidelines on Decentralization and Strengthening of Local Authorities’ (Guideline, UN-HABITAT, 2007) < http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

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international policy responses and will be summarized. The chapter will also provide definitions of various terminologies used in this thesis, such as climate change, food security and governance. The chapter identifies the major impacts of climate change on each pillar of food security. This has been done by reviewing climate change and food security literature (particularly the works of the IPCC and the FAO).

Chapter 3 seeks answers to the remaining part of the first research question what international legal and institutional principles and guidelines have been recommended to strengthen the future roles. For this, the chapter focuses on legal and institutional strategies that are recommended by international policy responses to strengthen the future role of local government in climate impacted food security. Legal and institutional principles and guidelines will be developed from the governance strategies recommended by international policy responses.

Chapter 4 examines the role of local government in food security and climate change in Australia and Indonesia, as well as the legal and institutional principles and guidelines that have been adopted in these two countries. The aim of this chapter is to address the second research question and develop a practical understanding of the national governance approaches and the appropriateness of international legal and institutional principles and guidelines in developed and developing countries. The lessons learned from this chapter will then be applied to Bangladesh in the following chapter.

Chapter 5 focuses on Bangladesh, describing the current policy, legal and institutional settings to address food security and climate change impacts as well as role local government. This will focus on the remaining part (Bangladesh) of the second research question. The chapter proceeds by analyzing the adequacy of existing local government laws, food security and climate change policies, laws and strategies having regard to the identified legal and institutional principles and guidelines.

Chapter 6 addresses the final research question This chapter provides a summary of the findings in relation to the research questions in the previous chapters. This chapter recommends approaches to strengthen local government roles in climate impacted food security, particularly in the Bangladesh, through legal and institutional principles and guidelines derived from international policy responses and national approaches in the selected countries.

Chapter 7 provides a short review of the findings in this thesis and concluding remarks.

**CHAPTER 2: DEFINITIONS, CONCEPTS AND FUTURE ROLE OF LOCAL GOVERNMENT IN
CLIMATE IMPACTED FOOD SECURITY**

I INTRODUCTION

Food security, climate change and governance are the three basic concepts of this research. Climate change matters cover vast areas of interdisciplinary issues such as climate change, the science behind climate change, present and future impacts on various sectors and response mechanisms of both mitigation of and adaptation to climate change. Similarly, food security is also influenced by multiple social, environmental, economic and political factors related to food availability, access and utilization.¹ Governance is another area that encompasses governance of various levels, issues, theories and strategies involving a wide range of government and non-government stakeholders. However, the scope of this research is limited to the climate change impacts on food security, adaptation actions and improving local governance by strengthening local government. Therefore, this chapter will discuss the concepts within this scope of the research and will also provide essential definitions that are useful for this research to understand the three concepts.

Another major objective of this chapter is to investigate the first part of the first research question i.e. what are the future roles local government can play to address climate impacted food security. This is an important issue for this research because many legal and institutional strategies for local level adaptation to climate impacted food security, recommended by international policy responses, are based on the future roles of stakeholders that include local government. This chapter will refer to the recommendations made by the Intergovernmental Panel on Climate Change (IPCC), the Food and Agriculture Organization of the United Nations (FAO) and some major international policy responses about the future roles of local government to address climate impacted food security.

This chapter will discuss the food security concept by defining the four pillars of food security², identifying the factors influencing the four pillars, discussing the importance of climate change in the global and local dimensions of food security, defining sustainable development in food security

¹ Polly J. Ericksen, 'Conceptualizing Food Systems for Global Environmental Change Research' (2008) 18 *Global Environmental Change* 234, 234.

² The four pillars of food security are: 1) availability, 2) access, 3) utilization and 4) stability. These four pillars are described in the *Declaration of World Summit on Food Security* held in 2009; see, '*Declaration of the World Summit on Food Security*' WSFS 2009/2 (November 2009) para 2 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

and the implication of sustainable development goals (provided by the United Nations Sustainable Development Summit 2015) in climate impacted food security. The discussion on climate change will focus on the impacts of climate change on the four pillars of food security with reference to the impacts in Bangladesh. The discussion on climate change will also define vulnerability and resilience in relation to climate impacted food security. The governance of climate impacted food security will be the focus of governance concepts. This chapter will provide a brief definition of local governance, local government and food security governance in this context. This chapter will also provide a brief discussion about general governance theories and principles such as the principle of subsidiarity, decentralization and adaptive governance, promoting local governance and their relation to strengthening the local government role in climate impacted food security. Finally, this chapter will identify the future roles of local government in climate impacted food security through discussing the recommendations made by the IPCC, the FAO and some other major international policy responses.

II DEFINITIONS AND CONCEPTS USED IN THIS RESEARCH

A Food Security

Food security is one of the key concepts of this research. Food security is ‘when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life’.³ This definition indicates four basic pillars (or basic areas) of food security; food availability, food access, food utilization and food stability.⁴ This is a popular definition of food security which is generally referenced in many international policy responses and national legal frameworks. The Fifth Assessment Report (AR5) of the IPCC acknowledges the importance of the four pillars of food security for addressing the impacts of climate change.⁵ In Bangladesh, the legal framework for food security and climate

³ This is the latest internationally accepted definition of food security adopted in the World Summit on Food Security 2009. The World Summit on Food Security was held in Rome, Italy in 2009 and was organized by the Food and Agriculture Organization of the United Nations. The Summit adopted the Declaration of the World Summit on Food Security that provided the definition of food security; see World Summit on Food Security ‘*Declaration of the World Summit on Food Security*’ WSFS 2009/2 (November 2009) para 2.

<http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

⁴ ‘*Declaration of the World Summit on Food Security*’ WSFS 2009/2 (November 2009) para 2

<http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

⁵ John R Porter et al, ‘Food Security and Food Production Systems’ in Christopher B Field et al (eds.) *Climate Change 2014 Impacts, Adaptation, and Vulnerability Part A Global and Sectoral Aspects Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014) 490-504.

change does not provide any definition of food security, however, the importance of the four pillars of food security are evident. The goals and objectives of the Bangladesh National Food Policy (NFP) indicate the importance of the four pillars.⁶ Other major policies for food security in Bangladesh are basically based on the objectives and goals set in the NFP.⁷ This thesis adopts the abovementioned definition of food security for the purpose of this research. The four pillars of food security will be referred to understand the impacts of climate change.

The processes and the infrastructures required to meet food security are important to understand a food system.⁸ This may involve food production systems (growing, harvesting, hunting), farming methods, storing, transporting, retail and wholesale marketing, import and export, trading systems, bartering methods, different aspects of consuming food as well as disposal of waste.⁹ Therefore, the factors that influence the proper functioning of a food system are important to understand. Table 2.1 provides a summary of the factors under each of the four pillars of food security. The following section also provides a brief definition of the four pillars.

1 *Four Pillars of Food Security*

(a) *Food Availability*: Food availability of a country generally includes a national food account that is a sum of total food available through domestic production, international trade (food import/export) and food aid. Therefore, domestic food production and the supply of food through different trade mechanisms are the two major factors for food availability at the national level. In Bangladesh, local food availability is generally described under household food security conditions that are described by finding each household's capacity to produce or acquire food, household food stocks and availability of food at local markets.¹⁰ Therefore, factors that influence food availability at the household level in Bangladesh are important for local food security.

⁶ Government of Bangladesh, *National Food Policy (NFP)* (Ministry of Food, 2006), 2 <<http://www.mofood.gov.bd/>>; The NFP stresses on ensuring food security for all people for all time which is an indication of the existence of the fourth pillar i.e. 'stability'; it also sets its three goals for food security in Bangladesh to address the first three pillars (availability, access and utilization).

⁷ See, eg. Government of Bangladesh, *National Food Policy Plan of Action 2008-2015(POA)* (Ministry of Food, 2008) 8 <<http://fpmu.gov.bd/agridrupal/policy-and-planning-frameworks>>; Government of Bangladesh, *Bangladesh Country Investment Plan: A roadmap towards investment in agriculture, food security and nutrition (CIP)* (Ministry of Food, 2011) 9 <<http://fpmu.gov.bd/agridrupal/policy-and-planning-frameworks>>.

⁸ Porter et al, above n 5, 490.

⁹ Sonja J. Vermeulen, Bruce M. Campbell and John S.I. Ingram, 'Climate Change and Food Systems' (2012) 37 *The Annual Review of Environment and Resources* 195, 197.

¹⁰ NFP, above n 6, section C.

Table 2.1: Four pillars of food security and associating factors

Food Availability	
Areas of food availability	Factors that influence food availability
Production	Quantity and quality of accumulated agricultural assets (amount of agricultural land, number of livestock and waterbody for fishing), opportunities to produce and gather food (opportunities to farming, hunting and fishing), availability and access to agricultural inputs (fertilizer, pesticides, labour and technology), intensity and impacts of natural disasters and diseases.
Distribution	Transport services and corresponding infrastructures (road, railway, and waterway), storage facilities, markets, public safety net programs, food aid, trade policies, food import, remoteness of the locality, gender and age
Exchange	Income levels and purchasing power, informal social arrangements for barter, local customs for giving and receiving gifts, markets, terms of trade, currency value, food price, employment opportunities,

Food Access	
Areas of food access	Factors that influence food access
Affordability	Money, land labour and other household resource, income level, food price, poverty, employment opportunity,
Allocation	Infrastructure (road, railway and waterway), density of markets and shops, remoteness of the locality, transport services,
Preference	Religion, local customs, type of food, diversity of food, food aid policies, land use policies, social safety net policies, food governance, age and gender, health condition

Food Utilization	
Areas of food utilization	Factors that influence food utilization
Ability of Utilization	Water, sanitation, nutritional failure, prevalence of diseases
Quality of Utilization	Knowledge about nutritious food and food processing, food safety policy and enforcement, condition of household, poverty, food price, gender and age, health condition
Nutritional Value	Diversity of food, disease incidence, cooking facilities, clean water and sanitation practices
Social Value	Special food, local food, organic food, local customs
Food Safety	Policies and regulations, food processing and packaging procedures, hygiene, food borne diseases,
Bio Utilization	Safety and hygiene
Physical Utilization	Cooking utensils, cuisine patterns, adequate housing, knowledge, family structure and work load

Food Stability		
Areas for food stability	Explanation	Factors influencing food stability
Human Asset	Qualities for individual or household	Education, knowledge generation, access to information, health consciousness,
Natural Asset	Conditions for stability of natural world	Functionality of ecosystem services, prevalence of climate induced hazards, environmental policy, climate change policy
Financial Asset	Conditions that influence financial	Employment generation, income, credit facility, insurance, alternative income source, aid program Note a word is missing from the column to the left of this comment
Social Asset	Social Conditions for stability	Trust and reciprocity, social network, food habits, political stability, health care, social safety net program, food aid programs, disaster preparedness program, adaptation program, local knowledge generation,
Physical Asset	Physical elements that influence stability	Basic infrastructure, irrigation facility, agriculture input supply, availability of technology, disaster management,

Source: See, e.g., Renzaho, Andre M. N. and David Mellor, 'Food security measurement in cultural pluralism: Missing the point or conceptual misunderstanding?' (2010) 26(1) (Jan 2010) *Nutrition* 1, 5; Ericksen, Polly J., 'Conceptualizing Food Systems for Global Environmental Change Research' (2008) 18 *Global Environmental Change* 234, 239-241; Rebecca White, Beth Stewart and Patricia O'Neill, 'Access to Food in a Changing Climate' (DEFRA, 2010) <http://randd.defra.gov.uk/Document.aspx?Document=FO0424_10039_FRP.pdf>; 'Climate Change and Food Security: A Framework Document' (Food and Agriculture Organization of the United Nations, 2008) 4, 25, 26<<ftp://ftp.fao.org/docrep/fao/010/k2595e/k2595e00.pdf>>.

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Table 2.1 shows the factors that are associated with food availability. The factors are distributed in three areas: i) food production, ii) food distribution and iii) food exchange.¹¹

(b) *Food Access*: Food access includes both physical and financial access to food and how food is distributed.¹² A number of factors are associated with food access such as income levels, food prices, location and density of food markets and shops, infrastructure, law and policies, social, economic and political conditions. Table 2.1 shows the factors that are associated with food access under three areas; affordability, allocation and preference.¹³ In Bangladesh, local food access is dependent on household income, assets, borrowing capacity, transfer of income and food aid.¹⁴

Amartya Sen viewed access to food under the concept of ‘entitlement approach’ and argued that a failure in ensuring access to food results in food insecurity (i.e. starvation).¹⁵ The ‘entitlement approach’ under the concept of access to food refers to the indicators like governance, law and policy as well as household resources and their relationships as determinants of food access. The FAO has also acknowledged this concept of food access by describing it as ‘a measure of the ability to secure entitlements’¹⁶ and emphasized that only production and supply of food are not enough for ensuring food security, rather the ‘entitlement that determines people’s access to food’¹⁷ is also a determining factor. The FAO placed importance on indicators like allocation mechanisms and, affordability as well as cultural and personal preferences to access food.¹⁸

(c) *Food Utilization*: According to the FAO, food utilization is ‘the use of food and how a person is able to secure essential nutrients from the food consumed.’¹⁹ The FAO identified different

¹¹ These three areas were identified by Polly J. Ericksen which give a framework for understanding food availability; See, Ericksen, above n 1, 239-241.

¹² Andre M. N. Renzaho and David Mellor, 'Food Security Measurement in Cultural Pluralism: Missing the Point or Conceptual Misunderstanding?' (2010) 26(1) (Jan 2010) *Nutrition* 1, 5.

¹³ Ericksen defined food access by categorizing the factors into these three areas; see Ericksen, above n 11, 239-241.

¹⁴ NFP, above n 6.

¹⁵ Amartya Sen defined entitlement approach as ‘A person starves *either* because he does not have the ability to command enough food *or* because he does not use this ability to avoid starvation. The entitlement approach concentrates on the former, ignoring the latter possibility...Ownership of food is one of the most primitive property rights, and in each society there are rules governing this right. The entitlement approach concentrates on each person’s entitlements to commodity bundles including food and views starvation as resulting from a failure to be entitled to a bundle with enough food’; see Amartya Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford: Clarendon Press New York: Oxford University Press, 1981) 45.

¹⁶ Food and Agriculture Organization, *Climate Change and Food Security: A Framework Document* (Rome, 2008) 21 <<ftp://ftp.fao.org/docrep/fao/010/k2595e/k2595e00.pdf>>.

¹⁷ *Ibid* 20.

¹⁸ *Ibid* 20.

¹⁹ *Ibid* 21.

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factors influencing food utilization such as nutritional value, composition, preparation, social value of food, and safety of food supply. There are other factors that may also influence food utilization. Some of these factors are diversity of food, disease incidence, cooking facilities, clean water, sanitation practices as well as the social and cultural aspects of consumption such as food for special events, local food, policies and regulations, food processing and packaging procedures. Malnutrition is a major concern for Bangladesh local food security that is associated with food utilization factors.²⁰ Access to safe and nutritious food, health care, food security education, sanitation facilities and safe water are some of the major factors for food utilization in Bangladesh. Table 2.1 summarizes the factors influencing food utilization.

(d) Food Stability: The FAO refers to ‘food stability’ as the ‘temporal availability of, and access to, food’.²¹ ‘Stability’ has also been described as a system or structure that sustains any unit’s ability to withstand sudden incidences that might affect food security.²² Renzaho and Mellor identified five types of ‘assets’ that are essential to withstand such sudden incidences and ensure food stability: 1) human assets, 2) natural assets, 3) financial assets, 4) social assets, and 5) physical assets.²³ Table 2.1 showed the factors under each of these assets. It is evident that a number of factors under these assets are also important factors for other pillars of food security. Some of these factors include physical infrastructure, social safety net programs, government policies and income and employment generation activities. Therefore, it can be said that food stability is closely related to the stability of the other three pillars of food security. As mentioned earlier the Bangladesh legal and institutional framework for food security does not specifically mention food stability, however the food stability factors mentioned above (and in Table 2.1) may be relevant to address the urge to ensure food security for all people at all times mentioned in the National Food Policy 2006 of Bangladesh.²⁴

²⁰ NFP, above n 6.

²¹ Food and Agriculture Organization, above n 16.

²² Renzaho and Mellor, above n 12, 6.

²³ Ibid.

²⁴ NFP, above n 6.

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2 Global and Local Dimension of Food Security

(a) State of Food Insecurity of the World and Global Dimensions of Food Security

Since 1999, the FAO has been generating a yearly report titled ‘State of Food Insecurity of the World’ (SFIW).²⁵ The 2015 version of the SFIW stated a number of reasons for global food insecurity such as unstable food and energy prices, global economic recession, rise in unemployment rates, undernourishment, political instability and environmental hazards.²⁶ The report identified undernourishment as the major concern for present global food insecurity.²⁷ It is noteworthy that undernourishment is an issue of food utilization (the third pillar of food security). The report also provides a picture of undernourishment conditions in different regions of the world that shows that a significant difference exists in the number of undernourished people and prevalence rates among different regions.²⁸ Asia has the most undernourished people (511 million), while the highest numbers of undernourished people live in South Asian countries (281 million) and African regions have the highest prevalence rate of undernourishment (20 per cent) in the world.²⁹ However, Latin America and the Caribbean regions have the lowest number of undernourished people (34.3 million) and lowest prevalence rates (5.5 per cent).³⁰

SFIW 2015 showed that food insecurity in different regions of the world is different and is related to governance strategies. The reasons for severe food insecurity conditions in African regions are mainly due to increasing food prices, droughts, rapid growth of population and political instability.³¹ North and south African countries have shown significant success in addressing the impacts on food security, but the central and sub-Saharan countries have not taken enough measures to address the problems and have therefore become vulnerable to the impacts of these causes.³²

²⁵ The SFIW gives a general picture of global food insecurity conditions, reasons of food insecurity and also provide some guidelines for strategies to address the problems.

²⁶ Food and Agriculture Organization, *The State of Food Insecurity in the World: Meeting the 2015 International Hunger Targets: Taking Stock of Uneven Progress* (Rome, 2015) 9 < <http://www.fao.org/3/a-i4646e.pdf>>.

²⁷ The 2015 report of the SFIW found that worldwide around 795 million people were undernourished during 2014-16 period; Ibid 8.

²⁸ Food and Agriculture Organization, above n 26, 8-10.

²⁹ Ibid 8.

³⁰ Ibid 8.

³¹ Ibid 12-14.

³² Ibid 12-15.

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The reasons of persisting hunger in the South Asian region, particularly in India, (the highest number of undernourished people live in this region) are problems of management and administration of food related issues.³³ However, SFIW 2015 praised the Bangladesh success for producing effective food security policies to address food insecurity.³⁴ The eastern regions of Asia have also shown significant success in addressing food insecurity by bringing the benefits of accelerated economic growth to vulnerable people; similar success has been identified in central Asian regions as well as in Latin American countries where the benefit of economic growth along with a stable political situation as well as good food security policies have contributed to achieve success in addressing food insecurity.³⁵ However, the progress in western regions of Asia, particularly Iraq and Yemen, have stalled due to political instability, war, lack of information and a fragile institutional structure.³⁶

Climate change is emerging as another major threat to global food security particularly to the developing countries. SFIW 2015 states that natural disasters arising from climate change have impacted over 1.9 billion people living in the developing countries and caused damage to nearly half a trillion US dollars of assets over 2003-13 periods.³⁷ The report also estimates that people in developing countries and their assets are under the potential risks of future climate change impacts that could deteriorate the future food security conditions and halt the progress of current successes in addressing food insecurity.³⁸

The AR5 has also documented the impacts of climate change on global food security and reported it as a major concern for global and local food security.³⁹ The AR5 stated that ‘the impacts of climate change on food systems are expected to be widespread, complex, geographically and temporally variable, and profoundly influenced by socio-economic conditions’⁴⁰ According to the fourth and fifth assessment reports (AR4 & AR5) of the IPCC, regions at northern higher latitudes are experiencing an extended growing season while lower and mid latitudinal areas (such as the

³³ Ibid 15.

³⁴ Ibid 15.

³⁵ Ibid 15-17.

³⁶ Ibid 16.

³⁷ Ibid 40.

³⁸ Ibid 40.

³⁹ Christopher B Field et al, ‘Summary for Policymakers’ in Christopher B Field et al (eds.) *Climate Change 2014 Impacts, Adaptation, and Vulnerability Part A Global and Sectoral Aspects Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014).

⁴⁰ Porter et al, above n 5, 490.

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Sahel region) are experiencing shorter growing seasons due to rises in temperature and changes in precipitation patterns.⁴¹ In the Philippines, a 15 percent decrease in rice yields has been observed due to a rise in temperature. Hay yields are also experiencing a decreasing trend in the United Kingdom due to global warming. Sub Saharan African countries have been experiencing irregular and frequent droughts and floods causing severe shortages of food due to agricultural damage.⁴² Similarly, Australia has recently experienced severe droughts and floods at the country's eastern region that have caused significant stress on its agriculture.⁴³ South Asian countries are experiencing the hardest stresses in crop yield due to climate change as well. Crops like maize, wheat and rice production are experiencing declining yields in this region.⁴⁴

Future food security will be dependent on 'securing food supply in response to changing and growing global demand.'⁴⁵ A report published by the European Union⁴⁶ identified a number of drivers that would influence future global food security dimensions. Some of the key drivers of future food security are:

1. Change in demography
2. More people in urban areas, more economic growth and more income would lead more people to come out of poverty
3. Increased food demand, change in food consumption (demand for meat, dairy and fresh products would increase compared to the demand of staple foods like rice and wheat)
4. Pressure on natural resources (more land would come under food production that could result in soil degradation, water scarcity)
5. Increased pressure on agriculture input and energy supply
6. Increased use of biofuel

⁴¹ See W.E Easterling et al, 'Food, Fiber and Forest Products' in M. L Parry et al (eds) *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, (Cambridge University Press, Cambridge, UK), 275; Porter et al, above n 5, 485.

⁴² S N Ngigi, 'Climate Change Adaptation Strategies: Water Resources Management Options for Smallholder Farming Systems in Sub-Saharan Africa' (The MDG Centre for East and Southern Africa and the Earth Institute at Columbia University, 2009)2.

⁴³Anthony S Kiem and Emma K Austin, 'Drought and the Future of Rural Communities: Opportunities and Challenges for Climate Change Adaptation in Regional Victoria, Australia' (2013) *Global Environmental Change*1.

⁴⁴ Gerald C. Nelson et al, 'Climate Change: Impact on Agriculture and Costs of Adaptation' (International Food Policy Research Institute, 2009)4.

⁴⁵ Albino Maggio, Tine Van Criekinge and Jean Paul Malingreau, 'Global Food Security 2030: Assessing Trends With View to Guiding Future EU Policies' (European Union, 2015)3 <<https://ec.europa.eu/jrc>>.

⁴⁶ Ibid.

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7. Impact of climate change; and
8. Food prices.⁴⁷

The above discussion on the global dimension of food security shows that present and future global food security can be influenced by many causes. It varies from region to region and is dependent on the impacts of the causes of food insecurity imposing on a region as well as the capacity of governance strategies to address food security.

(b) Food Insecurity Dimension at the Local Level

Food security dimensions at the local level are diverse. A study on food security concern and needs of a local community in the New York, USA reveals that local communities are more concerned about local food markets, education about nutritional aspects, reflection of family and community values in food policies and other legal frameworks and options for economic growth.⁴⁸ The study also states that community concerns about food and nutritional security may vary according to the composition of community members and diverse needs of individuals.⁴⁹ Such findings emphasize understanding the composition of local communities and the need to understand the local dimensions of food security.

The report of the World Commission on Environment and Development (WCED) identified three challenges for sustaining local food security:

1. The challenges in agricultural production,
2. The livelihood challenges of the rural poor; and
3. The challenges in conserving the resources necessary for food production.⁵⁰

The report of the WCED also identified a number of difficulties that local level smallholder farmers had been facing. The difficulties were problems in land title, a lack of ability to extract benefits from government policies and advanced technologies and a lack of education, advice and

⁴⁷ Ibid 9-10.

⁴⁸ Christine McCullum et al, 'Use of a Participatory Planning Process As a Way to Build Community Food Security' (2002) 102(7) *Journal of the American Dietetic Association* 962, 966.

⁴⁹ Ibid 966-967.

⁵⁰ *Report of the World Commission on Environment and Development: Our Common Future*, UN GAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, chapter 5, para 44 < <http://www.un-documents.net/ocf-05.htm#IV>>.

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equipment.⁵¹ The report also noted the failure of government programs to address the needs of the women farmers in many developing countries.⁵²

At a peri-urban level, sustainable food security depends on challenges like ensuring the availability of pure drinking water (food utilization), sufficient waste water treatment facilities (food utilization), ability to adapt climate change impacts (food stability), the capacity to provide infrastructure (food access and stability), and sustaining biodiversity (food stability).⁵³

The impacts of climate change on local food security are complex and intertwined.⁵⁴ The complexities in local food security arise from the diverse needs for local community and their relationship with local impacts of climate change.⁵⁵ At the local level such complex relationship and corresponding adaptation actions are influenced by local knowledge, resources and networks along with assistance from government and other agencies.⁵⁶ Many of the adaptation actions taken by the rural people are based on past climate risk management experience.⁵⁷ Therefore, understanding local patterns of adaptation and local needs are important for an effective response to climate change. The IPCC in the AR5 has focused upon local adaptation actions for addressing climate change impacts that also include adaptation actions for food security.⁵⁸

The above discussion implies that the global and local dimensions of food security could be impacted by a number of different drivers. However, the impacts of climate change on both local and global food security are gaining significant attention. Therefore, an understanding of potential climate change impacts on food security is an important part of developing governance strategies for adaptation. The following section discusses the significant impacts of climate change on food security.

⁵¹ Ibid Chapter 5.

⁵² Ibid annex, section 16-19.

⁵³ Hector Malano et al, 'Challenges and Opportunities for Peri-urban Futures' in Hector Malano et al (eds), *The Security of Water, Food, Energy and Liveability of Cities* (Springer, 2014)7.

⁵⁴ Purnamita Dasgupta et al., 'Rural Areas' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)485, 630.

⁵⁵ World Summit on Food Security 'Declaration of the World Summit on Food Security' WSFS 2009/2 (November 2009) para 2 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

⁵⁶ Dasgupta et al, above n 54,642.

⁵⁷ Porter et al, above n 5, 513.

⁵⁸ Field et al, above n 54, 25-28.

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3 Sustainable Food Security and Sustainable Development Goals

Sustainable development is ‘development that meets the needs of the present without compromising the ability of the future generations to meet their own needs’.⁵⁹ The WCED stated the importance of linking environmental concerns with every development initiative for sustainable development, including food security⁶⁰ which was also reflected in the principle 4 of the Rio Declaration on Environment and Development at the United Nations Conference on Environment and Development (UNCED) in 1992.⁶¹ The WCED recommended a number of strategies for sustainable food security that require proper government and international interventions in policy arenas, developing a resource base for sustainable food production, developing productivity bases (technology, human resource, agriculture input) and ensuring equity in food production and distribution (with a focus on the rural poor).⁶²

Sustainable development is becoming a major concern for food security because of the evidence from past and present experiences that unstable food production and food prices and natural and human induced disasters may cause food insecurity on both a local and global scale.⁶³ Sustainable food security can be defined from both the individual and the community point of view. At the individual level, sustainable food security is ‘physical, economic, social and ecological access to balanced diets and safe drinking water, so as to enable every individual to lead a productive and healthy life in perpetuity.’⁶⁴ Sustainable food security at the community level can be defined as ‘a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes self-reliance and social justice.’⁶⁵ Therefore, both individual and community level sustainable food security demand a governance system that would ensure ‘sustainable food security’. The definition of sustainable development and sustainable food security together indicates that sustainable development in food security

⁵⁹ *Report of the World Commission on Environment and Development: Our Common Future*, UN GAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) chapter 2, para 1 < <http://www.un-documents.net/ocf-02.htm#I>>.

⁶⁰ *Ibid* chapter 2 and 5.

⁶¹ *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26 (vol.1); 31 ILM 874 (1992), principle 4.

⁶² *Report of the World Commission on Environment and Development: Our Common Future*, UN GAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) chapter 5 < <http://www.un-documents.net/ocf-05.htm#IV>>.

⁶³ M. S Swaminathan, 'Food Security and Sustainable Development' (2001) 81(8) *Current Science* 948, 948.

⁶⁴ *Ibid* 949.

⁶⁵ Michael W. Hamm and Anne C. Bellows, 'Community Food Security and Nutrition Educators' (2003) 35 *Journal of Nutrition Education and Behaviour* 37, 37.

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requires such actions that would meet the demands of safe, adequate and nutritious food security of the present generation without compromising the needs of future generation.

The United Nations Sustainable Development Summit (UNSDS), held in 2015 acknowledged the incorporation of food security elements into the sustainable development agenda.⁶⁶ The UNSDS sets 17 goals for achieving sustainable development by the year 2030 in which ending hunger, achieving food security and nutrition and promoting sustainable agriculture is one of the goals. Goal two of the SDG specifically mentions ending hunger through achieving food security, improving nutrition and promoting sustainable agriculture.⁶⁷ Goal two sets a number of targets to be achieved by 2030. These include ensuring safe, nutritious and sufficient food to all, especially to vulnerable people; increasing productivity and income of small holder farmers through improving land rights, agricultural input management, finance and knowledge and employment generation; ensuring sustainable agriculture, strengthening adaptive capacity to climate change; managing genetic diversity of food through various modern research methods and utilizing traditional local knowledge; increasing investment in local infrastructure and production services and improving food commodity markets.⁶⁸

Some of the other SDGs also specified actions for food security. Goal six of the SDG specifically mentioned availability and sustainable management of water and sanitation for all,⁶⁹ which is important for food security and is under the threat of climate change.⁷⁰ The SDG sets targets like access to drinking water, adequate and equitable sanitation and hygiene, improving water quality, increasing water use efficiency, implementing integrated water resource management at all levels, protecting natural resources, improving and increasing cooperation among stakeholders and ensuring participation of local communities in water and sanitation management.⁷¹ Goal eight focuses upon employment generation, particularly at the local level,⁷² Goal 12 focuses upon

⁶⁶ *Draft Outcome Document of the United Nations Summit for the Adoption of the Post-2015 Development Agenda*, 69th sess, Agenda Item 13 (a) and 115, UN Doc A/69/L.85 (12 August 2015, adopted 25 September 2015) paras 54-59.

⁶⁷ *Ibid.*

⁶⁸ *Ibid* paras 15-16.

⁶⁹ *Ibid* para 18.

⁷⁰ Porter et al, above n 5, 485.

⁷¹ *Draft Outcome Document of the United Nations Summit for the Adoption of the Post-2015 Development Agenda*, above n 66 para 19.

⁷² *Ibid* paras 19-20.

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sustainable consumption and production through efficient natural resource management,⁷³ and Goal 15 places importance on protecting, restoring and promoting natural resources, including ecosystems.⁷⁴ Goal 13 of the SDG, in particular, sets out aims for combating climate change and associated impacts. To achieve this goal, the targets include integrating climate change into the national legal frameworks, improving education, awareness building programs and institutional capacity and promoting mechanisms that would focus on vulnerable communities.⁷⁵

Goal 16 focuses upon institutional development for achieving sustainable development at various sectors including food security. The targets include developing accountable, transparent and effective institutions; ensuring responsive and representing decision making; ensuring access to justice and information; strengthening national institutions and improving national legal frameworks.⁷⁶ Goal 17 of the Agenda sets some targets to achieve the goals. Some of the targets are strengthening resource mobilization; the transfer of technologies and enhancing multi-stakeholder partnerships.⁷⁷ Therefore all of the 17 sustainable development goals set in the UNSDS have implications for sustainable food security.

B *Climate Change*

‘Climate’ refers to average weather which is calculated over a long period of time (usually over a range of 30 years as defined by the World Meteorological Organization). The basic parameters of climate are temperature, pressure, humidity, wind, presence of clouds, precipitation and the occurrence of special phenomena, such as thunderstorms, dust storms, tornados and others.⁷⁸ The average variations in these parameters over 30 years of time period are known as ‘climate variability’. Many of these parameters are related to food production. Change in seasons, temperature, humidity and precipitation are well known influencing factors of food production. Therefore, climate variability is a natural phenomenon and closely related to food security, particularly with food production.

⁷³ Ibid para 23.

⁷⁴ Ibid para 25.

⁷⁵ Ibid paras 23-24.

⁷⁶ Ibid 26.

⁷⁷ Ibid 28.

⁷⁸ Ulrich Cubasch et al., ‘Introduction’ in Thomas F. Stocker et al., *Climate Change 2013: Physical Science Basis* (Cambridge University Press, 2013) 119, 123.

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According to Article 1 of the United Nations Framework Convention on Climate Change (UNFCCC) "climate change" means,

a change in climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.⁷⁹

Therefore, climate change is not nature's usual variations, but rather the unusual changes in climate that are attributed from anthropogenic sources. It is evident from the IPCC AR5 report that the climate of the earth has been changing beyond its normal trends, over the last century, due to anthropogenic activities.⁸⁰

Climate change is impacting global food security.⁸¹ The IPCC and the FAO have projected a number of impacts on the four pillars of food security.⁸² Some of the impacts include losses in production, lower income, increasing food price and price volatility, damaging infrastructure and health and nutritional losses.⁸³ The following discussion provides some information on the impacts of climate change on the four pillars of food security.

1 Impacts of Climate Change on the Four Pillars of Food Security

The interrelationship between food security and climate change has been well articulated in international fora. It was first internationally acknowledged at the 1974 World Food Conference.⁸⁴ The Conference admitted the growing environmental impacts as one of the major threats to national and international food security.⁸⁵ The second such conference (World Food Summit) was held in 1996, which also observed environmental degradation as one of the major causes of food

⁷⁹ *The United Nations Framework Convention on Climate Change*, 1771 UNTS 107 (entered into force 21 March, 1994) art I.

⁸⁰ See Lisa V. Alexander et al, 'Summary for Policymakers', in Thomas F. Stocker et al., *Climate Change 2013: Physical Science Basis* (Cambridge University Press, 2013) 3.

⁸¹ Porter et al, above n 5, 488.

⁸² See, eg, Field et al, above n 39, 18; Food and Agriculture Organization, above n 16.

⁸³ Food and Agriculture Organization, above n 26, 40.

⁸⁴ The World Food Conference 1974 was held in Rome and organized by the Food and Agriculture Organization of the United Nations. The Conference adopted the Universal Declaration on the Eradication of Hunger and Malnutrition in recognizing the growing hunger situations in developing countries. The declaration outlined global policy for eliminating hunger and malnutrition. See, *Report of the World Food Conference, Rome, 5-16 November, 1974*, E/CONF.65/20 (United Nations, 1975).

⁸⁵ *Report of the World Food Conference, Rome, 5-16 November, 1974*, E/CONF.65/20 (United Nations, 1975).

insecurity along with poverty.⁸⁶ However, the relationship between climate change and food security became more visible after the IPCC started to publish its scientific reports (assessment reports) on climate change. The IPCC, in AR5 has shown *high confidence*⁸⁷ about impacts of climate change on food security.⁸⁸ The FAO has also acknowledged the growing impacts of climate change.⁸⁹ The impacts of climate change on food security that are authoritatively illustrated in various IPCC and FAO publications, as well as in scientific literature on climate change and food security, are discussed in the following sections to identify the major areas of food security that are under the threat of climate change.

The IPCC in AR5 has stated that all of the four pillars of food security (availability, access, utilization and stability) will be impacted by climate change to a varying extent.⁹⁰ This section will discuss the impacts of climate change on these four pillars of food security with particular focus on the impacts at local level.

(a) Impact on Food Availability

One of the major concerns of the impact of climate change on food security is its impact on food production, which is the main aspect of food availability. Changes in temperature and precipitation patterns will decrease average global crop production, despite increased production in some regions.⁹¹ Global average production of major staple crops like maize, wheat, rice and soybean will decrease. The effects of CO₂ (carbon dioxide) concentration on crops due to climate change are mixed. Some types of crops may grow faster due to increased CO₂ concentration in the atmosphere (wheat, rice, cotton, soybean, sugar beets and potato). Production of some crops in some higher latitudinal countries may also increase due to increased temperature.⁹² However, other major crops (corn, sorghum, sugarcane) may not get any benefit out of increased CO₂

⁸⁶ The second food conference was also held in Italy and organized by the FAO of the UN. The conference was known as World Food Summit 1996. See, *Rome Declaration on World Food Security and World Food Summit Plan of Action* (13 November 1996) World Summit on Food Security, Food and Agriculture Organization of the United Nations <http://www.fao.org/wfs/index_en.htm>.

⁸⁷ The term 'Confidence' is defined by the IPCC as 'the validity of a finding synthesizes the evaluation of evidence and agreement. Levels of confidence include five qualifiers: very low, low, medium, high, and very high.' See Field et al, above n 39.

⁸⁸ Porter et al, above n 5, 488-489.

⁸⁹ See, eg, Food and Agriculture Organization, above n 16.

⁹⁰ Porter et al, above n 5, 502.

⁹¹ See, e.g, Gerald C. Nelson et al, 'Climate Change: Impact on Agriculture and Costs of Adaptation' (International Food Policy Research Institute, 2009); Porter et al, above n 5, 488.

⁹² Porter et al, above n 5, 488-489.

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concentration and temperature.⁹³ Pests, weeds and diseases are always major threats to crop production. Scientific research has also found a correlation between the increase in pests, weeds and diseases and climate change.⁹⁴ Extreme Weather Events (EWEs) will impact food production, particularly immediately and soon after the event.⁹⁵ There are also concerns about the possibility of adapting to the impacts of increased EWEs on food production.⁹⁶

Marine fisheries will also be affected by climate change.⁹⁷ Changes in sea water temperature and corresponding damage in coral reefs will negatively affect availability of marine fisheries.⁹⁸ More than 90 per cent of the people who work in this sector are involved in small scale fisheries and live in developing countries.⁹⁹ Any negative change in the availability in marine fisheries may affect their livelihood and impact food security. Although there is little evidence available about the impact of climate change on inland fresh water fisheries, there is a growing concern on changes in fish composition in inland fresh water fisheries due to variations in temperature and climatic events.¹⁰⁰ This may also impact the availability of fish for the countries which are mostly dependent on fresh water fisheries.

The fisheries sector is very important for Bangladesh food security. The sector contributes around four percent to the national gross domestic product (GDP), around 85 per cent of the total fish production comes from freshwater sources and the remaining fish are produced from marine sources. Approximately 11 per cent of the population of Bangladesh is involved in the fisheries sector for livelihood purposes.¹⁰¹ The AR5 reported that the Bangladesh fisheries sector is under the potential threat from the impacts of climate change.¹⁰² Therefore, any change in both marine and freshwater fisheries would significantly impact fish availability in Bangladesh as well as impact on the livelihoods of the people dependent on the fisheries sector.

⁹³ Ibid 488.

⁹⁴ Ibid 500.

⁹⁵ Ibid 488-489.

⁹⁶ Peter Droogers, 'Adaptation to Climate Change to Enhance Food Security and Preserve Environmental Quality: Example for Southern Sri Lanka' (2004) 66 *Agricultural Water Management* 15, 16.

⁹⁷ Porter et al, above n 5, 500.

⁹⁸ Ibid.

⁹⁹ Ibid.

¹⁰⁰ Ibid 500-501.

¹⁰¹ Government of Bangladesh, *Fisheries Statistical Report of Bangladesh 2014-15* (Department of Fisheries, May 2016, Volume 32) < <http://www.fisheries.gov.bd/>>.

¹⁰² Dasgupta et al, above n 54, 628.

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The relationship between livestock production and climate change is not much evident from the existing research.¹⁰³ However, the AR5 reported that factors like non availability of animal fodder and a decrease in grazing lands, due to direct and indirect influences of climate change, may have negative impacts on livestock productivity.¹⁰⁴

Soil is an important aspect for sustainable agriculture production.¹⁰⁵ One of the major reasons for soil degradation is the impact of climate change. Most of the physical soil degradation occurs due to the breakdown in soil structure by external forces like water, heat and air.¹⁰⁶ Prolonged rainfall, flooding and drought are some of the major causes of physical soil degradation that have links with climate change.¹⁰⁷ Soil may also degrade due to the depletion of chemical composition (e.g. reduced nitrogen) and biological materials. Removing plants, soil acidification and salinity intrusion are some of the examples that cause both chemical and biological degradation of soil.¹⁰⁸ Conversion of land for different types of use, deforestation and unsustainable cultivation practices are also responsible for soil degradation.¹⁰⁹

Water is another important element for sustainable agricultural production. The quality of water storage and availability largely determines yield variations.¹¹⁰ Agricultural systems dependent on rainfall for water availability and storage are more susceptible to change in rainfall pattern and amount due to climate change. The irregularity in rainfall pattern, as well as unsustainable water availability from the natural resources encourages irrigation practices for agricultural development. Currently, more than 60 per cent of global food comes from irrigated lands.¹¹¹ However, unsustainable irrigation practices may reduce quality and quantity of water in water bodies that could impact wildlife and fisheries habitats.¹¹² Excessive ground water extraction has

¹⁰³ Porter et al, above n 5, 494.

¹⁰⁴ Ibid 500-501

¹⁰⁵ Jerry L. Hatfield, 'Soil Degradation, Land Use, and Sustainability' in David D. Songstad, Jerry L. Hatfield and Dwight T. Tomes (eds), *Convergence of Food Security, Energy Security and Sustainable Agriculture* (Springer, 2014) 61, 62.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

¹⁰⁹ Ibid.

¹¹⁰ Ibid 70-71.

¹¹¹ Mahbub Alam et al, 'Impact of Technology and Policy on Sustainable Agricultural Water Use and Food Security' in David D. Songstad, Jerry L. Hatfield and Dwight T. Tomes (eds), *Convergence of Food Security, Energy Security and Sustainable Agriculture* (Springer, 2014) 75, 76.

¹¹² Ibid 78.

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caused arsenic contamination in ground water sources in Bangladesh, which has become a major health concern for the northern part of the country.¹¹³

Therefore, the above discussion reveals that the impacts of climate change on food availability are basically related to changes in food production because of the impacts on natural elements that are essential for food production. The major impacts of climate change on food production are summarized as.

1. Loss of major crop production
2. Decrease in freshwater and marine fisheries
3. Decrease in animal fodder and grazing land
4. Agricultural soil degradation
5. Scarcity of water for irrigation

‘Food availability’ in Bangladesh is also impacted by climate change. Land and soil quality of the coastal region of the country is deteriorating due to salinity intrusion arising from sea level rises and occurrences of mega cyclones like *Sidr and Aila*.¹¹⁴ Increased temperatures and changes in the precipitation pattern have had negative impacts on the production of major cereals like rice, wheat and maize in Bangladesh.¹¹⁵ The fisheries and livestock sector have also been impacted. Increased salinity in inland fresh water bodies has damaged the habitat of freshwater fish and, also, the recurrence of floods has increased pollution in many water bodies.¹¹⁶

(b) Impact on Food Access

Food prices are an important issue for food security. Changes in food prices are one of the key determinants for food access.¹¹⁷ Decreased food production due to climate change will have an

¹¹³ See, eg, Blanca E. Jiménez Cisneros, ‘Freshwater Resources’ in Christopher B Field et al (eds) *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)229, 252.

¹¹⁴ See Government of Bangladesh, *Rio+20: National Report on Sustainable Development (NRSD)* (Ministry of Environment and Forests, Bangladesh, 2012) 41, 53, 66, <<http://www.moef.gov.bd/#>>; Government of Bangladesh *Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change (SNCB)* (Ministry of Environment and Forests, Bangladesh 2012)viii < <http://www.moef.gov.bd/#>>; Poh Poh Wong et al, ‘Coastal Systems and Low-Lying Areas’ in Christopher B Field et al. (eds), *Climate Change 2014 Impacts , Adaptation and Vulnerability Part A : Global and Sectoral Aspects* (Cambridge University press, 2014)361, 384.

¹¹⁵ See Government of Bangladesh, *National Adaptation Program of Action 2005 (NAPA)* (Ministry of Environment and Forest, Bangladesh, 2005) 14< <http://www.moef.gov.bd/#>>.

¹¹⁶ SNCB, above n 114, ix-x; Dasgupta et al, above n 54, 628.

¹¹⁷ Porter et al, above n 5, 501-502.

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impact on the price of food.¹¹⁸ This will have impact on food access, particularly on poor farming communities whose livelihoods basically depend on agriculture. According to AR5 the global food price may increase up to 84 per cent by 2050 due to the damage done by climate change on food production.¹¹⁹ The impact of increased food prices on poverty and food security is associated with the share of income that poor and vulnerable people spend on food.¹²⁰ Poor people spend most of their earnings on purchasing food; an increase in food price may put them in a situation to compromise either food quantity or quality, or other necessary aspects of their lives like education and health.¹²¹ A study by the World Bank estimated a net increase of 44 million people in extreme poverty in low and middle-income countries as a result of food price increases since June 2010.¹²²

The AR5 has shown that the impact of price volatility on food access of different types of households is not the same.¹²³ Subsistence farmers and food producing farming households (net sellers of food) will be less impacted by any increase in food prices. On the other hand, rural landless people, food producing farming households (net food buyers) and urban consumers will be highly impacted by such price rises.¹²⁴ Therefore, in a local community, the pattern and mixture of different types of households may determine the overall impact of price volatility on the community.

Livelihood sources are important indicators of food security. According to AR5, climate extremes would increase poverty in Bangladesh.¹²⁵ The livelihood of the rural poor in Bangladesh is very much exposed to climate change impacts.¹²⁶ Increased floods, salinity intrusion and inundation at the coastal areas as well as coastal cyclones are severely affecting the livelihood sources of coastal poor and rural communities.¹²⁷ According to the Agriculture Census 2008 of Bangladesh, most of

¹¹⁸ Ibid 502.

¹¹⁹ Ibid 489.

¹²⁰ Food and Agriculture Organization, *The State of Food Insecurity in the World: How does international price volatility affect domestic economies and food?* (Rome, 2011) < <http://www.fao.org/docrep/014/i2330e/i2330e.pdf>>.

¹²¹ Ibid.

¹²² M. Ivanic and W. Martin, 'Implications of Higher Global Food Prices for Poverty in Low-income Countries' (2008) *Agricultural Economics*, 39, 405-416.

¹²³ Porter et al, above n 5, 503.

¹²⁴ Ibid.

¹²⁵ Dasgupta et al, above n 54, 633.

¹²⁶ See, NAPA, above n 115, 17; Ainun Nishat, *Protocol for Monitoring of Impacts of Climate Change and Climate Variability in Bangladesh* (IUCN, 2011) 141; SNCB, above n 114, xi-xii.

¹²⁷ NAPA, above n 115, 17; Government of Bangladesh, *Bangladesh Climate Change Strategy and Action Plan (BCCSAP)* (Ministry of Environment and Forests, Dhaka, 2009)16 < <http://www.moef.gov.bd/#>>; NRSB, above n 114, 50; Wong et al, above n 114, 366.

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the farmers are either smallholder farmers (farm holding size 0.05-2.49 acres) or landless farmers.¹²⁸ Therefore, these people will be mostly affected by climate change impacts because of their limited resources to cope with the impacts. Climate change would also increase EWEs in Bangladesh. EWEs, such as floods and storms would damage rural and urban infrastructure like roads and markets Bangladesh,¹²⁹ resulting in a negative impact on food affordability.

The above discussion reveals the fact that the impacts of climate change will mainly be on livelihood options of poor people living at the local level. These impacts will be felt through:

1. Increases in food price
2. Loss of livelihood sources (assets, agricultural land, water bodies, forests, local jobs); and
3. Damage to infrastructure.

(c) Impact on Food Utilization

Nutrition is an essential part to understanding food utilization. As mentioned earlier, malnutrition is a worldwide major food security concern,¹³⁰ and climate change may further deteriorate nutritional conditions.¹³¹ The impacts of climate change, particularly on livelihoods, may influence poor households to reduce calorie intake and choose less nutritional food.¹³² Calorie intake will significantly decrease in developing countries in an increased climate change impact scenario and, particularly, child nutritional conditions in the poorer countries will deteriorate.¹³³ The vulnerable people to climate change may change their consumption pattern to adapt to the adverse situation arising from income loss and price hikes. This will have impacts on the nutritional and energy intake aspects of these people. Also, a recurrence of this situation may have a permanent impact on their health.¹³⁴ Climate change may impact on micronutrient content of specific crops as well as influence diseases to grow.¹³⁵ Warmer climate may influence pathogens¹³⁶ to grow. It is evident

¹²⁸ Government of Bangladesh, *Census of Agriculture 2008: Structure of Agricultural Holdings and Livestock Population* (Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, 2010).

¹²⁹ SNCB, above n 114, xi.

¹³⁰ Food and Agriculture Organization, above n 26.

¹³¹ Field et al, above n 39, 19.

¹³² Porter et al, above n 5, 503.

¹³³ Nelson et al, above n 44, vii.

¹³⁴ Porter et al, above n 5, 502-505.

¹³⁵ Marshall Burke and David Lobell, 'Climate Effects on Food Security: An Overview' in David Lobell and Marshall Burke (ed), *Climate Change and Food Security: Adapting Agriculture to a Warmer World* (2010) 27.

¹³⁶ Joern Birkmann et al, 'A Selection of the Hazards, Key Vulnerabilities, Key Risks, and Emergent Risks Identified in the WGII Contribution to the Fifth Assessment Report' in Christopher B Field et al. (eds), *Climate*

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that in Australia and Europe *Salmonella*¹³⁷ related food poisoning is increasing because of warmer climate.¹³⁸ Some of the other impacts on food utilization are a shift in staple food preferences, shifting away from grain-fed livestock products, increased consumption of new food items, reduced consumption of wild foods and reduced quantity and variety of consumed food.¹³⁹

The availability of pure drinking water is an important factor for food utilization that would also be impacted by climate change.¹⁴⁰ The IPCC in AR5 has illustrated a series of impacts on drinking water arising from salinity intrusion, pollution, increased sediment, nutrient and pollutant loadings due to heavy rainfall, increased temperature, increased concentration of pollutants and disruption of treatment facilities due to flood.¹⁴¹

Food utilization concerns in Bangladesh includes challenges of providing safe drinking water, availability of safe water sources, increased risk to human health due to water borne diseases, increased crop disease and the resulting impact on nutritional conditions.¹⁴² Ground water sources in Bangladesh experience pollution during drier situation.¹⁴³

Therefore, the impacts of climate change on food utilization are mainly focused on the following problems:

1. Scarcity of pure drinking water
2. Loss of calorie and nutritional values in food intakes
3. Outbreak of diseases

Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects (Cambridge University press, 2014) 113,114.

¹³⁷ Salmonella is type of bacteria, grows in plants and causes problems to human health if salmonella affected plants are eaten. See, *Salmonella Information* < <http://www.salmonella.org/info.html>>.

¹³⁸ Burke and Lobell, above n 135, 28.

¹³⁹ Food and Agriculture Organization, above n 16, 42.

¹⁴⁰ See Field et al, above n 39, 14.

¹⁴¹ Christopher B Field et al., 'Technical Summary' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)35, 50.

¹⁴² SNCB, above n 114, xi; NRSD, above n 114, 57; BCCSAP, above n 126, 16.

¹⁴³ Blanca E Jimenez Cisneros et al., 'Freshwater Resources' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)229, 252.

(d) Impact on Stability

Stability of food security deteriorates when the availability, access and utilization of food security are impacted. Increased EWEs due to climate change and their permanent impact on the socio-economic conditions of vulnerable people have brought the concern about stability into focus. EWEs not only damage production, but also destroy roads and other facilities that destabilize the conditions of the key services for the poor, such as roads, electricity, sanitation, and drinking water. These facilities can be heavily disrupted due to extreme weather events caused by climate change, particularly in rural areas.¹⁴⁴ This basic infrastructure is an important indicator of food stability.¹⁴⁵ From a developing country context, refunctioning of these facilities takes time due to economic constraints. The slow recovery of basic infrastructure and services may affect the poor, particularly in rural areas where options for these services are limited.

There are also corresponding impacts of EWEs on stability. Recurrence of such events would discourage agricultural investment that may lead to agricultural production falls and price hikes.¹⁴⁶ Smallholder farmers are the most vulnerable in this situation. Repeated damage to agricultural production may discourage them from investing in agriculture and encourage participation in non-agriculture jobs.¹⁴⁷ Less food production and the resulting price hikes may lead the poor farmers to compromise with their food consumption quantity and quality as well as reducing expenditure in some major non-food sectors like health care and education.¹⁴⁸ Reduction in food production and consumption may also lead to reduced income generation and may further deteriorate food security conditions.¹⁴⁹ Wealthier people may liquidate their assets to adjust their lifestyle with price rises.¹⁵⁰ Increased EWEs and climate instability may increase insurance costs, particularly agriculture insurance in developed countries where insurance plays a major role in keeping stability. There is evidence about increased insurance costs due to the volatility in climate in many developed countries.¹⁵¹

¹⁴⁴ Porter et al, above n 5, 503.

¹⁴⁵ Renzaho and Mellor, above n 12, 6.

¹⁴⁶ Porter et al, above n 5, 505.

¹⁴⁷ Ibid 503.

¹⁴⁸ Ibid 485; see also Food and Agriculture Organization, *The State of Food Insecurity in the World: The Multiple Dimensions of Food Security* (Rome, 2013) 22<<http://www.fao.org/docrep/018/i3434e/i3434e00.htm>>.

¹⁴⁹ Porter et al, above n 5, 504.

¹⁵⁰ Porter et al, above n 5, 503.

¹⁵¹ Food and Agriculture Organization, above n 16, 39.

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Biological diversity is also another basic condition for food stability. It supplies the basic components of human diet and nutrition, contributes to food security, dietary diversity, nutrition and health, sustains agricultural ecosystems and supports rural livelihoods.¹⁵² However, the impacts of climate change on biological diversity are also evident. The AR5 has provided a range of impacts that climate change could do to damage biological diversity.¹⁵³

Bangladesh has been successful in disaster risk reduction, particularly in addressing sea storms. The fatality rate has been reduced significantly over the last two decades. This is because of the construction of cyclone shelters, improved cyclone preparedness programs including the development of forecasting and warning systems, the establishment of coastal volunteer networks, and coastal reforestation programs.¹⁵⁴ Despite Bangladesh's success in addressing disaster risk reduction procedures, climate change impacts on natural resources are huge. Climate change is adversely impacting biological diversity, soil and land resources, water and forest resources and damaging essential infrastructure for food security in Bangladesh.¹⁵⁵ Climate change is also reducing agriculture productivity in Bangladesh.¹⁵⁶ A study on the coastal farming communities in Bangladesh showed that the impacts of salinity intrusion and inundation of farm lands impacted the livelihood capacities of the coastal crop farmers and some instances leads to changes in livelihood patterns.¹⁵⁷ It is noteworthy that most of the agricultural activities in Bangladesh are conducted by smallholder farmers¹⁵⁸ and any adverse impact on agriculture would make these smallholder farmers conditions more unstable.

Therefore, the impacts on stability can be summarized as:

1. Loss of basic infrastructure (roads, markets, power supply, shelters)
2. Loss of investment in agriculture

¹⁵² Braulio Ferreira de Souza Dias, 'The Convention on Biological Diversity and Food Security, Nutrition and Genetic Resources' (Presentation, Food and Agriculture Organization) <<http://www.fao.org/fileadmin/templates/nr/documents/CGRFA/SE2015/CBD.pdf>>; Dasgupta et al, above n 54, 640.

¹⁵³ Dasgupta et al, above n 54, 640.

¹⁵⁴ Yoshiki Saito et al., 'Building Long-term Resilience from Tropical Cyclone Disasters' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)147, 148.

¹⁵⁵ BCCSAP, above n 127, 14-17; SNCB, above n 114, 14-24.

¹⁵⁶ Ranjan Roy et al, 'The Vision of Agri-Environmental Sustainability in Bangladesh: How the Policies, Strategies and Institutions Delivered?' (2013) 4 *Journal of Environmental Protection* 40).

¹⁵⁷ Nazmul Huq et al, 'Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories' (2015) 7(7) *Sustainability* 8437, 8446.

¹⁵⁸ Census of Agriculture 2008: Structure of Agricultural Holdings and Livestock Population, above n 128.

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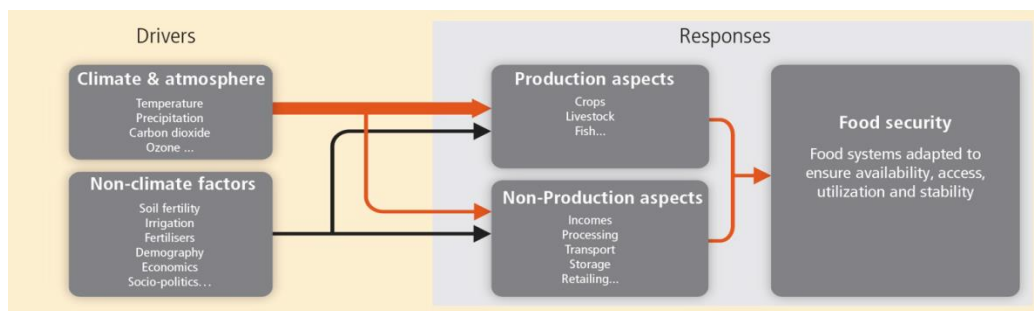
3. Decrease in farm numbers and farm related jobs
4. Biodiversity loss; and
5. Degradation of natural resources.

The above discussion illustrates that the impacts of climate change are evident on all four pillars of food security. The severity of the impacts of climate change on food security can be assumed through defining vulnerability and resilience of a system to the impacts of climate change. The following section provides a brief discussion on this.

2 Vulnerability and Resilience in Climate Impacted Food Security

To understand the vulnerability and resilience of food security, it is important to know the factors that influence food security. Table 2.1 showed a number of factors that are associated with the four pillars of food security. It is evident from the table 2.1 and the discussion of the impacts of climate change in the previous section that a number of factors of food security are associated with climate change and at the same time a number of factors are associated with non-climatic factors. The IPCC, in the Fifth Assessment Report (AR5) has illustrated the influence of both climatic and non-climatic factors on food security. Figure 2.1 shows the illustration.

Figure 2.1 The relationship among climatic and non-climatic drivers with food security.



Source: The IPCC Fifth Assessment Report of the IPCC¹⁵⁹

Figure 2.1 shows that climatic factors like floods, droughts, cyclones, sea level rise, salinity intrusion, and change in precipitation and water system and temperature variation have influence on both food production and non-production aspects of a food system. On the other hand, a food

¹⁵⁹ Figure 2.1 is reproduced from Porter et al, above n 5, 490. The figure shows the drivers affecting production and non-production elements of food systems. The thickness of the lines indicates that there is more evidence of the impacts of climatic factors on the production aspects are available compare to the availability of evidences of the impacts on non-production aspects.

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system could also be influenced by a number of non-climatic factors like physical geography (e.g. desert), remoteness, economic constraints and poverty, changing consumption patterns, gender inequalities, social, economic, and institutional shocks/trends (e.g., urbanization, industrialization, prevalence of female-headed households, landlessness, short-term policy horizons, low level literacy, high percentage of agriculture in GDP), as well as demographic changes, access to and availability of food, density of social networks, memories of past climate variations, knowledge, and long-term residence in the region.¹⁶⁰ Therefore, the overall impact of a food system could be a combined effect of both climatic and non-climatic drivers.

Impacts of these climatic and non-climatic factors on a system are related to ‘vulnerability’ and ‘resilience’. The IPCC defines ‘vulnerability’ of a system under the impacts of climate change as:

the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.¹⁶¹

The IPCC also defines ‘resilience’ as:

The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation.¹⁶²

The link between vulnerability and resilience can be understood by considering both the definitions together, which illustrates that a system becomes vulnerable when it crosses its threshold point, after which it become unable to cope with the disturbances. Resilience is the capacity of the system that determines the position of that threshold point; the more resilient a system - the higher the threshold point and the less the vulnerability to disturbances. Resilience of a food system, therefore, will depends on the ability to cope with both climatic and non-climatic drivers as well as responding through adaptation and other mechanisms to maintain the desired state.

¹⁶⁰ Dasgupta et al, above n 54, 634; Porter et al, above n 5, 502; Christine Slade and Wardell-Johnson, ‘Creating a Climate for Food Security: Governance and Policy in Australia’ (National Climate Change Adaptation Research Facility, Australia, 2013) <<http://www.nccarf.edu.au/publications/creating-climate-food-security-governance>>.

¹⁶¹ M.L Parry et al, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, (Cambridge University Press, Cambridge, UK)27.

¹⁶² Field et al, above n 39, 5.

Therefore, understanding the ‘threshold’ point to cope with the impacts of climate change on food security is important to appreciate the vulnerability and resilience of a society. It is stated that food security is a complex issue and is influenced by a number of factors that are associated with many social, political, environmental and economic issues.¹⁶³ Therefore, the ‘threshold’ point of a society will be influenced by these factors. The limited scope of this research will not allow the consideration of all these factors together to identify the ‘threshold’ point of a society; rather it will look into the impacts that climate change will be making on local food security to understand vulnerability (discussed in the previous section) and will also determine appropriate governance strategies for local government so that resilience of that system improves. Bangladesh is predominantly the major focus in this research. However, this research will also review the examples of Australia and Indonesia as well as international recommendations for strengthening local government.

C Definition of various types of governance used in this thesis

To ‘govern’ means to control or influence¹⁶⁴ or to guide the actions of something;¹⁶⁵ and ‘governance’ refers to the activities to ‘govern’.¹⁶⁶ According to the United Nations Development Program (UNDP) policy paper on ‘Governance for sustainable human development 1997’, ‘governance’ refers to

‘[T]he exercise of economic, political and administrative authority to manage a country’s affairs at all levels. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences.’¹⁶⁷

This definition refers to the control of activities of stakeholders (citizen, groups and organizations) through various processes, mechanisms and institutions. However, ‘governance’ is not only about control. Jon Pierre states that ‘governance’ is about harmonization and reasoning of the roles of

¹⁶³ Ericksen, above n 1, 234.

¹⁶⁴ Oxford Dictionaries (2016) <<http://www.oxforddictionaries.com/definition/learner/govern>>.

¹⁶⁵ Merriam-Webster Dictionaries <<http://www.merriam-webster.com/dictionary/govern>>.

¹⁶⁶ Oxford Dictionaries (2016) <<http://www.oxforddictionaries.com/definition/learner/governance>>.

¹⁶⁷ ‘Governance for Sustainable Human Development’ (United Nations Development Programmes, New York, 1997). This definition of ‘governance’ has also been endorsed by the United Nations Economic and Social Councils. See Committee of Experts on Public Administration, *Definitions of Basic Concepts and Terminologies in Governance and Public Administration*, UN Doc E/C.16/2006/4 5th sess (5 January, 2006).

different stakeholders that are working to achieve various objectives.¹⁶⁸ Such stakeholders may include government and non-government organizations, international organizations, business groups and other groups of different political, economic and social interests. Therefore ‘governance’ may be referred to as the control and coordination of activities of all stakeholders.

There are some characteristics of this ‘control and coordination’ mechanism that transforms ‘governance’ into ‘good governance’. The UNDP identifies five principles for good governance; these are legitimacy and voice (participation and consensus orientation); direction (strategic vision); performance (responsiveness, effectiveness and efficiency); accountability and transparency; fairness (equity and rule of law).¹⁶⁹ The World Bank also identifies similar characteristics (indicators) for measuring the quality of governance. The World Bank indicators are voice and accountability; political stability and absence of violence; effectiveness; regulatory quality; rule of law and control of corruption.¹⁷⁰

The ‘control and coordination’ mechanism of governance works in various sectors. This thesis is focused upon local government, food security and climate change; therefore, governance of these sectors are important issues for this thesis and the following sections focus on this.

1 *Local Governance*: Generally, local governance refers to the governance at a local level. It involves both the direct and indirect activities of formal institutions like the government and local government institutions and informal institutions such as community organizations and non-government organizations (NGOs). The purpose of local governance is to control and coordinate the functions of the stakeholders and define the framework of such functions that include decision making and mechanisms of public service delivery.¹⁷¹ Therefore, the diverse activities of various stakeholders working for different objectives at the local level and the control and coordination mechanisms of these activities come within the broader definition of local governance. This thesis is focused on local food security issues and roles of local government; therefore, local governance is a major aspect of this thesis.

¹⁶⁸Jon Pierre and Guy B. Peters, *Governance, Politics and the State*, New York, St. Martin’s Press, 2000.

¹⁶⁹‘Governance for Sustainable Human Development’, above n 167.

¹⁷⁰ Daniel Kaufmann and Aart Kraay, The Worldwide Governance Indicators Project, (Report, The World Bank, 2015) <<http://info.worldbank.org/governance/wgi/index.aspx#home>>.

¹⁷¹ See, eg, Anwar Shah and Sana Shah, ‘The New Vision of Local Governance and the Evolving Roles of Local Government’ in Anwar Shah (ed), *Local Governance in Developing Countries* (The World Bank, 2006)2; Robert H Wilson, ‘Understanding Local Governance: An International Perspective’ (2000) 40(2) *RAE-revista de Administração de Empresas* 51.

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2 Local Government: Local government (LG) is a local level institution and a formal stakeholder under local governance, created under the legal and institutional framework of a country for providing specific services to the local community.¹⁷² Therefore, the roles and responsibilities of local government are country specific and, in particular, specific to the legal and institutional frameworks that create local government in respective countries. In Bangladesh, local government is created under the provision of the national constitution¹⁷³ and the roles and responsibilities are specified in national legal frameworks; in Australia, local governments (known as ‘councils’) are created under respective state legislation and the respective state legislation specifies the roles and responsibilities of respective local governments.¹⁷⁴

Local government is an important stakeholder in local governance in many countries for development activities and service delivery at the local level. However, the traditional local government role in local development has been criticized for its limited impact at the local level.¹⁷⁵ It is argued that the benefits of local government actions could be tangible if citizen-government relationship conditions are developed under a local governance concept.¹⁷⁶ Therefore, this thesis mainly deals with local government but locates it in the context of local governance and entire governance.

3 Food Security Governance: According to the FAO of the United Nations (UN), food security governance is related to ‘formal and informal rules and processes through which interests are articulated, and decisions relevant to food security in a country are made, implemented and enforced on behalf of members of a society’.¹⁷⁷ Therefore the governance of food security could be defined as the control and coordination of these activities and the stakeholders to ensure food security. The roles of various stakeholders under food security governance are important in this respect. At the global level, stakeholders like the FAO, International Fund for Agricultural Development and the World Food Program are involved in building global structures for food security, while at a national level major stakeholders like the government, private sector food

¹⁷² Shah and Shah, above n 171, 1.

¹⁷³ *The Constitution of the People’s Republic of Bangladesh 1972* (Bangladesh), pt iv ch iii.

¹⁷⁴ *Our Government*, Australia.gov.au <<http://www.australia.gov.au/about-australia/our-government>>.

¹⁷⁵ See, eg Caroline Andrew and Michael Goldsmith, ‘From Local Government to Local Governance—and Beyond?’ (1998) 19(2) *International Political Science Review* 101.

¹⁷⁶ Wilson, above n 171, 51.

¹⁷⁷ ‘Good Food Security Governance: The Crucial Premise to the Twin Track Approach’, (Background paper, ESA Workshop, the FAO, Rome, 2011) 17

<http://www.fao.org/fileadmin/templates/righttofood/documents/project_f/fs-governance/workshop_report.pdf>.

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producers, civil society, farmer's organizations and NGOs are mainly involved in activities regarding food security.¹⁷⁸ In Bangladesh, food security governance is generally dominated by the central government, which involves activities of a range of government ministries and departments in food security processes.¹⁷⁹ However, the involvement of private actors, particularly in the supply of key agricultural inputs is also gaining importance in contemporary Bangladesh.¹⁸⁰

The FAO identified a number of indicators for good food security governance. These are:

1. Participation of stakeholders in food security planning and decision making, clear and responsive planning and implementation of the strategies across the four pillars of food security;
2. Institutions should be efficient, effective, transparent and accountable;
3. There should be respect for the rule of law, fairness and equality in managing and allocating resources, and in service delivery; and
4. Policies should be coherent and there should be coordination among institutions and actions.¹⁸¹

Therefore, the existence of these governance qualities in the legal and institutional frameworks of a country could be an indicator for good food security governance which this research would promote in the Bangladesh context.

D Some Governance Theories and Principles Used in this Research

1 Principle of Subsidiarity

To strengthen the role of local level institutions as well ensuring local autonomy, subsidiarity principles are commonly uttered in governance strategies. The core theme of subsidiarity is diffusion of power to the lowest possible level, from which decisions should be made. Higher

¹⁷⁸ Ibid 5-17.

¹⁷⁹ The implementing agency of most of the government policies and strategies in Bangladesh to address food security is government ministries and departments. Chapter 5 has discussed about the roles of different stakeholders in Bangladesh food security action.

¹⁸⁰ 'The State of Governance in Bangladesh 2009: Entitlement, Responsiveness, Sustainability', (Research Report, Institute of Governance Studies, BRAC University, 2009) 2 <http://dspace.bracu.ac.bd:8080/xmlui/bitstream/handle/10361/2054/sog_2009.pdf?sequence=1&isAllowed=y>.

¹⁸¹ Good Food Security Governance: The Crucial Premise to the Twin Track Approach, above n 177, 17.

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authorities will assist the local body in carrying out its tasks.¹⁸² Therefore, the source of power and authority is generally focused upon the local level and its potential to discharge duties.

Although the concept of ‘subsidiarity’ is rooted deep in western political thinking,¹⁸³ it was conceptualized in catholic social teaching in 1931, which trusted the individual ability to perform duties and discouraged interference from the higher level (i.e. the state) unless essential. The shifting of responsibility from the appropriate authority and unnecessary interference of other authorities had been seen as an ‘evil’ action.¹⁸⁴ This conceptual understanding of the subsidiarity principle only focuses on ‘authority and power’ of an institution, leaving limited scope of integration among the institutions to address complex problems like climate change and food security.

However, subsidiarity has other conceptual forms that promote integration and cooperation among institutions. Marshall stated that subsidiarity promotes multi-levelled system of nested organizations and under which it promotes community based environmental governance.¹⁸⁵ Such multileveled nested organizations can be understood through understanding the concept of organizational relationship in the principle of subsidiarity. According to the principle of subsidiarity the organizational relationship within this multi-levelled system moves in two ways; vertically and horizontally.¹⁸⁶ Here, the vertical movement refers to the distribution of power and authority among actors at different layers of public spheres; and horizontal movement expresses the cooperation and coordination among different public and private organizations.¹⁸⁷ These two types of relationships have been seen as essential to ensure autonomy and to ensure resources play effective roles by organizations.¹⁸⁸ Therefore, subsidiarity also promotes organizational

¹⁸² See Gilles Paquet, 'The New Governance, Subsidiarity and the Strategic State' in OECD (ed), *Governance in the 21st Century* (Organisation for Economic Co-operation and Development, 2001); Domenec Mele, *The Principle of Subsidiarity in Organizations: A Case Study* (Working Paper, IESE Business School, University of Navarra, Madrid, 2004) < <http://www.iese.edu/research/pdfs/DI-0566-E.pdf>>; Alessandro Colombo, 'The ‘Lombardy Model’: Subsidiarity-informed Regional Governance' (2008) 42(2) *Social Policy and Administration* 177.

¹⁸³ PG Carozza, 'Subsidiarity as a Structural Principle of International Human Rights Law', (2003) 97 *The American Journal of International Law*, 38-78.

¹⁸⁴ See, e.g, Colombo, above n 182, 183.

¹⁸⁵ Graham R. Marshall, 'Nesting Subsidiarity, and Community-based Environmental Governance Beyond the Local Level' (2008) 2(1) *International Journal of the Commons* 75, 76.

¹⁸⁶ Colombo, above n 182, 185.

¹⁸⁷ *Ibid.*

¹⁸⁸ *Ibid.*

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integration that can be achieved through the existence of both ‘vertical’ and ‘horizontal’ relationships among organizations.

The horizontal and vertical relationships of organizations under subsidiarity require the creation of an environment that would encourage freedom, respect and empowerment of organizations.¹⁸⁹ Domenec Mele identified four factors that would help to create such environment. The factors are: i) respecting and fostering human freedom, ii) respect for human dignity, iii) considering diversity and iv) contribution for the common good.¹⁹⁰ Therefore, the existence of these factors in legal and institutional frameworks of a governance system should promote building cooperation and coordination among organizations and encourage public participation and local government participation in national policy dialogues on food security and climate change and their implementation.

The principle of subsidiarity may enable identifying mechanisms for both the division and exercise of power at different levels of administration.¹⁹¹ However, subsidiarity is considered as a ‘normative’ principle, the application of which in legal and institutional systems is largely dependent on political consensus and involves a high level of social-economic factors.¹⁹² Therefore, the difficulties of implementing subsidiarity in governance strategies bring the necessity of considering approaches that consider the role of higher and local levels of governance in a realistic and balanced way. Subsidiarity defines the general ‘norms’ for legal and institutional settings to strengthen the role of local government. However, theories that indicate legal and institutional changes for specific ‘sectors’¹⁹³ would provide further information for strengthening the role of local government in the respective sectors like food security and climate change. Discussion about the theory of decentralization is useful in this respect.

¹⁸⁹ Mele, above n 182; FJ Schweigert, ‘Solidarity and Subsidiarity: Complementary Principles of Community Development’, (2002) 33 *Journal of Social Philosophy* 33-44; *ibid.*

¹⁹⁰ Mele, above n 182, 3-4.

¹⁹¹ Werner Vandenbruwaene, The Legal Enforcement of Subsidiarity (Workshop paper, Workshop 17 on Federalism, Community Identity and Distributive Justice, Faculty of Law, University of Oslo, 2014) 23 <<http://www.jus.uio.no/english/research/news-and-events/events/conferences/2014/wccl-cmdc/wccl/papers/ws17/w17-vandenbruwaene.pdf>>.

¹⁹² George A. Bermann, ‘Taking Subsidiarity Seriously: Federalism in the European Community and the United States’ (1994) 94(2) *Columbia Law Review* 331, 456; *ibid.*

¹⁹³ Here ‘sector’ refers to different sectors of governance; e.g. food security, climate change, agriculture.

2 Decentralization

Generally, ‘decentralization’ refers to the transfer of power and resources from central government to a lower level of government.¹⁹⁴ More specifically, it is the transfer of a central government’s power and authority towards local level government organizations to enable more services for local people. This definition indicates that the source of power and authority is located at the central or higher level and decentralization promotes diffusion of such power and authority towards the local level. It is noteworthy that in subsidiarity, the location of such power and authority is at the local level that is closest to the problem.¹⁹⁵

Decentralization is gaining popularity because of the failures of centralized systems. Centralized agricultural systems are evident in many countries, particularly in developing countries, where the state controls input supply, marketing and rural finance, agricultural research organizations, extension services as well as irrigation facilities.¹⁹⁶ There is criticism about such centralized systems that state controlled agriculture develops monopolistic systems over agricultural input and output businesses and management and therefore paves the way for unnecessary influence of government staff and influential politicians over the entire agricultural service systems¹⁹⁷ that has left less room for local level organizations to play an effective role. Also, the failure of central governments in providing agricultural services (e.g. under the impacts of climate change) invites the question of providing assistance to the vulnerable people by other local level organizations. It is also argued that state controlled services such as social safety net programs that are prepared by national government ignores local needs and leaves no option for market solutions of problems by the local agricultural producers, intending to benefit supporters of the political parties in power¹⁹⁸ without addressing the diverse range of vulnerable people living in local areas. The consequence of the centralized system in agriculture is detrimental to local agriculture and food security and a system which would address local needs and problems is an essential aspect of policy in this area.

¹⁹⁴ Lawrence D Smith, ‘Reform and Decentralization of Agricultural Services: A policy Framework’ (FAO Agricultural Policy and Economic Development Series 7, Rome, 2001) Chapter 1: What is Decentralization? <<http://www.fao.org/docrep/005/y2006e/y2006e05.htm#bm05>>.

¹⁹⁵ See Paquet, above n 182.

¹⁹⁶ K.C Lai and Vito Cistulli, *Decentralization and Agricultural Development: Decentralization of Agricultural Services* (2005) (EASYPol module13, FAO, page 3-4) <http://www.fao.org/easypol/output/advanced_search.asp>.

¹⁹⁷ Ibid 4.

¹⁹⁸ Ibid 9.

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Decentralization of power and authority towards local level organizations demand attention after these failures and criticisms of centralized governance.

Decentralization for rural development and food security is not a new concept. Many countries have adopted decentralization processes in respective governance systems to promote agriculture and rural development.¹⁹⁹ The FAO has identified three principles for constituting decentralization in agricultural and food security.²⁰⁰ The principles are: 1) subsidiarity, 2) jurisdictional spill-over and 3) specialization. Under the principle of subsidiarity, agricultural services are required to be vested in the authority of local level organizations, according to the potential of respective levels of organizations. An example could be the management of large irrigation projects where the responsibility of local actions (management of local canals and local water bodies) should be given to local authorities.²⁰¹

The principle of jurisdictional spill-over places importance on ensuring multiple authorities do not have responsibility for a specific management issue of agricultural resources in order to avoid confusion. The principle requires clear jurisdictional definition for each authority to act.²⁰² Therefore the involvement of local government in control and management of local canals and waterbodies, under this principle, should not conflict with the role of other authorities. The principle of specialization refers to vesting specific duties for each authority with full autonomy.²⁰³ Responsibilities that are specific to each authority enhance accountability for the management of resources.

The three principles identified by the FAO have implications for enhancing the potential areas for local government to address climate change impacted food security issues. The relevance of the subsidiarity principle has been discussed in the preceding section. Jurisdictional spill-over and specification would enable local government to identify areas for facilitating public participation,

¹⁹⁹ K.C Lai and Vito Cistulli, *Decentralization and Agricultural Development: Introduction to the Training Path on Decentralization and Agricultural Development* (2005) (EASYpol module11, FAO, page 2) <<http://www.fao.org/documents/search/en/?sel=IGF0dHJfdHNfdG10bGVJbmZvX3RpdGxIOiJkZWNIbnRyYWxpe mF0aW9uliA%3D&page=2>>.

²⁰⁰ K.C Lai and Vito Cistulli, *Decentralized Development in Agriculture: An Overview* (2005) (Issue Paper, EASYpol module12, FAO, page 15-17) <http://www.fao.org/easypol/output/advanced_search.asp>.

²⁰¹ K.C Lai and Vito Cistulli, *Decentralization of Agricultural Services: Decentralization of Rural Financial Services* (2005) (EASYpol module14, FAO) <http://www.fao.org/easypol/output/advanced_search.asp>.

²⁰² Ibid.

²⁰³ Ibid.

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cooperation and coordination, involvement in national policies as well as preparing their own strategies and plans. These general principles for legal and institutional frameworks for food security and climate change may facilitate strengthening the role of local government. However, issues of power, authority, role and conflicts are not described by these principles.

There are three basic areas where actions are required for facilitating decentralization in agriculture.²⁰⁴ The first action is the reform of agricultural services, like fertilizer distribution, providing business management advice, marketing of agriculture inputs and outputs that would include legislation and regulatory services, finance, insurance, development and use of technology and associated advice, plant and animal disease control measures. Other agricultural services are infrastructure for agricultural production, social services such as education, health and food safety and services for organizing the agricultural producers such as farmer organizations.²⁰⁵ The involvement of local government in these reform procedures could be an important aspect for strengthening their role. These reforms should encourage public participation and participation of local government as well as providing scope for preparing local plans, rules and strategies for the development of agricultural services that would contribute to responding to climate change impacts on food security by the local government.

The second action area is decentralizing natural resource management and the third action area is development of planning and management processes.²⁰⁶ The importance of natural resource management by involving local people has been recommended in global policy responses, particularly in the *Convention on Biological Diversity (CBD)*²⁰⁷ that encouraged developing local biological diversity plans.²⁰⁸ Decentralizing natural resource management as well as agricultural development and management frameworks may consider local government involvement in the management roles and procedures.

²⁰⁴ Ibid module 14 page 2-3.

²⁰⁵ Ibid module 13.

²⁰⁶ Lai and Cistulli, above n 199, 2.

²⁰⁷ *United Nations Convention on Biological Diversity*, 1760 UNTS 79; 31 ILM 818 (29 December 1993).

²⁰⁸ *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Tenth Meeting* Agenda Item 2.3 and 7 UNEP/CBD/COP/DEC/X/22 (29 October, 2010).

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Cheema identified several gaps in the legal and institutional frameworks of developing countries focusing on decentralization.²⁰⁹ The first gap is in the policy and strategic areas. In developing countries, most policy statements about decentralization intend to include a wide-range of objectives, but in practice most of them are less comprehensive in scope. One of the reasons for such a mismatch is the failure in blending political devolution with financial and administrative capacity in order to make local government an effective agent in local development.²¹⁰ Also, the increasing number of small local governments with poor administrative and financial capacity as well as the emergence of densely populated urban local governments, with relatively large resource bases, is creating policy dilemmas about how to balance the need for greater representation to promote democracy.²¹¹

There are also trends in developing countries to shift responsibilities towards local governments without financial as well as administrative support.²¹² This inadequacy of resources and support to address the scope of their responsibilities means that local government may fail to play an effective role. Moreover, such resource scarcity makes local government more dependent on central government grants, negatively affecting autonomy.²¹³ Successful decentralization requires addressing the aforesaid gaps. It is said that '[t]he political nature of the link between the central government and local government also matters enormously. Where local and national elites collude, decentralization is unlikely to be pro-poor and empowering.'²¹⁴

However, the conflict between higher and local levels for sharing power and authority invites an alternative governance approach where solutions to the problems comes first and responsibility, power and authority of different actors are defined by focusing on the solutions. Adaptive governance provides such alternative approaches in governance strategies which is discussed below.

²⁰⁹ G. Shabbir Cheema, 'Engaging Civil Society to Promote Local Governance: Emerging Trends in Local Democracy in Asia' in Joakim Ojendal and Anki Dellnas (eds), *The Imperative of Good Local Governance: Challenges for the Next Decade of Decentralization* (The United Nations Library, 2013)236-237.

²¹⁰ Ibid.

²¹¹ Ibid.

²¹² Ibid.

²¹³ Ibid.

²¹⁴ Catherine Dom (Mokoro), 'Empowerment Through Local Citizenship' (OECD, 2015) <<http://www.oecd.org/dac/povertyreduction/50157563.pdf>>

3 Adaptive Governance

Adaptive Governance (AG) is a growing form of environmental governance. The aim of AG is to address the prevailing uncertainties and complexities in the resource management systems by both encouraging and facilitating coordination among different stakeholders.²¹⁵ AG can be defined as an array of interactions among various stakeholders, the network of such interactions among different actors and institutions for achieving a preferred social-ecological condition or state (SES).²¹⁶ The reasons for adopting such cooperative and coordinated governance setting by involving different stakeholders may arise under the following circumstances:

1. Any disaster takes place or undesirable current state of SES (degraded environment, loss of ecosystem systems, social conflict over resource use and management)
2. Ecological and social values came under threat
3. Stubborn policies or policy failure to address management needs
4. Unequal competition over scarce resources and rise of conflict
5. Governance failure to address continuing resource management crisis.
6. Civil disobedience due to governance failure; and
7. Initiative for transformation of governance is taken (e.g. developing network, search to develop forms of governance, policy responses against any social-ecological disturbance, developing funding options and opportunities are taken or seek).²¹⁷

The abovementioned symptoms may lead to the creation of alternative governance e.g. informal networks to exploit window of opportunities and therefore may accelerate transition or shift in governance towards AG. It is noteworthy from the symptoms of AG that symptoms such as natural disasters, destruction of ecology and resource depletion leading to resource scarcity are closely

²¹⁵ Brian C. Chaffin, Hannah Gosnell and Barbara A. Cosens, 'A Decade of Adaptive Governance Scholarship: Synthesis and Future Directions' (2014) 19(3) *Ecology and Society* 56, 56.

²¹⁶ See, eg, Ibid.

²¹⁷ See, Barbara A. Cosens, 'Legitimacy, Adaptation, and Resilience in Ecosystem Management' (2013) 18(1) *Ecology and Society*; Barbara A Cosens et al, 'Identifying Legal, Ecological and Governance Obstacles, and Opportunities for Adapting to Climate Change' (2014) 6(4) *Sustainability* 2338; Lance Gunderson, 'Resilience, Flexibility and Adaptive Management: Antidotes for Spurious Certitude?' (1999) 3(1) *Conservation Ecology* 7; Thomas Hahn et al, 'Trust-building, Knowledge Generation and Organizational Innovations: The Role of a Bridging Organization for Adaptive Comanagement of a Wetland Landscape around Kristianstad, Sweden' (2006) 34(4) *An Interdisciplinary Journal* 573; Per Olsson, Carl Folke and Thomas Hahn, 'Social-Ecological Transformation for Ecosystem Management: the Development of Adaptive Co-management of a Wetland Landscape in Southern Sweden' (2004) 9(4) *Ecology and Society* 2.

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related to the impacts of climate change. Therefore, climate change impacts can be regarded as a potential driver for adopting AG.

The AG model has some special characteristics. Some of the major characteristics of AG are:

1. Nested Institutions (complex and layered, e.g., market- and state-based, having the property that the roles and responsibilities of each institution is, to an appropriate extent, contained in other institutions.)
2. Institutional set-up should be accommodative for new learning, experiments and effective changes.
3. Poly-centricity (decision making with authority divided amongst bodies with overlapping jurisdictions)
4. Institutional Diversity (a mixture of market, state, and community organizations)
5. Covering all levels of governance (Local to State and International)
6. Connected through formal and informal social networks.
7. Promote knowledge generation and organizational learning
8. Increase collaboration and participation
9. Devolution of management rights/power sharing
10. Building trust, leadership and keeping social memory
11. Formation of actor groups/teams; and
12. Adaptability and transformability.²¹⁸

These characteristics of AG indicate an institutional setting where all stakeholders in a governance system have roles that are not mutually exclusive and the responsibilities are shared among the stakeholders. The characteristics also promote participation of all stakeholders and at the same time uphold accountability by incorporating the shared responsibility option. The poly centricity

²¹⁸See, Thomas Dietz, Elinor Ostrom and Paul C. Stern, 'The Struggle to Govern the Commons' (2003) 302(5652) *Science* 1907; Carl Folke et al, 'Adaptive Governance of Social-ecological Systems' (2005) 30 *Annual Review of Environmental and Resources* 441; Brian Walker et al, 'Resilience, Adaptability and Transformability in Social-ecological systems' (2004) 9(2) *Ecology and Society* 5; Carl Folke, 'Resilience: The emergence of a perspective for social-Ecological Systems Analyses' (2006) 16(3) (8) *Global Environmental Change* 253; Dave Huitema et al, 'Adaptive Water Governance: Assessing the Institutional Prescriptions of Adaptive (Co-)Management from a Governance Perspective and Defining a Research Agenda' (2009) 14(1) *Ecology and Society* 26; Silveira, A, André R. and Keith S. Richards, 'The Link Between Polycentrism and Adaptive Capacity in River Basin Governance Systems: Insights from the River Rhine and the Zhujiang (Pearl River) Basin' (2013) 103(2) *Annals of the Association of American Geographers* 319.

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of decision making also widens the scope of local government decision making about environmental problems that are local in nature. The mechanisms for building such a cooperative and coordinated environment are also evident. Trust building, developing leadership quality, keeping social memory, knowledge generation, strengthening social network connections and collaboration among stakeholders are some of the major factors that could contribute to create the environment for AG.

Donna Craig and Michael Jeffery identified a number of legal and institutional changes under the AG model required for addressing impacts of climate change on food security peri-urban areas in New South Wales, Australia.²¹⁹ These are:

1. Relevant and timely scientific data to improve risk assessment procedures at all levels of governance (local level data)
2. Projection for social, economic and environmental effects at the local level, options of governance (based on assessment of risks, nature and magnitude of losses, and transaction costs)
3. Coordination among stakeholders to sustainably use and manage resources (with priority on facilitating resilience and productivity at local level)
4. Adoption of anticipatory future oriented approach base on comparative science
5. Informed and participatory development (characteristics: capacity building, engagement of stakeholders, policy development and adoption, legal and institutional framework including local)
6. Adoption of resilience approach²²⁰
7. Risk identification and management model for forming the baseline for strategies for food security
8. Prioritization of reforms of policies, laws and institutions
9. Design and capacity building of supporting institutions
10. Identification of key policies, institutional and legal contingency

²¹⁹ Donna Craig and Michael Jeffery, 'Adaptive Governance for Extreme Events in Peri-urban Areas: A Case Study of the Greater Western Sydney' in Malano Basant Ramesh et al (eds), *The Security of Water, Food, Energy and Livability of Cities: Challenges and Opportunities for Peri-urban Futures* (Springer, 2014).

²²⁰ Resilience approach: the approach that incorporates identification of interaction among the components of the system and their involvement in case of change as well as their ability to maintain functionality before shifting to other state due to change. See, Craig and Jeffery, above n 219, 456.

11. Legal and institutional coordination requirements for adaptive strategies
12. Reduction and improved coordination of institutional structure (to facilitate least cost involvement)
13. Improved incentives for mitigation and adaptation efforts
14. Mechanism for transfer of resources to better performers.
15. Incorporation of the elements of good governance
16. Soft planning tools along with existing command and control methods (informing of the risks to the potential stakeholders)
17. Mix of regulation and market instruments (define) (interaction of state and private rules in a way that one does not dis-empower the other).²²¹

The AG for food security emphasizes local data, forecasting future impacts and risks and adoption of resilience approach and subsequently placing importance on informed and participatory development as well as coordinated action among stakeholders. Legal and institutional frameworks acknowledging this linkage of capacity building to facilitate participation and coordination would contribute to improving the role of local government in this process. For this, AG has also put emphasis on legal and institutional coordination for adopting adaptive strategies. However, legal and institutional mechanisms to transfer resources, incentives for adaptation and establishment of good governance characteristics are important aspects for establishing AG.

III FUTURE ROLES OF LOCAL GOVERNMENT IN ADDRESSING CLIMATE IMPACTED FOOD SECURITY

The importance of the future roles of local government in climate adaptation has been well articulated in the IPCC AR5 report. The AR5 states:

Among the many actors and roles associated with successful adaptation, the evidence increasingly suggests two to be critical to progress: those associated with local government and those with the private sector.²²²

²²¹ Craig and Jeffery, above n 219.

²²² Yury Anokhin et al, 'Adaptation Needs and Options' in Christopher B. Field et al (eds), *Climate Change 2014 Impacts, Adaptation, and Vulnerability Part A Global and Sectoral Aspects Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013)833, 836.

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The statement not only specifically emphasizes the role of local government in climate adaptation among many other stakeholders but also suggests that the role of local government would be ‘critical’ for successful adaptation. The IPCC has also provided indications of future roles that local government should play for successful adaptation.²²³ Some of the roles that have been mentioned in the AR5 are:

1. Local government should work to place the local needs for climate adaptation into national policies
2. The implication of national adaptation goals, policies, actions and investment should be translated to the local communities and stakeholders by the local government
3. Local government should assess the role and importance of other local level stakeholders for addressing climate change impacts, especially natural disasters
4. Uphold the importance of local knowledge to the higher authority in addressing the local impacts of climate change
5. Distribute climate risks and act as a mediator among various levels of governments, society and political processes
6. Establish incentive structures to facilitate both individual and collective adaptation action
7. Support adaptation initiatives, encourage coordination among various levels of government, and facilitate implementation of adaptation action
8. Mainstreaming adaptation actions in local planning; and
9. Improve basic services such as water and sanitation, housing and infrastructure.²²⁴

Some international policy responses have also recommended for future roles of local government in addressing climate change impacts on food security. The Report of the World Commission on Environment and Development (also known as *Our Common Future*), while placing importance on the role of local governments have recommended some future roles for food security that include providing sustainable livelihoods to poor farmers, protection of subsistence farmers rights, developing integrated rural development strategies and the development of systems to facilitate food production, transportation and distribution.²²⁵ The *CBD* emphasizes a local government role

²²³ Ibid 842-843.

²²⁴ Ibid 842-843.

²²⁵ *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, Chapter 5[80-103] < <http://www.un-documents.net/ocf-05.htm#IV>>.

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in implementing strategic biodiversity plans by integrating biodiversity issues with development planning including agriculture, water, transport and waste management.²²⁶ The *United Nations Convention to Combat Desertification (CCD)* emphasizes local level action to combat desertification by increasing local awareness, improving early warning systems and promoting local participation.²²⁷ There are some other future roles that local government may adopt to address food security, such as:

1. Involvement of farmers in the decision making process for adopting better agriculture planning and its implementation
2. Use of local resources more efficiently by increasing investment in agriculture and rural infrastructure so that vulnerable people gain benefits
3. Improving local food stability by increasing food availability, access and utilization; and
4. Partnership brokering role by facilitating collaboration among local stakeholders involved in local food security.²²⁸

Agenda 21 also recommended some future roles for local government for facilitating sustainable development at the local level. Some of the future roles that local government should play for sustainable development are:

1. Organize regular dialogue with local communities for adopting local agenda 21
2. Facilitate consultation for household awareness building on sustainable development
3. Facilitate participation of local stakeholders in decision making for consensus building; and
4. Foster exchange of information, experience and technical expertise among local stakeholders.²²⁹

²²⁶ *Decision adopted by the conference of the parties to the convention on Biological Diversity at its twelfth meeting* UN Doc. No UNEP/CBD/COP/DEC/Xii/9 (17 October, 2014) Decision ix/28

²²⁷ *United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa* UN Doc No. A/AC.241/27 (12 September 1994)

²²⁸ Food and Agriculture Organization, 'Climate-Smart Agriculture Sourcebook' (2013)554 <www.fao.org/docrep/018/i3325e/i3325e.pdf>.

²²⁹ *Agenda 21: Programme of Action for Sustainable Development* UN GAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) para 28.3.

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The *World Summit on Food Security 2009* recommended some future roles that institutions at various levels of government may consider for dealing with food security problems. The future roles are:

1. Development of measures to manage the effects of excessive price volatility and of adverse weather events. Promoting well-functioning markets, better market information, transparency and competition. Smallholder farmers should be given special focus.
2. Providing appropriate technologies and practices to smallholder farmers to improve the resilience of farming systems against the impacts of climate change.
3. Encouragement of the consumption of foods, particularly those available locally, that contribute to diversified and balanced diets, as the best means of addressing micronutrient deficiencies and other forms of malnutrition, especially among vulnerable groups.²³⁰

The FAO also stated the interrelationship between climate change and food security and suggested a number of actions that stakeholders in climate impacted food security governance should implement to facilitate adaptation in food security.²³¹ Table 2.2 provides the future actions for addressing impacts of climate change in food security.

Table 2.2: Future roles of stakeholders for food security against climate change recommended by the FAO

Future Roles for Climate Impacted Food Security	Major Areas of Governance
<ol style="list-style-type: none">1. General risk management; management of risks specific to different ecosystems (marine, coastal, inland water and floodplain, forest, dryland, island, mountain, polar, cultivated);2. Research and dissemination of crop varieties and breeds adapted to changing climatic conditions;3. Introducing tree crops to provide food, fodder and energy and enhance cash incomes.	Protecting local food supplies, assets and livelihoods against the effects of increasing weather variability and increased frequency and intensity of extreme events,

²³⁰ *Declaration of the World Summit on Food Security* WSFS 2009/2 (November 2009) principle 1 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

²³¹ See, eg, Food and Agriculture Organization, above n 16, 41.

<ol style="list-style-type: none"> 1. Efficient agricultural water management; 2. Efficient management of irrigation water on rice paddies; 3. Improved management of cultivated land; 4. Improved livestock management; 5. Use of new, more energy-efficient technologies by agro-industries. 	<p>Avoiding disruptions or declines in global and local food supplies due to changes in temperature and precipitation regimes,</p>
<ol style="list-style-type: none"> 1. Use of degraded or marginal lands for productive planted forests or other cellulose biomass for alternative fuels; 2. Clean Development Mechanism (CDM), carbon sink tree plantings; 3. Watershed protection; 4. Prevention of land degradation; 5. Protection of coastal areas from cyclones and other coastal hazards; 6. Preservation of mangroves and their contribution to coastal fisheries; 7. Biodiversity conservation. 	<p>Protecting ecosystems, through provision of such environmental services</p>
<ol style="list-style-type: none"> 1. Protecting biodiversity and exploiting wild foods; 2. Promoting urban and school gardens; 3. Increasing use of dry cooking methods to conserve water; 4. Promoting energy-efficient and hygienic food preparation practices; 5. Teaching good eating habits to reduce malnutrition and diet-related diseases 	<p>Adjustments to maintain dietary quality</p>
<ol style="list-style-type: none"> 1. Protecting existing livelihood systems; 2. Diversifying sources of food and income; 3. Changing livelihood strategies; 4. Migrate if there is no other option. 5. Research and dissemination of crop varieties and breeds adapted to changing climatic conditions; 6. Effective use of genetic resources; 7. Promotion of agroforestry, integrated farming systems and adapted forest management practices; 8. Improved infrastructure for small-scale water capture, storage and use; 9. Improved soil management practices 	<p>Strengthening resilience</p>

Source: Food and Agriculture Organization, 'Climate Change and Food Security: A Framework Document' (Rome, 2008) 31 41, <<ftp://ftp.fao.org/docrep/fao/010/k2595e/k2595e00.pdf>>.

The future roles for climate adaptation for food security, illustrated in table 2.1 are important for all stakeholders working at different levels. However, it is stated that implementation of most adaptation actions generally take place at local level.²³² The perception of 'adaptation is local' is getting attention in the policy discussions because of the increasing understanding about the

²³² Thomas G. Measham et al, 'Adapting to Climate Change Through Local Municipal Planning: Barriers and Challenges' (2011) (16) *Mitigation and Adaptation Strategies for Global Change* 889.

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relationship between geographical variability of climate change and the local adaptation actions.²³³ This perception of local adaptation has also brought the focus on local governance and role of local level institutions. Therefore, the future roles of adaptation in food security mentioned in table 2.2 are relevant to local government.

According to Arun Agrawal, the importance of the role of local institutions is crucial for structuring the responses to local impacts, facilitating both individual and collective adaptation actions and governing the delivery of resources for facilitating adaptation.²³⁴ The future roles of local government, discussed in this section, will therefore provide a guideline in this regard.

IV CONCLUSION

This chapter has provided an explanation and scope of the concepts and definitions that will be used in this research. The discussion of the concept of food security has shown a number of factors that are associated with the four pillars of food security. Table 2.1 has provided a summary of these factors. The discussion of climate change has illustrated the impacts of climate change on the four pillars. The discussion has shown that different food security factors could be impacted by climate change and that may influence defining the vulnerability and resilience of a system. The discussion on governance has provided definitions of different types of governance such as local governance and food security governance as well as local government. The discussion on governance has also defined some major governance theories and principles (subsidiarity, decentralization and adaptive governance) and their implications in promoting integration among institutions and scope for strengthening local government. The findings will benefit structuring appropriate governance strategies for local government in the following chapters of this thesis.

This chapter has also identified future roles of local government to improve food security against the impacts of climate change. Some of the major future roles are food security policy planning and implementation, facilitating adaptation of other stakeholders, improving service delivery, improving livelihood options particularly for the farmers, improve food production, distribution and transportation facilities, ensure public participation and involvement in decision making, facilitating collaboration and coordination among organizations working at local level, educating

²³³ Ibid 890; Vermeulen, Campbell and Ingram, above n 9, 195.

²³⁴ Arun Agrawal, 'Local Institutions and Adaptation to Climate Change' in Robin Mearns and Andrew Norton (eds), *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World* (The World Bank, 2010) 173

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the local people about risks of malnutrition and providing infrastructure. The recommendations of the FAO, illustrated in table 2.1 also provide a guideline of major adaptation actions that an important local level stakeholder like the local government can implement. The findings answer the first part of the first research question i.e. what are the future roles of local government to address climate impacted food security.

However, the implementation of these actions may face some challenges. The AR5 identified institutional, technological, informational, and economic challenges such as a ‘lack of adaptive capacity, inadequate extension, institutional inertia, cultural acceptability, financial constraints including access to credit, insufficient fertile land, infrastructure, a lack of functioning markets, and insurance systems’²³⁵ that may constrain adaptation. Therefore, identifying appropriate legal and institutional strategies that could both facilitate the future roles of local government in climate impacted food security and overcome the challenges and barriers for their successful adaptation are important. The next chapter will address this issue by examining the recommendations of international policy responses and develop a set of legal and institutional principles and guidelines from the recommended governance strategies to strengthen the role of local government in climate impacted food security.

²³⁵ John R Porter et al., ‘Food Security and Food Production Systems’ in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A : Global and Sectoral Aspects* (Cambridge University press, 2014)485, 518.

CHAPTER 3: LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES TO STRENGTHEN LOCAL GOVERNMENT ROLE IN CLIMATE IMPACTED FOOD SECURITY: INTERNATIONAL POLICY RESPONSES

I INTRODUCTION

Chapter 2 identified a number of future roles of local government for addressing climate impacted food security recommended by international policy responses and reports by international organizations. It is argued that a strong role of local government at the local level is a precondition for addressing the diverse and complex nature of local food security.¹ Strong roles for local government in climate adaptation have also been recommended in the fifth assessment report (AR5) of the International Panel on Climate Change (IPCC). The AR5 recommends that '[l]ocal government and the private sector are increasingly recognized as critical to progress in adaptation, given their roles in scaling up adaptation of communities, households, and civil society and in managing risk information and financing.'² Therefore, strengthening local government roles in climate impacted food security is crucial and urgent. Many international policy responses have recommended various principles and guidelines to strengthen local governance in planning for, and responding to, climate impacted food security. This chapter will examine the recommendations and identify appropriate legal and institutional principles and guidelines that will strengthen local government institutions to effectively play this future role. The findings will address the second part of the first research question i.e. what international legal and institutional principles and guidelines have been recommended to strengthen the future roles of local government.

The importance of the role of local government in response to the impacts of climate change, particularly on food security issues, is increasing.³ Specific local governance responses change over time and vary according to the environmental, social, political and economic contexts

¹ Albino Maggio, Tine Van Criekinge and Jean Paul Malingreau, 'Global Food Security 2030: Assessing Trends With View to Guiding Future EU Policies' (European Union, 2015) 15 <<https://ec.europa.eu/jrc/>>.

² Christopher B Field et al, 'Summary for Policymakers' in Christopher B Field et al (eds) *Climate Change 2014: Impacts, Adaptation, and Vulnerability Part A Global and Sectoral Aspects Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, London, 2014)1, 25.

³ Chapters 1 and 2 have provided details of the importance of local government and future roles in addressing climate change impacts on food security.

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impacted by climate change and food security issues. The focus on legal and institutional principles and guidelines recognizes this changes and nature and scale of this global problem that will have to be addressed at every level of governance. However, the starting point for developing new roles for local government is to understand the legal and institutional principles and guidelines derived from international policy and experiences and to begin to apply them to national and local situations.

International policy responses, especially organized by the United Nations (UN) and its associated organizations, recommending legal and institutional policy responses have been contributing to strengthening governance at various level for many years. Since the *United Nations Conference on the Human Environment (UNCHE)* in 1972, a number of international treaties, policies and guidelines have been developed on the issues of the environment, climate change, sustainable development, food security and improving local governance. This chapter will consider the major international responses related to sustainable development, climate change, food security and local governance. Four major areas of international response will be analyzed:

1. The environment and sustainable development
2. Responding to climate change impacts
3. Food security; and
4. Good governance.

The categorization of international policy responses will benefit from a focus on the principles and guidelines that were developed to enable integrated legal and institutional approaches to sustainable development, climate change and food security. This chapter will investigate legal and institutional principles and guidelines from the international policy responses under each of these categories that are relevant to address the future roles of local government in climate impacted food security. A proposed set of legal and institutional principles and guidelines for strengthening the role of local government in climate impacted food security will be developed from the findings.

II INTERNATIONAL POLICY RESPONSES RECOMMENDING LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES FOR STRENGTHENING LOCAL GOVERNMENT ROLE IN CLIMATE IMPACTED FOOD SECURITY

A International Policy Responses on Environment and Sustainable Development

Food security has always been a common concern for international policies on the environment and sustainable development. The latest evidence of this priority is the United Nations Sustainable Development Summit (UNSDS), held in October 2015, that set food security as one of the sustainable development goals (SDGs) for global policy and action.⁴ A similar emphasis on food security was also evident in the earlier United Nations Millennium Development Goals (MDGs) that were set in the UN Millennium Summit in 2000. Other international policy responses have focused more specifically on the concerns of food security and impacts of climate change to provide legal and institutional principles and guidelines for strengthening local governance. The following sections will discuss these major international treaties, policies and guidelines (hereafter referred to as international policy) and identify the legal and institutional principles and guidelines appropriate for local governance of climate impacted food security.

1 The United Nations Conference on Human Environment 1972:

The United Nations Conference on the Human Environment (*UNCHE*) in 1972 (also popularly known as the Stockholm Conference) highlighted the necessity of addressing human concerns in developing countries arising from environmental degradation, particularly the concerns related with basic needs such as food, nutrition, sanitation and shelter.⁵ The *UNCHE* acknowledged that both local and central government would ‘bear the greatest burden for large-scale environmental policy and action with their jurisdiction’⁶ to address the impacts of environmental degradation on food security and other basic aspects of human life. The *UNCED* stressed improving the human environment for the present and future generations by working together.⁷ To address the human concerns and facilitate actions of governments at various levels, the Stockholm Conference Declaration provided 26 principles.⁸ Some of the principles specified the roles and responsibilities

⁴ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015).

⁵ *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972) chapter 1, para 1- 7.

⁶ *Ibid* para 7.

⁷ *Ibid* para 6.

⁸ *Ibid* Chapter 1 (principles).

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of governments and some principles indicate measures for improving governance for sustainable development. Chapter 2 discussed these future roles of local government recommended by *UNCHE*.⁹ The principles that indicated guidelines for strengthening and developing governance at various levels (including local governance) are:

Principle 12: Resources should be made available to the governments at every level for preserving and improving the environment.

Principle 13: Development planning and implementation by governments should adopt integrated and coordinated approaches by ensuring stakeholder participation.

Principle 17: National institutions at appropriate levels should be entrusted for planning, managing and controlling natural resources.¹⁰

The abovementioned principles illustrate that resource availability, ensuring stakeholder participation through adopting integrated and coordinated approaches and building trust among national institutions are necessary for improving governance of the environment and development, including local government. The growing concerns of food security and environmental degradation mentioned in the preamble of the Conference,¹¹ as well as the importance of local government to take appropriate action,¹² indicate the applicability and relevance of these principles to improve local governance of climate change impacts, particularly on food security.

2 The United Nations Conference on Environment and Development 1992

The United Nations Conference on Environment and Development (UNCED) in 1992 adopted the ‘Rio Declaration on Environment and Development’ that consisted of 27 principles for environment and sustainable development.¹³ Principle 4 of the Rio Declaration established the relationship between environmental protection and sustainable development by stating that environmental protection should be an integral part of sustainable development.¹⁴ A number of other Rio principles provide legal and institutional guidelines for improving governance of

⁹ See section III of chapter 2.

¹⁰ *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972) chapter 1(principles).

¹¹ *Ibid* chapter 1 para 1- 7

¹² *Ibid* chapter 1 para 7.

¹³ *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26 (vol.1); 31 ILM 874 (1992) principles.

¹⁴ *Ibid* principle 4.

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sustainable development, with a focus on environmental protection. Although the Rio Declaration did not explicitly mention food security, it endorsed the declaration made in the *UNCHE* that acknowledged the relationship between food security concerns, meeting basic needs and global environmental degradation.¹⁵ The challenge is to apply the general principles from the *UNCHE* and UNCED to developing policies and guidelines for the roles of local government, as part of improved governance for sustainable development.

The principles in the Rio Declaration (UNCED) are mainly focused on State (national government) responsibility and rights about sustainable development and environmental protection. However, the Rio Declaration also emphasized cooperation among different stakeholders.¹⁶ Principle 22 of the Rio Declaration stated the importance of the role of indigenous people and local communities in environmental development and management.¹⁷ The principles in the Rio Declaration provide guidance for local level sustainable development and environmental protection as well as food security concerns for major local stakeholders such as local government. Some of the major guidelines and principles from the Rio Declaration are provided below.

1. Environmental protection should be an integral part of development (principle 4)
2. Eradication of poverty should be given prior emphasis for improving living standards (principle 5)
3. Public participation, access to information and access to justice should be ensured for environmental issues (principle 10)
4. Precautionary measures should be incorporated for environmental protection (principle 15)
5. Environmental impact assessment (EIA) shall be undertaken for development activities (principle 17)
6. Participation of women should be encouraged in environmental management and development (principle 20); and
7. The environmental and natural resources of the vulnerable people should be protected (principle 23).¹⁸

¹⁵ Ibid.

¹⁶ Ibid Preamble.

¹⁷ Ibid Principle 22.

¹⁸ Ibid Principles.

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These principles show many of the substantive and procedural elements that legal and institutional frameworks should adopt for sustainable development such as valuing environmental and poverty reduction concerns in development activities, ensuring public participation and access to information and justice and adopting precautionary measures and EIA. The principles and guidelines also stipulate appropriate functions and roles for stakeholders that can contribute to strengthening local government role in sustainable development, including future roles of local government in climate impacted food security.

3 Agenda 21:

Agenda 21 is focused on improving governance for sustainable development such as sustainable agriculture and rural development, environmental protection, and the future roles of stakeholders such as local government. It emphasized facilitating future roles of local government by adopting a 'local agenda' and incorporating the objectives of Agenda 21.¹⁹ The guidelines articulated in Agenda 21 for improving local governance, especially those that are relevant to address climate impacted food security are given below:

1. The planning and implementation of local agendas should provide scope for local people (including vulnerable groups such as women, youth, small farmers, landless poor and indigenous people) to participate in local decision making through local dialogues. There should be mechanisms for incorporating the findings of local dialogues into policies, programmes and laws.
2. Mechanisms for cooperation among different local stakeholders should be enhanced
3. Legal and institutional frameworks should provide options for international agencies to support local authority programs.
4. National government should support reviewing local agricultural policies to integrate sustainable development and rural development concerns.
5. Cooperate with local authorities to develop early warning systems for agriculture.

¹⁹Local Agenda 21 is a Local government planning framework for local authorities by incorporating the objectives of Agenda 21. See *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) chapter 28.

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6. Build capacity building of local government to review policies, improve extension services, local data collection, facilitate public participation, improve management strategies such as accounting and audit, rural off-farm activities and rural industry development.
7. Improve local financial networks to raise local financial resources.
8. Strengthen land use planning and management.
9. Provide training to local administrators, planners and farmers.
10. Create scope for local authorities to participate in agriculture and environmental policies, planning and management discussions at national level; and
11. Provide financial incentives for the conservation and management of natural resources.²⁰

Importantly, Agenda 21 recommended promotion of integrated environmental management in general local government activities.²¹ The FAO related these guidelines to the actions for Sustainable Agriculture and Rural Development (SARD)²² and argued that it will contribute to adaption to the impacts of climate change on food security.²³ The international acceptance of Agenda 21 makes the principles and guidelines mentioned above important for strengthening the role of local government in addressing climate impacted food security.

4 *Convention on Biological Diversity*

The impact of climate change on biological diversity is well known.²⁴ Biodiversity supplies the basic components of human diet and nutrition, contributes to food security, dietary diversity, nutrition and health, sustains agricultural ecosystems and supports rural livelihoods.²⁵ The *CBD* recognized in 1992 the importance of biological diversity for food security.²⁶ This convention emphasized maintaining and preserving local knowledge about biological diversity through involvement and encouragement of local communities in the process.²⁷ The *CBD* also urged

²⁰ *Agenda 21*, UN GAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) Chapter 14 and 28.

²¹ *Ibid* Chapter 7 para 7.77e.

²² The objective of SARD mentioned in the Agenda 21 is to 'increase food production in sustainable way and enhance food security'; see *ibid* Chapter 14 para 14.2.

²³ Food and Agriculture Organization, *Climate change and food security: a framework document* (Rome, 2008)72 <<ftp://ftp.fao.org/docrep/fao/010/k2595e/k2595e00.pdf>>.

²⁴ Purnamita Dasgupta et al., 'Rural Areas' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)613, 640.

²⁵ Braulio Ferreira de Souza Dias, 'The Convention on Biological Diversity and Food Security, Nutrition and Genetic Resources' (Presentation, FAO) <<http://www.fao.org/fileadmin/templates/nr/documents/CGRFA/SE2015/CBD.pdf>>; Dasgupta et al, above n 24, 640.

²⁶ *United Nations Convention on Biological Diversity* 1760 UNTS 79; 31 ILM 818 (29 December 1993) Preamble.

²⁷ *Ibid* Article 8(j).

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support for local people ‘to develop and implement remedial action in degraded areas where biological diversity has been reduced.’²⁸ The protection and remediation of ecosystems will be fundamental for food security options. The implementation of the *CBD*, and the protocols under it,²⁹ provide an essential dimension for legal and institutional guidelines for the local government role in addressing food security.

The *CBD* in its 10th Conference of the Parties (COP 10) at Nagoya, Japan in 2010 suggested a Plan of Action³⁰ for governments at various levels to protect biological diversity at respective levels.

The recommendations of COP 10 are:

1. Encouraging and resourcing the development of local biodiversity and strategy plans
2. Engagement of local authorities in national biodiversity strategy and action plans
3. Recognizing and rewarding local authorities for their actions by national governments
4. Integrating biodiversity considerations into public procurement policies and urban infrastructure investments
5. Implementation of the programme of work on protected areas of the Convention on Biological Diversity
6. Encouraging the cooperation between central and local authorities
7. Promote and support the representation of local authorities
8. Support the development of landscape-level and ecosystem-based partnerships with local authorities
9. Organize regular consultations with local authorities
10. Contribute to a dialogue, with and between, subnational governments and local authorities

²⁸ Ibid Article 10(d).

²⁹ See, eg, *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Tenth Meeting* Agenda Item 2.3 and 7 UN Doc. UNEP/CBD/COP/DEC/X/22 (29 October , 2010); *Cartagena Protocol on Biosafety to the Convention on Biological Diversity* UN Doc. UNEP/CBD/ExCOP/1/3, (2000).

³⁰ *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Tenth Meeting* Agenda Item 2.3 and 7 Un Doc. UNEP/CBD/COP/DEC/X/22 (29 October , 2010); COP 10 Decision X/22 in Nagoya, 2010 provides Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity (here local authority stands for all levels of government below the subnational, national or federal level (prefectures, districts, counties, municipalities, cities, towns, communes, etc.).

11. Organize capacity-building initiatives (web-based tools, publications, newsletters, collections of case-studies, best practices and lessons learned, workshops, seminars and conferences) for local authorities; and
12. Encourage local authorities to reach out to major groups such as children and youth, women, local parliamentarians and/or legislators, non-government organizations (NGOs) and businesses, to raise awareness about the importance of biodiversity and promote partnerships on local action for biological diversity.³¹

These guidelines focus on local-national cooperation and coordination for biological diversity through participation in national and local dialogues and planning and implementation procedures. It also emphasizes the capacity of local government to prepare and implement local plans and to facilitate vulnerable groups and other stakeholder's activities. Therefore, these guidelines could be important for strengthening local government's role in climate impacted food security, particularly for protecting biological diversity.

5 Convention to Combat Desertification

The impact of drought and the desertification of land are closely linked with food security. Climate change and its corresponding impacts on increasing desertification and increased drought conditions have been well acknowledged by the IPCC in its assessment reports.³² In 1994, to combat drought and desertification, the *United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (CCD)* was initiated.³³ The *CCD* recognizes the importance of locally implemented programs and communities for combating drought.³⁴ The convention text did not specifically mention the role of local government to combat desertification, but a number of articles recommend guidelines for effective local action that also show the scope and potential for local government roles. The guidelines associated with local action are:

³¹ *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Tenth Meeting* Agenda Item 2.3 and 7 UN Doc. UNEP/CBD/COP/DEC/X/22 (29 October, 2010).

³² Virginia R. Burkett et al, 'Point of Departure' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)169, 175.

³³ *United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa*, UN Doc No. A/AC.241/27 (12 September 1994).

³⁴ *Ibid* Article 3.

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1. Encourage by creating an environment for participation of local people, particularly women and youth, in decision making
2. The role of local government should be specified in national policies
3. Institutional frameworks should promote cooperation and coordination
4. National programmes should allow participation of local people
5. Early warning systems should be established at local level
6. Drought preparedness and management should be strengthened at local level
7. Research on combating desertification should address local needs
8. Capacity building, education and public awareness building; and
9. Channel financial resources rapidly and efficiently to the local level.³⁵

The abovementioned guidelines for improved local action for combating desertification can be applied more generally to improve local government, beyond desertification (which is of growing importance to food security), and the *CCD* gives timely recognition of the role of local communities as the primary mechanism for national implementation.

6 Programme for the Further Implementation of Agenda 21

In 1997, five years after the adoption of Agenda 21, the United Nations in its nineteenth special session adopted 'Programmes for Further Implementation of Agenda 21' which reviewed the progress of agenda 21 and suggested further actions.³⁶ The 'Programme' observed the growing impacts of climate change and concerns on global food security, particularly in the least developed countries, and emphasized on taking an integrated approach to address the problem.³⁷ The 'Programme' also acknowledged the importance of local government by stating that '[t]he efforts of local authorities are making Agenda 21 and the pursuit of sustainable development a reality at the local level through the implementation of "local Agenda 21s" and other sustainable development programs.'³⁸ Some recommendations made in the 'Programme' for improving governance are applicable to strengthening the role of local authorities, such as:

1. Ensuring equity in service delivery

³⁵ Ibid Articles 3,5, 10, 19, 20)

³⁶ *Programme for the Further Implementation of Agenda 21*, GA/RES/S-19/2, 19th sess, Agenda Item 8, UN Doc A/RES/S-19/2 (19 September 1997) < <http://www.un.org/documents/ga/res/spec/aress19-2.htm>>.

³⁷ Ibid para 8-9, 33 and 48.

³⁸ Ibid para 12.

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2. Development of Local Agenda 21 should be encouraged
3. Environmental pollution control activities should be included in local policies
4. Strengthening of local capacity and private-public partnerships
5. Ensure participation of local authorities, as well as local communities, in water resource management
6. Transport facilities (an important aspect for food access and availability) should be coordinated with local authority
7. Adopting an ecosystem approach in planning and development of land and agriculture; and
8. An integrated approach to address soil and land resources by including all stakeholders at both local and national levels.³⁹

The above recommendations indicate that integration in approaches is an important guideline for improving governance, including local governance, in sustainable development of food security impacted by climate change. The recommendations also provide for the improvements in local planning, public participation, equity and coordination.

7 The Millennium Development Goals:

In 2000, the United Nations (UN) organized the Millennium Summit, where the Heads of States and governments of the member countries, gathered at the UN to reaffirm their trust in the UN and its charter. The Summit adopted a resolution called ‘United Nations Millennium Declaration’ which expressed a shared vision of the countries for the new millennium.⁴⁰ The shared vision of the countries was explained under ‘eight goals’, set to be achieved by 2015, and became popularly known as ‘Millennium Development Goals (MDGs)’.⁴¹ The MDGs were further elaborated under a number of targets and indicators. Some of the MDGs are associated with food security and addressing climate change impacts such as the eradication of hunger and extreme poverty (goal 1),

³⁹ Ibid paras 8, 24a, 31,32,34c, 47, 62.

⁴⁰ *United Nations Millennium Declaration*, GA Res 55/2, 55th Sess, Agenda Item 60(b), UN Doc A/RES/55/2 (18 September, 2000).

⁴¹ ‘The Millennium Development Goals Report 2015’ (The United Nations, 2015)⁴ <http://www.un.org/millenniumgoals/2015_MDG_Report/>; the eight goals are 1) eradicate extreme poverty and hunger 2) achieve universal primary education 3) promote gender equality and empower women 4) reduce child mortality 5) improve maternal health 6) combat HIV/AIDS, malarial and other diseases 7) ensure environmental sustainability, and 8) develop a global partnership for development.

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combating against diseases (goal 6) and sustainable development and environmental protection (goal 7).

The Millennium Declaration also provided some legal and institutional guidelines for achieving the MDGs:

1. Achieving good governance at every level of government
2. Resources should be mobilized to ensure sustainable development
3. Promotion of gender equality and empowerment of women and create employment opportunities for young people
4. Develop partnership with private organizations and civil society
5. Integrating the principles of sustainable development into policies and implementation programmes
6. Emphasis on cooperation, coordination and partnership for development
7. Integrating the principles and guidelines provided in the Agenda 21, CBD and CCD
8. Implement the principles of democracy and respect for human rights; and
9. Protecting the vulnerable people from impacts of climate change such as natural disasters.⁴²

The target period for achieving MDGs (by the year 2015) has passed with limited effectiveness overall, though some success has been achieved, particularly in reducing extreme poverty and hunger.⁴³ Although the MDGs, targets and indicators basically indicate responsibilities of national governments and international organizations, local government also had a major role to implement MDGs.⁴⁴ It is argued that achieving many MDG targets were related with effective delivery of services that local governments provide for local food security and addressing climate change impacts such as basic health services, construction of roads, improving drinking water and sanitation, agriculture extension for food production, fostering local economic activities, building resilience to climate change, monitoring local food security conditions, managing environmentally sound agriculture and development and promoting gender equality.⁴⁵ The 2015 Millennium Development Goal Report found that local actions and plans taken by local government to meet

⁴² *United Nations Millennium Declaration*, GA Res 55/2, 55th Sess, Agenda Item 60(b), UN Doc A/RES/55/2 (18 September, 2000)

⁴³ The Millennium Development Goals Report 2015, above n 41, 4.

⁴⁴ See, e.g., Nicola Crosta, 'Localizing the MDGs, Local Development and MDGs: What Role for Local Governments?' (Conference framing paper, Global Forum on Local Development, Uganda, October, 2010) 8.

⁴⁵ *Ibid* 8-12.

local priorities worked well to achieve MDGs in many local areas.⁴⁶ The Report also found that local data for addressing MDGs varied from region to region and was a major barrier for implementing MDGs.⁴⁷ The successes from the MDG guidelines include: strengthening the role of local government, facilitated implementation of other international sustainable development policies, guidelines and strategies.

8 *New Delhi Declaration of Principles of International Law Relating to Sustainable Development*

The International Law Association or ILA is a recognized international non-governmental organization that works on studying, clarifying and developing international law of different areas.⁴⁸ In 2002, in its 70th Conference held in New Delhi, the ILA developed seven principles for sustainable development.⁴⁹ The New Delhi Declaration⁵⁰ acknowledged the principles and guidelines developed in previous international reports and conferences such as *Our Common Future*, *the Rio Declaration* and *the Agenda 21*.⁵¹ The New Delhi Declaration did not explicitly mention food security issues and the role of local government in the context of climate change impacts. However, it provides a general set of principles for environmentally sustainable development which is important for sustainable food security and effective role of local government.⁵² The principles for sustainable development articulated in the New Delhi Declaration are:

1. Principle 1: The duty of States to ensure sustainable use of natural resources
2. Principle 2: The principle of equity and the eradication of poverty
3. Principle 3: The principle of common but differentiated responsibilities

⁴⁶ The Millennium Development Goals Report 2015, above n 41, 10.

⁴⁷ Ibid.

⁴⁸ *International Law Association* < http://www.ila-hq.org/en/about_us/index.cfm >.

⁴⁹ 'ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development' (2002) 2(2) *International Environmental Agreements: Politics, Law and Economics* 209.

⁵⁰ *New Delhi Declaration of Principles of International Law Relating to Sustainable Development* was adopted in the 70th Conference of the Law Association held in New Delhi, India, from 2-6 April 2002, resolution 3/2002; see International Law Association, *Conference Resolution (English) New Delhi 2002* <<http://www.ila-hq.org/en/Others/document-summary.cfm/docid/65DD8DEF-E74D-4ED5-925EBC6D73F19C97>>.

⁵¹ 'ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development' above n 49, 211.

⁵² Chapter 2 discussed about the relationship between sustainable development and sustainable food security, See section II(A)3 of Chapter 2. Chapter 2 also discussed about the future roles of local government in addressing climate impacted food security and sustainable development issues that justifies the importance of sustainable development principles of ILA in this context.

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4. Principle 4: The principle of the precautionary approach to human health, natural resources and ecosystems
5. Principle 5: The principle of public participation and access to information and justice
6. Principle 6: The principle of good governance; and
7. Principle 7: The principle of integration and interrelationship, in particular in relation to human rights and social, economic and environmental objectives.⁵³

Principle 1 emphasizes the sustainable use of natural resources that are important element of food security and are also under the potential threat of climate change. Local government may share this State responsibility at local level to facilitate State actions. Principles 2-6 generally reflects the principles developed in previous international conventions and conferences such as the Rio Declaration and the Aarhus Convention.⁵⁴ Principle 7 indicates the importance of integrating social, economic, financial, environmental and human rights aspects of sustainable development. Given the multidimensional aspects of food security (availability, access, utilization and stability) and impacts of climate change on these pillars,⁵⁵ this principle of integration would be appropriate for addressing sustainable development in food security. The New Delhi Declaration states that ‘All levels of governance – global, regional, national, sub-national and local – and all sectors of society should implement the integration principle, which is essential to the achievement of sustainable development’.⁵⁶ Therefore, this principle has implications for effective role of local government. The New Delhi Declaration also suggests these principles of sustainable development for all stakeholders that are involved ‘in pursuing the objective of sustainable development in an effective way’.⁵⁷ Therefore, these principles apply to local government that is an important institution for ensuring sustainable development particularly in the context of addressing climate impacted food security.⁵⁸

⁵³ 'ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development' above n 49, 213-216.

⁵⁴ The Rio Declaration and Aarhus Convention have been discussed in Chapter 3. Chapter 3 also focused on good governance principles particularly for local government that has been discussed in sub-section II (D).

⁵⁵ See Chapter 2 for the pillars of food security.

⁵⁶ 'ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development' above n 49, 216.

⁵⁷ Ibid 213.

⁵⁸ Chapter 1 discussed about the importance of local government in addressing climate impacted food security. See sub-section III (E) and III (F) of chapter 1.

9 World Summit on Sustainable Development, Johannesburg, 2002

The 2002 World Summit on Sustainable Development (WSSD) recommended renewed actions at every level of governance through participation in decision making and implementation.⁵⁹ The Summit emphasized collective responsibility to achieve sustainable development and acknowledged the importance of the guidelines provided in the Rio Declaration and Agenda 21.⁶⁰ WSSD acknowledged the impacts of climate change on agriculture and food security as a major challenge for sustainable development.⁶¹ A Plan of Implementation (known as The Johannesburg Plan of Implementation) was developed at the summit outlining the strategies for sustainable development for institutions working at various levels.⁶² The Johannesburg Plan of Implementation provided recommendations for institutional development at the national level for sustainable development.⁶³ The most important recommendations for involving local government in the process are:

1. Development of existing legal and institutional setting for strengthening the role of institutions in policy making, implementation, coordination and enforcement of law
2. Development of law and policies that promote public participation and access to information
3. Inclusion of local level institutions in the national councils for sustainable development for ensuring multi-stakeholder participation; and
4. Encouraging the role of local authorities in implementing Local Agenda 21 through building partnership programmes with local authorities.⁶⁴

The recommendations emphasize improving legal and institutional frameworks for strengthening local government such as provisions for public participation, access to information, scope for participating in national dialogues and partnership building.

⁵⁹ *Report of the World Summit on Sustainable Development*, UN Doc A/CONF.199/20 (26 August-4 September, 2002) Annex, para 23.

⁶⁰ *Ibid* paras 5, 8

⁶¹ *Ibid* para 13.

⁶² *Ibid* Resolution 2, annex (Plan of Implementation of the World Summit on Sustainable Development).

⁶³ *Ibid* Resolution 2, annex (Plan of Implementation of the World Summit on Sustainable Development) art. 162.

⁶⁴ *Ibid* Resolution 2 annex (Plan of Implementation of the World Summit on Sustainable Development) arts 164, 165 and 167.

10 *Rio+20 The Future We Want*

The United Nations Conference on Sustainable Development (UNCSD) was held in 2012 in Rio de Janeiro to mark the progress since UNCED in 1992 and set strategies for future action.⁶⁵ The summit is also known as ‘Rio+20 – The Future We Want’. The summit reviewed the achievements of sustainable development over the period of 1992-2012 and recommended further action that included institutional frameworks for sustainable development. The summit acknowledged the role of local authorities in sustainable development,⁶⁶ particularly in decision making and implementation of sustainable development programs.⁶⁷ Some guidelines for improving local governance, food security, nutrition, sustainable agriculture, water and sanitation are:

1. Coherent and integrated planning that includes local authorities with national government
2. Comprehensive national and local waste management policies, strategies, laws and regulations
3. Strengthening of local financial mechanisms for better implementation of sustainable development
4. Increase access to finance, market, health care, social services, education, training for local people, particularly the vulnerable people
5. Local government development activities should consider empowering local women for agriculture, food security and sustainable development
6. Local government development planning should support sustainable agriculture, integrate water and sanitation into local sustainable development projects, develop integrated water resource management, incorporate the importance of ecosystem in sustainable water management; and develop disaster management and pollution control measures.⁶⁸

The above guidelines provide more recent insights and experience for developments required in the legal and institutional frameworks of local government to improve local governance of food security for sustainable development and climate change impacts.

⁶⁵ *Report of the United Nations Conference on Sustainable Development*, UN Doc A/Conf.216/16 (20-22 June 2012) annex (The Future We Want).

⁶⁶ *Ibid* art 76.

⁶⁷ *Ibid* art 98.

⁶⁸ *Ibid* arts 101, 109-124, 218, 253.

11 The United Nations Sustainable Development Goals:

The United Nations Sustainable Development Summit (UNSDS), held in 2015, set 17 sustainable development goals (SDGs) and 169 targets for achieving global sustainable development by 2030.⁶⁹ The UNSDS has the vision to address food security concerns such as reducing hunger and poverty, ensuring safe drinking water and sanitation facilities, ensuring safe and nutritious food for all and ensuring sustainable use of natural resources and environmental protection.⁷⁰ Some of the SDGs specifically address food security and climate change impacts, such as Goal 12 focused to ‘end hunger, achieve food security and improved nutrition and promote sustainable agriculture’⁷¹ and Goal 13 addresses climate change impacts, natural disasters and environmental protection.⁷² Therefore, the vision of the UNSDS and the SDGs are very much aligned with addressing food security and environmental protection.

The UNSDS, while setting the SDGs, also discussed the roles of different stakeholders and provided guidelines for attaining the SDGs. The necessary role of local government to implement the SDGs with the national government was highlighted.⁷³ Some of the guidelines for attaining SDGs are relevant to addressing climate change and food security. These are:

1. Partnership is essential for implementing the SDGs
2. Arrangement and flow of financial resources are key to implementing SDGs and targets
3. National law should support financing SDGs and develop accountability measures for implementation
4. Regular follow-up and review of the implementation status of SDGs are important
5. Local planning should incorporate SDGs and targets in accordance with local circumstances
6. Increase investment in rural agriculture and infrastructure development

⁶⁹ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015).

⁷⁰ Ibid para 7-8.

⁷¹ Ibid para 59.

⁷² Ibid para 59; Goal 13 is ‘Take urgent action to combat climate change and its impacts’, Goal 14 is ‘Conserve and sustainably use the oceans, seas and marine resources for sustainable development’ and Goal 15 is ‘Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.’

⁷³ Ibid para 45.

7. Develop measures to ensure proper functioning of commodity markets so that food price volatility can be controlled
8. Policies should be developed to promote women empowerment
9. Local participation should be encouraged to improve water and sanitation programmes
10. Development oriented activities should be promoted to create employment opportunities
11. Resilience and adaptive capacity should be strengthened to face climate induced hazards
12. Climate change measures should be integrated into policies, strategies and plans
13. Education, human and institutional capacity building program should be given emphasis
14. Promote sustainable management of forests; and
15. Land and natural habitat degradation should be addressed to reduce desertification effects.⁷⁴

These guidelines are important because the SDGs reflect the future action plans for all countries for sustainable development up to 2030. The guidelines update and revise previous recommendations made in major international policy responses.⁷⁵ Therefore, strengthening the role of local government would require considering the abovementioned guidelines for addressing climate impacted food security.

B International Policy Responses to Climate Change Impacts

This chapter is focused on finding the appropriate legal and institutional principles and guidelines recommended in international policy responses. This chapter will also address the second part of the first research question i.e. what are the international legal and institutional principles and guidelines that have been recommended to strengthen future roles. The previous section on ‘environment and sustainable development’ identified some important principles and guidelines recommended in a number of international policy responses. This section will identify the recommendations made by the international policies focused on climate change impacts, adaptation and mitigation options that are relevant to improving local government roles, particularly for climate impacted food security issues.

⁷⁴ Ibid paras 39, 41, 45, 55 and 59.

⁷⁵ Ibid para 11.

1 *The United Nations Framework Convention on Climate Change:*

The IPCC AR5 report has specifically acknowledged the linkage between greenhouse gas (GHG) emissions and climate change.⁷⁶ The *United Nations Framework Convention on Climate Change (UNFCCC)* focuses on reducing GHG emissions and sets its objectives to stabilize the atmospheric GHG at a level that would prevent further climate change.⁷⁷ In achieving this objective, the *UNFCCC* acknowledges the importance of incorporating local conditions⁷⁸ as well as the involvement of local stakeholders.⁷⁹ The *UNFCCC* formally recognized the role of local government in addressing climate change impacts in the Cancun Conference. The Cancun declaration stated that:

[S]takeholders at global, regional, national and local levels, be they government, including subnational and local government, private business or civil society, including youth and persons with disability, and that gender equality and the effective participation of women and indigenous peoples are important for effective action on all aspects of climate change.⁸⁰

The recognition and role of local government to address the impacts of climate change was further elaborated in the following COPs. COP 17 at Durban in 2011 suggested for the Parties to engage local level institutions⁸¹ to develop local sustainable development plans, encourage and facilitate mobilization of local information⁸² and seek input.⁸³ COP 17 also suggested involving local stakeholders in preparing National Adaptation Plans (NAP).⁸⁴ COP 18 at Doha in 2012 acknowledged local capacity to address loss and damages associated with climate change

⁷⁶See, Lisa V Alexander et al., 'Summary for Policymakers' in Thomas F. Stocker et al. (eds) *Climate Change 2013 The Physical Science Basis* (Cambridge University Press, 2013).

⁷⁷ *United Nations Framework Convention on Climate Change* U.N. Doc. A/AC.237/18 (Part II)/Add.1 (21 March 1994) Article 2.

⁷⁸ *Ibid* Article 3.

⁷⁹ *Ibid* Article 4 and 6.

⁸⁰ *United Nations Framework Convention on Climate Change: Report of the Conference of the Parties on its sixteenth session* UN Doc FCCC/CP/2010/7/Add.1, Decision 1/CP.16 (15 March 2011) Para 7 <<http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf>>.

⁸¹ *United Nations Framework Convention on Climate Change: Report of the Conference of the Parties on its seventeenth session* UN FCCC/CP/2011/9/Add.1, Decision 2/CP.17 (15 March 2012) Para 100 <<http://unfccc.int/resource/docs/2010/cop17/>>.

⁸² *Ibid* Para 93b.

⁸³ *Ibid* Para 105.

⁸⁴ *Ibid*.

impacts⁸⁵ COP 19 at Warsaw in 2013 placed emphasis on the potential of sharing of experiences by the local authorities.⁸⁶ COP 20 at Lima in 2014 did not explicitly refer to the actions of local government, but the draft negotiation text of COP 20 recognized the action of local authorities in reducing emissions, vulnerability and building resilience against the impacts of climate change.⁸⁷ The future roles of local government for addressing climate change impacts are evident in the outcomes of the abovementioned COPs. However, the legal and institutional guidelines to implement the future roles became evident in COP 21 held in Paris. The following section discusses these guidelines.

(a) COP 21 and the Paris Agreement:

In 2015, the parties of the *UNFCCC* in its 21st COP adopted the *Paris Agreement* to address climate change by controlling global GHG emissions.⁸⁸ The *Paris Agreement* recognized the importance of addressing climate change impacts on food security.⁸⁹ Having recognized the importance of food security, the *Paris Agreement* basically elaborated the responsibilities and guidelines for global mitigation and adaptation actions. The *Paris Agreement* placed greater importance on adaptation funding and actions. Recommendations for effective adaptation guidelines indicated scope for improving legal and institutional frameworks for strengthening local government, such as:

1. Adaptation actions should be focused on enhancing adaptive capacity, strengthening resilience and reducing vulnerability; and

⁸⁵ *United Nations Framework Convention on Climate Change: Report of the Conference of the Parties on its eighteenth session* UN Doc FCCC/ CP/2012/8/Add.1, Decision 1/CP.18 (15 March 2012) <<http://unfccc.int/resource/docs/2010/cop18/>>.

⁸⁶ *United Nations Framework Convention on Climate Change: Report of the Conference of the Parties on its nineteenth session* UN Doc FCCC/ CP/2013/10, Decision 1/CP.19 (31 January 2014) <<http://unfccc.int/resource/docs/2010/cop19/>>.

⁸⁷ *United Nations Framework Convention on Climate Change: Report of the Conference of the Parties on its twentieth session* UN Doc FCCC/ CP/2014/10/Add.1, Decision 1/CP.20 (2 February 2015) <<http://unfccc.int/resource/docs/2014/cop20/eng/10a01.pdf#page=2>>.

⁸⁸ *Conference of the Parties, United Nations Framework Convention on Climate Change, Adoption of the Paris Agreement*, UN Doc FCCC/CP.2015/L.9/Rev.1 (12 December 2015) Annex.

⁸⁹ *Ibid.*

2. Adaptation actions should be gender responsive, participatory, transparent, consider both vulnerable people and ecosystems, local and indigenous knowledge, guided by science, and integrate social, economic and environmental policies together.⁹⁰

These guidelines indicate the qualities that legal and institutional frameworks of any institution should have for effective adaptation action against the impacts of climate change, including impacts on food security. Local government as an important local level institution for addressing climate change impacts should adopt these qualities into the legal and institutional framework to provide an effective role in climate impacted food security.

2 Recommendations of the IPCC AR5 Report:

The IPCC AR5 report has articulated some principles for effective adaptation in the context of climate change.⁹¹ Most of the principles for effective adaptation articulated by the AR5 included strategies for improved climate change governance; such as:

1. Adaptation is place and context specific: this principle emphasises acknowledging the differences in adaptation actions that are influenced by different local conditions. This principle sets the foundation for involving local level stakeholders in the decision making process and strengthen their role to better address local contexts in national policies as well as determining implementation strategies.⁹²
2. Adaptation planning and implementation requires effective roles of both individuals and all levels of government: this principle signifies the role of local government in climate adaptation. Government policies that acknowledge this principle are more likely to acknowledge the importance of the role of local government in adaptation actions.⁹³
3. Reducing vulnerability and exposure to present climate variability should be the prime task for adaptation: this principle emphasises the prime objective, i.e. reducing vulnerability, of all governance strategies and roles of stakeholders in facilitating adaptation action.⁹⁴

⁹⁰ Ibid Annex article 7.

⁹¹ Field et al, above n 2, 25.

⁹² Ibid.

⁹³ Ibid 26.

⁹⁴ Ibid.

4. Decision making processes at all level of governance should consider diversity in social values, interest and cultural contexts. Therefore, local government decision making should also adhere to this principle.⁹⁵
5. Support to facilitate decision making should consider the diversity in the decision maker's conditions: this principle directs the upper authority (e.g. central government) to consider the local contexts of lower authorities (e.g. local government) while facilitating decision making.⁹⁶
6. Economic instruments are important for implementing adaptation actions: this principle states the scope of economic instruments as an effective tool for facilitating adaptation. However, governance strategies should also consider careful use of the existing economic instruments so that the adverse effects arising from the misuse of these instruments could be prevented.⁹⁷
7. Poor governance structure may impede adaptation and result in maladaptation: this principle indicates the importance of good governance for effective adaptation action. Therefore, the existence of good governance elements in the legal and institutional framework is important.⁹⁸

These principles provide a very useful foundation for addressing the research questions in this dissertation through considering local government's role in adaptation options for food security. The core areas that the principles cover are climate adaptation strategies to ensure effective roles for all stakeholders, understanding vulnerability, diversity in decision making, use of economic instruments and strong governance structures. The principles have also acknowledged the importance of place and context for adaptation, as well as the importance of governance at each respective level. Therefore, these principles provide some of the essential attributes of a legal and institutional structure for strengthening local government roles for addressing climate change impacts.

⁹⁵ Ibid 27.

⁹⁶ Ibid.

⁹⁷ Ibid 28.

⁹⁸ Ibid.

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The IPCC AR5 report discussed the adaptation options available for food security⁹⁹ by focusing on governance strategies to reduce risk and vulnerability by adjusting practices and processes against the impacts of climate change. Such processes and practices include changes in social and institutional structures that influence decision making and necessary actions.¹⁰⁰ Integration of non-climatic pressures, such as population growth, into food security actions, investment in new technologies, infrastructure and engagement processes are some of the changes in decision making process that are suggested by AR5.¹⁰¹

According to the IPCC, food production is an essential indicator for food security, especially for developing countries that depend on domestic food production for food availability, as well as for livelihood options.¹⁰² Therefore, policies, institutions and related adaptation actions that address local food production demands more focus in governance strategies. The AR5 recommended a number of governance actions for food availability include enhanced food storage, reserves and distribution policies,¹⁰³ improving irrigation facilities¹⁰⁴ and changing crop planting dates to adjust with changing climate.¹⁰⁵ In the fisheries sector, such strategies include planning and management of watersheds and wetlands¹⁰⁶ and the restoration of habitat for the fisheries.¹⁰⁷ Some other governance actions include improvement in machineries and techniques like dry sowing, seedling transplanting and speed priming,¹⁰⁸ relocation of property that is exposed to sea level rise, diversification of activities including higher value activities (e.g. water use efficiency) and providing an insurance scheme for small scale farmers.¹⁰⁹ The major AR5 guidelines for improving governance of climate impacted food security are:

1. Adaptive strategies should incorporate multilevel governance

⁹⁹ John R Porter et al., 'Food Security and Food Production Systems' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A : Global and Sectoral Aspects* (Cambridge University press, 2014)485, 513-520.

¹⁰⁰ Ibid 513.

¹⁰¹ Ibid 514.

¹⁰² Ibid 514.

¹⁰³ Ibid 515.

¹⁰⁴ Ibid 504.

¹⁰⁵ Ibid 514.

¹⁰⁶ Ibid 516-517.

¹⁰⁷ Ibid 517.

¹⁰⁸ Ibid 514.

¹⁰⁹ Ibid 517.

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2. Adaptation action should be taken in every scale of governance; from field to policy
3. Adaptive capacity of the decision makers at all levels should be increased
4. Investment in new technologies, infrastructure, information, and engagement processes should be prioritised
5. Addressing adaptation costs, barriers and limits in adaptation planning is important
6. Following an ecosystem approach to maximize resilience of the ecosystem
7. Adaptability and flexibility in governance system
8. Incorporation of indigenous knowledge in adaptation actions
9. Devolution of the decision-making process to integrate local, contextual information into adaptation decision making; and
10. Enhancement of other climate-affected aspects of food systems such as food reserves, storage, and distribution policies and systems, provision of effective insurance markets, clarity in property rights, building adaptive capacity, and developing effective participatory research cultures.¹¹⁰

The above list provides a summary of the strategies required to improve climate impacted food security governance. These strategies indicate the necessary changes in policies, decision making processes, governance structures and approaches to improve climate impacted food security governance. It is noteworthy that the IPCC clearly recognized the role of local government in addressing climate change impacts.¹¹¹ Therefore, the guidelines provided above to improve governance of climate impacted food security will also be applicable for strengthening local government roles.

¹¹⁰ Ibid 489-518.

¹¹¹ Yury Anokhin et al., 'Adaptation Needs and Options' in Christopher B. Field et al. (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2013)833, 836.

C International Policy Responses on Food Security

Food security is one of the major conceptual areas of this thesis. This section will identify the legal and institutional principles and guidelines recommended in international policy responses on food security that are relevant to improve the future role of local government to address climate impacted food security.

1 The Food Security Conferences and Five Rome Principles for Sustainable Global Food Security

The FAO organized three conferences on food security over the last four decades (1974, 1996 and 2009) to provide guidelines for addressing global food security concerns.¹¹² Each of the three conferences provided guidelines for legal and institutional changes to provide for food security. The 1974 World Food Conference placed importance on trade issues and provided guidelines for establishing and holding stocks against the vulnerabilities due to climate induced hazards such as droughts and floods.¹¹³ The World Food Summit 1996 considered food security concerns from a broader point of view by acknowledging the social, political, economic and environmental aspects of food security and subsequently provided a comprehensive ‘plan of action’ for addressing the concerns.¹¹⁴ The Summit acknowledged the impacts of climate change as a major threat to food security and provided guidelines. The guidelines that reflect legal and institutional improvements in food security governance emphasized poverty reduction, creating an environment for stakeholders to play their respective roles, taking measures to improve food availability such as improving food production and facilitating food aid programs, resource generation, promoting participatory adaptation actions to reduce climate induced vulnerabilities, food trade policies should focus food security, improving disaster preparedness, foster investment opportunities and follow up mechanisms for evaluating the actions.¹¹⁵ The Summit mentioned that ‘[i]f all parties at local, national, regional and international levels make determined and sustained efforts, then the overall goal of food for all, at all times, will be achieved.’ Therefore, the emphasis on local

¹¹² See *Declaration of the World Summit on Food Security*, Doc WSFS 2009/2, November 2009) para 1; *Rome Declaration on World Food Security and World Food Summit Plan of Action* (The FAO, 1996) <<http://www.fao.org/docrep/003/w3613e/w3613e00.HTM>>; ‘Council of FAO: Report of the 64th Session’ (The FAO Corporate Document Repository, 1974) <<http://www.fao.org/docrep/meeting/007/F5340E/F5340E03.htm>>.

¹¹³ ‘Council of FAO: Report of the 64th Session’ (The FAO Corporate Document Repository, 1974) <<http://www.fao.org/docrep/meeting/007/F5340E/F5340E03.htm>>.

¹¹⁴ *Rome Declaration on World Food Security and World Food Summit Plan of Action* (The FAO, 1996) <<http://www.fao.org/docrep/003/w3613e/w3613e00.HTM>>.

¹¹⁵ *Ibid.*

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government's role is evident and the guidelines provided for improving food security governance are also relevant to improving the legal and institutional frameworks of local government to play an effective role in climate impacted food security.

The *World Summit on Food Security 2009* in Rome, Italy, provided some basic principles for addressing food security issues. The principles are known as the 'Five Rome Principles for Sustainable Global Food Security' and they reflect contemporary governance strategies for improving food security:

Principle 1: Encouraging investment for programs and partnerships focusing upon food security.

Principle 2: Improving coordination at all level of governance, guaranteeing allocation of resources, and avoiding duplication of action.

Principle 3: Promoting short and long term action plans for food security.

Principle 4: Capacity building of institutions; and

Principle 5: Commitment of investment with appropriate planning programs.¹¹⁶

The Five Rome Principles are the latest outcomes of the FAO initiatives for developing consensus on global food security strategies. The Five Rome Principles indicate the necessity of governance strategies for food security that would promote partnership, coordination, capacity building and appropriate planning. This cannot be undertaken without more inclusive and powerful leadership roles for local government.

The Summit considered food security a national responsibility and called for national actions through appropriate stakeholder participation in the decision making process¹¹⁷ as well as coordination mechanisms and networking among the stakeholders.¹¹⁸ The Summit stressed rural development, employment generation for enhancing access to food and capacity building of the institutions involved in food security actions. For this the Summit urged for integrated policy approaches that would address both institutions and people.¹¹⁹

¹¹⁶ 'Declaration of the World Summit on Food Security' WSFS 2009/2 (November 2009) para 8
<http://www.fao.org/fileadmin/templates/wsfs/Summit/docs/Final_Declaration/WSFS09_Declaration.pdf>.

¹¹⁷ Ibid principle 1.

¹¹⁸ Ibid principle 2.

¹¹⁹ Ibid principle 3.

D International Policy Responses on Good Governance and Decentralization

Principles and guidelines for strengthening governance at local level through decentralization are reflected in some major international conferences. ‘The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy’ and Good Governance¹²⁰ and ‘International Guidelines on Decentralization and the Strengthening of Local Authorities’¹²¹ provide significant legal and institutional principles and guidelines for strengthening local government roles. A number of international policy responses, discussed above, have also consistently recommended improving the scope of public participation, access to information and justice for improving governance of climate impacted food security. ‘The Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters’¹²² provides fundamental legal and institutional guidelines for strengthening governance that should be applied to local government legal and institutional framework as well. The following section will discuss how these international norms can be recognized through appropriate legal and institutional principles and guidelines for local government.

1 The United Nations Principles of Good Governance:

Chapter 2 mentioned good governance principles developed by the United Nations Development Program (UNDP).¹²³ The UNDP principles for good governance include legitimacy and voice (participation and consensus orientation); direction (strategic vision); performance (responsiveness, effectiveness and efficiency); accountability and transparency; fairness (equity and rule of law).¹²⁴ These principles were considered to be important factors for achieving Millennium Development Goals by UN member states. These UN principles of good governance provide guiding principles for strengthening local government and its role in risk environments such as addressing the adverse impacts of climate change on food security.

¹²⁰ ‘The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance’ (Commonwealth Local Government Forum, April 2005) <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

¹²¹ International Guidelines on Decentralization and Strengthening of Local Authorities’ (Guideline, UN-HABITAT, 2007) < http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

¹²² *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001).

¹²³ See sub-section II (C) of chapter 2; ‘Governance for Sustainable Human Development’ (United Nations Development Programmes, New York, 1997).

¹²⁴ ‘Governance for Sustainable Human Development’ (United Nations Development Programmes, New York, 1997).

This thesis has argued that participatory political environments for decision making suits uncertain and risk situations, particularly at local level. This usually provides for better results by offering diverse processes and outcomes for addressing risks, addresses equality and ownership issues contributes to overall adaptability and stability of institutions and flexibility in decision making.¹²⁵ The climate change context of food security where the risks on food security arising from climate change requires such participatory processes as a central element require participation and consensus orientation.

However, the success of participatory political process depends on accountability, transparency and rule of law.¹²⁶ Also, equity should require the inclusion of the vulnerable population (individuals and generally excluded groups in decision making) in the development process.¹²⁷ In the context of food security and climate change, equity in development activities should provide for the needs of the most vulnerable populations and communities.

2 Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters (The Aarhus Convention)

The *Aarhus Convention* was adopted at the United Nations Economic Commission for Europe in the Danish city of Aarhus on 25 June, 1998.¹²⁸ The Convention set a number of rights (public participation, access to information and justice) regarding the environment and the people for the participating States of the European Union (EU). Despite its applicability in the EU countries, the convention is well acknowledged in other international agreements, particularly concerning public participation issues.¹²⁹ The convention recognized that every human being has a right to live in a healthy environment, which is essential for human well-being.¹³⁰ Building on this right, the convention sets out three basic substantive and procedural rights of the public in relation to environmental matters.¹³¹ The rights are:

¹²⁵ 'Towards Human Resilience: Sustaining MDG Progress in an Age of Economic Uncertainty' (UNDP Report, September, 2011) 279.

¹²⁶ Ibid 280; Governance for Sustainable Human Development' above n 124..

¹²⁷ Towards Human Resilience: Sustaining MDG Progress in an Age of Economic Uncertainty' above n 125, 280.

¹²⁸ Ibid.

¹²⁹ The United Nations Economic Commission for Europe (UNECE), *Introduction* <<http://www.unece.org/env/pp/introduction.html>>.

¹³⁰ *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001).

¹³¹ Charles Banner, 'The Aarhus Convention: An Overview' in Charles Banner (eds) *The Aarhus Convention: A Guide for UK Lawyers* Hart Publishing, Oxford, 2015, page 2.

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1. the right to access to information¹³²
2. the right to participate in environmental decision making;¹³³ and
3. the right to access to justice to review procedures about accessing appropriate information.¹³⁴

To support these rights, the *Aarhus Convention* requires the parties¹³⁵ to implement legal and institutional measures through various public authorities and local government is recognized as an authority under the Convention.¹³⁶ The authorities should take necessary legislative, regulatory and other measures to implement necessary actions for ensuring public participation in environmental decision making, access to information as well as access to justice in environmental issues.¹³⁷ The legal and institutional settings for facilitating public participation in the Aarhus Convention are articulated in provisions of the convention text:

1. The promotion of environmental education and environmental awareness among the people and assisting environmental groups or associations working for environmental protection through providing a legal framework for their activities.¹³⁸ It follows that local government, as an ‘authority’ under the *Aarhus Convention*, should be entitled to promote environmental awareness among its citizen as well as being involved in coordinating activities of environmental groups work in local areas.
2. Environmental information should be made available upon request and at the quickest possible time to the citizen, for which appropriate legal provision should be available in respective legal frameworks. Procedures for responding to such requests should also be prepared:¹³⁹ This requires improved accountability and transparency in governance systems for accessing environmental information by the public. Legal procedures that increase accountability of local government towards its citizens would include public access to environmental information in this respect.

¹³² *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, above n 130, arts 4-5.

¹³³ *Ibid* arts 6-8.

¹³⁴ *Ibid* art 9.

¹³⁵ Party” means the signatory States of the Convention.

¹³⁶ According to the Article 2 of the convention public authority includes governments at national, regional and other level. Therefore, local government is also an ‘authority’ under this Convention.

¹³⁷ Above n 130, art 3.

¹³⁸ *Ibid*.

¹³⁹ *Ibid* art 4.

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3. A system for the proper flow of information about environmental issues involving different public authorities should be developed with necessary updates on environmental issues.¹⁴⁰ Article 3 of the Convention identifies a key role for local authorities providing efficient information systems to be delivered to local people. Information about environmental hazards and necessary actions and options for preventing, mitigating or adapting to current and future situations are important to the preparation of local plans, strategies and rules. This provision also requires dissemination of the information about environmental hazards and actions as soon as possible to the most vulnerable people.¹⁴¹ Therefore, legal provisions indicating the necessity of such a flow of national data to local authorities, and subsequently defining the responsibilities of local authorities would be essential in this regard.

4. Appropriate legal provisions for ensuring transparency of the information provided to the people by the respective authority. Environmental information should be made available through electronic databases for better access.¹⁴² Transparency and access to governance systems has been seen as an important aspect in this provision, while legal provisions that promote transparency of local government would be helpful for this purpose.

5. Provisions for public participation for public hearings or inquiries, environmental planning and programs, time, stage and level of public participation, should ensure public participation in environmental decision making.¹⁴³ These provisions emphasize appropriate legal procedures such as providing timely notice to the public by detailing the issues, creating opportunities for public participation in policy dialogues, justified timeframes for public participation and making a contribution in the decision making. Local government law and policies should incorporate public participation and widen local government participation in environmental decision making processes through local and national policy dialogues. The increased capacity of local government to facilitate public participation would strengthen its future in the environmental decision making processes.

6. Article 9 of the *Aarhus Convention* defines the right to access justice for reviewing environmental decisions by appropriate courts of law, or to any independent body formed for this

¹⁴⁰ Ibid art 4.

¹⁴¹ Ibid art 4.

¹⁴² Ibid art 5.

¹⁴³ Ibid arts 6-8.

purpose by law.¹⁴⁴ These legal provisions are fundamental for public access to justice. This provision would not only contribute to improve accountability of local government by ensuring access to information and public participation but also would improve accountability in environmental decision making through access to reviews by independent bodies.

The *Aarhus Convention* provides important attributes for developing legal and institutional frameworks concerning local government to strengthen their role in addressing food security issues impacted by climate change. It provides prerequisites to enhance ‘the quality and the implementation of decisions, contribute to public awareness of environmental issues, give the public the opportunity to express its concerns and enable public authorities to take due account of such concerns.’¹⁴⁵ Therefore, the presence of these attributes in local food security and climate change plans, strategies and rules as well as law and rules shaping local government’s role could improve public participation and accountability that has been regarded as an essential governance strategy in the preceding sections.

3 International Guidelines on Decentralization and the Strengthening of Local Authorities

After the Habitat II conference in 1996,¹⁴⁶ world leaders started exchanging ideas on developing a ‘world charter of local self-government’ that would strengthen the role of local government to address human settlement issues.¹⁴⁷ As an outcome of these processes, the ‘International Guidelines on Decentralization and the Strengthening of Local Authorities’¹⁴⁸ was developed by the UN-HABITAT program in 2007. The guidelines focused on improving four areas in governance for strengthening the role of local government and indicated some attributes in this regard. The four major areas are a) governance and democracy, b) power and responsibilities, c) administrative relationship with other authorities and d) financial resources and capacities. The

¹⁴⁴ Ibid art 9.

¹⁴⁵ Ibid general provisions.

¹⁴⁶ *United Nations Conference on Human Settlements (HABITAT II)*, UN Doc A/Conf. 165/14 (7 August, 1996); The conference was held in Istanbul, Turkey from 3-14 June 1996. The purpose of the conference was to address the shelter and sanitation problems of human being, the condition of which is vulnerable in many developing countries. The conference identified a number of problems that are affecting rural settlement issues. Many of the problems identified in the conference for human settlement issues have relevance with ensuring local food security.

¹⁴⁷ International Guidelines on Decentralization and Strengthening of Local Authorities’ (Guideline, UN-HABITAT, 2007) < http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

¹⁴⁸ Ibid.

following table (Table 3.1) shows the attributes under these four major areas and provides further explanation and governance implications.

Table 3.1: Strengthening Local Government: Lessons from the International Guidelines on Decentralization and the Strengthening of Local Authorities

Major area	Subdivision	Attributes for strengthening the role of local government (LG)
Governance and democracy	Representative and participatory democracy	<ol style="list-style-type: none"> 1. Political decentralization: Practice of representative and participatory democracy in local government. Free and fair election procedure. 2. Public participation through inclusiveness and citizen empowerment 3. Recognition of the presence of different communities within the local government area for addressing the voice of all in decision making. 4. Constitutional as well as legislative provision for public participation at local level decision making 5. The principle of non-discrimination 6. Innovation in public participation procedures. 7. Participation of vulnerable groups (woman, children, young people).
	Local official and the exercise of the office	<ol style="list-style-type: none"> 1. Transparency and accountability of the tasks of the local government offices 2. Development of code of good conduct for the officials of LG 3. Mechanisms for citizens to reinforce the code 4. Access to information of the LG offices
Powers and responsibilities	Subsidiarity	<ol style="list-style-type: none"> 1. Power sharing without decreasing local autonomy 2. Following the principles of subsidiarity 3. Responsibilities of the LG should be made specific through constitutional and/or legislative provisions
	Incremental action	<ol style="list-style-type: none"> 1. The capacity of LG should be increased to perform more actions 2. Increase in decentralizing responsibilities for the LG 3. Upper authority should only intervene when LG fails to perform 4. Mechanism for justifying such intervention 5. Adoption of the principles of subsidiarity 6. Increasing the participation of LG at higher level decision making processes
Administrative relations between local	Legislative action	<ol style="list-style-type: none"> 1. Acknowledgement of LG in the constitutions as well as in legislation 2. The authority, duty, function and responsibility of LG should be specified in legislation as well as in constitution

authorities and other spheres of government		<ol style="list-style-type: none"> 3. The role of higher authority in the specified LG roles should also be mentioned in legislations 4. Providing adequate authority to LG in dealing with local matters
	Empowerment	<ol style="list-style-type: none"> 1. Full and exclusive use of power (cannot be made limited without legal provision) 2. Matters affecting local concerns should be consulted with the LG 3. Assistance should be provided for determining local policy and strategies under national policy frameworks. 4. Support and assistance should be provided for developing responsive, transparent and accountable instruments for governance
	Supervision and Oversight	<ol style="list-style-type: none"> 1. Supervision by superior authority should be made according to legislative provisions 2. Such supervision should respect the autonomy of LG 3. Specific legal provision for suspending the function of LG 4. Provision for overseeing the actions of superior authorities in this regard (provision for appeal at appropriate court)
Financial resources and capacities of local authorities	Capacities and human resources for local authorities	<ol style="list-style-type: none"> 1. Assistance by higher level of government should be provided in developing administrative, technical and managerial capacity of LG 2. Authority to develop own administrative culture to address local needs 3. Full control over the staff of local level offices 4. legislative provision for ensuring recruitment of efficient and high quality staff at local level offices 5. Provisions and opportunity for adequate human resource development training programmes for LG staff 6. Such training should be provided by the national government in collaboration with LG
	Financial resources of local authorities	<ol style="list-style-type: none"> 1. Adequate funding mechanism and options for every task and responsibility of LG 2. Legislative provision for authority over financial resources for utilization 3. Authority over determining the rates of local taxes and fees 4. For shared responsibilities with other authorities, justified proportion of income should be transferred to LG 5. Control over local tax (e.g. land tax) 6. Legislative provision for ensuring participation of LG while framing rules 7. Financial allocations should respect local priority 8. Earmarked allocation should be avoided in areas where local government has to stimulate national policies at local

		<p>level (e.g. environment, education, health, social development)</p> <p>9. Legal provision for access to national capital market for borrowing</p>
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Source: International Guidelines on Decentralization and Strengthening of Local Authorities' (Guideline, UN-HABITAT, 2007) <http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

The above table (Table 3.1) provides a detailed legal and institutional framework to strengthen local government. For example, under 'governance and democracy', legal and institutional changes for public participation and measures regarding accountability and transparency in local government are specified. The 'power and responsibilities' area indicates the measures for incorporating subsidiarity principles for local governance. The legal changes for strengthening the relationship of local government with other authorities, which is an important aspect for local government's role in food security, are specified under 'administrative relations between local authorities and other spheres of government'. The importance of financial capacities of local government for its role in the context of this thesis has been well articulated in the preceding discussions. The guidelines also provide for legal and institutional changes to facilitate 'financial resources and capacities of local authorities'.

4 The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance

In 2005, the Commonwealth Local Government Conference¹⁴⁹ at Aberdeen, Scotland provided a set of principles for good local government for the Commonwealth member states that is known as 'Commonwealth Principles on Good Practice for Local Democracy and Good Governance'.¹⁵⁰ The principles also provided a set of standards for healthy local democracy and good local government across the Commonwealth. The Aberdeen Agenda has been endorsed by the Commonwealth Heads of Government and incorporated in the Commonwealth Charter.¹⁵¹ The

¹⁴⁹ Commonwealth local government conference is organised by the Commonwealth Local Government Forum (CLGF). As a designated Commonwealth organisation, CLGF works closely with other Commonwealth and international organisations such as the Commonwealth Secretariat, the Commonwealth Foundation, the Commonwealth Parliamentary Association and the United Nations, notably UN-Habitat and the United Nations Development Programme (UNDP), to promote and support democratic local government in the Commonwealth.

¹⁵⁰ 'The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance' (Commonwealth Local Government Forum, April 2005) <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

¹⁵¹ *Charter of the Commonwealth*, the Commonwealth.org (<<http://thecommonwealth.org/sites/default/files/page/documents/CharteroftheCommonwealth.pdf>>).

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principles are regarded as essential for achieving the SDGs by 2030.¹⁵² While setting out the principles for good local government, the Aberdeen Agenda noted the impacts of climate change in various regions of the world and recalled the actions articulated in UN Millennium Development Goals, UN Habitat programs and UN Sustainable Development Goals.¹⁵³ The principles for good local governance in the Aberdeen Agenda are:

1. Constitutional and legal recognition for local democracy: upholding the local government position in the governance system has been given focus in the principle by recommending legal and constitutional recognition of local government. Such recognition for food security and climate change governance would be beneficial for local government to frame the basic roles for this purpose.
2. The ability to elect local representatives: this is a basic condition for local democracy that has also been voiced in theories and other international policy arenas previously discussed in this thesis.
3. Partnerships between spheres of government: the principle emphasizes cooperation and partnership mechanisms for facilitating local government roles in local governance. The principle recommends dialogue and participation of local government in national policy initiatives.
4. Defined legislative frameworks: this is important for defining specific authority and powers of local government. Therefore, legal frameworks incorporating this principle should define the authority and powers of local government in governance activities that also include food security.
5. Opportunity to participate in local decision-making process: public participation is a crucial part of facilitating actions regarding food security.¹⁵⁴ This principle focuses upon ensuring local people's participation in local government decision making processes and requires defined relationships between local government and civil society.
6. Open local government: The Aberdeen Agenda articulates accountability, transparency and scrutiny as the three principles for open local government. According to these principles, an

¹⁵² 'The Gaborone Declaration Local Government Vision 2030' (Commonwealth Local Government Conference, June 2015) < http://www.clgf.org.uk/default/assets/File/CLGF_statements/CLGC2015_gaborone_declaration.pdf>

¹⁵³ 'The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance', above n 150, 4.

¹⁵⁴ Ibid.

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independent body should be involved to monitor the accountability of local government along with promoting a strong civil society and public participation in decision making. Local government processes should be made understandable to local people to facilitate transparency. For this, clear and simple communication methods with local people should be encouraged. The principles also require a mechanism for scrutinizing local government work by internal and external bodies comprised of members of civil society and other elected members.

7. Inclusiveness: this principle focuses upon inclusion of social, economic, environmental and cultural needs of the community in decision making by the local government. Therefore, this principle urges mechanisms that would extend local government functions by reaching to all relevant groups of the community, particularly the vulnerable groups (e.g. food insecure and vulnerable to climate change), and the development of decision making that includes social, economic, environmental and cultural aspects of an issue.

8. Adequate and equitable resource allocation: this principle emphasizes accessible sources and the supply of resources to local government and autonomy for allocating the resources in their areas of responsibility. Availability and capacity to distribute resources are considered as a prerequisite for local government to carry out its functions effectively. The importance of resources necessary for addressing food security problems arising from climate change has been considered in global policy responses to these problems.¹⁵⁵ Therefore, developing effective roles by local government in food security will require adequate and equitable resource allocation in regards to the evolving roles of local government. Legal and institutional frameworks alone cannot guarantee this allocation. It is highly dependent on political factors and government priorities beyond the scope of this thesis. However, the principles discussed can more clearly identify local government powers, roles and responsibilities in climate adaptation and food security. Improved participation by local people, communities and civil society can build political support for more adequate local government resources as well as adding value to local governance.

9. Equitable service delivery: this principle requires local government to prepare policies that address the needs of vulnerable people to ensure equity in service delivery. Therefore, local food

¹⁵⁵ Ibid.

security and climate change policies adhering to this principle would be beneficial for equitable service delivery by the local government.

10. Building strong local democracy and good governance: the principle identifies the essential characteristics for good governance as effective leadership, education and capacity building of civil society, measurability of local government process and developing partnerships with other organizations.¹⁵⁶ Legal and institutional frameworks that encourage these characteristics would contribute to developing local democracy and good governance, which is an essential aspect for strengthening the role of local government.

Section D has provided principles for transformative democratic governance at the local level. Addressing the first research question requires applying these general approaches to strengthening local government in local democracy and good governance. The challenge is to apply these general principles more explicitly in the context of climate impacted food security approaches discussed in Chapter 2.

III LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES FOR STRENGTHENING LOCAL GOVERNMENT ROLE IN CLIMATE IMPACTED FOOD SECURITY: SUMMARY OF THE FINDINGS

The focus of this chapter is to address the first research question to identify appropriate legal and institutional principles and guidelines for strengthening the future roles of local government that are recommended in international policy responses. The discussions of the recommendations of international policy responses in the areas of sustainable development and environment, climate change, food security and good governance provide a number of principles and guidelines that are appropriate for strengthening local government legal and institutional frameworks. This section will develop a more specific set of legal and institutional principles and guidelines by integrating the recommendations of international policy responses discussed in the previous sections.

The legal and institutional principles and guidelines for strengthening local government roles recommended by various international policy responses generally focus on a few principles and guidelines for improving local governance. The principles and guidelines that are focused in the international policy responses are:

¹⁵⁶ Ibid.

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1. Resources should be made available for implementing the roles of local government
2. National policies should encourage cooperation, coordination and partnership with local government
3. Local government planning, decision making process and service delivery should be improved
4. Local government role should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing vulnerability of local people
5. Good local governance principles should be adopted in the local government legal and institutional frameworks

These are not new principle and guidelines; rather an approach to combine the legal and institutional principles and guidelines recommended in international policy responses. The intention of this approach is to articulate the principles and guidelines in a more comprehensive way by integrating the similar principles and guidelines together so that a clear guideline for improving the legal and institutional framework for strengthening the local government role in climate impacted food security can be visualized. This five legal and institutional principles and guidelines, mentioned above, intend to represent the overall legal and institutional principles and guidelines recommended in international policy responses. The following sections provide a discussion about each of these principles and guidelines.

A Resources should be made available for implementing the roles of local government:

Adaptation to the impacts of climate change on food security involves considerable cost and the provision of adequate resources (as discussed above) is essential. Understanding the barriers and limits in adaptation planning is important.¹⁵⁷ The importance of resource availability at local level, for the effective role of local government in climate impacted food security, is clear in almost all international policy responses. The 1972 *UNCHE* stressed the need for resource availability in order to preserve and improve the environment.¹⁵⁸ Similarly, the 2015 UNSDS has also emphasized the flow of financial resources as the key to implementing SDGs.¹⁵⁹ The CBD has

¹⁵⁷ Porter et al, above n 88, 489-518.

¹⁵⁸ *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972) chapter 1, principle 12.

¹⁵⁹ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 41.

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encouraged resourcing the development of local biodiversity plans and strategies¹⁶⁰ and the CCD has recommended the rapid channeling of resources to the local level to combat desertification.¹⁶¹ Allocation of adequate and equitable resources to the local level is also one of the principles of good local governance that was stated in the Commonwealth Local Government Conference in 2005 in Aberdeen, Scotland.¹⁶²

International policy responses have suggested some mechanisms to improve resource availability at the local level. The United Nations Conference on Sustainable Development in 2012 recommended strengthening local financial mechanisms,¹⁶³ and the 2015 UNSDS suggested developing national legal frameworks to support financing local SDGs as well as improving financial accountability.¹⁶⁴ The UNSDS also proposed increased investment in rural agriculture and infrastructure development¹⁶⁵ that may also increase resource flows to the local level. Similarly, the *World Summit on Food Security 2009* recommended increasing investment opportunities and commitment for investment.¹⁶⁶ It is noteworthy that the source of funds for development activities by local government institutions in many countries is the development grants provided by the national or state governments. Therefore, legal and institutional framework guaranteeing appropriate funding for the future roles of local government would ultimately contribute to a strong and effective local government role in climate impacted food security.

The IPCC in AR5 has stated that economic instruments can play a vital role in accelerating adaptation.¹⁶⁷ Economic instruments include public-private finance partnerships, loans, charges, subsidies, regulations and resource pricing. Insurance services and payments for environmental

¹⁶⁰ COP 10 Decision X/22 Nagoya, 2010; Decision X/22 provides Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity (here local authority stands for all levels of government below the subnational, national or federal level (prefectures, districts, counties, municipalities, cities, towns, communes, etc.).

¹⁶¹ *United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa*, UN Doc No. A/AC.241/27 (12 September 1994).

¹⁶² 'The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance' (Commonwealth Local Government Forum, April 2005)4 <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

¹⁶³ *Report of the United Nations Conference on Sustainable Development*, UN Doc A/Conf.216/16 (20-22 June 2012) annex (The Future We Want) arts 101, 109-124, 218, 253

¹⁶⁴ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) [paras 39, 41, 45, 55 and 59].

¹⁶⁵ *Ibid* paras 39, 41, 45, 55 and 59.

¹⁶⁶ *Declaration of the World Summit on Food Security*' WSFS 2009/2 (November 2009) para 8 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

¹⁶⁷ Field et al, above n 2, 28.

services¹⁶⁸ can play an effective role in resource generation at the local level. The International Guidelines on Decentralization and the Strengthening of Local Authorities also provided some legal and institutional mechanisms for resource generation at the local level.¹⁶⁹ These are:

1. Adequate funding mechanisms and options for every task and responsibility of LG
2. Legislative provisions for authority over financial resources for utilization
3. Authority over determining the rates of local taxes and fees
4. For shared responsibilities with other authorities, a justified proportion of income should be transferred to LG
5. Control over local taxes (e.g. land tax)
6. Legislative provisions for ensuring participation of LG while framing rules
7. Financial allocations should respect local priority
8. Earmarked allocations should be avoided in areas where local government has to stimulate national policies at a local level (e.g. environment, education, health, social development); and
9. Legal provisions for access to national capital markets for borrowing.

B National policies should encourage cooperation, coordination and partnership with local government

Improving coordination among all levels of government is one of the five principles for food security provided in the World Summit on Food Security in 2009.¹⁷⁰ The principle encouraged national governments to lead coordination mechanisms and networks to ensure coherence in food security actions at all government levels of the country.¹⁷¹ Similarly, importance placed on national government coordination efforts is evident in the principles for effective adaptation developed in the AR5. One of these principles for effective adaptation stated that strong national government support in coordinating adaptation efforts in partnership with local government can help reduce

¹⁶⁸ Field et al, above n 2, 28.

¹⁶⁹ 'International Guidelines on Decentralization and Strengthening of Local Authorities' (Guideline, UN-HABITAT, 2007) <http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

¹⁷⁰ *Declaration of the World Summit on Food Security*' WSFS 2009/2 (November 2009) principle 2 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

¹⁷¹ Ibid para 14.

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vulnerability at the local level.¹⁷² These two principles, together, reflect the importance of national government initiatives, which are usually reflected through national policies, strategies and laws, to coordinate local government adaptation efforts in climate impacted food security.

The importance of cooperation, coordination and partnership among different levels of government to facilitate actions that influence climate impacted food security is also evident in most of the international policy responses discussed in the previous sections. The UNSDS, while setting the SDGs, has emphasized the importance of partnerships in implementing the SDGs.¹⁷³ Similar emphasis was given to implementing MDGs.¹⁷⁴ Principle 13 of the *UNCHE* gave importance to the need for coordinated and integrated action to ensure scope for all stakeholders to express respective needs.¹⁷⁵ Agenda 21 suggested mechanisms for enhancing cooperation among stakeholders and creating options for international organizations to support local authorities to implement local agenda 21.¹⁷⁶ ‘The Programmes for Further Implementation of Agenda 21’ suggested strengthening of local capacity and public-private partnership.¹⁷⁷ Partnership among different spheres of government was also one of the principles adopted for good local governance in the CLGC, 2005 in Aberdeen.¹⁷⁸

National governments have a major role in facilitating coordination, cooperation and partnership with local governments in climate impacted food security. Therefore, national policies, strategies and laws addressing climate impacted food security and local government are usually prepared by national government to provide the basic framework for such cooperation, coordination and partnership. International policy responses have provided some guidelines in this regard. The *World Summit on Food Security 2009* recommended capacity building of institutions for food

¹⁷² Field et al, above n 2, 25.

¹⁷³ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 39 and 45.

¹⁷⁴ *United Nations Millennium Declaration*, GA Res 55/2, 55th Sess, Agenda Item 60(b), UN Doc A/RES/55/2 (18 September, 2000) goal 8.

¹⁷⁵ *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972) Chapter 1, Principle 13.

¹⁷⁶ *Agenda 21*, UN GAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) [28.2-28.7]

¹⁷⁷ *Programme for the Further Implementation of Agenda 21*, GA/RES/S-19/2, 19th sess, Agenda Item 8, UN Doc A/RES/S-19/2 (19 September 1997) article 32.

¹⁷⁸ ‘The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance’ (Commonwealth Local Government Forum, April 2005)4 <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

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security.¹⁷⁹ Such capacity building of local government ultimately reflects the importance of cooperation from higher levels of government. The 1997 Programme for the Further Implementation of Agenda 21 suggested vesting local government with the coordination of transport facilities,¹⁸⁰ the 2002 WSSD suggested inclusion of local government in the national councils of sustainable development,¹⁸¹ the 2012 UNCSA and the *New Delhi Declaration* emphasized coherent and integrated planning that includes local authorities with national government and comprehensive national and local waste management policies, strategies, laws and regulations.¹⁸² The IPCC, while recommending adaptation actions for food security, emphasized the devolution of decision making to integrate local circumstances into national policies.¹⁸³ Such devolution would necessitate cooperation and coordination between local and national government.

The CBD suggested engagement of local authorities in national biodiversity strategy and action plans, recognizing and rewarding local authorities for their actions by national governments, organize regular dialogue with local government and supporting partnership with local authorities in ecosystem and landscape development activities.¹⁸⁴ The CCD suggested that the role of local government should be specified in national policies.¹⁸⁵ For this, the CCD recommended developing national institutional frameworks would promote cooperation and coordination and allow participation of local people.¹⁸⁶ The CCD also recommended national research institutions to consider local needs¹⁸⁷ which indicate the necessity of coordination between national research organizations and local authorities. Capacity building of local government such as providing training on improving planning and service delivery to address climate impacted food security has

¹⁷⁹ *Declaration of the World Summit on Food Security* WSFS 2009/2 (November 2009) para 8

<http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

¹⁸⁰ *Programme for the Further Implementation of Agenda 21*, GA/RES/S-19/2, 19th sess, Agenda Item 8, UN Doc A/RES/S-19/2 (19 September 1997) para 8-9, 33 and 48.

¹⁸¹ *Report of the World Summit on Sustainable Development*, UN Doc A/CONF.199/20 (26 August-4 September, 2002) article 165.

¹⁸² *Report of the United Nations Conference on Sustainable Development*, UN Doc A/Conf.216/16 (20-22 June 2012) annex (The Future We Want); 'ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development', above n 53.

¹⁸³ Porter et al, above n 88, 489-518.

¹⁸⁴ *United Nations Convention on Biological Diversity* 1760 UNTS 79; 31 ILM 818 (29 December 1993) Preamble.

¹⁸⁵ *United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa*, UN Doc No. A/AC.241/27 (12 September 1994) Article 10.

¹⁸⁶ *Ibid.*

¹⁸⁷ *Ibid.*

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been recommended in international policy responses. ‘International Guidelines on Decentralization and the strengthening of local authorities’¹⁸⁸ recommends that national government collaboration with local government for such capacity building programs may provide effective results.¹⁸⁹ It is understandable that national governments are better equipped with technologies and expertise, and that a flow of such resources to the local level may improve the local government capacity to address climate impacted food security.

Providing access to environmental information and justice to local people is an important aspect for good local governance. Article 4 of the *Aarhus Convention* requires that the proper flow of information to local authorities such as local government can provide information to local people.¹⁹⁰ Therefore, national policies allowing such flow of environmental and food security related information that suits local conditions will strengthen the role of local government in this respect. Similarly, the legal provisions of national laws and policies on climate change and food security, allowing access to justice to local people about decisions on addressing climate impacted food security, will also strengthen local government to ensure the rights of local people. It is noteworthy that a legal system of reviewing local decisions will encourage local government to be more careful about environmental decision making such as decisions about climate impacted food security.

The mechanisms for creating an environment of coordination, cooperation and partnership among institutions have been discussed under ‘some governance theories and principles’ section in Chapter 2.¹⁹¹ The principle of subsidiarity expressed this under the idea of ‘horizontal’ and ‘vertical’ relationships among institutions.¹⁹² The discussion on the principle of subsidiarity identified four factors important for creating such environment of coordination; i) respecting and fostering human freedom; ii) respect for human dignity; iii) considering diversity and; iv)

¹⁸⁸ ‘International Guidelines on Decentralization and Strengthening of Local Authorities’ (Guideline, UN-HABITAT, 2007) < http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

¹⁸⁹ Ibid.

¹⁹⁰ *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001) article 4.

¹⁹¹ See Section II (D) of chapter 2.

¹⁹² The vertical relationship refers to the distribution of power and authority among actors at different layers of public spheres; and horizontal relationship expresses the cooperation and coordination among different public and private organizations.

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contribution for the common good.¹⁹³ The theory of Adaptive Governance (AG) basically promotes the concept of cooperation, coordination and partnership in governance systems for addressing complex environmental concerns such as climate impacted food security.¹⁹⁴ Some properties of AG that promote cooperation among institutions and coordinated action have been provided in chapter 2.¹⁹⁵ Donna Craig and Michael Jeffery examined the applicability of AG in extreme weather events produced by climate change in the Australian peri-urban context.¹⁹⁶ The findings show that coordination among stakeholders for sustainable use of natural resources to increase resilience is important. It is noteworthy that natural resources such as water sources, land and natural habitats are influential factors for food security and are also under the potential threat of climate change.¹⁹⁷

The above discussion reflects that changes in governance frameworks are required to promote coordination, cooperation and partnership, especially with local government, in climate impacted food security. A reflection of such coordination in national policies may be an important step towards changes in governance frameworks as recommended in international policy responses. However, the IPCC suggests consideration of local conditions before facilitating local level institutions.¹⁹⁸

C Local government planning, decision making process and service delivery should be improved and resourced

Local government is basically known for the services it provides to its citizen. A number of current and future services that local government provides to try to achieve food security and environmental protection have been discussed in previous chapters.¹⁹⁹ To effectively deliver services to citizens, local government usually prepares plans by following some decision making processes. Many international policy responses have recommended developing local government

¹⁹³ Domenec Mele, 2004, *The Principle of Subsidiarity in Organizations: A Case Study*, Working Paper, IESE Business School, University of Navarra, Madrid, <<http://www.iese.edu/research/pdfs/DI-0566-E.pdf>>.3-4

¹⁹⁴ Brian C. Chaffin, Hannah Gosnell and Barbara A. Cosens, 'A Decade of Adaptive Governance Scholarship: Synthesis and Future Directions' (2014) 19(3) *Ecology and Society* 56, 56.

¹⁹⁵ Section II (D) (3) of Chapter 2.

¹⁹⁶ Donna Craig and Michael Jeffery, 'Adaptive Governance for Extreme Events in Peri-urban Areas: A Case Study of the Greater Western Sydney' in Malano Basan et al (eds) *The Security of Water, Food, Energy and Liveability of Cities: Challenges and Opportunities for Peri-urban Futures* (Springer, 2014).

¹⁹⁷ See Section II (B) of chapter 2.

¹⁹⁸ Field et al, 'above n 2, 25.

¹⁹⁹ See section III of chapter 2.

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planning and decision making processes for effectively addressing food security factors that are under the threat of climate change.

Trusting a local authority for environmental and food security planning could be one of the primary steps towards such development. The *UNCHE* suggested trusting national institutions like local government for planning, management and controlling natural resources²⁰⁰ that are important for food security. Agenda 21 has emphasized local planning by suggesting the development of Local Agenda (LA) and incorporating the objectives of Agenda 21 in local planning.²⁰¹ This was further encouraged in the following sustainable development summits in the ‘Programme for the Further Implementation of Agenda 21’ in 1997,²⁰² the 2002 WSSD²⁰³ and the 2012 UNCSA.²⁰⁴ The UN Millennium Summit in 2000 recommended the incorporation of sustainable development principles in planning procedures²⁰⁵ and the 2015 UNSDS emphasized incorporating SDGs into local planning, according to local circumstances.²⁰⁶ Therefore, the incorporation of the objectives of Agenda 21, sustainable development principles and SDGs into local planning procedures is important to address sustainable development concerns about food security arising due to the impacts of climate change.

The *UNFCCC*, while recognizing the potential of local government in climate change, recommended national governments cooperate with local level institutions to develop sustainable development plans and strategies, collecting local climate change data, and preparing adaptation plans.²⁰⁷ International policy responses have also recommended some other considerations for effective local planning and service delivery in climate impacted food security such as including

²⁰⁰ *Report of the United Nations Conference on the Human Environment*, UN Doc A/Conf.48/14/Rev.1 (5-16 June 1972) chapter 1, principle 17.

²⁰¹ *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) chapter 28.

²⁰² *Programme for the Further Implementation of Agenda 21*, GA/RES/S-19/2, 19th sess, Agenda Item 8, UN Doc A/RES/S-19/2 (19 September 1997).

²⁰³ *Report of the World Summit on Sustainable Development*, UN Doc A/CONF.199/20 (26 August-4 September, 2002).

²⁰⁴ *Report of the United Nations Conference on Sustainable Development*, UN Doc A/Conf.216/16 (20-22 June 2012) annex (The Future We Want).

²⁰⁵ *United Nations Millennium Declaration*, GA Res 55/2, 55th sess, Agenda Item 60(b), UN Doc A/RES/55/2 (18 September, 2000).

²⁰⁶ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015).

²⁰⁷ *United Nations Framework Convention on Climate Change* U.N. Doc. A/AC.237/18 (Part II)/Add.1 (21 March 1994).

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climate change measures,²⁰⁸ integrating biodiversity considerations,²⁰⁹ diversity in social values, interest and culture,²¹⁰ and equity in service delivery.²¹¹ The 2012 UNCSO stressed improving local financial mechanisms for better implementation of sustainable development.²¹² The World Summit on Food Security in 2009 recommended adopting long and short term planning for food security.²¹³

Local government has often been the institution entrusted to facilitate public participation and human resource development in global policy responses. Most of the international policy responses have recommended public participation for improving the local decision making process. Agenda 21 recommended participation of vulnerable groups such as women and young people,²¹⁴ the Programme for the Further Implementation of Agenda 21 recommended public participation in water resource management,²¹⁵ and the UNSDS 2015 emphasized local participation to improve water and sanitation programs.²¹⁶ The CCD suggested creating an environment to encourage public participation, particularly by the vulnerable people, in addressing desertification.²¹⁷

The importance of participatory political process has also been articulated in the *United Nations Principles of Good Governance*.²¹⁸ It was argued that participatory political environment suits well for addressing risks by offering diverse solutions.²¹⁹ The legal and institutional requirements for

²⁰⁸ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 59.

²⁰⁹ *United Nations Convention on Biological Diversity* 1760 UNTS 79; 31 ILM 818 (29 December 1993) Preamble.

²¹⁰ Field et al, above n 2, 1; 'The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance' (Commonwealth Local Government Forum, April 2005) <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

²¹¹ 'The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance' (Commonwealth Local Government Forum, April 2005)4 <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

²¹² *Report of the United Nations Conference on Sustainable Development*, UN Doc A/Conf.216/16 (20-22 June 2012) annex (The Future We Want) Article 167.

²¹³ *Declaration of the World Summit on Food Security*, (Food and Agriculture Organization of the United Nations Doc WSFS 2009/2, November 2009) para 8 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

²¹⁴ *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992).

²¹⁵ *Programme for the Further Implementation of Agenda 21*, GA/RES/S-19/2, 19th sess, Agenda Item 8, UN Doc A/RES/S-19/2 (19 September 1997).

²¹⁶ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 59.

²¹⁷ *United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa*, UN Doc No. A/AC.241/27 (12 September 1994).

²¹⁸ 'Governance for sustainable human development', above n 124.

²¹⁹ 'Towards Human Resilience: Sustaining MDG Progress in an Age of Economic Uncertainty', above n 125.

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facilitating public participation in decision making have been recommended in the *Aarhus Convention*.²²⁰ Some of the requirements are creating opportunities for local dialogues in policy planning, providing timely notices to the local people about dialogue and opportunities to contribute in the decisions.²²¹ Agenda 21 has emphasized incorporating public opinion into the policies.²²² The WSSD 2002 recommended developing law and policies to ensure scope of public participation in decision making.

Ensuring access to information and justice about environmental matters to local people is another indicator of better service delivery by local government. The *Aarhus Convention* in particular provided guidelines for developing legal and institutional frameworks to ensure proper access to information and justice to local people.²²³ Some of the recommendations in this regard include legal provisions for the availability of information, legal provisions for transparency of information and the right to review environmental decisions.²²⁴

D Local government role should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing vulnerability of local people:

Climate change is impacting local food security. Chapter 2 of this thesis has provided a description of the climate change impacts on local food security.²²⁵ The IPCC has emphasized the role of local government in adaptation planning.²²⁶ International policy responses have suggested some guidelines in this regard. The Rio Declaration suggested integrating environmental protection and precautionary measures into local development planning and ensuring environmental impact assessment for all development activities.²²⁷ Agenda 21 supported such integration of environmental concerns for local government activities.²²⁸ The Programme for the Further

²²⁰ *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001).

²²¹ *Ibid.*

²²² *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992).

²²³ *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001).

²²⁴ *Ibid.*

²²⁵ See Section II (B) of chapter 2.

²²⁶ Field et al, above n 2, 25.

²²⁷ *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26 (vol.1); 31 ILM 874 (1992) principles 4, 11, 17.

²²⁸ *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) Chapter 7.

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Implementation of Agenda 21 recommended including environmental pollution control activities in local policies.²²⁹

Addressing the impacts of climate change is one of the SDGs developed in the UNSDS. To achieve this goal, the UNSDS recommended integrating climate change issues into policies, strategies and plans for achieving the SDGs²³⁰ that can be followed in local planning procedures for achieving SDG targets at local level. The UNSDS also recommended the promotion of sustainable development of forests and the reduction of the effects of desertification by improving land and natural habitat management.²³¹ The New Delhi Declaration also provide some basic guideline and principles for addressing sustainable development.²³²

Some guidelines for protecting local biological diversity are evident in the recommendations of the CBD. A list of recommendations applicable to local government planning has been provided in the previous sections.²³³ Some major recommendations include encouraging and resourcing local biodiversity plans, integrating biodiversity concerns into development planning and procurement policies, promoting consultation with local people and raising awareness and capacity building.²³⁴ The IPCC stressed adopting an ecosystem approach to maximize the resilience of ecosystems.²³⁵

According to the IPCC, reducing vulnerability and exposure to climate change risk is one of the prerequisites for effective adaptation.²³⁶ The COP 21 of the *UNFCCC* also highlighted adaptation that is focused on enhancing adaptive capacity and reducing vulnerability.²³⁷ The UNSDS recommended strengthening resilience and adaptive capacity to address impacts of climate

²²⁹ *Programme for the Further Implementation of Agenda 21*, GA/RES/S-19/2, 19th sess, Agenda Item 8, UN Doc A/RES/S-19/2 (19 September 1997) article 31.

²³⁰ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 13.2.

²³¹ *Ibid* paras 15.2 and 15.3.

²³² 'ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development', above n 53.

²³³ *United Nations Convention on Biological Diversity* 1760 UNTS 79; 31 ILM 818 (29 December 1993).

²³⁴ *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Tenth Meeting* Agenda Item 2.3 and 7 UNEP/CBD/COP/DEC/X/22 (29 October, 2010).

²³⁵ Field et al, above n 2, 25.

²³⁶ *Ibid*.

²³⁷ Conference of the Parties, United Nations Framework Convention on Climate Change, *Adoption of the Paris Agreement*, UN Doc FCCC/CP.2015/L.9/Rev.1 (12 December 2015)

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change.²³⁸ Therefore, the role of local government in climate impacted food security should also be focused on reducing the vulnerability of local people, increasing adaptive capacity and resilience. International policy responses have suggested improvements to some areas could contribute to the reduction of vulnerability as well as increase resilience and adaptive capacity.

The major emphasis that international policy responses have noted to address vulnerability is reducing poverty. The Rio Declaration emphasized the eradication of poverty and improvement of living standards for sustainable development.²³⁹ It also suggested protection of the natural resources of vulnerable people.²⁴⁰ Eradication of hunger and poverty was also one of the MDGs. International policy responses have also stressed gender equality and empowerment of women for increasing resilience to climate change impacts, adaptation and sustainable development. The MDGs in particular prioritized empowerment of women for sustainable development by increased participation of women in decision making.²⁴¹ The *Paris Agreement* stated that adaptation action should be gender responsive.²⁴² Similarly, the UNSDS highlighted policy support for the empowerment of women. These recommendations for addressing poverty and living standards of vulnerable people as well as empowering vulnerable groups like rural women can be replicated in the functions and local planning procedures so that vulnerability in climate impacted food security can be reduced.

Price volatility due to the impacts of climate change on food production contributes to the increase in vulnerability of the poor. The UNSDS recommended the proper functioning of commodity markets to control price volatility.²⁴³ At the local level, local government usually controls local markets, therefore measures to control food price would contribute to reduce vulnerability of the

²³⁸ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 13.1

²³⁹ *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26 (vol.1); 31 ILM 874 (1992) principle 5.

²⁴⁰ *Ibid* Principle 23.

²⁴¹ *United Nations Millennium Declaration*, GA Res 55/2, 55th Sess, Agenda Item 60(b), UN Doc A/RES/55/2 (18 September, 2000) goal 3.

²⁴² Conference of the Parties, United Nations Framework Convention on Climate Change, *Adoption of the Paris Agreement*, UN Doc FCCC/CP.2015/L.9/Rev.1 (12 December 2015) Annex (article 7).

²⁴³ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015).

local poor. The UNSDS also recommended promoting development oriented activities so that local employment options increase the improvement of livelihood options to reduce vulnerability.²⁴⁴

Providing education, promoting awareness-building programs and arranging local training programs for local people have also been recommended in some international policy responses.²⁴⁵ Local government legal and institutional frameworks promoting these types of capacity building programs for local people can contribute to building resilience and increasing adaptive capacity of the local people. The CBD suggested that local government educate local people about the importance of biological diversity.²⁴⁶ Diseases such as malaria and dengue fever that may spread due to climate change may also increase vulnerability by influencing health conditions of the local poor who are prone to these types of diseases.²⁴⁷ Combating these types of diseases was one of the MDGs²⁴⁸ which local government legal and institutional frameworks can adopt to reduce the vulnerability of health, which is also a component of food utilization.

E Good local governance principles and guidelines should be adopted in the local government legal and institutional frameworks

The IPCC states that poor governance may impede adaptation and result in maladaptation.²⁴⁹ Therefore, good governance is important for implementing adaptation actions required for climate impacted food security. The principles and guidelines discussed above in general provide some conditions of good environmental governance that will strengthen the local government role in climate impacted food security. The principles and guidelines regarding availability of resources, supportive policies and laws, improved service delivery and decision making process, improving resilience of local people, ensuring public participation and adopting environmental concerns in

²⁴⁴ Ibid para 8.3.

²⁴⁵ *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001); *United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa*, UN Doc No. A/AC.241/27 (12 September 1994); *United Nations Convention on Biological Diversity* 1760 UNTS 79; 31 ILM 818 (29 December 1993); *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015).

²⁴⁶ *United Nations Convention on Biological Diversity* 1760 UNTS 79; 31 ILM 818 (29 December 1993).

²⁴⁷ Field et al, above n 2, 1.

²⁴⁸ *United Nations Millennium Declaration*, GA Res 55/2, 55th Sess, Agenda Item 60(b), UN Doc A/RES/55/2 (18 September, 2000) Goal 6.

²⁴⁹ Field et al, above n 2, 25-28.

planning procedures are necessary conditions for effective role of local government and good environmental governance in general.

However, there are some other basic conditions that are essential for developing good local governance. The United Nations Principles of Good Governance provide an understanding of basic principles and guidelines required for addressing governance problems arising from risks such as climate change impacts.²⁵⁰ The New Delhi Declaration has also stated some good governance principles for sustainable development.²⁵¹ The Commonwealth Principles on Good Practice for Local Democracy and Good Governance²⁵² and ‘International Guidelines on Decentralization and the Strengthening of Local Authorities’²⁵³ provide a set of such guidelines and principles for strengthening local government by improving legal and institutional frameworks. Some of the basic features for good local governance are:

1. Constitutional and legal recognition of local government and its role
2. Election procedures for enabling local people to elect local representatives in local government
3. A defined legal framework specifying power, roles and responsibilities of local government. The legal framework should also specify the authority of the higher level of government concerning local government. Some guidelines support the concept that subsidiarity principles provide for empowering local institutions. However, it depends on the political culture of a country. Indeed, a clear and well defined role may enable local government to focus on its duties including the role to address climate impacted food security.
4. A legal framework providing scope for public participation
5. A legal and institutional framework ensuring transparency and accountability of local government functions

²⁵⁰ ‘Governance for Sustainable Human Development’ above n 124.

²⁵¹ ‘ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development’, above n 53.

²⁵² ‘The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance’ (Commonwealth Local Government Forum, April 2005) <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

²⁵³ ‘International Guidelines on Decentralization and Strengthening of Local Authorities’ (Guideline, UN-HABITAT, 2007) <http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

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6. Provision for considering all social, economic, cultural and environmental factors and communities in decision making
7. Legal provisions for appropriate resource allocation
8. Equity in service delivery
9. Capacity building of local government such as capacity to understand climate and food security data, planning procedure and resource generation.

The above characteristics for improving local governance provide the basic guidelines. The theoretical discussion on principles of subsidiarity, decentralization and adaptive governance also provide some basic legal and institutional principles and guidelines for strengthening local governance.²⁵⁴ Some of the principles and guidelines are evident in the above mentioned principles and guidelines. It is noteworthy that the principle of autonomy that subsidiarity principle promotes for strengthening local governance and the FAO principles for decentralization in agriculture and food security,²⁵⁵ should also be included as an important legal and institutional characteristic for strengthening local government.

However, implementation of these characteristics may depend on the political culture of respective countries and the status of democratic practices. It may be mentioned that the growing severity of the impacts of climate change and governance failure to respond properly indicate the urgent necessity for changes to governance frameworks and roles. The five legal and institutional principles and guidelines provide a general indicator for response in this regard particularly for strengthening the local government role in climate impacted food security and are supported by major international policy responses.

IV CONCLUSION

The objective of this chapter was to investigate the answer to the research question: what international legal and institutional principles and guidelines have been recommended to strengthen the future roles of local government. The chapter identified five major legal and institutional principles and guidelines by analyzing the recommendations of international policy

²⁵⁴ See section II (D) (3) of Chapter 2 for details about Principle of Subsidiarity, Decentralization and Adaptive Governance.

²⁵⁵ K.C Lai and Vito Cistulli, 'Decentralized Development in Agriculture: An Overview' (Issue Paper, EASYpol module12, FAO,2005) 15-17< http://www.fao.org/easypol/output/advanced_search.asp>.

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responses on environment and sustainable development, climate change, food security and good governance. These five legal and institutional principles and guidelines are: 1) resources should be made available for implementing the roles of local government, 2) national policies should encourage cooperation, coordination and partnership with local government, 3) local government planning, decision making process and service delivery should be improved and resourced, 4) local government roles should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing the vulnerability of local people, and 5) good local governance principles should be adopted in the local government legal and institutional frameworks. This set of legal and institutional principles and guidelines are not new principles, rather a combination of appropriate principles and guidelines that have been suggested in theories and international policy responses.

However, legal and institutional frameworks for local government may vary from country to country due to their respective national legal, institutional and political frameworks. To investigate the applicability of the principles and guidelines as well as the characteristics of countries with strong local government systems addressing climate impacted food security, this thesis will proceed to analyze in the next chapter the legal and institutional frameworks of a developed country (Australia) and a developing country (Indonesia).

Chapter 4: Legal Framework for the role of Local Government in Food Security: Examples from Australia and Indonesia

I INTRODUCTION

Local government legal and institutional frameworks of a country usually state the principles and guidelines for local government roles. The principles and guidelines that strengthen local government roles in climate impacted food security can also be found in the legal and institutional frameworks of a country. This chapter analyses the legal and institutional frameworks of countries with strong local government systems and are also recognised for good food security. Australia and Indonesia have been chosen for the purpose of comparative analysis. Australia is well-known for its high level of food security, despite growing climate change impacts.¹ Local governments in Australia play a variety of roles in addressing food security problems and climate change impacts. Indonesia also has a reputation of good local government systems for addressing food security problems.² The reason for choosing examples from a developed country (Australia) and a developing country (Indonesia) is to understand the strengths, weaknesses and differences in the legal and institutional frameworks of countries with different development statuses and the principles and guidelines (identified in chapter 3) in their legal and institutional frameworks. This chapter will explore the legal and institutional frameworks of these two countries to identify the relevant principles and guidelines applied by local governments in food security issues impacted by climate change. The findings will consider the second research question i.e. what current legal and institutional principles and guidelines have been adopted by local government to address food security impacted by climate change in a selected developed country (Australia) and developing countries (Indonesia).

This chapter is divided into two parts. The first part (Part A) will discuss the impacts of climate change, local food security problems and the related laws that address the problem as well as the strengthened role of local government in Australia. The activities in food systems in Australia are

¹ David Michael and Rachel Crossley, 'Food Security, Risk Management and Climate Change: ' (Research Report, National Climate Change Adaptation Research Facility, 2012) 4-5<<http://www.nccarf.edu.au/publications/food-security-risk-management-and-climate-change>>.

² Food and Agriculture Organization, 'The State of Food Insecurity in the World 2014: Strengthening the enabling government to improve food security and nutrition' (Rome, 2014) 16, 20 <<http://www.fao.org/publications/sofi/2014/en/>>.

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generally regulated by respective state legislation.³ Also, the Australian local government system is recognized and regulated by respective state legislation. Therefore, state food security laws and policies have influence on both the roles of local government and food security in Australia. This research has chosen the legal and institutional frameworks of one of the states of Australia, New South Wales (NSW)⁴, where one of the major ‘food bowls’ in Australia is located.⁵ NSW agriculture contributes a lot to Australian food security: around 99 percent of the total rice produced in Australia comes from NSW as well as producing wheat, cattle and poultry.⁶ The analysis of the NSW legal and institutional frameworks will provide a general understanding of a local government’s role in climate impacted food security in Australia and the principles and guidelines that facilitate the role of local government in regard to research question two.

The second part (Part B) will examine the laws and policies of Indonesia’s local governments and the food security and climate change adaptation that govern local government roles, particularly climate impacted food security. It will identify the legal and institutional principles that are strengthening local government roles, where climate change is a major threat to Indonesian food security.⁷ Indonesia prepared a ‘National Action Plan for Climate Change Adaptation’ to address climate change impacts on different sectors of the country, including food security, and provide guidelines for stakeholders, including local government, for effective adaptation actions.⁸ However, the basic legal and institutional principles and guidelines for strengthening the roles of local government in Indonesia are evident in the Constitution of Indonesia⁹ and the Law on Regional Administration.¹⁰ The Law on Food provides the guidelines and roles for addressing food

³ Australian Government, ‘National Food Plan Green Paper 2012’ (Department of Agriculture, fisheries and forest, July 2012) 31 <http://www.agriculture.gov.au/Style%20Library/Images/DAFF/___data/assets/pdffile/0009/2175156/national-food-plan-green-paper-072012.pdf>.

⁴ NSW is one of the six states of Australia. Other states are Victoria, Queensland, South Australia, Western Australia and Tasmania. The territories are Australian Capital Territory and Northern Territory.

⁵ The Murrumbidgee and Murray river basin of NSW contribute a major portion of total food production in Australia. See, eg, ‘National Food Plan: NSW Business Chamber Response to Green Plan’ (NSW Business Chamber, September 2012) 1 <http://www.agriculture.gov.au/Style%20Library/Images/DAFF/___data/assets/pdffile/0016/2211019/NSW-Business-Chamber.pdf>.

⁶ ‘Agriculture Industry Action Plan: Primed for Growth, Investing Locally Connecting Globally’ (NSW Department of Primary Industries, November 2014) 2 <http://www.dpi.nsw.gov.au/___data/assets/pdf_file/0020/535061/agriculture-industry-action-plan_full_doc.pdf>.

⁷ See, eg, Government of Indonesia, ‘National Action Plan for Climate Change Adaptation (NAPCCA)’ (Ministry of National Development Planning, Indonesia, 2013) <https://gc21.giz.de/ibt/var/app/wp342deP/1443/wp-content/uploads/filebase/programme-info/RAN-API_Synthesis_Report_2013.pdf>.

⁸ Ibid 41.

⁹ *Indonesian Constitution* (Indonesia) ch vi.

¹⁰ *Law 32/2004 on Regional Administration* (Indonesia).

security¹¹ and the Law on Environmental Protection and Management provides guidelines for addressing environmental concerns¹² by government at various levels, including local government. Part B will examine these laws and policies.

Local government, food security and climate change and legal and institutional frameworks of NSW, Australia and Indonesia cover matters that are relevant to local governance, such as services, local administration and development issues. However, this chapter will only look into the current roles of local government in climate impacted food security that are mentioned in the legal and institutional frameworks and the legal and institutional principles and guidelines adopted for facilitating the roles.

PART A: AUSTRALIA

II OVERVIEW OF AUSTRALIAN FOOD SECURITY AND CLIMATE CHANGE IMPACTS

Australia is a highly food secure country.¹³ The reasons behind such a high level of food security are high food production (ensuring food availability), high per capita income, improved social security (ensuring food access), improved biosecurity, better research and development including climate change research and expertise in human health and nutrition research (ensuring food utilization), a modern and competitive food retailing sector, low trade barriers and an internationally competitive agriculture sector and capacity to adapt in difficult circumstances including to adverse impacts of climate change (ensuring food stability).¹⁴ Despite this higher level of food security, a number of food security concerns exist in Australia. The rural areas of Australia have higher numbers of older and unemployed people; diet related health problems (e.g. obesity),¹⁵ the physical environments in the rural areas are more exposed to the effects of climate change,¹⁶ competition for water and land is more intense and a rise from the growing demands from multiple

¹¹ *Law 18/2012 on Food* (Indonesia).

¹² *Law 32/2009 on Environmental Protection and Management* (Indonesia)

¹³ National Food Plan Green Paper 2012, above n 3, 1; Michael and Crossley, above n 1, 4-5.

¹⁴ Michael and Crossley, above n 1, 4-5. Australian Government, 'Australian food security in a changing world' (PMSEIC, October 2010) 2 <http://www.chiefscientist.gov.au/wp-content/uploads/FoodSecurity_web.pdf>.

¹⁵ Quentin Farmar-Bowers, Vaughan Higgins and Joanne Millar, 'Introduction: The food security problem in Australia' in Quentin Farmar-Bowers, Vaughan Higgins and Joanne Millar (eds), *Food security in Australia: Challenges and prospects for the future* (Springer, 2013) 1.

¹⁶ Purnamita Dasgupta et al, 'Rural Areas' in in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014) 613.

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sectors¹⁷ (agriculture, industry and local settlement), reduced food availability in times of reduced local food production, critical infrastructure and exposure to climate related health issues.¹⁸

Climate change impacts are also one of the major threats to Australian food security.¹⁹ The fifth assessment report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) has projected a number of impacts of climate change in Australia.²⁰ According to the AR5, there would be a decrease in rainfall as well as an increase in hot weather events in southern Australia, a decrease in the quality of coral reefs, a decline in freshwater resources, increased erosion and inundation of land areas, increased heat wave and changes in rainfall and temperature patterns. Some other impacts of climate change on agriculture include a shift in agriculture zone due to changes in the precipitation patterns,²¹ reduced water availability for sustainable crop yields,²² and reduced dairy production.²³ Many of these impacts would affect Australian food security and Australian agriculture.²⁴

Water is an important factor for Australian agriculture. Australia's rice production depends mostly on irrigated water.²⁵ The Murray-Darling Basin is the key area for Australian rice production. The region also produces a large portion of the total national wheat production as well as oranges and apples. One third of Australia's total food production also comes from this area.²⁶ The Murray-

¹⁷ Jacqueline Williams and Paul Martin, 'Developing Law and Governance Strategies for Peri-urban Sustainability' in Maheshwari Basant et al (eds), *The security of water, food, energy and liveability of cities: challenges and opportunities for peri-urban futures* (Springer, 2014)435-436.

¹⁸ Andy Reisinger et al, 'Australasia' in Vicente R Barros et al (eds) IPCC, 2014: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA) 1371, 1398.

¹⁹ See, eg, Australian Government, 'Australian food security in a changing world' (PMSEIC, October 2010) 1 <http://www.chiefscientist.gov.au/wp-content/uploads/FoodSecurity_web.pdf>; National Food Plan Green Paper 2012, above n 3, 39.

²⁰ Reisinger et al, above n 18, 1371.

²¹ Reisinger et al, above n 18, 1374; Christine Slade and Wardell-Johnson, 'Creating a Climate for Food Security: Governance and Policy in Australia' (National Climate Change Adaptation Research Facility 2013) 16-17 <<http://www.nccarf.edu.au/publications/creating-climate-food-security-governance>>; National Food Plan Green Paper 2012, above n 3, 39.

²² Jinny Collet, *Climate Change and Australian Food Security* (27 June, 2014) 3-6 <<http://www.futuredirections.org.au/publications/food-and-water-crises/1767-climate-change-and-australian-food-security.html>>.

²³ Reisinger et al, above n 18, 1396.

²⁴ Commonwealth of Australia, 'National Climate Resilience and Adaptation Strategy' (Australian Government, 2015) 40 <www.environment.gov.au>

²⁵ Reisinger et al, above n 18, 1397.

²⁶ Murray-Darling Basin Authority, *Irrigated Agriculture in the Basin - Facts and Figures* <<http://www.mdba.gov.au/about-basin/irrigated-agriculture-in-the-basin>>.

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Darling Basin is under the threat of climate change and climate variability, and has experienced impacts such as prolonged droughts.²⁷ The threat arises due to reduced rainfall in the region of lowering water availability²⁸ impacting Australia's food production. Similarly, Australia's wheat production would be impacted by reduced rainfall as well as increased temperatures. Under the severe climate change scenarios, Australia's wheat production may decrease in a way that would shift the country's current status as a wheat exporter to a net wheat importer.²⁹

Australian food industries have an important role in food security. A large number of diverse organizations are involved in food related businesses and the efficiency and functionality of these organizations are closely related with local food security.³⁰ These organizations are responsible for supplying food for meeting national demand as well as exporting food to other countries. It is noteworthy that most of the jobs related to food production, food processing and manufacturing are located at the local level in Australia, particularly in the non-urban areas.³¹ Therefore, any variation in agriculture production including the impacts of climate change would impact food industries, local businesses as well as livelihood of local people in Australia.

Competition over resources is another major concern for local food security in Australia. Peri-urban areas³² are under the threat of such competition.³³ Competition for water and land among industries, agricultural farms and local settlements are exacerbated when climate change impacts such as less precipitation, drought, soil erosion and bush fire make resources scarcer.³⁴ This makes food security issues more challenging for the elderly and unemployed people living in the remote and rural areas.³⁵

The impacts of climate change will have a severe effect on local health issues in Australia. An increase in drought events as well as an increase in dryland salinity will increase depression due

²⁷ Reisinger et al, above n 18, 1376.

²⁸ Reisinger et al, above n 18, 1411.

²⁹ Reisinger et al, above n 18, 1397.

³⁰ Michael and Crossley, above n 1, 3-4.

³¹ National Food Plan Green Paper 2012, above n 3, 5.

³² Periphery of metropolitan and regional hubs, complex social ecological system, multiple uses of land and pressure on land use. Significant for agriculture as well as establishment of industries and residential settlement.

³³ Donna Craig, and Michael Jeffery, 'Adaptive governance for extreme events in peri-urban areas: A case study of the greater Western Sydney' in Maheshwari Basant et al (eds), *The security of water, food, energy and liveability of cities: challenges and opportunities for peri-urban futures* (Springer, 2014) 451.

³⁴ Ibid.

³⁵ Ibid.

to loss in agriculture related business.³⁶ It is also reported that many rural Australian communities are service and resource poor that include a lack of basic infrastructures such as roads, schools, health services and trade outlets.³⁷ Impacts of climate change like increased disaster events may further reduce these communities access to the basic services that are essential for food security.

The above discussion illustrates that climate change impacts on local food security of Australia range from lack of food production, impacts on local food business and food supply, competition over water and other natural resources and health. To address these challenges on food security, Australia has developed legal and institutional frameworks that indicate the roles and responsibilities of governments at different levels in Australia. The following section provides an overview of the roles of governments at different levels in Australia for addressing climate impacted food security with a focus on the roles of local government.

III THE ROLES OF DIFFERENT TYPES OF GOVERNMENT IN AUSTRALIA TO ADDRESS FOOD SECURITY AND CLIMATE CHANGE

The responsibilities for addressing food security concerns in Australia, generally, are distributed among the three tiers of government; federal government, states and territory governments and local governments.³⁸ The federal government of Australia is generally responsible for broader micro and macroeconomic policies, financial regulation, health and social welfare policies like fisheries, quarantine and patents concerning food security issues. The federal government is also responsible for creating provisions for infrastructure, taxation, trade, railway and external affairs.³⁹ A number of federal government departments as well as regulatory bodies are involved in managing food security in Australia.⁴⁰ On the other hand, states have responsibility for power and activities that are not specifically attributed to the federal government in the Commonwealth Constitution and are responsible for regulating issues related to food safety, education, health, environment, land management, and transport.⁴¹ The roles and responsibilities of territory

³⁶ Angela Wardell-Johnson et al., 'Creating a climate for food security: The businesses, people and landscapes in food production' (Synthesis and Integrative Research, NCCARF, Australia, 2013) 12 <https://www.nccarf.edu.au/sites/default/files/attached_files_publications/Wardell-Johnson_2013_Food_security_businesses_people_landscapes.pdf>.

³⁷ Ibid.

³⁸ National Food Plan Green Paper 2012, above n 3, 30.

³⁹ Slade and Johnson, above n 21, 7-9; the authority of Australian federal government, in general, is also specified in sections 51-52 of the Constitution of Australia.

⁴⁰ Slade and Johnson, above n 21, 7-9.

⁴¹ Ibid.

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governments are not considered in this thesis as the selected comparative study focuses on state jurisdiction (NSW) only.

Many federal government and state government regulations influence food security in Australia. Table 4.1 illustrates the areas of regulation by federal government and state governments and the areas of food security areas under the influence of the regulations.

Table 4.1: Federal/state government regulations affecting food security in Australia

Food security area	Area of federal government regulation	Area of state government regulation
Land use and environment	-environmental protection, -international treaties and conventions covering world, natural, and cultural heritage and marine protected areas -National Pollutant Inventory -water access and regulation	-environmental protection/assessment and native vegetation legislation - land use, planning and building -weed and vermin control -water access and regulation -fire control
Primary production	-licencing and approval of chemicals, fertilisers and pesticides -fisheries	-use of chemicals, fertilisers and pesticides -livestock and animal welfare -fishing/aquaculture licencing and permit -boating regulations and licencing -fisheries restricted areas
Biosecurity	-quarantine and biosecurity -export certificates/controls -export approval for wildlife trade	- domestic quarantine and biosecurity -/pest/disease/weed control
Food and packaging	-food and packaging standards (national and international)	-food safety regulations including primary production and processing food -certification and labelling packaging requirements
Transport	-national land transport regulatory frameworks -shipping and maritime safety laws and international maritime codes and conventions	-transport including vehicle and machinery licencing -government owned public/private transport infrastructure -transport access regimes
General	Industrial relations, immigration, competition laws, marketing legislation, World Trade Organization obligations, market access and trade and investment agreement, foreign investment screening regime and taxation.	Industrial relations, occupational health and safety legislation and policy, insurance requirements, interstate certification arrangement.

Source: Christine Slade and Wardell-Johnson, 'Creating a climate for food security: Governance and policy in Australia' (Research Report, National Climate Change Adaptation Research Facility 2013) 10-11 <<http://www.nccarf.edu.au/publications/creating-climate-food-security-governance>>).

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The roles of local governments in food security in Australia, on the other hand, are mainly related with providing infrastructure support and various economic and community services related to food security.⁴² It is important to note that the roles of local government in Australia are only specified under state legal frameworks and therefore the roles and responsibilities of local governments in food security would largely depend on the areas of food security that the state governments are responsible for. Moreover, state regulations in Australia vary from one state to another, therefore the roles and responsibilities vested upon local government for food security may also vary according to the pattern of the legislation that respective state governments adopt.⁴³

The roles of different tiers of government in environmental management in Australia are described under the 'Intergovernmental Agreement on the Environment' (the Agreement).⁴⁴ The Agreement acknowledged the impacts of climate change in Australia and emphasised greenhouse gas (GHG) emission control, local community understanding and adaptation strategies and stressed coordinated action by governments at all levels in Australia.⁴⁵ The Agreement also acknowledged biological diversity as an important element of the environment and also emphasised its protection.⁴⁶

Regarding the impacts of climate change, the importance of biological diversity and other environmental concerns, the Agreement specified the roles and responsibilities of federal, state, territory and local government in environmental matters. The objective of the Agreement was to protect the environment through cooperation among governments, better decision making, reducing intergovernmental disputes and specifying their roles.⁴⁷ The Agreement emphasised considering the principle of 'ecologically sustainable development (ESD)' in environmental decision making by all parties by reflecting the importance of both economic and environmental

⁴² National Food Plan Green Paper 2012, above n 3, 31.

⁴³ *Our Government*, Australia.gov.au <<http://www.australia.gov.au/about-australia/our-government>>; Christine Slade, 'Institutional Capacity of Local Government to Embed Food Security into Policy' in Vaughan Higgins and Joanne Millar Quentin Farmar-Bowers (ed), *Food security in Australia: Challenges and prospects for the future* (Springer, 2013) 63; *Facts and figures on local governments in Australia*, Australian Local Government Association <<http://alga.asn.au/?ID=59&Menu=41,83>>.

⁴⁴ Australian Government, 'Intergovernmental Agreement on the Environment' (Department of the Environment, 1992) <<https://www.environment.gov.au/about-us/esd/publications/intergovernmental-agreement>>; the agreement was made in 1992 where Australian Local Government Association was a party to the agreement, representing the local governments of Australia.

⁴⁵ Intergovernmental Agreement on the Environment, above n 44, schedule 5.

⁴⁶ *Ibid* schedule 6.

⁴⁷ *Ibid*.

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considerations in decision making, taking into consideration the interests of both present and future generations and the proper use of natural resources.⁴⁸ The principle of ESD was further elaborated by incorporating four other principles such as the precautionary principle, principles of intergenerational equity, conservation of biological diversity and ecological integrity and improved valuation, pricing and incentive mechanisms in environmental management.⁴⁹

The Agreement articulated three major responsibilities of local government in environmental management:

2.4.1 Local Government has a responsibility for the development and implementation of locally relevant and applicable environmental policies within its jurisdiction in co-operation with other levels of Government and the local community.

2.4.2 Local Government units have an interest in the environment of their localities and in the environments to which they are linked.

2.4.3 Local Government also has an interest in the development and implementation of regional, statewide and national policies, programs and mechanisms which affect more than one Local Government unit.⁵⁰

These three ‘responsibilities’ provide the general guidelines that are influencing the roles of local government in Australia. The Agreement acknowledges the importance of the role of local government in local environmental management such as local policy making and implementation, the emphasis on cooperation and participation in national and state policies on environment. The roles and responsibilities of federal and state government are also specified in the Agreement.⁵¹

In 2015, Australia prepared its ‘National Climate Resilience and Adaptation Strategy’ (NCRAS).⁵² The NCRAS acknowledged the impacts of climate change on Australian food security, particularly

⁴⁸ Ibid section 3; The concept of ESD was developed in the Report of the World Commission on Environment and Development (WCED) that is popularly known as ‘Our Common Future’. The concept of ESD consists of principles such as precautionary principle, intergenerational equity and conservation of biological diversity and ecological integrity; see, eg, *Report of the World Commission on Environment and Development: Our Common Future*, UN GAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, < <http://www.un-documents.net/ocf-05.htm#IV>>, Peter Williams, ‘The Structure and Scope of Environmental Law’ in Peter Williams *The Environmental Law Handbook: Planning and Land Use in NSW* (Thomson Reuters, Sydney, 6th Edition, 2016)1, 10.

⁴⁹ Intergovernmental Agreement on the Environment, above n 44.

⁵⁰ Ibid.

⁵¹ Ibid section 2.2 and 2.3.

⁵² The NCRAS was released in December 2015 by the Australian Government that provides the strategies for addressing climate change impacts to improve community, environment and the economy; see, Australian Government, ‘*National Climate Resilience and Adaptation Strategy* Department of the Environment and Energy < <http://www.environment.gov.au/climate-change/adaptation/strategy>>.

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on agriculture, forestry, fisheries, water and health, and provided principles and guidelines to adapt to impacts of climate change and increase resilience.⁵³ The NCRAS highlighted the importance of local action to address the local impacts of climate change and stated that ‘effective responses to climate change are context specific, and often addressed best at the local and regional level.’⁵⁴ Accordingly, effective roles of governments at all levels (that also include local government) in Australia have been emphasised.⁵⁵

The NCRAS identified six principles for effective resilience and adaptation: 1) sharing responsibility, 2) factoring climate risk into decision making, 3) evidence based risk management approach, 4) helping the vulnerable, 5) collaborative, value-based choices, and 6) revisiting decisions and outcomes.⁵⁶ These principles provide an important reference to Australia’s approach to climate adaptation and resilience that are also essential in government approaches at different levels (including local government level) to address climate change impacts such as on food security.

IV THE EVOLVING ROLES OF AUSTRALIAN LOCAL GOVERNMENTS IN CLIMATE IMPACTED FOOD SECURITY

Local government institutions in Australia were created during the 1840s to assist the then colonial government as well as to provide services to property.⁵⁷ However, their traditional role has been broadened in contemporary Australia and more local roles and services have come under local government authority.⁵⁸ Local government is now recognised as one of the major sectors to deliver

⁵³ Australian Government, ‘National Climate Resilience and Adaptation Strategy 2015’ (Department of Environment, Australia, 2015)5 <<http://www.environment.gov.au/system/files/resources/3b44e21e-2a78-4809-87c7-a1386e350c29/files/national-climate-resilience-and-adaptation-strategy.pdf>>.

⁵⁴ Ibid.

⁵⁵ Ibid 6.

⁵⁶ Ibid 8-9.

⁵⁷ Australian Government, ‘Local Government National Report 2012-2013’ (Department of Infrastructure and Regional Development, Australia, 2015) 1 <http://www.regional.gov.au/local/publications/reports/2012_2013/INFRA2378_LGNR_2012-13.pdf>; ‘Local Government in Australia’ (Office of Local Government, Department of Immigration, Local Government and Ethnic Affairs, 1991); ‘Services to property’ usually refers to the services related with the management of local roads, rubbish and rates; Barbara Pini, Su Wild River and Fiona M Haslam McKenzie, ‘Factors Inhibiting Local Government Engagement in Environmental Sustainability: case studies from rural Australia’ (2007) 38(2) *Australian Geographer* 161, 162; Slade, above n 43, 63; Brian Dollery, Joe Wallis and Percy Allan, ‘The Debate that Had to Happen But Never Did: The Changing Role of Australian Local Government’ (2006) 41(4) (2006/12/01) *Australian Journal of Political Science* 553.

⁵⁸ Dollery, Wallis and Allan, above n 57, 553; Graham Sansom, ‘The evolving role of mayors: An Australian perspective’ in Graham Sansom and Peter McKinlay (eds), *New Century Local Government* (Commonwealth Secretariat, 2013) 212.

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services to the Australian people.⁵⁹ According to an Australian government report, the roles of local government institutions in Australia are expanding and changing in two ways: firstly '[l]ocal government has been increasingly taking on responsibility for social functions, such as management of health, alcohol and drug problems, community safety and improved planning and accessible transport' and secondly '[l]ocal government has also been playing an increasing regulatory role in the areas of development and planning, public health and environmental management.'⁶⁰ This statement indicates that environmental management has become a new concern for local government in Australia. It is noteworthy that the impacts of climate change invite future roles of local government in public safety and food security, as discussed in chapter 2.⁶¹

The changing roles of local government in Australia include corporate governance (as well as risk management), strategic planning, greater community engagement and development, increased areas of service delivery, asset management and regulation.⁶² These new roles are evident in different state legislation. Addressing local food security concerns and development of policy regarding local food security by the local government is also evident in the legal and institutional frameworks of different states in Australia.⁶³ Some of the roles of local government that are relevant to food security include developing infrastructure, economic services, environmental health and food safety, community food services and emergency food relief.⁶⁴ Such functions of local government bodies are also influenced by both state and federal government policies as well as by other private and non-profit organizations.⁶⁵

The services that local government organizations in Australia provide differ from region to region according to geographic location, development and composition of business activities.⁶⁶ Water

⁵⁹ Local Government National Report 2012-2013, above n 57, 1.

⁶⁰ Commonwealth of Australia, 'Rates and Taxes: A Fair Share for Responsible Local Government' (House of Representatives Standing Committee on Economics, Finance and Public Administration, Canberra, 2003) 9<
http://www.aph.gov.au/parliamentary_business/committees/house_of_representatives_committees?url=efpa/localgovt/report.htm>.

⁶¹ See section III of chapter 2 for future roles of local government.

⁶² Sansom, above n 58, 212-213; Local Government National Report 2012-2013, above n 57, 1.

⁶³ Slade and Johnson, above n 21, 11; Slade, above n 43, 63.

⁶⁴ National Food Plan Green Paper 2012, above n 3, 30; Slade and Johnson, above n 21, 11.

⁶⁵ Slade and Johnson, above n 21, 11.

⁶⁶ Dollery, Wallis and Allan, above n 57, 558.

supply, a major element of food security, is a prime concern of service delivery for local governments located in Queensland, Tasmania and rural NSW compared to other localities.⁶⁷

Although local government is a major sphere in the Australian government system and its role is significantly growing, the Australian Constitution does not mention local government. Rather, state legislation defines respective local government structures and related powers and roles.⁶⁸ Therefore, the legal and institutional framework for local government in food security and climate change can be found in state legislation. This research will focus on the state of New South Wales, one of the six Australian states, to identify the legal and institutional principles and guidelines that are contributing to facilitate NSW local government roles in climate impacted food security.

V THE LEGAL AND INSTITUTIONAL FRAMEWORK FOR THE ROLES OF LOCAL GOVERNMENT IN NSW FOR ADDRESSING CLIMATE IMPACTED FOOD SECURITY

The role of local government in NSW in food security is generally regulative.⁶⁹ Local government is responsible for regulating safe and nutritious food supply to the community, inspection and regulating the quality control issues as well as public health concerns. These responsibilities are reflected through a number of laws.

A Constitution Act (No 32) 1902 (NSW)

The constitutional recognition of local government is evident in the NSW legal system. The *Constitution Act (No 32) 1902 (NSW)* recognizes the importance of local government and its responsibilities for better government at local level.⁷⁰ The Act constitutes local government, its power, authority and roles in accordance with law.⁷¹ The state constitution provides a significant legal base for local government roles in NSW.

The Constitution Act of NSW does not mention the terms ‘food security’ and ‘climate change’; but provides for making laws for the purpose of good government at all levels of the state (NSW).⁷² However, it does not provide any detailed outline of the roles and responsibilities of local

⁶⁷ Ibid.

⁶⁸ Pini, River and McKenzie, above n 57, 162.

⁶⁹ Liesel Spencer, 'Integrating Food Security into Local Government Law, Policy and Planning: Using Local Government Legal Structures to Build Community Resilience to Food Insecurity' (2012) 2(1) *Food Studies* 1, 2.

⁷⁰ *Constitution Act (No 32) 1902 (NSW)* pt 8 s 51(1).

⁷¹ Ibid s 51(2).

⁷² Ibid pt 2 s 5.

government, nor provide any principles and guidelines for discharging duties by local government. The roles and responsibilities of local government in NSW can be found in the Local Government Act (NSW).⁷³ The following sections will focus on this Act.

B Local Government Act (No 30) 1993 (NSW)

The pattern of institutional frameworks, powers and functions of the local government of NSW (NSWLG) are generally articulated in the *Local Government Act 1993 (NSW)*⁷⁴ (hereinafter LGA). The Act provides a detailed outline of the functions of NSWLG including their roles in food security. The basic features of the LGA that reflect the principles and guidelines for strengthening NSWLG are discussed below.

The LGA acknowledges the responsibility of NSWLG towards environment and ecologically sustainable development.⁷⁵ The Act vests responsibilities to local government for the management, improvement and development of resources (that also include natural resources).⁷⁶

The roles and functions of NSWLG is guided by a number of principles specified by the LGA.⁷⁷ Some of the principles can be applied to improve local governance for food security and addressing climate change impacts, as discussed in chapter 3, directing the NSWLG should:

1. Strive to provide adequate, equitable and appropriate service to the community. Services should be delivered by due consultation with the community
2. Encourage community leadership
3. Follow the principle of ecologically sustainable development while managing, protecting, restoring, enhancing and conserving environment
4. Consider long term effects of decisions
5. Coordinate local tasks by integrating interests of all stakeholders
6. Ensure participation of stakeholders
7. Prepare long term plans
8. Deliver services by considering social justice, access, participation and rights; and

⁷³ *Local Government Act 1993 (NSW)*.

⁷⁴ *Ibid* ss 7-8.

⁷⁵ *Ibid* s 7.

⁷⁶ *Ibid* s 7(d).

⁷⁷ *Ibid* s 8; The principles are known as the 'Council's Charter'; see also Spencer, above n 69, 4.

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9. Coordinate with state government⁷⁸

The roles of NSWLG are further specified in the other provisions of the LGA.⁷⁹ The LGA divides the roles of NSWLG into six categories. These are 1) non-regulatory (services), 2) regulatory (actions for which LGs approval or order is required), 3) ancillary (functions that assist to comply with the regulatory functions), 4) financial 5) administrative and 6) functions related to the enforcement of the LGA.⁸⁰ This categorization of roles specifies the responsibility patterns of local government.

The services that NSWLG should provide to the local people are specified in the LGA.⁸¹ Many of these have potential relationships with the future roles of local government in addressing climate impacted food security, as discussed in chapter 2.⁸² These services are community services and facilities (food stability), public health services and facilities (food utilization), environment conservation, protection and improvement services and facilities (food stability and availability), waste removal, treatment and disposal services and facilities (food utilization), pest eradication and control services and facilities (food availability), public transport services and facilities (food access and availability), energy production, supply and conservation (food stability), water, sewerage and drainage works and facilities (food utilization), storm water drainage and flood prevention, protection and mitigation services and facilities, fire prevention (food stability), land and property development (food availability), housing (food utilization) and industry development (food availability and stability).⁸³ The LGA also refers to other state legislation that provides for the roles of local government and some of those functions are relevant to address local food security.⁸⁴ The LGA is the source of power and functions of NSWLG including food security and environmental concerns. It reflects the comprehensive characteristics of the Act.

The LGA provides significant reference to the legal capacity of NSWLG.⁸⁵ It provides authority to the NSWLG to ‘do all such things as are supplemental or incidental to, or consequential on, the

⁷⁸ *Local Government Act 1993* (NSW) s 8.

⁷⁹ *Ibid* chs 5-8 and 11-17.

⁸⁰ *Ibid* s 21.

⁸¹ *Ibid* ch 6.

⁸² See section III of chapter 2 for future roles of local government recommended by international policy responses.

⁸³ *Local Government Act 1993* (NSW) ch 6.

⁸⁴ *Ibid* s 22.

⁸⁵ *Ibid* s 24.

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exercise of its functions'.⁸⁶ Such provision provides an extended power to NSWLG to perform its duties that have been mentioned in the previous paragraph. One example is the authority for classifying lands.⁸⁷ The provision strengthens the role of LG for classifying natural resources that are important to the community, threatened species, wildlife and the environment. The LGA also requires NSWLG to organise public hearings for such land classification.⁸⁸ This provision encourages public participation in local government. The Act also provides authority to NSWLG in managing community lands⁸⁹ that include wetlands, water courses and natural areas.⁹⁰ These types of natural resources are important for food security and are also potentially impacted by climate change.⁹¹ One of the objectives of the management of natural resources by NSWLG is to conserve biological diversity and maintain ecosystem functions.⁹² The Act also empowers NSWLG by providing a number of regulative authorities to manage natural resources.⁹³ Therefore, the value of conserving natural resources and related powers, authority and roles of local government has been addressed in the LGA. Water supply and sewerage are important aspects of food security in Australia.⁹⁴ The LGA vests the authority of the management of local water supply and sewerage system on local government.⁹⁵ This provision enables the LGs to address safe drinking water issues that are essential for food security.

Availability of resources is important for strengthening the local government role in climate impacted food security.⁹⁶ The LGA specifies nine different types of sources of local government finance such as rates, charges, fees, grants, borrowing, income from business, income from land, income from investment and sales of assets.⁹⁷ The LGA provides a detailed guideline for collecting resources from the above sources.⁹⁸ However, there is no specification of resource allocation for

⁸⁶ Ibid s 23.

⁸⁷ Ibid s 25.

⁸⁸ Ibid s 29.

⁸⁹ Ibid ss 35-47(F).

⁹⁰ Ibid s 36.

⁹¹ Christopher B. Field et al., 'Summary for Policymakers', in Christopher B Field et al. *Climate Change 2014 Impacts Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University Press, 2014)1.

⁹² *Local Government Act 1993* (NSW) s 36E(a).

⁹³ Ibid ss 47(G)- 54(R).

⁹⁴ Reisinger et al, above n 18, 1397.

⁹⁵ *Local Government Act 1993* (NSW) s 58.

⁹⁶ The principle '*Resources should be made available for implementing new roles for local government*' is one of the principles and guidelines for strengthening local government role, identified from the recommendations of international policy responses; see section III (A) of chapter 3 for details.

⁹⁷ *Local Government Act 1993* (NSW) ch 15.

⁹⁸ Ibid ch 15, ss 491-625.

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addressing climate change impacts such as on food security in the LGA. Therefore, the funds collected through the abovementioned sources should be used for all purposes including the roles for food security.

The authority to make local regulations and rules by the local government is also an important legal and institutional attribute to improve the potential of local government in food security and climate change.⁹⁹ The LGA provides a range of regulatory authority for NSWLG.¹⁰⁰ The areas where NSWLG has regulative authority includes water supply and sewerage, waste management (important for food utilization), local roads (important for food availability and supply) and management of community land,¹⁰¹ and land acquisition (important for food stability).¹⁰² The LGA also specifies the procedures for applying such regulative authority by the local government.¹⁰³ The LGA also provide some authority to NSWLG to apply legal action against the offenders failing to comply with LG's orders.¹⁰⁴

Election procedures for local representation have been specified in the LGA.¹⁰⁵ Such provision is importance for good local governance (as identified at chapter 3). The LGA also provide detailed guidelines about administrative procedures¹⁰⁶ as well as the sources of resource generation and allocation of resources.¹⁰⁷ The Act also enables NSWLG to develop public-private partnerships for local investment.¹⁰⁸ There are some provisions in the LGA that specify the mechanisms for accountability and transparency of the NSWLG.¹⁰⁹ This includes procedures for public hearing, procedures for providing notice and dispute resolution. The LGA also specifies access to information by the public in Chapter 4.¹¹⁰ According to this chapter local people should have open

⁹⁹ This was reflected in Aberdeen Agenda as a good local governance principle. See section III (E) of chapter 3 for details.

¹⁰⁰ *Local Government Act 1993* (NSW) ch 7-8.

¹⁰¹ *Ibid* s 68.

¹⁰² *Ibid* s 186.

¹⁰³ *Ibid* ss 75-184, 191-201.

¹⁰⁴ *Ibid* ch 16.

¹⁰⁵ *Ibid* chs 9-10.

¹⁰⁶ *Ibid* chs 11-12.

¹⁰⁷ *Ibid* ch 15.

¹⁰⁸ *Ibid* s 400C.

¹⁰⁹ *Ibid* ch 18.

¹¹⁰ *Ibid* ch 4.

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access to the council meetings¹¹¹ as well as to the council reports and correspondences.¹¹² These provisions are important aspects for encouraging good governance and local democracy.

The LGA requires NSWLGs to prepare community strategic planning that should be based on social justice, public participation and economic and environmental concerns.¹¹³ This provision has enabled the inclusion of climate change impacts on food security issues at the local level in the strategic planning of the LGs. The mechanisms for such strategic planning are also set out in the Act.¹¹⁴ The LGA attempts to promote the role of NSWLGs in community engagement as well as clarifies the relevant mechanisms. One of the examples of implementing community engagement in strategic planning, particularly associated with food security, includes the development of the ‘Illawarra Food Strategy’ by the Illawarra Councils (Kiama Municipal Council, Shellharbour City Council and Wollongong City Council).¹¹⁵ Under this strategic plan the Councils have engaged local stakeholders, including the community members, local businesses and local agencies to develop and implement local policy and strategy for sustainable food security. The strategy has included concerns about climate change impacts on local food security and has adopted programmes to increase resilience.¹¹⁶ The legal provisions of the LGA have a role in such initiatives.

The above discussion indicates some major legal and institutional principles and guidelines that the LGA provide to empower NSWLG that could also contribute to improve NSWLG’s future role in climate impacted food security. The major legal and institutional principles and guidelines are:

1. The principles of participation, equity in service delivery, appropriate planning, involving community, encouraging ecologically sustainable development for environmental management, and coordination with higher authority (state authority) should guide local government roles¹¹⁷
2. Services should contribute to improve food security¹¹⁸

¹¹¹ Ibid s 9.

¹¹² Ibid s 11.

¹¹³ Ibid s 402.

¹¹⁴ Ibid ss 403-406.

¹¹⁵ *Illawarra regional food security* Wollongong City Council, <<http://www.wollongong.nsw.gov.au/Pages/default.aspx>>.

¹¹⁶ *Illawarra regional food security* Wollongong City Council, <<http://www.wollongong.nsw.gov.au/council/meetings/BusinessPapers/Illawarra%20Regional%20Food%20Strategy.pdf>>.

¹¹⁷ *Local Government Act 1993* (NSW) s 8.

¹¹⁸ Ibid ch 6.

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3. Local government should ‘do all such things as are supplemental or incidental to, or consequential on, the exercise of its functions’¹¹⁹ such as functions contributing to improve climate impacted food security¹²⁰
4. Regulative authority, including the capacity to improve infrastructures and facilities that are important for food security¹²¹
5. Resources are made available
6. Incorporation of good governance elements such as election procedures, accountability, transparency and access;¹²² and
7. Community planning to improve food security.¹²³

There is other legislation in NSW that provides roles for NSWLG that relate to actions for food security and climate change and this is reviewed in the following sections.

C Environmental Planning and Assessment Act (No 203) 1979 (NSW)

The *Environmental Planning and Assessment Act (No 203)* (NSW) or EPA Act focuses on natural resource management, land use planning, ecologically sustainable development, coordination in service delivery and protection of the environment important for addressing climate impacted food security issues.¹²⁴ It also emphasises coordination between state and local government for environmental planning through enhancing public participation.¹²⁵ Although the administrative functions for environmental management and assessment have been kept under the authority of the concerned state government minister and the Department of Planning and Environment (DPE),¹²⁶ there are provisions in the EPA Act about delegation of power to the local government (councils) for discharging such duties.¹²⁷

The EPA Act also specifies matters that are related with the NSWLGs.¹²⁸ The EPA Act states that

¹¹⁹ Ibid s 23.

¹²⁰ Ibid s 23.

¹²¹ Ibid chs 7-8.

¹²² Ibid chs 4,15.

¹²³ Ibid s 402.

¹²⁴ *Environmental Planning and Assessment Act, 1979* (NSW) s 5 (a).

¹²⁵ Ibid s 5(b)-5(c); David Clark, *Bluett's Local Government Handbook New South Wales* (Thomson Reuters, 17 ed, 2012) 440.

¹²⁶ *Environmental Planning and Assessment Act, 1979* (NSW) ss 7-22.

¹²⁷ Ibid s 23(d).

¹²⁸ Ibid pt 2(A) div 6.

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the Commission or a regional panel must not exercise a function that will result in the making of a decision that will have, or that might reasonably be expected to have, a significantly adverse financial impact on a council until after it has consulted with the council.¹²⁹

The provision reflects the principle of subsidiarity by establishing NSWLGs' rights over local environmental decision making. The higher authority (commissioner or regional panel) needs to involve or get the consent of local government on environmental matters articulated in the Act. However, the EPA Act also ensures higher authorities' control over local government by including the provision of complying 'reasonable direction' of such authorities by the local government.¹³⁰ Therefore, both the provisions reflect a balance of power and authority between local government and higher authorities.

The EPA Act provides for three types of legally binding environmental planning instrument (EPI): Local Environmental Plan (LEP), Regional Environmental Plan (REP) and the State Environmental Planning Policy (SEPP).¹³¹ The EPIs are important for the management of local food security issues that could be impacted by climate change. Some of the contents of EPIs include protection and improvement of the environment (food stability), controlling development activities, land zoning and land use (food availability and access), improving housing facilities (food utilization), protection of biodiversity (food stability), protection of trees and vegetation (food availability and stability).¹³² The EPA Act specifies three types of development under EPIs: development that does not need consent, development that needs consent, and development that is prohibited.¹³³ This provision enables authorities to control and prioritise development activities such as developments that may influence adaptation for climate impacted food security. The following section will focus on the LEP, an essential EPI for local government, and its function to improve local food security.

¹²⁹ Ibid s 23(M).

¹³⁰ Ibid s 23(N).

¹³¹ Ibid s 24.

¹³² Ibid s26.

¹³³ Ibid ss 76, 76 (A), 76(B).

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1 *Local Environmental Plan (LEP)*:

The EPA Act designates NSWLG for environmental planning at the local level through the LEP.¹³⁴ Such authority empowers the NSWLG to prepare their own plans and strategies for local environmental management, development and conservation which is also important for addressing climate impacted food security issues. The mechanisms for practicing such authority have also been articulated in the EPA Act.¹³⁵

The NSW state government has specified the contents and standards that each LEP should comply with. This standard form of LEP is known as ‘The Standard Instrument Principal Local Environment Plan’¹³⁶ (herein after SIPLEP). This is an important guideline for NSWLG to comply with the objectives of the EPA Act. This guideline is common and mandatory for all local government institutions in NSW for environmental planning. The SIPLEP mentions about 35 possible types of land use under LEP.¹³⁷ It includes land types that are important for food security and vulnerable to climate change impacts such as lands used for primary production (e.g. agricultural land, farms and roads), forestry, natural waterways, natural reserves and lands marked for environmental conservation and management (e.g. lands with high/special ecological value).¹³⁸ This would enable NSWLGs to address lands that are important for food security as well as vulnerable to the impacts of climate change into the LEPs. The SIPLEP specifies the objectives for agricultural development through LEP. The objectives are:

1. To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
2. To encourage diversity in primary industry enterprises and systems appropriate for the area.
3. To minimize the fragmentation and alienation of resource lands.
4. To minimize conflict between land uses within this zone and land uses within adjoining zones.¹³⁹

¹³⁴ Ibid div 4.

¹³⁵ Ibid ss 55-60.

¹³⁶ New South Wales Government, *Standard Instrument Principal Local Environment Plan* (11 March 2016) NSW Legislation < <http://www.legislation.nsw.gov.au/#/view/EPI/2006/155a>>.

¹³⁷ Ibid.

¹³⁸ Ibid.

¹³⁹ Ibid.

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The abovementioned objectives provide essential guidelines for NSWLG for strengthening food security by incorporating the environmental values into the planning procedures. Local government may include additional objectives in the respective LEPs that are consistent with the core objectives mentioned in the SIPLEP.¹⁴⁰ This flexibility in the LEP would enable NSWLGs to incorporate objectives that could address impacts of climate change on food security. This is an important guideline that SIPLEP enables to improve the roles of local government through environmental planning and contribute to the strengthening food security.

Similar guidelines are also available for using natural waterways and working waterways (important for agriculture and fishing), national parks and natural reserves and forestry (important for biodiversity) and environmental management and protection.¹⁴¹ However, the SIPLEP does not mention addressing climate change and its impacts in the planning objectives under different types of land uses.

Community consultation has been made mandatory for LEP which reflects the intention of public participation in the decision making process in EPA Act.¹⁴² The EPA also ensures control over local government action by providing DPE with the authority to monitor and review LEPs for the purpose of achieving the objectives of EPA Act.¹⁴³ This provision reflects the characteristics of adaptive governance where the poly-centricity of decision making has been given importance to social-ecological development.¹⁴⁴

The EPA Act therefore empowers NSWLG in environmental decision making processes through the provisions of delegating authority and power to make local environmental plans and to approve or refuse development consent under them. The preparation of LEP's is an important pro-active and strategic opportunity that supports good governance principles. The definitions of an EPI, LEP and the SIPLEP provides significant scope for their expanded use by NSWLGs as the impacts of climate change on food security becomes more urgent in the future.

¹⁴⁰ Gillian Duggin, 'Agriculture' in Peter Williams (ed) *The Environmental Law Handbook: Planning and Land Use in NSW* (Thomson Reuters, Sydney, 6th Edition, 2016) 501, 509.

¹⁴¹ New South Wales Government, above n 136.

¹⁴² *Environmental Planning and Assessment Act, 1979* (NSW) s 57.

¹⁴³ *Ibid* s 73.

¹⁴⁴ See, eg, Thomas Dietz, Elinor Ostrom and Paul C. Stern, 'The Struggle to Govern the Commons' (2003) 302(5652) (December 12, 2003) *Science* 1907; Carl Folke et al, 'Adaptive governance of social-ecological systems' (2005) 30 *Annual Review of Environmental and Resources* 441; Brian Walker et al, 'Resilience, adaptability and transformability in social-ecological systems' (2004) 9(2) *Ecology and Society* 5.

D *Food Act (No 43) 2003* (NSW)

The *Food Act 2003* (NSW) covers the regulation of food in NSW.¹⁴⁵ The objective of the *Food Act 2003* (NSW) is to ensure safe food that is for sale through ensuring food standards and fairness.¹⁴⁶ Therefore, ensuring availability and access of safe and nutritious food are embedded into the legal framework of NSW. Pursuant to this objective of the Act, a separate body, the NSW Food Authority, has been created.¹⁴⁷ It has the prime responsibility to implement the actions required by the *Food Act 2003* to ensure food safety and fairness. However, the food authority may involve LGs for the enforcement of the law within respective jurisdiction of the LGs, as well as in other jurisdictions.¹⁴⁸ The *Food Act 2003* empowers the NSWLGs to act not only in respective local government areas but also in areas beyond the local jurisdiction under the provisions of this Act. This provision enables the NSWLGs to control a broader chain of food security for addressing climate change impacts. The *Food Act 2003* also provides provisions of accountability of LGs working under this legislation through their responsibility to report to the Food Authority regarding any function under this law.¹⁴⁹

E *Other Legislation*

There are some other laws in NSW that mention specific roles of NSWLGs in food security, notably in the *LGA*.¹⁵⁰ These roles, relevant to food security are presented in table 4.2.

Table 4.2: The roles of NSWLG specified in other legislation of NSW for food security

Name of legislation	Implications for food security
<i>Community Land Development Act 1980</i> (NSW)	Planning functions as consent authority. This role provides the scope of LG to take part in planning processes that are related to land (an essential resource for food production).
<i>Fire Brigades Act 1989</i> (NSW)	Payment of contributions to fire brigade costs and furnishing of returns. This role would promote LGs responsibility in disasters associated with fire. The role will also impact on reducing impacts of fire on local communities that would strengthen the 'stability' element of food security.
<i>Public Health Act 2010</i> (NSW)	Inspection of systems for purposes of microbial control. Helps to ensure food safety.

¹⁴⁵ Clark, above n 125, 521.

¹⁴⁶ *Food Act 2003* (NSW) s 3.

¹⁴⁷ *Ibid* s 107.

¹⁴⁸ *Ibid* ss 110,111(4).

¹⁴⁹ *Ibid* s 113.

¹⁵⁰ *Local Government Act 1993* (NSW) s 22.

<i>Roads Act 1993</i> (NSW)	Construction and management of roads. Helps food access and food availability at local level.
<i>Rural Fires Act 1997</i> (NSW)	Danger periods requiring the furnishing of information to the Rural Fire Service Advisory Council and its Co-ordinating Committee and environment protection notices. Helps to take measures to reduce the impacts of climate change at local level.
<i>State Emergency Service Act 1989</i> (NSW)	Recommending appointment of local controller. Keeps the LGs in action during emergency issues that may also occur due to any climate induced events.
<i>Coastal Protection Act 1979</i> (NSW)	Limitation on coastal development by councils. This would help to protect coastal areas that are under the potential threat of climate change.
<i>Environmental Offences and Penalties Act 1989</i> (NSW)	Forfeiture of council functions to person appointed by Governor.
<i>Government Information (Public Access) Act 2009</i> (NSW)	Council required to publish certain information and to grant access to certain documents. Improves access to information to the stakeholders that help them to know about the policy and actions of food security.
<i>State Emergency and Rescue Management Act 1989</i> (NSW)	Council required to prepare for emergencies. Increases accountability and capacity to act in times of emergencies.

Source: *Local Government Act 1993* (NSW) s 22.

Table 4.2 provides a list of the legislation that concerns the role of local government in food security. The *Roads Act 1993*(NSW) provides the scope of LGs to construct and maintains local roads that are essential for food access and food availability and the *Public Health Act 2010*(NSW) provides the scope of implementing the provisions of the act such as actions for safe drinking water. Under the *Rural Fires Act 1997*, the LGs are responsible for setting up fire brigades and regulate the activities of the fire service to prevent, mitigate and suppress fire, co-ordinate activities in this regard as well as protect the environment.¹⁵¹

The laws related to local government roles in food security in NSW, Australia discussed above have shown a number of characteristics that contribute to the current role of local government in NSW. The following section summarises the principles and guidelines included in the NSW legal and institutional frameworks for climate impacted food security and the associated linkages with the roles of local government.

¹⁵¹ Clark, above n 125, 494.

V LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES ADOPTED IN NSW TO STRENGTHEN THE ROLE OF LOCAL GOVERNMENT IN CLIMATE IMPACTED FOOD SECURITY

The objective of Part A of this chapter was to address the second research question: to identify the legal and institutional principles and guidelines that Australian legal and institutional frameworks have adopted to strengthen local government in climate impacted food security. The discussion in this chapter has identified some basic legal and institutional principles and guidelines in this regard.

One of the major legal and institutional principles and guidelines that has widened local government scope to contribute to climate impacted food security is the provision relating to LEPs in the EPA Act of NSW. The SIPLEP provides a guideline for developing LEP at the local government level. It also enables local governments of NSW to address climate change impacts on food security elements such as agriculture production, fisheries, water, natural resource, biodiversity and infrastructures under different categories of land use and specifying objectives and decision control mechanisms. The LEP is a means to improve local government planning capacity in NSW which reflects the principle developed in chapter 3 i.e. ‘Local government planning, decision making process and service delivery should be improved.’

Promoting public participation is another major principle that has been adopted for an effective local government role in NSW. The LGA mentions a number of functions of the local government that are relevant to environmental concerns and may also impact food security.¹⁵² Subsequently, the LGA sets public participation as an important principle for exercising these functions¹⁵³ and has also precisely explained the procedures for local community involvement in the decision making process.¹⁵⁴ Similar emphasis on public participation has been given in the EPA Act where community consultation has been made mandatory for LEP.¹⁵⁵ Public participation is a major element for good local governance, discussed under good governance principles in chapter 3.

The characteristics of good local governance are evident in NSWLG legal frameworks. The properties of legal and constitutional recognition of local government, local representation, the

¹⁵² See section V (E) of Chapter 4; *Local Government Act 1993* (NSW) ch 6.

¹⁵³ *Local Government Act 1993* (NSW) s 8.

¹⁵⁴ *Ibid* ch 4.

¹⁵⁵ *Environmental Planning and Assessment Act, 1979* (NSW) s 57.

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defined legal framework, public participation, open local government and resource allocations are evident in the legal frameworks, particularly in the LGA.¹⁵⁶

Ecologically sustainable development and the six principles for climate adaptation and improving resilience are notable principles and guidelines adopted for the local government role in addressing climate change impacts in Australia.¹⁵⁷ These principles include some basic principles recommended by international policy responses such as the precautionary principle, inter and intra generational equity, coordination and cooperation, helping the vulnerable and integrating climate change into policies. These principles are also embedded into the legal and institutional principles and guidelines developed in chapter 3.

Providing appropriate power and authority to local government and specifying roles are important legal and institutional principles and guidelines evident from the discussion. ‘The council’s charter’ specifies the power and authority of NSWLG.¹⁵⁸ The LGA also specifies the power and authority of NSWLG in discharging its various functions.¹⁵⁹ The EPA Act specifies NSWLGs’ superiority on local environmental decision making.¹⁶⁰ The provision of NSWLG as a designated authority for LEP empower the local government to play its role in environmental planning¹⁶¹ which is important for improving food security issues impacted by climate change. The *Food Act* empowers NSWLG through provisions for delegating the power of NSW Food authority to the local government.¹⁶²

The legal and institutional frameworks of NSW for food security and the environment not only provide power and authority to the NSWLG but also specify a number of functions that LGs should do in relation to addressing food security. The LGA specifies the roles of NSWLG by categorizing the functions under six areas.¹⁶³ Under each of these areas a number of specific functions have been articulated. For example, under the non-regulatory functions, a number of roles have been

¹⁵⁶ See *Constitution Act (No 32) 1902* (NSW) pt 8 s 51; *Local Government Act 1993* (NSW) ss 7,9-11, 21, 219-220, 296, 400C, 401, 439-490, 491-624.

¹⁵⁷ See Intergovernmental Agreement on the Environment, above n 44; National Climate Resilience and Adaptation Strategy 2015, above n 53, 8.

¹⁵⁸ *Local Government Act 1993* (NSW) s 8.

¹⁵⁹ *Ibid* chs 5-8.

¹⁶⁰ *Environmental Planning and Assessment Act, 1979* (NSW) s 23(M).

¹⁶¹ *Ibid* s 54(1)(a).

¹⁶² *Food Act 2003* (NSW) ss 110,111(4).

¹⁶³ *Local Government Act 1993* (NSW) s 21.

specified that could improve food security issues.¹⁶⁴ The roles of NSWLG are also specified in the EPA Act, the Food Act and a number of other laws (mentioned at table 4.2) that have relationship with food security and environmental concerns. This is an indication of the potential scope of local governments in NSW to address food security. The powers, authorities and various roles of local government that are relevant to addressing climate impacted food security enhance local government scope to contribute to improve resilience and reduce vulnerability of people and food security. This reflects the principle adopted in chapter 3 i.e. ‘Local government should be involved in improving resilience and adaptive capacity, and reducing vulnerability of local people.’

Despite the adoption of the legal and institutional principles and guidelines in the legal frameworks in NSW, Australian local governments (particularly at the rural level) are constrained by a number of issues. Barbara Pini, Su Wild River and Fiona M Haslam McKenzie identified four areas where the rural local governments are constrained: capacity, commitment of the council members, coordination among the agencies working at this level and community engagement.¹⁶⁵ Other research by Mukheibir et al. showed that local government in Australia has a poor understanding of climate risks, is constrained by government structures and poor leadership, a lack of resources and a lack of climate change adaptation frameworks to address the problem,¹⁶⁶ though these problems are not acute in metropolitan local governments.¹⁶⁷ Therefore, social, economic and political factors are also important concerns that are associated with addressing climate change impacts by local government institutions in rural areas of Australia.

There is also criticism about the existing food security structure in Australia. According to Christine Slade and Wardell-Johnson, the existing bureaucratic system for food security needs to be simplified to address local and regional level food security concerns¹⁶⁸ and for this ‘there is an urgent need for higher tiers of government to recognize the food security agenda and provide coordinated support for local government initiatives, particularly through legislation and funding.’¹⁶⁹

¹⁶⁴ Ibid s 52.

¹⁶⁵ Pini, River and McKenzie, above n 57, 166-170.

¹⁶⁶ Pierre Mukheibir et al, ‘Cross-scale barriers to climate change adaptation in local government, Australia’ (NCCARF, 2013) <<https://www.nccarf.edu.au/publications/barriers-climate-change-adaptation-local-government>>

¹⁶⁷ Pini, River and McKenzie, above n 57, 171.

¹⁶⁸ Slade and Johnson, above n 21.

¹⁶⁹ Slade and Johnson, 11.

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The legal frameworks of Australian local government emphasise food security policies that would involve a collaborative approach to address the problem. The Prime Minister's Science, Engineering and Innovation Council expert working group for food security¹⁷⁰ recommends establishing an Australian Food Security agency that would work with other stakeholders, including local government, to address and develop food security issues. Such collaboration would include data collection, research, planning, education, community development and a funding structure to assist local governments (including other stakeholders) to improve food security.¹⁷¹ Research by Donna Craig and Michael Jeffery on Greater Western Sydney about food security conditions has revealed that the existing legal and institutional frameworks require more pro-active approaches as well as 'no-regret' policies to address climate change impacts on food security.¹⁷²

The discussion of the role of local government in Australia has identified the legal and institutional principles and guidelines adopted to strengthen local government, the limitations and scope to improve local governance in Australia for addressing climate change impacts on food security. The next part (Part B) will seek similar information in an Indonesian context.

¹⁷⁰ The Prime Minister's Science, Engineering and Innovation Council provides independent advice on major national issues in science, technology and engineering and their social and economic contribution. <<http://www.chiefscientist.gov.au/tag/pmseic/>>.

¹⁷¹ Australian food security in a changing world, above n 19, 2-5.

¹⁷² Craig and Jeffery, above n 33, 455.

PART B: INDONESIA

Climate change is one of the major threats to Indonesian food security.¹⁷³ Climate induced vulnerabilities such as natural disasters, natural resource depletion, environmental pollution, decrease in water availability, flooding, droughts and landslides, competition due to natural resource scarcity as well as social and economic disadvantages are causing food insecurity in Indonesia.¹⁷⁴ Food security sectors such as water, marine and fisheries, agriculture and forestry will face the major impacts of climate change in Indonesia.¹⁷⁵ Despite the impacts of climate change and other factors on food security, Indonesia has shown significant success in achieving food security.¹⁷⁶ The country reached rice and wheat self-sufficiency in 2008, which helped manage food availability concerns.¹⁷⁷ This has been done through encouraging processes such as democratization, decentralization and greater political participation.¹⁷⁸ In these processes, strengthening local government has been recognized as one of the successful ingredients for Indonesia's food security.¹⁷⁹ Indonesia has also developed a legal and institutional framework for strengthening food security across the country.¹⁸⁰

The success that Indonesia has made to improve food security by strengthening local governance will be the focus of this part of the chapter. This part will investigate the major current laws and policies of Indonesia that contribute to playing active roles by local government institutions in food security, particularly in addressing climate change impacts. The chapter will identify the legal and institutional principles and guidelines that are adopted by local government of Indonesia to address the impacts of climate change on food security. The findings will address the remaining part of the second research question i.e. what current legal and institutional principles and

¹⁷³See, eg, NAPCCA, above n 7; *Law 18/2012 on Food* (Indonesia) art 22; Republic of Indonesia: Country programme evaluation (IFAD, February 2014) v <http://www.ifad.org/evaluation/public_html/eksyst/doc/country/pi/indonesia/indonesia_cpe2014.pdf>.

¹⁷⁴ Government of Indonesia, 'Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change' (Ministry of Environment, Republic of Indonesia, 2010) Chapter IX, 3 <http://unfccc.int/files/national_reports/>; NAPCCA, above n 7, 8.

¹⁷⁵ NAPCCA, above n 7, 8.

¹⁷⁶ Food and Agriculture Organization, 'The State of Food Insecurity in the World 2014: Strengthening the enabling government to improve food security and nutrition' (Rome, 2014) 16, 20 <<http://www.fao.org/publications/sofi/2014/en/>>.

¹⁷⁷ Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change, above n 174, 11.

¹⁷⁸ Food and Agriculture Organization, above n 176, 20.

¹⁷⁹ Food and Agriculture Organization, above n 176, 20.

¹⁸⁰ Food and Agriculture Organization, above n 176, 29.

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guidelines have been adopted by local government to address food security impacted by climate change in a selected developing country.

Part B will look into the findings of the FAO, the IPCC and government reports of Indonesia to identify the potential impacts of climate change on local food security of Indonesia. The discussion will proceed with investigating the current legal and institutional framework for local government, food security and climate change of Indonesia. It will identify the existing legal and institutional principles and guidelines promoting the roles of local government and compare them with the legal and institutional principles and guidelines identified from the recommendations of international policy responses in chapter 3.

VI CLIMATE CHANGE IMPACT AND LOCAL FOOD SECURITY CONCERNS IN INDONESIA

Climate change will impact Indonesia's crop production. Irregularities in season change (dry and wet seasons) and precipitation will impact Indonesian crop production.¹⁸¹ Research by Naylor et al. showed that a delay in the occurrence of the regular rainy season may cause a 65 per cent decrease in rice production in Indonesia.¹⁸² Climate change effects in Indonesia are basically associated with El Nino Southern Oscillation (ENSO)¹⁸³ events that may decrease rainfall and impact the production of major crops.¹⁸⁴ ENSO events are also causing increased crop pests and diseases (e.g. brown plant hopper in rice fields).¹⁸⁵

Climate change will also impact livestock production in Indonesia. Under changed rainfall and increased temperature situations, the availability, quality and quantity of forage and fodder as well as the reproduction systems of the livestock will be negatively impacted and will result in decreased dairy production.¹⁸⁶ Climate change will also impact the Indonesian fisheries sector by

¹⁸¹ Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change, above n 174, chapter IX; NAPCCA, above n 7.

¹⁸² Rosamond L. Naylor et al., 'Assessing risks of climate variability and climate change for Indonesian rice agriculture' (Proceedings, vol. 104, no. 19, National Academy of Sciences of the United States of America, 2007) 7752-7757.

¹⁸³ ENSO refers to El Nino Southern Oscillation which is the oscillation between El Niño and La Niña conditions. El Niño events are associated with drought and La Niña event are associated with heavy rainfall and flooding.

¹⁸⁴ Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change, above n 174, chapter IV, 10.

¹⁸⁵ Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change, above n 174, 11-14.

¹⁸⁶ Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change, above n 174, 11-14.

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reducing marine fisheries availability.¹⁸⁷ Increased drought will lead to fire associated vulnerabilities in agriculture, forestry and human settlements.¹⁸⁸ Indonesia may lose up to 1.4 per cent of its gross domestic product (GDP) due to losses in agriculture production by 2080 because of climate change impacts.¹⁸⁹ Climate change has resulted in increased frequency of natural disasters in Indonesia. During the period of 2003-2005, around 1,429 disasters occurred in Indonesia, of which hydro-meteorological disasters (e.g. floods) were common.¹⁹⁰

Indonesia is one of the developing countries in the world. The country has shown significant success in reducing hunger over the last few decades.¹⁹¹ However, a large number of Indonesian people are still the poor living in rural areas. The major means of livelihood for these poor rural people is agriculture.¹⁹² The impacts of climate change on agriculture in Indonesia will deteriorate the livelihood status of these poor people who live in the rural areas.¹⁹³ Agriculture contributes a significant portion of the national GDP of Indonesia (around 17 per cent)¹⁹⁴ where rice production is the key indicator of Indonesian food security.¹⁹⁵ A negative impact on Indonesian rice production may lead to increased poverty at the local level which would also impact farmer welfare issues.¹⁹⁶ The participation of women in crop production is also significant in Indonesian rural areas. Nearly 40 per cent of domestic food supplies are made from kitchen gardens that are managed by women in the local areas. Fisheries also provide livelihoods for a lot of local people. Indonesia has a huge number of people who live in low-lying coastal areas and these people are

¹⁸⁷ Yasuaki Hijioka et al, 'Asia' in V.R Barros et al (eds) *IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA)1327, 1345.

¹⁸⁸ Ibid 1350.

¹⁸⁹ Dasgupta et al, above n 16, 632.

¹⁹⁰ Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change, above n 174, chapter 4 (1).

¹⁹¹ Food and Agriculture Organization, above n 176, 16, 20.

¹⁹² Food and Agriculture Organization, above n 176, 30; Republic of Indonesia: Country programme evaluation, above n 173, v.

¹⁹³ Hijioka et al, above n 187, 1350; Dasgupta et al, above n 16, 633.

¹⁹⁴ Food and Agriculture Organization, *Fact Sheet Indonesia: Women in Agriculture, Environment and Rural Production* <<ftp://ftp.fao.org/docrep/fao/007/AD520e/AD520e00.pdf>>.

¹⁹⁵ Indonesia Second National Communication Under the United Nations Framework Convention on Climate Change, above n 174, chapter IV, 10; Food and Agriculture Organization, above n 194.

¹⁹⁶ Hijioka et al, above n 187, 1349.

under increasing threats of climate change impacts.¹⁹⁷ These coastal people depend on marine fisheries for their livelihoods. About 2 million people are involved in this sector. Changes in marine fisheries due to climate change would therefore impact the livelihood of these people.

One of the major problems in Indonesian food security relates to food access.¹⁹⁸ Access to food by the rural household, due to lack of financial resources, is one of the major food security issues in Indonesia.¹⁹⁹ After the economic crisis in 1997, food prices increased in Indonesia significantly.²⁰⁰ The situation further deteriorated due to natural disasters such as drought and forest fire.²⁰¹ The economic crisis and natural disasters impacted on the household income of poor rural people. As a result, a major portion of household income of poor people was used in purchasing food.

After the economic crisis in the late 1990s, Indonesia has shown significant success in food security, particularly in achieving the Millennium Development Goal by reducing poverty and halving the proportion of people who suffer from hunger.²⁰² The Food and Agriculture Organization (FAO) recognized the success of Indonesian food security as a result of the country's legal and institutional approach to promote decentralization of power towards the local authorities and strengthening local government role.²⁰³ The following section will discuss the legal and institutional frameworks of Indonesia, the principles and guidelines that enable local government to play a strong role in food security, particularly in addressing the impacts of climate change.

VIII THE LEGAL AND INSTITUTIONAL FRAMEWORK FOR THE ROLE OF LOCAL GOVERNMENT IN FOOD SECURITY IN INDONESIA

The legal and institutional frameworks for local government, food security and climate change of Indonesia are basically described in several laws and policies. The Constitution of Indonesia provides a basic guideline of the principles that Indonesia adopted to regulate and strengthen local governance.²⁰⁴ Under the guidelines of the Constitution, Indonesia formulated the '*Law 32/2004*

¹⁹⁷ Poh Poh Wong et al., 'Coastal Systems and Low-Lying Areas' in Christopher B Field et al. *Climate Change 2014 Impacts Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University Press, 2014) 361, 373.

¹⁹⁸ Food and Agriculture Organization, above n 194.

¹⁹⁹ Food and Agriculture Organization, above n 194.

²⁰⁰ Food and Agriculture Organization, above n 176, 16, 20.

²⁰¹ Food and Agriculture Organization, above n 194.

²⁰² Food and Agriculture Organization, above n 176, 16, 20.

²⁰³ Food and Agriculture Organization, above n 176, 20, 29.

²⁰⁴ *Indonesian Constitution* (Indonesia) ch vi.

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*on Regional Administration (Indonesia)*²⁰⁵ (LRA) in 2004 that defines the institutional authority and capacity of local government institutions (provinces, regencies and municipalities) in accordance with the Constitution of the country.²⁰⁶ The LRA also specifies the principles and guidelines for the effective role played by local government.

The *Law 18/2012 on Food (Indonesia)*²⁰⁷ (Food Law) was formulated in 2012 to address food security in Indonesia. The Food Law adopts food sovereignty, food sufficiency and food security as the basic strategy for sustainable food systems in Indonesia.²⁰⁸ It also indicates legal and institutional principles and guidelines for effective roles for food security by key stakeholders such as local government.

Two other legal and policy documents of Indonesia are also a good source of identifying legal and institutional principles and guidelines for the role of local government. The Law 32/2009 on Environmental Protection and Management (Indonesia) (EPM) and National Action Plan for Climate Change Adaptation, 2013 (NAPCCA) provide governance strategies and guidelines for protecting the environment and addressing climate change impacts.

The following sections will explore these legal and policy documents of Indonesia to understand the role of local government and legal and institutional principles and guidelines followed in regards to research question 2.

A The 1945 Constitution of the Republic of Indonesia

Indonesia is a unitary state in the form of a republic.²⁰⁹ The structure and authority of LG in Indonesia is specified in the Indonesian Constitution.²¹⁰ Chapter VI of the Indonesian Constitution describes 'Regional Authorities', under which three types of local government institutions are defined: provinces, regencies and municipalities.²¹¹ The Constitution provides a basic

²⁰⁵ *Law 32/2004 on Regional Administration (Indonesia)* preamble.

²⁰⁶ *Ibid* art 1.

²⁰⁷ *Law on Food (Indonesia)* 18/2012.

²⁰⁸ *Ibid* art 3.

²⁰⁹ *Indonesian Constitution (Indonesia)* art 1.

²¹⁰ *Ibid* arts 18 and 18A.

²¹¹ *Ibid* ch vi and art 18 (1); Simon Butt, 'Regional Autonomy and Legal Disorder: The Proliferation of Local Laws in Indonesia' (2010) 32(2) *Sydney Law Review* 177, *Regional Administration (Indonesia)* Law 32/2004, art 2; In Indonesia, local governments are known as Regional Authorities (RA). However, this chapter will keep using the term 'local government' in Indonesian context to avoid multiple terminology of a common subject.

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understanding of legal and institutional principles and guidelines that Indonesia has adopted to improve local governance. The Constitution states that ‘[t]he regional authorities of the provinces, regencies and municipalities shall administer and manage their own affairs according to the principles of regional autonomy...’.²¹² Here, ‘the principles of regional autonomy’ reflects the presence of a subsidiarity principle that stresses local autonomy.²¹³ This is also evident in the Article 18(5) of the Constitution that states ‘regional authorities shall exercise wide-ranging autonomy, except in matters specified by law to be the affairs of the central government.’²¹⁴ Therefore, regional autonomy is a major focus for strengthening local governance in Indonesia.

Article 18A of the Constitution emphasizes making laws for defining the nature of cooperation and assistance between central and local government institutions in Indonesia, especially for finance, public service and resource use.²¹⁵ This provision of the Constitution indicates the acknowledgement of the importance of cooperation and coordination to strengthen local governance in Indonesia. Article 18A emphasizes a principle of justice and equity for regulating and administering the cooperation and coordination.²¹⁶ These provisions of the Indonesian Constitution reflect the existence of the second principle developed in chapter 3 i.e. ‘National policies should encourage cooperation, coordination and partnership with local government.’²¹⁷ Here, the Constitution of Indonesia provides the legal basis for adopting this principle into the legal and institutional framework to strengthen local government.

The Constitution also provides some guidelines for establishing good local governance such as the authority to prepare their own laws to manage and administer affairs, public representation, election and mechanisms for accountability.²¹⁸ These provisions indicate adopting the principle of establishing good local governance, as recommended in chapter 3.²¹⁹

²¹² *Indonesian Constitution* (Indonesia) art 18(2).

²¹³ See section II (D) (1) of chapter 2 for details about Principle of Subsidiarity.

²¹⁴ *Indonesian Constitution* (Indonesia) art 18(5).

²¹⁵ *Ibid* arts 18A.

²¹⁶ *Ibid* arts 18A(2).

²¹⁷ See section II (B) of Chapter 3 for details of the principle ‘National policies should encourage cooperation, coordination and partnership with local government’.

²¹⁸ *Indonesian Constitution* (Indonesia) arts 18 and 18A.

²¹⁹ See section III (E) of chapter 3 for details of the principle ‘Good local governance principles should be adopted in the local government legal and institutional framework’.

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The above discussion indicates some basic features of the Indonesian Constitution to strengthen local government, such as the principle of autonomy as a means of local empowerment, legal procedure for ensuring cooperation and coordination and emphasis on good governance. All these features are also evident in the principles and guidelines developed in chapter 3 to strengthen the role of local government in climate impacted food security.

B Law 32/2004 on Regional Administration (Indonesia)

The *Law 32/2004 on Regional Administration (LRA)* is the major local government law in Indonesia that describes the roles of local government and indicates the legal and institutional mechanisms for discharging the duties. The following discussion will identify the principles and guidelines that this law has adopted to facilitate the role of local government in Indonesia and their relevance to the roles in climate impacted food security.

The LRA mentions local government responsibilities in Indonesia.²²⁰ Some of the responsibilities are related to addressing environmental concerns and food security, such as:

1. Local development planning and implementation, including land development
2. Addressing local health problems (this provision indicates local government role and responsibility to address health issues related with climate change)
3. Providing public facilities and infrastructure (This provision empowers local government to construct and maintain infrastructure and facilities associated with food security that are affected by the impacts of climate change, such as local roads, transport, embankments, storage facilities and market.)
4. Improving quality of life and developing a system of social guarantee
5. Providing education services and human resource development
6. Addressing social problems and providing social services and facilities
7. Developing local resources
8. Development of local businesses
9. Control of environmental impacts
10. Control and management of agricultural services; and

²²⁰ *Law 32/2004 on Regional Administration (Indonesia)* arts 13 and 14.

11. Coordination of the services of local government institutions (Provinces are responsible for coordinating tasks of regencies and municipalities in Indonesia).²²¹

These roles of local government in Indonesia, mentioned in the LRA, provide some scope to addressing climate impacted food security. Improving resilience of local people has been recommended as an important future role of stakeholders in addressing climate impacted food security by the FAO.²²² The roles mentioned in the LRA, such as improving quality of life, addressing social problems, social guarantees, education and human resource development may contribute to improving the resilience of local people against disturbances such as climate change impacts on food security. Providing public facilities, infrastructure and addressing local health problems are also important for improving the climate impacted food security issues that were discussed in chapter 2.²²³

The principles that local government should follow to discharge their duties are mentioned under the 'Principles of Running Administration' of the LRA.²²⁴ The principles that local government should follow are the principle of legal certainty, the principle of good governance, the principle of public interest, the principles of transparency, the principle of proportion, the principle of professionalism, the principle of accountability, the principle of efficiency and the principle of effectiveness.²²⁵ These principles basically provide the 'norms' that local governments should be aware of while discharging duties. Some of these 'norms' are evident in the principles developed in chapter 3 such as good governance, accountability and transparency.

'Regional autonomy' is an important principle to understand power and authority of local government in Indonesia.²²⁶ Article 1 of the LRA defines 'regional autonomy' as 'the right, authority and obligation of an autonomous region to govern and manage state affairs and interest of the local people on its own in accordance with the existing law.'²²⁷ The concept is further strengthened in article 10 of the LRA that states that the LGs should have the authority and power

²²¹ Ibid arts 13, 14 and 22.

²²² Food and Agriculture Organization, 'Climate change and food security: a framework document' (Rome, 2008) 31 41, <<ftp://ftp.fao.org/docrep/fao/010/k2595e/k2595e00.pdf>>.

²²³ The future roles of local government in climate impacted food security has been discussed in section III of chapter 2.

²²⁴ *Law 32/2004 on Regional Administration* (Indonesia) art 20.

²²⁵ Ibid.

²²⁶ Ibid preamble.

²²⁷ Ibid art 1(5).

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to carry out the responsibilities that fall within their authority (as specified by law) except for the tasks that are solely the central government's responsibility (e.g. defence, foreign affairs, religious affairs, judiciary, national financial issues and security).²²⁸ This provision of the LRA is synonymous to the principle of subsidiarity²²⁹ that is an essential characteristic for good local governance.²³⁰

Cooperation and coordination of tasks with local government is another important aspect emphasised by the LRA. The LRA specifies matters such as financial, administrative and resource use between central government and local government and among different local government institutions.²³¹ Some of the areas of relations between central government and local government include allocation of cost, provision for loans and grants, facilitating public service delivery, joint licencing systems, harmonizing of the environment, reforestation, managing the impacts on natural resources and conservation.²³² The areas of relations among different local government institutions in Indonesia are sharing revenue, joint financing programs, cooperation for regional administration, joint management of natural resources and sharing of proceeds from the use of natural resources.²³³ These provisions provide legal and institutional scope for integrated action through cooperation and coordination between central and local government and among local government institutions in Indonesia. The LRA describes these relations as the precondition for playing local government roles effectively and efficiently.²³⁴ The emphasis on coordination and cooperation with local government reflects the principle developed in chapter 3 for strengthening local government roles in climate impacted food security that emphasises encouraging cooperation, coordination and partnership with local government.²³⁵

Resources are important for implementing the role of local government and appropriate funding is an important legal and institutional principle and guideline for the effective role of local

²²⁸ Ibid art 10.

²²⁹ See section II (D) (1) of chapter 2 for details about Principle of Subsidiarity.

²³⁰ Subsidiarity principle has been adopted as an element for the principle of good local governance in chapter 3; see section III (E) of chapter 3.

²³¹ Ibid arts 2, 15, 16, 17.

²³² Ibid arts 15, 16, 17.

²³³ Ibid arts 2, 15, 16, 17.

²³⁴ Ibid preamble.

²³⁵ See section III (B) of chapter 3.

government in climate impacted food security.²³⁶ Article 12 of the LRA mentions that any responsibility deployed to the local government should be accompanied by necessary funding options and resources.²³⁷ This provision places obligations on central government to provide the necessary resources to the local government to discharge duties such as roles in climate impacted food security. The LRA also provides a detailed guideline for resource generation by the local government institutions in Indonesia.²³⁸ The LRA specifies resource generation options for local government such as sources of income,²³⁹ options for making loans²⁴⁰ and placing equities in state and private companies.²⁴¹

Regional Legislative Council (DPRD) and its Role:

There is a duality in Indonesia's local government administration. Local government shares the running of local administration with the DPRD, which is the regional legislative body, the approving authority of local government plans, legislation, budget and functions and members of which are elected through a general election.²⁴² The DPRD has the authority to formulate regional laws and regulations jointly with the local government, control the implementation of regional laws and regulations, the appointments and discharge of local government representatives (governor, regent/mayor), request accountability reports to the regional governments, conduct the supervision of local election commission's tasks and approve cooperation initiatives by local government with external agencies or institutions.²⁴³ Therefore, local government in Indonesia is dependent on DPRD for its functions. The system indicates that the concept of 'local autonomy' in Indonesia means the power, authority and role of DPRD and local government together. This is a speciality in Indonesian local governance to ensure accountability of local government.

The LRA is the basic law for local government in Indonesia to perform its functions. Some basic characteristics such as the principle of local autonomy, cooperation and coordination between central and local government, financial guarantees and mechanisms for resource generation and

²³⁶ See section III (A) of chapter 3.

²³⁷ *Law 32/2004 on Regional Administration* (Indonesia) art 12.

²³⁸ *Ibid* ch viii.

²³⁹ *Ibid* art 157,

²⁴⁰ *Ibid* art 169.

²⁴¹ *Ibid* art 173.

²⁴² *Indonesian Constitution* (Indonesia) arts 18; *Ibid* art 40.

²⁴³ *Law 32/2004 on Regional Administration* (Indonesia) art 42.

the system of DPRD to ensure joint running of administration and accountability are evident in the LRA that indicate the legal and institutional principles and guidelines for strengthening local government in Indonesia.

The functions of local government for food security and addressing climate change impacts are also evident in some other laws in Indonesia. Indonesia also formulated laws that specifically deal with food security and environmental concerns. The following sections will focus on these laws and identify the roles of local government and the associated legal and institutional principles and guidelines influencing the roles.

C Law 18/2012 on Food (Indonesia)

The Food Law acknowledges food as a basic human right and the state has responsibility to address these rights from national to local levels and for the individual.²⁴⁴ The Food Law acknowledges the impacts of climate change as one of the reasons of the food crisis in Indonesia.²⁴⁵ The aim of the Food Law is to improve food access for vulnerable people, improve food production, improve food sufficiency ('food sufficiency' further illustrates availability of food at a reasonable price), increase people's knowledge about food safety, quality and nutrition as well as the welfare of farmers.²⁴⁶ The aims of the Food Law indicate the relevance and importance of this law to improve climate impacted food security as it addresses the four pillars of food security and the vulnerabilities.

The Food Law specifies a number of functions and guidelines for the effective role of local government (LG) in Indonesia, such as:

1. Ensuring food availability and development of the food production system; food availability through determination of the type of local food; addressing food consumption issues as well as the needs of local people in a sustainable way; development of fulfilling local food availability through use of local resources, culture and institutions; development

²⁴⁴ *Law 18/2012 on Food (Indonesia)* preamble.

²⁴⁵ *Ibid* arts 1(29), 22.

²⁴⁶ *Ibid* art 4.

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of infrastructure for food access and food availability (storage facility, markets, promotion of food business, roads); maintenance of agricultural land.²⁴⁷

2. Empowerment of farmers, fishermen, fish farmers and food producers.²⁴⁸
3. Allocation of natural resources for food production, information for sustainable resource use.²⁴⁹
4. Development and dissemination of knowledge and technology to increase production.²⁵⁰
5. Development of public food institutions.²⁵¹
6. LGs should have food reserves.²⁵² The source, type and quantity of such food reserves at the local level should be determined by the LG.²⁵³ There should be coordination between central government and LGs in the procurement of food reserves.
7. The food reserves may be used in situations of emergencies like natural disasters and the distribution should also be matched to local needs.²⁵⁴
8. Implementation of measures to avoid food crises.²⁵⁵
9. Determination of food affordability through distribution, marketing, trading and food aid.²⁵⁶
10. Facilitation of food distribution (transport, loading and unloading facility, institutions).²⁵⁷
11. Increased marketing of food products.²⁵⁸
12. Fixing the minimum price for staple foods (where the price is not established by government).²⁵⁹
13. Increasing the quality and quantity of local food consumption.²⁶⁰
14. Implementation of food safety (standards, codes, sanitation, control of food additives, irradiation and pollution control).²⁶¹

²⁴⁷ Ibid art 12.

²⁴⁸ Ibid art 17.

²⁴⁹ Ibid art 18.

²⁵⁰ Ibid art 19.

²⁵¹ Ibid art 21.

²⁵² Ibid arts 27, 33.

²⁵³ Ibid art 29.

²⁵⁴ Ibid art 31.

²⁵⁵ Ibid art 44.

²⁵⁶ Ibid art 46.

²⁵⁷ Ibid art 49.

²⁵⁸ Ibid art 50.

²⁵⁹ Ibid art 57.

²⁶⁰ Ibid art 59.

²⁶¹ Ibid arts 68-69.

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15. Construct, compile and develop a food information system (planning, monitoring, evaluation, early warning system, declaration of food commodity price).²⁶²
16. Publication of the results of food research.²⁶³
17. LGs can provide incentives for food research.²⁶⁴

The above guidelines of local government of Indonesia show a wide scope and responsibility to address food security that reflects the importance of Indonesian LG in food security. It is noteworthy that many of the functions and guidelines discussed above have close reference with the future roles and guidelines for strengthening the role of local government in addressing climate impacted food security problems, as discussed in chapter 2 and 3.

The Food Law emphasises food planning as a means to address food security.²⁶⁵ Food planning should include environmental concerns and local demands, such as the carrying capacity of natural resources and environmental sustainability, local culture and food consumption patterns and potential and local development planning.²⁶⁶ Therefore, food planning in Indonesia considers local and environmental concerns which indicate the relevance of this law to address the local impacts of climate change on food security.

The Food Law emphasises the integration of local and national development plans to ensure food security.²⁶⁷ Such an emphasis increases the importance of local development plans in national food security policies. The Food Law provides some legal and institutional guidelines for effective food planning for local government, such as ensuring public participation, organized at local level and integrated into the local development plans.²⁶⁸ Local food planning by the local government also requires reflection of national food plan strategies.²⁶⁹

The Food Law is a unique example for empowering local government to address food security issues in Indonesia. It provides a legal and institutional means for the local government in Indonesia to be involved in a wide range of food security activities: almost all the activities are

²⁶² Ibid art 114.

²⁶³ Ibid art 121.

²⁶⁴ Ibid art 125.

²⁶⁵ Ibid art 6.

²⁶⁶ Ibid art 7.

²⁶⁷ Ibid art 8.

²⁶⁸ Ibid art 8.

²⁶⁹ Ibid art 9.

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important for addressing climate change impacts. The emphasis on local planning, roles in addressing climate change and food crisis, involving local people in decision making and the integration of food issues into local development plans are in accordance with the legal and institutional principles and guidelines developed in chapter 3.

C Law 32/2009 on Environmental Protection and Management (Indonesia)

The EPM acknowledges the impacts of climate change on food security in Indonesia as one of the major threats and concerns for this law.²⁷⁰ It also acknowledges the role of local government as well as the coordination and cooperation of all stakeholders in protecting the environment.²⁷¹ The EPM is based upon a number of principles that include state responsibility, conservation and sustainability, harmony and equilibrium, integration, benefit, prudence, justice, ecoregion, biological diversity, polluter pays, participation, local wisdom, good governance and regional autonomy.²⁷² Most of these principles are important for strengthening the local government role in climate impacted food security that are evident in the international policy responses as discussed in chapter 3.

The EPM requires environmental protection and management to consider systematic and integrated approaches that include planning, utilization, control, preservation, supervision and enforcement of law.²⁷³ Such an integrated and systematic environmental protection and management plan (RPPLH) should take place at all levels of the government, including at the local government level.²⁷⁴ Local government should prepare respective RPPLHs in accordance with the national plan.²⁷⁵ Such provision of preparing a local plan empowers the LGs in local environmental planning as well as strengthening LGs' role in environmental protection, which is necessary for food security issues, particularly for those impacted by climate change.

The EPM also provides guidelines for natural resource management. According to article 12 of EPM, every RPPLH should consider environmental processes, environmental productivity as well

²⁷⁰ *Elucidation on Law of the Republic of Indonesia number 32/2009 about Environmental Protection and Management (Indonesia)* preamble.

²⁷¹ *Law 32/2009 on Environmental Protection and Management (Indonesia)* preamble.

²⁷² *Ibid* art 2.

²⁷³ *Ibid* art 1.

²⁷⁴ *Ibid* arts 5, 9.

²⁷⁵ *Ibid* art 9(3).

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as the standards and welfare of the communities.²⁷⁶ Therefore, the provision includes the value of natural resources by safeguarding the natural resources from over exploitation and at the same time provides for productivity and welfare of the local people. Such a provision would enable LGs to be more careful in natural resource management.

Article 13 of the EPM empowers LGs to control environmental pollution made by any entity at the concerned level. For this the LGs are authorised to provide standards, licenses, legislation, budgets, audits and economic instruments.²⁷⁷ This is an important step of empowering and strengthening the role of LG in environmental protection. The EPM also articulates a number of environmental responsibilities that strengthen and empower the role of the LGs. Table 4.3 summarize those roles and responsibilities mentioned in respective articles of the EPM.

Table 4.3: The role and responsibilities of Indonesian LGs articulated in the EPM.

Relevant Articles of the EPM	Authority/Responsibility/Role of LG
15	Obligation for preparing strategic environmental assessment to address the principles of sustainable development.
32	Preparation of Environmental Impact Assessment (<i>Amdal</i>) for activities impacting environment.
34	Preparation and implementation of environmental management and monitoring program.
35	Authority to reject environmental permits.
39	Making environmental permits publicly accessible and understandable.
44	Authority to formulate environmental regulation.
45	Authority to approve the budget for environmental protection. The Central government is under an obligation to allocate the resources to implement the budget.
62	Development of an environmental information system that would be accessible by the public.
70	Ensure public participation and mechanisms for public participation.
71, 72, 82	Administration and control over the personnel involved in environmental management and protection.
90	Authority to file litigation.

Source: *Law 32/2009 on Environmental Protection and Management (Indonesia)*²⁷⁸

²⁷⁶ Ibid art 12.

²⁷⁷ Ibid art 13.

²⁷⁸ Ibid arts 15, 32, 34,35, 39, 44, 45, 62, 70-72, 82, 90.

Table 4.3 illustrates that the government of Indonesia recognises the importance of involving LGs in environmental protection and the legal framework has provided a range of authority and responsibility to the LGs for discharging the duties at respective levels. The involvement of Indonesian LGs in environmental management, particularly in a climate change context has been specified in national climate change policies. The following discussion will focus on the policies that involve LGs in addressing climate change issues that have impacted on food security.

D National Action Plan for Climate Change Adaptation, 2013

The adaptation action plans for addressing climate impacts on Indonesian food security illustrated in the NAPCCA are the adjustment of food production systems, expansion of farming and aquaculture areas, repair and development of agriculture and fisheries infrastructure, acceleration of food diversification, the development of innovative and adaptive technology and the development of information and communication systems and supporting programs.²⁷⁹

The NAPCCA acknowledges the role of local government in climate adaptation, particularly in addressing local conditions and vulnerabilities in Indonesia.²⁸⁰ The NAPCCA emphasises integrating climate change and adaptation options into the local development plans of local government and recommends adopting local climate change programs and plans by linking them with other sectoral strategic plans,²⁸¹ such as food security and environmental protection. The integrating of local climate change strategies with other local development policies is a special characteristic of Indonesian legal and institutional frameworks on climate change. It reflects the principle developed in chapter 3 that the ‘Local government role should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing vulnerability of local people.’²⁸²

The NAPCCA also focuses on ensuring local funding for the implementation of local plans and specifically mentions the need for coordination between central government and LG for the better implementation of the actions required to deal with the impacts of climate change.²⁸³ The

²⁷⁹ NAPCCA, above n 7, 11.

²⁸⁰ NAPCCA, above n 7, 16.

²⁸¹ NAPCCA, above n 7, 16..

²⁸² See section III (C) of chapter 3.

²⁸³ NAPCCA, above n 7, 19.

NAPCCA acknowledges the scarcity of resources and capacity at the local government level.²⁸⁴ It emphasises coordinated action by both central government and local government to implement local adaptation plans. The NAPCCA suggests adopting ‘pilot projects’ at the local level which would be based upon information on potential climate impacts and vulnerability, related local government commitments in local adaptation plans, prioritising existing adaptation programs and establishment of local working groups.²⁸⁵ This guideline reflects the principles of resource generation and coordination that were also recommended in the international policy responses.²⁸⁶

IX MAJOR LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES FOLLOWED IN INDONESIA FOR STRENGTHENING LOCAL GOVERNMENT IN CLIMATE IMPACTED FOOD SECURITY

The objective of analysing laws and policies of Indonesia is to identify the legal and institutional principles and guidelines that Indonesia adopted to strengthen local government roles in addressing climate impacted food security. This analysis is supposed to address the second research question i.e. what current legal and institutional principles and guidelines have been adopted by local government to address food security impacted by climate change in a selected developing country (Indonesia). The basic legal and institutional principles and guidelines that Indonesia adopted to strengthen local government and its role in climate impacted food security can be summarised as below:

1. The principle of autonomy is the key to empowering local government and its role
2. Relations with central government and among local governments for administrative, financial and natural resource use through coordination and cooperation is essential for the effective role of local government
3. Integration of climate change impacts and adaptation actions as well as food security functions in local development planning are essential.

These three basic principles and guidelines basically summarise the findings in chapter 3. However, the analysis also indicated that the Indonesian legal and institutional framework adopted the legal and institutional principles and guidelines developed in chapter 3 to strengthen the role

²⁸⁴ NAPCCA, above n 7, 19.

²⁸⁵ NAPCCA, above n 7, 20.

²⁸⁶ See section III (A) and III(B) of Chapter 3.

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of local government.²⁸⁷ The analysis has found some roles of local government in Indonesia that are relevant in addressing food security concerns and impacts of climate change on food security. The LRA and the Food Law in particular specify the role of local government in Indonesia to address food security concerns; the EPM indicates local government responsibility to protect the environment and the NAPCCA provides an indication of the importance of local government in adaptation actions against the impacts of climate change. The roles of local government mentioned in these laws and policies are identical to the future roles of local government identified in chapter 2, such as enhancing the resilience of local people, providing infrastructure, local planning, improving food availability, access and nutritional values, environmental management and regulation.²⁸⁸

The LRA encourages providing appropriate resources to the local government to perform their roles²⁸⁹ and specifies some sources for resource generation.²⁹⁰ The LRA also promotes cooperation between central government and local government for financial assistance.²⁹¹ The importance of local-central cooperation for resource availability at the local level to address adaptation actions against the impacts of climate change is also evident in the NAPCCA.²⁹²

The importance of cooperation and coordinated action with local government is highlighted in the laws and policies discussed. The Constitution of Indonesia emphasised assisting and cooperating with local government,²⁹³ which has been reflected in other laws and policies discussed. The NAPCCA in particular mentions such cooperation and coordination for climate adaptation programs.²⁹⁴ It focuses on the integration of local and national plans for climate adaptation and coordinated funding mechanisms.²⁹⁵ Similar characteristics are evident with the EPM, where preparation and implementation of RPPLH by the LGs are based on inter-governmental

²⁸⁷ Chapter 3 developed five principles and guidelines for effective role of local government in climate impacted food security; see section III of chapter 3.

²⁸⁸ See *Law 32/2004 on Regional Administration* (Indonesia) arts 13, 14 and 22; *Law 18/2012 on Food* (Indonesia) arts 12, 17-19, 21, 27, 33, 31, 44; *Law 32/2009 on Environmental Protection and Management* (Indonesia) arts 15, 32, 34, 35, 39, 44, 45, 62, 70-72, 82, 90; NAPCCA, above n 7, 16.

²⁸⁹ *Law 32/2004 on Regional Administration* (Indonesia) art 12.

²⁹⁰ *Ibid* ch viii.

²⁹¹ *Ibid* art 2 (5).

²⁹² NAPCCA, above n 7, 19.

²⁹³ *Indonesian Constitution* (Indonesia) arts 18A

²⁹⁴ NAPCCA, above n 7, 16.

²⁹⁵ NAPCCA, above n 7, 16.

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coordination as well as integration of local and central level plans.²⁹⁶ The Food Law also requires such integration of local development plans into the national food security strategies.²⁹⁷ This requires relationships among the different levels of government mentioned at the LRA.²⁹⁸

The Food Law provides guidelines to improve local government roles in food security. It emphasises improving local development plans.²⁹⁹ The NAPCCA provides guidelines for integrating climate change into local planning.³⁰⁰ The laws and policies of Indonesia also strongly endorse good governance principles and guidelines. The emphasis on ‘local autonomy’ is a reflection of empowering local government. The LRA mentioned some principles for effective service delivery of local government in Indonesia such as good governance, accountability and transparency.³⁰¹

Indonesian LGs are acknowledged by the national constitution of the country.³⁰² The importance of the LG role and responsibilities in food security and climate change is also well-acknowledged in the LRA, the Food Law, EPM and NAPCCA.³⁰³ Such acknowledgement provides the legal basis for the LGs to perform. The LRA provides the general legal framework for the roles and responsibilities of LGs which lead to other legal and policy documents to acknowledge the roles of LGs in Indonesia. For example, Article 10 of the LGA acknowledges the authority of LGs in local affairs and Articles 11-15 elaborate the authority.³⁰⁴ Such provision may have influenced acknowledgement of the role of LGs in local food security, environmental management and planning and climate change adaptation actions in the Food Law, EPM and NAPCCA. The system of joint administration with the DPRD reflects the importance of accountability in the local governance of Indonesia. The Constitution and the LRA also adopt other basic elements of good governance such as election procedures, public representation and judicial procedures.

²⁹⁶ *Law 32/2009 on Environmental Protection and Management* (Indonesia) art 1.

²⁹⁷ *Law 18/2012 on Food* (Indonesia) arts 8, 9.

²⁹⁸ *Law 32/2004 on Regional Administration* (Indonesia) art 16.

²⁹⁹ *Law 18/2012 on Food* (Indonesia) art 8

³⁰⁰ NAPCCA, above n 7, 16.

³⁰¹ *Law 32/2004 on Regional Administration* (Indonesia) art 20.

³⁰² *Indonesian Constitution* (Indonesia) art 18.

³⁰³ See *Law 32/2004 on Regional Administration* (Indonesia) art 22; *Law 18/2012 on Food* (Indonesia) arts 12-125; *Law 32/2009 on Environmental Protection and Management* (Indonesia) preamble, NAPCCA, above n 7, 16.

³⁰⁴ *Law 32/2004 on Regional Administration* (Indonesia) arts 10-15.

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The Indonesian legal frameworks specifically define the duties of LGs, particularly in respect to food security and environmental management. This is evident in the LRA, the Food Law and the EPM.³⁰⁵ Such specification of duties provides the legal base for the LGs to focus on their roles and responsibilities. The legal frameworks of Indonesia also show characteristics of public participation,³⁰⁶ inclusion of environmental values as a means of ensuring human rights³⁰⁷ and equity and justice.³⁰⁸

Food self-sufficiency is one of the major policy approaches for achieving food security in Indonesia.³⁰⁹ The policies concerning food security take into account self-sufficiency in rice and other major food commodities as well as keeping the food prices within the limits of the poor people and increasing farm income.³¹⁰ The governance of food security in Indonesia is headed by two authorities, the Food Security Council and the National Food Security Agency. The Food Security Council is the apex body regarding food security in Indonesia. It is noteworthy that local government has representation at the local level of the Council. Local governments take part in annual and regional meetings of the council and facilitate coordination, formulation and evaluation of food security policies.³¹¹

The FAO in its 2014 report on the State of World Insecurity made a remarkable comment about Indonesia's local government that describes the strengths and weaknesses of the overall food security system of the country. FAO states:

Indonesia has made significant progress in establishing institutions and mechanisms that enhance food security governance, but challenges remain in ensuring that these systems have adequate financial and institutional support to function effectively. The Food Law (No. 18/2012) provides a solid regulatory framework for food security by declaring food a human right. It is expected that the law will be translated into decrees and applied by 2015. The overall success of this reformed food security policy and governance regime will depend on how effectively the Food Law is applied, especially at the local level. The weak capacities of Food Security Council offices at the

³⁰⁵ *Law 32/2004 on Regional Administration* (Indonesia) art 22; *Law 18/2012 on Food* (Indonesia) arts 12-125; *Law 32/2009 on Environmental Protection and Management* (Indonesia) arts 15-90.

³⁰⁶ *Law 32/2004 on Regional Administration* (Indonesia) art 2.

³⁰⁷ *Law 32/2009 on Environmental Protection and Management* (Indonesia) preamble.

³⁰⁸ *Ibid* art 2.

³⁰⁹ Food and Agriculture Organization, above n 176, 30.

³¹⁰ Food and Agriculture Organization, above n 176, 30.

³¹¹ Food and Agriculture Organization, above n 176, 30-31.

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regional, district and municipal levels are a major challenge, and building capacities at the local level will significantly improve the effectiveness of food security policies in Indonesia.³¹²

The above statement acknowledges the strengths in Indonesian legal frameworks that would contribute to the role of LGs but at the same time expresses the concern about the capacities of the LGs to implement the tasks provided by the legal frameworks. The statement indicates the fact that the success in food security remains not only in formulating strong legal frameworks but also into the ability to translate the legal provisions into real life action. Despite that, Indonesian legal frameworks have provided the frameworks for the successes by the local government in strengthening local food security. The LRA has provided a solid framework for the local governments to play an important role while the Food Law and the law on environmental protection and management as well as the national action plan for climate change adaptation have strengthened the role of local government in food security.

X CONCLUSION

The intention of the chapter was to address the second research question i.e. to identify the legal and institutional guidelines and principles that Australian and Indonesian have adopted that enable the local government of the respective countries to play a role in food security issues impacted by climate change. The chapter has examined a number of laws of the state of NSW, Australia and Indonesia and has identified some future roles of local government in climate impacted food security and important legal and institutional principles and guidelines strengthening the roles. Some of the principles and guidelines adopted in Australia and Indonesia are consistent with the principles and guidelines developed in chapter 3.

In Australia, particularly in NSW, the major legal and institutional principles and guidelines that contribute to strengthening local government roles in climate impacted food security are the provisions of LEPs, public participation and good governance principles, principles of ecologically sustainable development and coordination, and providing appropriate power and specifying roles of local government. On the other hand, Indonesian legal and institutional frameworks for strengthening local government in climate impacted food security have adopted principles and guidelines such as the principle of autonomy, relations with central government through

³¹² Food and Agriculture Organization, above n 176, 31.

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cooperation and coordination and the integration of climate change impacts and adaptation actions in development planning.

The NSW legal framework provides legal authority to NSWLG to raise local funds through various mechanisms.³¹³ The characteristics of cooperation and coordination are specifically evident in Indonesian legal frameworks where the coordinated approaches for local climate change and food security actions have been given importance.³¹⁴

Both NSW and Indonesian legal frameworks are based upon a number of important principles such as public participation and equity. Moreover, the laws regarding environmental management in both NSW and Indonesian legal frameworks place emphasis on considering environmental values while discharging duties (including the services provided by the LGs). The elements of local good governance like election procedures, local representation and access to information and justice are also common in the legal frameworks of both countries. The characteristics identified in NSW, Australia and Indonesian legal frameworks reflect the guidelines and principles identified in chapters 3.

The discussion also indicates that despite some existing weaknesses in addressing climate impacted food security by local government in both Indonesia and Australia, the legal and institutional principles and guidelines adopted in the legal and institutional structures are providing wide scope for the effective role in climate impacted food security by local government.

However, the capacity of legal and institutional frameworks in developing countries have been criticised as weak in effectively adopting appropriate strategies and to address the barriers³¹⁵ which are also evident in context of Bangladesh.³¹⁶ The effectiveness of the strategies would also largely depend on the capacity and overall governance of respective countries as identified by the FAO,

³¹³ *Local Government Act 1993* (NSW) ch 15.

³¹⁴ NAPCCA, above, n 7, 16.

³¹⁵ See Benjamin J Richardson et al., 'Introduction: Climate law and developing countries' in Yves Le Bouthillier et al.(ed), *Climate law and developing countries* (Edward Elgar Publishing Inc., 2009)10.

³¹⁶ S Rizwana Hassan, 'Environmental Governance in Bangladesh: An Assessment of Access to Info, Participation and Justice in Environmental Decision Making' (The Access Initiative Bangladesh Coalition) 5-6 <[www.apfedshowcase.net/sites/default/.../2006_BELA_Final_Report\[1\].pd](http://www.apfedshowcase.net/sites/default/.../2006_BELA_Final_Report[1].pd)>; see also Junayed Ahmed Chowdhury, 'Public participation in Bangladesh response to climate change issue' (Advocates for International Development, June 2012)1 <<http://a4id.org/sites/default/files/...>>.

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particularly in the Indonesian context.³¹⁷ This highlights the necessity for revising the existing legal and institutional frameworks to encourage the emerging governance strategies.³¹⁸

The future roles of local government in climate impacted food security (identified in chapter 2), appropriate legal and institutional principles and guidelines (developed from international policy responses in chapter 3 and comparative examples of Australia and Indonesia provide a framework for analysing legal and institutional frameworks of local government and its role in food security and climate change impacts. The next chapter will examine the existing laws and policies of local government, food security and climate change of Bangladesh within the context of this framework to identify Bangladesh's strengths and weaknesses.

³¹⁷ Food and Agriculture Organization, above n 176, 31.

³¹⁸ Craig and Jeffery, above n 33, 458.

Chapter 5: LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES ADOPTED IN BANGLADESH TO STRENGTHEN LOCAL GOVERNMENT ROLE IN CLIMATE IMPACTED FOOD SECURITY

I INTRODUCTION

This thesis has identified the future roles of local government to address climate impacted food security (Chapter 2) and the legal and institutional principles and guidelines recommended by international policy responses to strengthen the roles of local government (Chapter 3). The research has also identified the current legal and institutional principles and guidelines adopted by local government to address food security impacted by climate change in a selected developed country (Australia) and developing country (Indonesia) in Chapter 4 and thus answered the major part of the second research question i.e. what are the current legal and institutional principles and guidelines that have been adopted by local government of Australia and Indonesia to address food security impacted by climate. This chapter will address the remaining portion of the second research question i.e. what are the current legal and institutional principles and guidelines that have been adopted by Bangladesh local government to address food security impacted by climate change.

The chapter will examine the local government laws, government strategies, policies and laws on climate change and food security in Bangladesh. While examining the relevant laws and strategies, this chapter will try to identify the existing roles of local government and the legal and institutional principles and guidelines that the major laws, policies and strategies have followed in developing roles of local government in Bangladesh.

This discussion will include a consideration of the influence of international legal and institutional principles and guidelines. This will provide the basis for further recommendations for finding appropriate legal and institutional principles and guidelines for strengthening Bangladesh local government in the next chapter.

II BANGLADESH LOCAL GOVERNMENT, LAWS AND ROLES IN FOOD SECURITY

Administratively, Bangladesh is divided into four tiers; union, upazila (sub-district), zila (district) and division. Union is the lowest administrative tier and smallest in terms of geographical area. Bangladesh has 4553 unions and each union consists of a local government known as 'Union

Parishad’.¹ Upazila (sub-district) is the next higher administrative unit. The local government at ‘upazila’ level is known as ‘Upazial Parishad’; Bangladesh has 489 upazilas.² Zila (district) is a larger form of administrative unit in Bangladesh. The whole country is divided into 64 zilas and the local government at zila level is known as ‘Zila Parishad’.³ The biggest administrative unit in Bangladesh is ‘Division’. Bangladesh is divided into eight divisions but there is no local government at this tier of the government. Bangladesh also has two other types of local government: ‘paurasava’ (municipalities) and ‘city corporations’. These two types of local government are basically urban local governments.⁴

The basic framework of local government structure is given in *The Constitution of the People’s Republic of Bangladesh 1972*. Articles 59-60 of the Constitution describes the formation of local government, basic roles and directions for making law to implement constitutional obligations⁵ and identifies three major types of functions of the local government; 1) administration and the work of the public officers, 2) the maintenance of public order and, 3) the preparation and implementation of plans relating to public services and economic development.⁶

In order to comply with the constitutional obligation of forming local government and specifying the roles, Bangladesh prepared five major local government laws for each of the local government institutions, described above, that basically regulate the activities of local government. The laws that regulate the basic structure and roles of these local government institutions in Bangladesh are:

1. Local Government (Union Parishad) Act 2009
2. Upazila Parishad Act, 1998
3. Local Government (Paurashava) Act 2009
4. Local Government (City Corporation) Act 2009

¹ See, eg, Government of Bangladesh, ‘Annual Report 2014-2015’ (Local Government Division, Dhaka, 2015) <http://www.lgd.gov.bd/LGD_FILES/Tender/annual-report-14-15.pdf>.

² See, e.g., Ibid.

³ Bangladesh has 61 zila parishad against 64 districts. The three hill districts i.e. *Khagrachori*, *Rangamati*, and *Bandarban* have separate and special local government mechanisms guided by *Chittagong Hill Tracts Regional Council Act 1998* (Bangladesh) (Act no 12 of 1998). This thesis will not consider this special types of local governments as they do not represent the general structure of local government in Bangladesh; see, *Zila Parishad Act 2009* (Bangladesh) s1(3); *Chittagong Hill Tracts Regional Council Act 1998* (Bangladesh) preamble.

⁴ Bangladesh has 324 paurashava and 11 city corporations; see, eg, Annual Report 2014-2015, above n1.

⁵ *The Constitution of the People’s Republic of Bangladesh 1972*, (Bangladesh) arts 59-60.

⁶ Ibid art 59(2).

5. Zila Parishad Act 2000

The following section will begin by examining *The Constitution of the People's Republic of Bangladesh 1972* to identify the basic principles and guidelines that are driving the legal and institutional strategies to improve governance. It will also examine the five local government laws of Bangladesh to identify the current roles that are relevant to address climate impacted food security and the principles and guidelines adopted in the laws to strengthen the roles.

*A Principles and Guidelines Provided in the Constitution of the People's Republic of Bangladesh
1972*

The Constitution of the People's Republic of Bangladesh 1972 promotes the concept of local democracy by emphasizing the leadership of public representatives at every tier of public administration as one of the 'fundamental principles of state policy'.⁷ This provision of the constitution provides the basic guideline for establishing local democracy in Bangladesh. Accordingly, *The Constitution of the People's Republic of Bangladesh 1972* specifically mentions forming local government and indicates the key functions that each local government body should perform.⁸ *The Constitution of the People's Republic of Bangladesh 1972* states the key roles of local government and provides directives to formulate laws to implement the provisions.⁹ The constitution also specifically mentions election procedures for ensuring local people's representation at the local government level.¹⁰

The Constitution of the People's Republic of Bangladesh 1972 provides the basic principles and guidelines for governance, including principles and guidelines for food security and environmental protection in Bangladesh. Part II of the Constitution states four general principles for state policy;

⁷ Article 11 of *The Constitution of the People's Republic of Bangladesh 1972* states that 'The Republic shall be a democracy in which fundamental human rights and freedoms and respect for the dignity and worth of the human person shall be guaranteed and in which effective participation by the people through their elected representatives in administration at all levels shall be ensured.' *The Constitution of the People's Republic of Bangladesh 1972*, art 11; The fundamental principles of state policy in Bangladesh Constitution is a set of principles mentioned in Part II of the Constitution that defines as the basic principles of governance policies in Bangladesh; see Ibid arts 8-25.

⁸ Chapter 3 of *The Constitution of the People's Republic of Bangladesh 1972* has detailed the formation and functions of local government in Bangladesh; *The Constitution of the People's Republic of Bangladesh 1972*, arts 59-60.

⁹ *The Constitution of the People's Republic of Bangladesh 1972* mentions about three major types of functions of the local government. These are 1) administration and the work of the public officers, 2) the maintenance of public order and 3) the preparation and implementation of plans relating to public services and economic development; see *The Constitution of the People's Republic of Bangladesh 1972*, art 59 (2) and 60.

¹⁰ *The Constitution of the People's Republic of Bangladesh 1972*, art 59(1).

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nationalism, socialism, democracy and secularism.¹¹ These principles provide a general view of Bangladesh's legal and institutional approach to governance, particularly the principle of democracy, which provides an indication of the existence of elements of good governance principles in Bangladesh's legal framework.

The Constitution also refers to a number of other principles that are closely related to improve governance at different levels in regards to actions in agriculture, food security and the environment. Table 5.1 illustrates these principles.

Table 5.1 The principles and state responsibilities in the Bangladesh Constitution governing strategies regarding agriculture, food security and the environment.

Name of the Principle and Article of the Constitution	State responsibility towards agriculture, food security and the environment
Emancipation of Peasants and Workers Article 14	The responsibility of government bodies towards eliminating the distresses of local people including farmers and workers has been reflected here.
Provision of basic necessities Article 15	This principle takes into account food as a basic necessity and has the need for government action in improving livelihood options.
Rural development and agricultural revolution Article 16	Developing the living standards of rural areas is important in this principle. The elements of food security that would contribute to the development of lifestyles of rural people should gain priority in governance strategies, according to this principle.
Public health and morality Article 18	This principle places emphasis upon nutritional aspects, as well as public health concerns, which is one of the pillars of food security.
Protection and improvement of environment and biodiversity Article 18A	This principle focuses upon State responsibility to protect and conserve environment as well as biodiversity, wetlands, forests and wildlife. Therefore, protecting the environment and biodiversity from the impacts of climate change is a State responsibility according to this principle.

Source: *The Constitution of the People's Republic of Bangladesh 1972*

It is noteworthy that these principles are consistent with the principles articulated in international policy responses, such as the Rio Declaration, Agenda 21 and the United Nations Sustainable Development Goals.¹² As local government is a constitutionally recognized government entity in

¹¹ Ibid art 8(1).

¹² See, *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26 (vol.1); 31 ILM 874 (1992) principles; *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21,

Bangladesh, these principles are also applicable to guide the role of local government in climate impacted food security issues in Bangladesh.

B Local Government (Union Parishad) Act 2009

The *Local Government (Union Parishad) Act 2009* (UPA) defines the structure and formation of a *Union Parishad* (UP). A UP is a rural level local government body in Bangladesh. A rural area could be declared as a ‘Union’ under the conditions described at the UPA.¹³ Most of the agricultural lands of the country and food production activities are located at ‘Union’ level. Also, the rural areas of Bangladesh are the most vulnerable to the impacts of climate change, particularly the impacts on agriculture production and rural livelihoods.¹⁴ Therefore, Union is an important administrative tier associated with food security and climate change impacts in Bangladesh.

UPs are run by elected public representatives in Bangladesh headed by a chairman. Every Union is divided into nine ‘wards’; each ward is represented by a public representative known as ‘ward member’. Every Union is also divided into three ‘special’ wards for electing women representatives for the UP.¹⁵ The provision of keeping three ‘reserved’ seats for women representation is significant as it relates to women empowerment in decision making at the UP level in Bangladesh.

The UPA specifies roles and responsibilities of UPs.¹⁶ The major activities of UPs are divided into four areas: i) general and public administration, ii) public security, iii) public welfare, and iv) preparation and implementation of local economic and social development plan.¹⁷ Schedule 2 of the UPA provides a list of functions that UPs are responsible for discharging.¹⁸ Some of the functions described in Schedule 2 are analogous to the future roles of local government to address climate impacted food security issues, such as:

UN Doc A/Conf.151/26 (1992); *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 59.

¹³ *Local Government (Union Parishad) Act 2009* (Bangladesh) ss 2, 11.

¹⁴ See, Government of Bangladesh, *Bangladesh Climate Change Strategy and Action Plan (BCCSAP)* (Ministry of Environment and Forests, Bangladesh, 2009) <http://www.moef.gov.bd/climate_change_strategy2009.pdf>.

¹⁵ *Local Government (Union Parishad) Act 2009* (Bangladesh) ss 2, 3,10.

¹⁶ *Ibid* s 47.

¹⁷ *Ibid* s 47.

¹⁸ *Ibid* sch 2.

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1. Preparation of future development plans (five years and annual)
2. Development, conservation and maintenance of rural infrastructure (important for food access, and availability. Rural infrastructure is also vulnerable to climate change impacts)
3. Necessary action for agricultural, fisheries and livestock development (important for food availability)
4. Disaster preparedness activities (important for food stability)
5. Environmental development and conservation (important for food stability)
6. Management and conservation of the sources of pure drinking water and other water sources (important for food utilization); and
7. Initiative for increasing food production (important for food availability).¹⁹

The UPA provides basic guidelines to strengthen the role of local government. The UPs are authorized to practice a number of executive, financial and regulatory powers to discharge its duties.²⁰ Some of these powers include control over government officials,²¹ control over assets, financial power to impose tax, create and spend funds²² and regulatory power to control contagious disease.²³

Some elements for good governance are also evident in the UPA. The UPA specifies provisions about election procedures,²⁴ financial management, allocation of resources,²⁵ audit procedures and accountability,²⁶ access to information for the local people²⁷ and power to regulate.²⁸

Ward meetings are important provision of the UPA.²⁹ Public participation and involving local people in decision making are major characteristics of ward meetings.³⁰ Chapter 14 of the UPA discusses the rights to information.³¹ The UPA acknowledges the rights to information,³² which is

¹⁹ Ibid sch 2.

²⁰ Ibid ss 46, 51, 97 and sch 4.

²¹ Ibid s 46.

²² Ibid sch 4.

²³ Ibid s 97.

²⁴ Ibid ss 19-20.

²⁵ Ibid ss 51-56, 65-70.

²⁶ Ibid ss 59-61.

²⁷ Ibid ss 78-80.

²⁸ Ibid ss 97-103.

²⁹ Ibid ch 2.

³⁰ Ibid ss 5-7

³¹ Ibid ch 14.

³² Ibid s 78

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the reflection of the substantive rights that were articulated in the *Aarhus Convention*.³³ The UPA also specifies the mechanisms for accessing information by the local people and the responsibilities of local government officials to provide information.³⁴

C Upazila Parishad Act 1998

The Upazila Parishad Act 1998 (UpPA) describes the formation and roles of Upazila Parishad (UpP) in Bangladesh. UpP is governed by elected public representatives headed by a chairman and two vice-chairmen (including one women vice-chairman). Chairmen of the UPs (within the upazila), mayor of each paurashava (within the upazila) and women representatives from the UPs and Paurashavas are ex-officio members of UpP.³⁵

The UpPA specifies the roles of UpP.³⁶ Some roles and responsibilities are similar to the future roles of local government mentioned in Chapter 2 for addressing food security problems impacted by climate change, such as:

1. Preparation of long and short term development plans
2. Coordination of the works of government agencies, cooperatives and private voluntary organizations that work at Upazila level
3. Construction of local roads
4. Small irrigation project preparation and implementation for ensuring best use of surface water
5. Development of public health, sanitation and nutrition programs
6. Programs on livelihood development and cooperation with central government
7. Agriculture, livestock, fisheries and forest development
8. Environmental management and conservation by adopting projects like social forestry, and
9. Coordination with UP.³⁷

³³ See section II (D) (1) of chapter 3.

³⁴ *Local Government (Union Parishad) Act 2009* (Bangladesh) ss79-81.

³⁵ *Upazila Parishad Act 1998* (Bangladesh) s 6

³⁶ *Ibid* sch 2.

³⁷ *Ibid* sch 2.

The UpPA also provides some guidelines about UpP power and authority to effectively discharge the roles³⁸ such as specifying the sources of funds,³⁹ preparing its own short and long term development plans⁴⁰ and regulatory authority to discharge administrative functions.⁴¹

UpPA requires UpP to display citizen charters⁴² and ensure access to information by the public.⁴³ The funds allocated to UpP should be audited.⁴⁴ Also, central government control and monitor UpPs functions and holds the authority to suspend UpP for violation of rules.⁴⁵ These clauses provide some guideline of accountability of UpP in Bangladesh.

D *The Local Government (Paurashava) Act 2009*

The Local Government (Paurashava) Act 2009 (LGPA) defines *Paurashava* or municipalities as an urban area in Bangladesh where more than 50,000 people live and most of the people are involved in non-agricultural profession and also at least one third of the land areas are non-agricultural land.⁴⁶ Therefore, a *paurashava* may have the property of both rural and urban characteristics with the admixture of both agricultural and non-agricultural activities. The LGPA specifies provisions for forming a *paurashava* and the election procedures for electing the public representatives.⁴⁷ The elected public representatives are a mayor, councilors from each ward, and women councilors from each reserved seat for women.⁴⁸ The LGPA provides a detailed list of the roles and responsibilities of the *paurashava*.⁴⁹ Some of the roles are related to functions for addressing climate impacted food security, such as:

1. Public health, waste management, sanitation facilities, contagious disease control, drinking water supply, water management (important for food utilization)

³⁸ Ibid s25.

³⁹ The sources of fund are tax, rate, fees, toll, income from the resources controlled by the UpP, government grants, income from various government sources and any other sources according to the provision of this Act. *Upazila Parishad Act 1998* (Bangladesh) s35; schedule 4 of the Act provide full details of the sources of fund.

⁴⁰ *Upazila Parishad Act 1998* (Bangladesh) s42.

⁴¹ Ibid s 64.

⁴² Ibid s 68A.

⁴³ Ibid s 68C.

⁴⁴ Ibid s 40.

⁴⁵ Ibid ss 50-53.

⁴⁶ *Local Government (Paurashava) Act 2009* (Bangladesh) s 3.

⁴⁷ Ibid ch 4.

⁴⁸ Ibid s 6

⁴⁹ Ibid sch 2.

2. Fisheries development, improving supply of dairy products, livestock development (food availability)
3. Food regulation, planning, disaster preparedness, tree plantation and conservation of forests, education and social welfare (food stability), and
4. Road construction and management, construction of markets, (food access).⁵⁰

To discharge the functions in an effective manner, the LGPA specifies some powers, roles and properties such as provisions for accumulating funds and formulating regulations by the *paurashava*.⁵¹ However, the power and authority for environmental management is not visible in the LGPA.

Some legal provisions of the LGPA reflect the accountability of *paurashava*, such as the acknowledgement of the right to access information by the local people, the procedures of accessing information⁵² and the options for maintaining accounts and audit procedures.

E Local Government (City Corporation) Act 2009

The City Corporation (CC) is an urban local government institution in Bangladesh. It is operated by public representatives elected through the voters of respective CCs. The voters elect a mayor and councilors to represent at CCs.⁵³ The roles of the CC are stated at schedule 3 of the Act.⁵⁴ The Local Government (City Corporation) Act 2009 (CCA) does not specifically mention climate change impacts or adaptation actions in the food security context. However, some of the roles of CC have relationship with food security. These functions are:

1. Food Utilization: public health, waste management, sanitation, control of contagious disease, water management (including drinking water)
2. Food Availability: management of government owned waterbodies for fisheries development, improvement of dairy production and improvement and management of livestock

⁵⁰ Ibid sch 2.

⁵¹ Ibid sch 3, 6-8.

⁵² Ibid s112.

⁵³ *Local Government (City Corporation) Act 2009* (Bangladesh) ss 5,31-36.

⁵⁴ Ibid s 41.

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3. Food Access: establishment of markets, construction and maintenance of roads, transport management, excavation of pond for water and fisheries, and
4. Food Stability: development planning, land development, disaster management, tree plantations and conservation of forests and facilitating education activities.⁵⁵

The sources of funds for discharging the functions⁵⁶ are mentioned at the schedule 4 of the CCA.⁵⁷ CCs also have some regulatory authority.⁵⁸ Some of the regulatory powers are personnel administration, allocation of funds, budgeting and management of own resources, licensing authority; and food price control.⁵⁹ The CCA does not explicitly mention public participation, cooperation and coordination among institutions. Most of the functions and regulatory authority of the CCs are similar to the authority and roles described in LGPA.

F Zila Parishad Act 2009

Zila Parishad (ZP) is formed with a chairman, 15 members and 5 women members from reserved seats for women. The chairman, members and women members are not elected by the local people of the *Zila*; rather mayors and councilors of CC (if any in that *Zila*) and pourashava; UpP chairmen, UP chairmen and members elect the chairmen and members of ZP.⁶⁰ Therefore ZP is a coordinating body comprised of the elected representatives of different local government institutions located within a *zila*.

The functions of the ZP are divided into two parts; compulsory and optional.⁶¹ The compulsory functions mainly focus on coordination of the development activities within the *Zila* that are conducted by other local government institutions.⁶² The optional functions include some activities that have relationship with food security impacted by climate change. These are:

1. Establishment of agricultural farm and maintenance

⁵⁵ Ibid sch 3.

⁵⁶ Ibid sch 3;

⁵⁷ Ibid sch 4.

⁵⁸ Ibid schs 6-8.

⁵⁹ Ibid schs 6-8.

⁶⁰ *Zila Parishad Act 2009* (Bangladesh) s 4, 17; A *Zila* is an administrative unit of Bangladesh that consists of a number of Upazilas. Bangladesh is divided into 64 *Zilas*. A *Zila* should have a number of union parishads, upazila parishads and may also contain pourashava and city corporation.

⁶¹ *Zila Parishad Act 2009* (Bangladesh) s27.

⁶² Ibid sch 1.

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2. Assisting the farmers by providing agricultural machineries; ensuring cultivation of fallow land; publicity of modern agricultural practices
3. Keeping crop statistics, providing agricultural loans, fertilizer distribution, raising fodder stock, providing crop security
4. Expansion of agricultural education
5. Building and maintenance of dam, water supply to agricultural land and its management.
6. Conservation of land, establishment of market and management
7. Improving public health facilities
8. Improving grazing land for livestock, and
9. Improvement of livestock and dairy industries.⁶³

The ZPA provides executive power of the ZP to discharge its duties.⁶⁴ This provision safeguards the ZP authority to play the abovementioned roles. The provisions for accounts and auditing,⁶⁵ sources of funds for implementing the tasks⁶⁶ and regulation making power⁶⁷ are also evident in the ZPA. However, provisions about rights to information and access to information are not evident.

G Principles and Guidelines adopted in the Local Government Laws in Bangladesh: Summary of the Findings

The discussion of *The Constitution of the People's Republic of Bangladesh 1972* indicates the following tasks that are important for local government in Bangladesh, particularly in addressing climate impacted food security.

1. Addressing the concerns of vulnerable people and improving resilience
2. Protection and conservation of environment
3. Addressing health and nutrition concerns of food security
4. Establishing local democracy, and

⁶³ Ibid sch 1.

⁶⁴ Ibid s 31; the functions of ZP are mentioned at schedule 1 of the Act and the functions related with food security have been provided at section II (F) of chapter 5.

⁶⁵ Ibid ss 46-47.

⁶⁶ Ibid sch 2.

⁶⁷ Ibid s74.

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5. Adopting qualities for good governance: Election procedures and public representation in local government, specific duties and roles in administrative, public safety and development planning matters and formulation of appropriate law to support the role of local government.

The discussion of the local government laws in Bangladesh shows some general principles and guidelines that have been used to strengthen local government role in Bangladesh, such as:

1. Legal and constitutional recognition of local government
2. Run by elected public representatives
3. Ensure women representatives in the local government
4. Roles to improve food security and address environmental concerns
5. Sources of financial resources to implement tasks
6. Authority to make local development plans and local regulations
7. Coordinate local development works and functions of different stakeholders at local level, and
8. Some procedures for promoting accountability and good governance such as access to information, public participation in decision making, financial audit, control and monitoring of central government.

These legal and institutional principles and guidelines are also evident in the recommendations of international policy responses discussed in chapter 3, particularly legal and constitutional recognition, the provision of elected local representation and good governance principles as mentioned in the Aberdeen Agenda.⁶⁸ The roles to improve food security and address environmental concerns articulated in the local government laws of Bangladesh are consistent with the recommendations of the Food and Agriculture Organization (FAO) and the Intergovernmental Panel on Climate Change (IPCC)⁶⁹ and the provisions of coordination of local development work reflected in the recommendations of Agenda 21.⁷⁰

However, these international principles and guidelines do not necessarily reveal the entire picture of Bangladesh's approach to address climate impacted food security and strengthening the role of

⁶⁸ See section II (D) (3) of chapter 3.

⁶⁹ See section III of chapter 2.

⁷⁰ *Agenda 21*, UN GAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) [28.2-28.7]

local government. Bangladesh has prepared a number of specific policies, strategies and laws to address food security and climate change. The following section will examine the relevant laws, policies and strategies for the purpose of strengthening the roles of local government in climate impacted food security.

III LOCAL GOVERNMENT ROLES AND LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES MENTIONED IN THE FOOD SECURITY AND CLIMATE CHANGE POLICIES, STRATEGIES AND LAWS IN BANGLADESH TO STRENGTHEN THE ROLES

The Constitution of the People's Republic of Bangladesh 1972 provides the basic principles and guidelines for Bangladesh legal and institutional frameworks to improve governance such as improving food security, environmental concerns and strengthening local government. The previous section has also provided the current roles of local government in climate impacted food security and principles and guidelines followed in the local government laws in Bangladesh. These policies, laws and strategies generally reflect the constitutional guidelines as well as the internationally agreed guidelines and principles that Bangladesh accepted. This section will examine the laws, policies and strategies on food security and climate change in Bangladesh to identify the future roles of local government in addressing climate impacted food security and the proposed principles and guidelines for strengthening these roles.

A Principles and Guidelines adopted in the Food Security Laws, Policies and Strategies in Bangladesh

Bangladesh, over the last few decades, has prepared a number of policies, laws and strategies to address food security. Bangladesh's approach to address food security, generally, is articulated in two national policy and strategy documents: the National Food Policy (NFP) 2006 and the National Food Policy Plan of Action (PoA) 2008-2015. These two documents have detailed the strategies and guidelines that Bangladesh should adopt for improving food security and discuss the future roles of different stakeholders.

Apart from these two major policy documents (the NFP, the PoA) Bangladesh has prepared some other laws and national policy documents that also influence sectoral food security issues such as the Bangladesh Country Investment Plan (CIP), the National Agriculture Policy (NAP) 2013, the National Water Policy 1999, the New Agriculture Extension Policy 1996 and the Food Safety Act

2013. The following discussion will examine the food security policies, strategies and laws to identify the principles and guidelines that have been adopted to strengthen the functions of different stakeholders and the scope of local government to play effective roles.

1 *The National Food Policy*

The NFP recognises the constitutional responsibility of the government to ensure food security for the citizens of Bangladesh.⁷¹ It also takes into account the recommendations of some international policy responses such as the Declaration of the World Food Summit in 1996 and the Millennium Development Goals set in 2000.⁷² The NFP emphasizes the role of government ministries and agencies for the implementation of food policy. However, it admits the uncertainties and complexities in managing food security and stated the importance of coordinated action by involving all stakeholders, including local government.⁷³ The NFP states that, ‘[t]he local and other level authorities might be able to take well-coordinated decisions on the implementation of the food security related policies and strategies.’⁷⁴ This statement illustrates the importance of the involvement of local government in addressing food security in Bangladesh.

The NFP sets its goal to ensure food security by developing ‘a dependable food security system for all people of the country at all times’.⁷⁵ The objectives, articulated in the NFP, for achieving this goal are:

1. Ensuring adequate and stable supply of safe and nutritious food
2. Enhancing purchasing power of the people for increased food accessibility, and
3. Ensuring adequate nutrition for all (especially women and children).⁷⁶

The objectives of the NFP specifically refer to the three major pillars of food security: availability, access and utilization. However, the fourth pillar of food security (i.e. stability) is evident in the ‘goal’ of the NFP where the terms ‘dependable’ and ‘at all times’ indicate ‘stability’ in food

⁷¹ *The Constitution of the People’s Republic of Bangladesh 1972*, art 15(a); Government of Bangladesh, *National Food Policy 2006 (NFP)* (Policy, Ministry of Food and Disaster Management, 2006) Preamble <<http://www.mofood.gov.bd/site/view/policies>>.

⁷² NFP, above n 71, Preamble.

⁷³ *Ibid*, Section E.

⁷⁴ *Ibid*.

⁷⁵ *Ibid* 2.

⁷⁶ *Ibid*.

security. Moreover, the objectives of the NFP put additional focus upon supply of food, purchasing power and nutrition of women and children.

The NFP acknowledges the importance of local food security concerns⁷⁷ and specifies the strategies to achieve the objectives. Table 5.2 provides a summary of the strategies that Bangladesh adopted to address food security. It is evident from the Table 5.2 that the major emphasis for addressing food security in Bangladesh is on food production and distribution mechanisms, disaster responses, income generation and nutritional aspects of food as well as water and food safety concerns. All these areas are closely related to climate change impacts.⁷⁸

Table 5.2: Governance strategies for achieving the objectives of NFP 2006
Objective 1: Ensuring stable food supply
Strategies: <ol style="list-style-type: none"> 1) Efficient and sustainable increase in food production <ul style="list-style-type: none"> - Agricultural development and extension services - Efficient use of water resources - Availability of agricultural inputs and their efficient use - Agriculture diversification and improved agricultural technology - Agricultural credit 2) Efficient food markets <ul style="list-style-type: none"> - Development of market infrastructure - Encouragement to private sector food trade - Development of trade-supportive legal and regulatory environment - Development and dissemination of early warning and market information system 3) Non-distortionary food-grain market intervention for price stabilisation <ul style="list-style-type: none"> - Price incentives for domestic food production - Public food-grain stock - Consumers price support
Objective 2: Increased purchasing power and access to food
Strategies: <ol style="list-style-type: none"> 1) Transitory shock management <ul style="list-style-type: none"> - Special measures for disaster mitigation for agriculture - Emergency distribution from public stock - Measures for increased supply through private trade and stock 2) Effective implementation of targeted food programmes to improve food security 3) Employment-generating income growth <ul style="list-style-type: none"> - Support to women and the disabled in income generating activities - Investment in employment enhancing technology - Incentives for development of agro-based industries - Special support for expansion of rural industries - Education, skill and human resources development - Adoption of macro policy for broad-based labour-intensive growth
Objective 3: Adequate nutrition for all

⁷⁷ Ibid Section C.

⁷⁸ See section II (B) in Chapter 2 for details of the impacts of climate change on food security.

Strategies:

- 1) Long-term national plan for ensuring balanced food in building a healthy nation
 - Setting long-term targets for physical growth in building a healthy nation
 - Setting a standard food intake in accordance with the physical, mental and intellectual needs
 - Taking steps to ensure balanced food to meet nutritional requirements
 - Taking steps to ensure balanced nutrition at minimal costs
- 2) Supply of sufficient nutritious food for vulnerable groups
- 3) Balanced diet containing adequate micronutrients
 - Nutrition education programmes
 - Dietary diversification
 - Effective food supplementation and fortification
- 4) Safe drinking water and improved sanitation
- 5) Safe, quality food supply
- 6) Adequate health status

Source: Government of Bangladesh, National Food Policy 2006 (Policy, Ministry of Food and Disaster Management, 2006) Section D <<http://www.mofood.gov.bd/site/view/policies>>.

Table 5.2 provides general guidelines for addressing food security in Bangladesh. The guidelines do not mention the climate change impacts on food security and also do not specify the roles of different stakeholders. However, some of the strategies that could contribute to climate adaptation are disaster mitigation, improving infrastructure, employment generation, safe drinking water and improving nutritional aspects.

The NFP highlights the proper flow of information, knowledge generation, adoption of changing dynamics in food security policies and mechanisms for forecasting food supply conditions.⁷⁹ It also places importance on strengthening stakeholder capacities to articulate and obtain necessary resources to implement food security programs.⁸⁰

The NFP does not mention representation of local government authorities at the national level food security committee. The ‘Food Planning and Monitoring Committee’⁸¹ is constituted only by the representatives of various central government ministries. Despite that, the strategies, principles and guidelines for addressing food security in Bangladesh, articulated in the NFP, could act as a reference to guide future local government roles in Bangladesh to address food security concerns. The emphasis on coordinated action, the trust of local government decision making capacity and the importance on capacity building of stakeholders, mentioned in the NFP, widens the future scope of the roles of local government in Bangladesh food security.

⁷⁹ NFP, above n 71, Section E.

⁸⁰ NFP, above n 71, Section E.

⁸¹ NFP, above n 71, Section E.

2 The National Food Policy Plan of Action 2008-2015

The PoA was prepared in the year 2008 to interpret the requirements of the NFP objectives into necessary governance strategies.⁸² The PoA acknowledged the challenges that climate change poses for Bangladesh food security.⁸³ A number of actions recommended in the PoA are consistent with the recommendations made in global policy responses for addressing climate change impacts on food security, such as improving use and management of water resources, agricultural credit and insurance, developing early warning systems, agricultural disaster management, emergency food distribution, addressing the needs of vulnerable people, women and the disabled, educational activities, safe drinking water, health, developing early warning systems and assessment of the impacts of climate change on natural and human resources.⁸⁴

The PoA specifies the roles of key actors for the implementation of the required actions. The authority for decision making is mostly kept within the government ministries and other key stakeholders have specified roles in implementing actions. The PoA acknowledged the roles of government departments (that work under different ministries), NGOs, the private sector and development partners for implementation purposes.⁸⁵ The PoA also places importance on the role of local level communities and agencies that work at the rural level. However, the importance of local government and its role is evident only in a few areas, such as strengthening nutrition education, involvement in public awareness and education programs, improving water safety as well as the control of diseases and investment in storage facilities.⁸⁶ The PoA acknowledges the importance of participation and capacity building of local government institutions for these actions.⁸⁷

The above discussion illustrates that the PoA has significant strategies and guidelines to address climate impacted food security in Bangladesh. However, the role of local government has not been

⁸² The PoA was prepared in accordance with the development policies of Bangladesh. The PoA provided 26 strategic areas of action for food security that will be implemented over the time period of 2008-2015 as well as specifies the priority actions and responsible actors; Government of Bangladesh, *National Food Policy Plan of Action 2008-2015 (PoA)* (FPMU, 5 August 2008) 2 <<http://fpmu.gov.bd/agridrupal/national-food-policy-plan-action>>.

⁸³ Government of Bangladesh, *National Food Policy Plan of Action 2008-2015(PoA)* (FPMU, 5 August 2008) 18 <<http://fpmu.gov.bd/agridrupal/national-food-policy-plan-action>>.

⁸⁴ Ibid 35.

⁸⁵ Ibid 102.

⁸⁶ Ibid 94, 97, 98, 100.

⁸⁷ Ibid 76, 97 and under actions 1.6, 3.5 of the PoA.

given adequate attention in the PoA. The importance of involving local government in decision making and coordination, recommended in the NFP, is not evident in the PoA.

3 Other laws/policies/strategies on food security in Bangladesh

Governance strategies for ensuring food security in Bangladesh are also included in some other laws and policies. The following table (Table 5.3) shows the major areas of governance that these law/policies and strategies have focused on.

Table 5.3: Other agriculture and food security related law/policies/strategies and governance focus

Name of the law/policy/strategy	Major governance focus and followed principles	Role of Local Government
Bangladesh Country Investment Plan (CIP).	<ol style="list-style-type: none"> 1. Plan and invest resources necessary for food security in an organized way 2. Match domestic sources of funding with external sources 3. Mobilize additional resources 4. Monitor and evaluate investments in food security,⁸⁸ and 5. Climate change resilience and adaptation strategies for food security.⁸⁹ <p><u>Principles and Guidelines</u></p> <ol style="list-style-type: none"> 1. Stakeholder participation in policy making and implementation 2. Capacity building, interagency collaboration, involvement of community based organizations, the private sector and NGOs, improvement of food management systems and improvement of current food management facilities (storage, warehouse facilities).⁹⁰ 	Strengthen linkages among agriculture, livestock, fisheries health services and local government to ‘support community based efforts of homestead gardening, rearing small livestock, aquaculture and awareness building for improved nutrition’ under the program ‘community based nutrition programs and services’. ⁹¹

⁸⁸ Government of Bangladesh, *Bangladesh Country Investment Plan: A Roadmap Towards Investment in Agriculture, Food Security and Nutrition (CIP)* (FPMU, Food Division, Bangladesh, June 2011) 8 <<http://fpmu.gov.bd/agridrupal/country-investment-plan>>.

⁸⁹ Ibid 21, 28.

⁹⁰ Ibid 21, 28.

⁹¹ Ibid 101.

National Agriculture Policy (NAP)	<p><u>Governance Focus:</u> Research and development,⁹² extension services,⁹³ small-irrigation,⁹⁴ agriculture marketing,⁹⁵ natural resource management.⁹⁶</p> <p><u>Principles and Guidelines:</u> Coordination of local extension services,⁹⁷ bottom-up approach in the governance system,⁹⁸ integration of environmental values into agriculture⁹⁹</p>	The NAP requires the local government institutions to take actions like preparing local action plan for assisting local extension services. ¹⁰⁰
National Water Policy 1999 (NWP)	<p><u>Major Governance Focus:</u></p> <p>1) Management and planning of national, 2) sub-regional and local water resources and their use, 3) protecting water quality and ensuring efficient use, 4) addressing the impacts of natural disasters, 5) specify water rights and their allocation, 6) mechanisms for public and private involvement and investment in water sector, 7) specifying responsibility and management of water supply and use for sanitation, agriculture, industries and navigation, 8) management policies regarding environment and biological diversity associated with water resources, and 9) specifying</p>	<p>1) The local government bodies prepare, implement and coordinate sub-regional and local water management plans.¹⁰⁷</p> <p>2) Regulate use of water in drought prone areas¹⁰⁸</p> <p>3) Inform local people as well as regulate pollution control and ensure efficient use of water.¹⁰⁹</p>

⁹² Government of Bangladesh, *National Agriculture Policy 2013 (NAP)* (Ministry of Agriculture, Bangladesh, 2013) 7 <<http://www.moa.gov.bd/site/view/policies/Policy>>.

⁹³ Ibid 9-11.

⁹⁴ Ibid 14.

⁹⁵ Ibid 19.

⁹⁶ Ibid 21.

⁹⁷ Ibid 10.

⁹⁸ Ibid 9.

⁹⁹ Ibid 21.

¹⁰⁰ Ibid 10.

¹⁰⁷ Government of Bangladesh, *National Water Policy 1999 (NWP)* (Ministry of Water Resources, Bangladesh) 6 <<http://www.mowr.gov.bd/site/files/328fb561-f1db-4c88-97f1-04ac01eaf851/National-Water-Policy-1999>>; Planning and management of water resources by analysing hydrological, social, political, economic and environmental factors have been recommended important in the NWP. For this, preparation of a National Water Management Plan (NWMP) has been advised.

¹⁰⁸ Government of Bangladesh, *National Water Policy 1999 (NWP)* (Ministry of Water Resources, Bangladesh) 8 <<http://www.mowr.gov.bd/site/files/328fb561-f1db-4c88-97f1-04ac01eaf851/National-Water-Policy-1999>>.

¹⁰⁹ Ibid 11.

	<p>stakeholder participation in water resource management.¹⁰¹</p> <p><u>Principles and guidelines:</u></p> <p>Empowerment of local stakeholders,¹⁰² pollution control,¹⁰³ capacity building of local communities¹⁰⁴ and decentralization of policies,¹⁰⁵ separate policy, planning, implementation function at each level of government, each institution should be accountable for financial and operational performance.¹⁰⁶</p>	
Food Safety Act 2013(FSA)	<p><u>Strategies:</u> Specifies responsibilities of food producers, distributors and sellers, regulatory authority for Bangladesh Food safety authority and Food Inspectors.</p>	<p>Representation by a local government representative (nominated by the government) at the National Food Safety Advisory Committee that is liable to provide advisory services regarding national policies for food safety.¹¹⁰</p>

The food security laws, policies and strategies discussed above illustrate that Bangladesh has adopted some principles and guidelines to strengthen the local government role in food security, such as giving priority to community development, particularly in developing homestead agriculture, preparation of local action plans, coordinating local food security management plans, gaining authority to regulate the use of basic natural resources such as water, improving awareness among local people and participation in national policies. The NWP provides significant legal and institutional guidelines by emphasizing separate policy, planning and functions for local government and ensuring financial and operational accountability. Some other general legal and institutional principles and guidelines evident in the food security laws and policies are stakeholder participation, interagency collaboration, the ‘bottom-up’ approach in governance, integration of

¹⁰¹ Ibid.

¹⁰² Ibid 6, 8.

¹⁰³ Ibid 11.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid 19.

¹¹⁰ *Food Safety Act 2013* (Bangladesh), s 3.

environmental values in agriculture and the capacity building of local communities. Although, the current roles of local government are not very evident in the NFP and the PoA, many strategies to address food security mentioned in these two government documents are relevant to the future roles of local government mentioned in Chapter 3. Thus, these strategies can be guidelines for the future roles of Bangladesh local government in climate impacted food security.

Bangladesh has also prepared a number of policies, strategies and laws to define governance strategies in addressing climate change impacts, environmental protection and sustainable development. The governance strategies in these government documents also refer to strategies for food security and the role of local government. The following section considers these policies, strategies and laws to identify the principles and guidelines that aim to facilitate the role of local government.

B Principles and Guidelines Adopted in Climate Change Policies, Strategies and Laws in Bangladesh and Local Government Roles

The Bangladesh approach to climate adaptation is articulated basically in two government documents: the National Adaptation Programmes of Action (NAPA) 2005¹¹¹ and the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009.¹¹² The NAPA was prepared under the guidelines provided by the *UNFCCC*.¹¹³ It outlined 15 priority areas for adaptation, activities under each of the priority areas and funding requirements. The BCCSAP is an updated version of the adaptation strategies mentioned in the NAPA, prepared in line with the development priorities of the country that Bangladesh should adopt to address climate change impacts. The BCCSAP included 44 programmes under six thematic areas (food security is one of the six thematic areas) that specified objectives, justification, action plan, timelines and responsibilities of respective institutions.¹¹⁴ Both the NAPA and the BCCSAP specify the roles of different stakeholders for

¹¹¹ Government of the People's Republic of Bangladesh, *National Adaptation Programme of Action (NAPA)* (Ministry of Environment and Forest, Bangladesh, November 2005) < <http://moef.portal.gov.bd/>>.

¹¹² BCCSAP, above n 14.

¹¹³ The COP 7 of the UNFCCC at Marrakesh in 2001 established LDC work program that developed a guideline for the LDC countries to identify priority areas for intervention against climate change impacts, developing action programs and calculating the needs. The entire process is known as NAPA. Preparation of NAPA was mandatory for accessing Least Developed Countries Fund (LDCF). Bangladesh prepared the NAPA in 2005; See UNFCCC *National Adaptation Programmes of Action* <http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/7567.php>; NAPA, above n 111.

¹¹⁴ BCCSAP, above n 14.

climate adaptation, including roles of local government, and indicate the basic legal and institutional principles and guidelines for their effective roles.

Necessary adaptation actions against climate change impacts and associated roles of stakeholders are also evident in some other environmental and climate change laws, policies and strategies. Some of these documents are the Environmental Policy 1992, the Bangladesh Biological Diversity Act 2012, the Climate Change Trust Act 2010 and the National Sustainable Development Strategy 2010-2021. The following discussion focuses on the legal and institutional principles and guidelines that the climate change policies and strategies and environmental laws specify for strengthening the local government role in addressing climate impacted food security.

1 National Adaptation Programmes of Action 2005

The National Adaptation Programmes of Action (NAPA) is an adaptation focused climate change strategy that articulates the impacts of climate change and provides a set of programs to address the problems.¹¹⁵ It identified a number of climate change impacts on agriculture, forestry and biodiversity, water, land, livelihood, human settlement and health¹¹⁶ and recommended 15 adaptation projects to address the impacts of climate change. The adaptation projects are:

1. Promoting adaptation to coastal crop agriculture to combat increased salinity.
2. Adaptation to agriculture systems in areas prone to enhanced flash flooding in North East and Central Regions.
3. Promoting adaptation to coastal fisheries through culture of salt tolerant fish in coastal areas of Bangladesh.
4. Adaptation to fisheries in areas prone to enhanced flooding in North East and Central Regions through adaptive and diversified fish culture practices.
5. Construction of flood shelters, and information and assistance centres to cope with enhanced recurrent floods in major floodplains.
6. Reduction of climate change hazards through coastal afforestation with community participation.

¹¹⁵ NAPA, above n 111.

¹¹⁶ NAPA, above n 111, 10-17.

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7. Provision of drinking water to coastal communities to combat enhanced salinity due to sea level rise.
8. Enhancing resilience of urban infrastructure and industries to impacts of climate change including floods and cyclone.¹¹⁷
9. Capacity building for integrating Climate Change in planning, designing of infrastructure, conflict management and land/water zoning for water management institutions.
10. Exploring options for insurance to cope with enhanced climatic disasters.
11. Mainstreaming adaptation to climate change into policies and programmes in different sectors (focusing on disaster management, water, agriculture, health and industry).
12. Inclusion of climate change issues in curriculum at secondary and tertiary educational institutions.
13. Climate change and adaptation information dissemination to vulnerable communities for emergency preparedness measures and awareness raising about enhanced climatic disasters.
14. Promotion of research on drought, flood and saline tolerant varieties of crops to facilitate adaptation in future.
15. Development of eco-specific adaptive knowledge (including indigenous knowledge) on adaptation to climate variability to enhance adaptive capacity for future climate change.¹¹⁸

Most of the adaptation projects, stated above, have the potential of improving food security in Bangladesh. Some of the adaptation projects indicate improving food production, such as agricultural crops and fisheries, and some projects are focused on improving resilience of food security such as building infrastructure, promotion of research and education. Each adaptation project has specified justification of action, description of the strategy, short and long term activities, possible outcomes, risks and barriers, institutional arrangements and financial requirements. The involvement of local government is visible only for an adaptation project to develop eco-specific adaptive knowledge to enhance adaptive capacity.¹¹⁹ The main actions under

¹¹⁷ NAPA, above n 111, 22.

¹¹⁸ NAPA, above n 111, 22.

¹¹⁹ NAPA, above n 111, 34.

this strategy are i) identifying eco-regions ii) identifying ecofriendly actions and iii) capacity building of the local communities to adapt ecofriendly actions.¹²⁰

Two basic legal and institutional principles and guidelines are evident in each of the adaptation projects of NAPA: an emphasis on coordination and cooperation and the importance of financial resources availability. Each project consists of a number of implementing agencies that indicate the necessity of cooperation and coordination among institutions. For example, under the project ‘Development of eco-specific adaptive knowledge (including indigenous knowledge) on adaptation to climate variability to enhance adaptive capacity for future climate change’, local government institutions are required to work with NGOs to implement the program. Most of the adaptation projects identified financial constraints as a barrier to implementing the projects and every project provided an estimated cost for implementation. The importance of financial resource availability for climate adaptation was acknowledged in many international policy responses and identified in Chapter 3 as an important principle and guideline for addressing climate impacted food security by local government.¹²¹

Although the NAPA provides detailed guidelines for addressing climate change impacts in Bangladesh, particularly on food security and provides some basic legal and institutional principles for effective roles of the stakeholders, the acknowledgement of local government as an important stakeholder is absent in NAPA. It is important to note that most of the strategies of NAPA would take place at the community level, but the primary and secondary implementation agencies are mostly central government departments. The role of local communities or community-based organizations as secondary implementing authorities and the focus on community participation for the proper implementation of the strategies is only evident in a few instances.¹²² Local government involvement is evident in only one project as a secondary implementing agency. The role of local government is not mentioned in the other 14 projects. The limited involvement of local government

¹²⁰ NAPA, above n 111, 35.

¹²¹ See section III (A) of chapter 3 for details of the principle ‘*Resources should be made available for implementing new roles for local government*’.

¹²² NAPA strategies that are focused on local community and put importance of community participation and involvement as implementing agency are coastal afforestation (strategy 6) and drinking water (strategy 7), capacity building (9), information decimation for disaster preparedness and awareness (strategy 13), enhancing resilience (strategy 8), adaptation to coastal crop agriculture (strategy 1) and agriculture in flash flooding areas (strategy 2).

in climate change adaptation projects indicates the lack of trust in the capacity of local government by the policymakers.

2 Bangladesh Climate Change Strategy and Action Plan 2009 (BCCSAP)

The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) is a strategy for combating climate change that was first prepared in 2008 to forward the NAPA strategies. In 2009 the BCCSAP was revised to adjust the strategies along with the development priorities of the Government of Bangladesh (GoB).¹²³ The BCCSAP 2009 provides a summary of the present and future climate change threats to Bangladesh food security. It is a 10-year program (2009-2018) that is built on six pillars: 1) food security, social protection and health, 2) comprehensive disaster management, 3) infrastructure, 4) research and knowledge management, 5) mitigation and low carbon development and, 6) capacity building and institutional strengthening.¹²⁴ Therefore the BCCSAP has specific focus on food security.

Under the ‘food security, social protection and health’ pillar the BCCSAP 2009 divides the actions into four areas. These are:

- 1 Increase the resilience of vulnerable groups, including women and children, through development of community-level adaptation, livelihood diversification, better access to basic services and social protection (e.g., safety nets, insurance) and scaling up
- 2 Develop climate change resilient cropping systems, (e.g., agricultural research to develop crop varieties, which are tolerant of flooding, drought and salinity, and based on indigenous and other varieties suited to the needs of resource poor farmers), fisheries and livestock systems to ensure local and national food security
- 3 Implement surveillance systems for existing and new disease risks and ensure healthy systems are geared up to meet future demands
- 4 Implement drinking water and sanitation programmes in areas at risk from climate change (e.g., coastal areas, flood and drought prone areas).¹²⁵

¹²³ BCCSAP, above n 14, xi.

¹²⁴ BCCSAP, above n 14, xvii-xviii.

¹²⁵ BCCSAP, above n 14, 27.

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The implementation of these four actions is further categorized into nine programs. These programs are:

Program 1: Institutional capacity for research towards climate resilient cultivars and their dissemination

Program 2: Development of climate resilient cropping systems

Program 3: Adaptation against drought

Program 4: Adaptation in the fisheries sector

Program 5: Adaptation in the livestock sector

Program 6: Adaptation in the health sector

Program 7: Water and sanitation programs in climate vulnerable areas

Program 8: Livelihood protection in ecologically fragile areas

Program 9: Livelihood protection of vulnerable socio-economic groups (including women)¹²⁶

These programs indicate the adaptation actions that Bangladesh is prioritizing for addressing climate impacted food security. A number of programs under the other five pillars of BCCSAP also have specified some actions that have potential to improve food security. Table 5.4 provides a summary of the programs under the remaining five pillars that are directly related to food security.

Table 5.4: BCCSAP 2009 programs that have relationship with food security

BCCSAP Pillar title	Programs related with food security
Comprehensive disaster management	<ol style="list-style-type: none">1. Improvement of flood forecasting and early warning2. Improvement of cyclone and storm surge warning3. Awareness raising and public education towards climate resilience4. Risk management against loss of income and property
Infrastructure	<ol style="list-style-type: none">1. Repair and maintenance of flood embankments, coastal polders2. Adaptation against natural disasters
Research and knowledge management	<ol style="list-style-type: none">1. Monitoring of ecosystem and biodiversity changes and their impacts2. Macroeconomic and sectoral economic impacts of climate change

¹²⁶ BCCSAP, above n 14, 32.

Mitigation and low carbon development	1. Afforestation and reforestation program 2. Lower emissions from agricultural land
Capacity building and institutional strengthening	1. Revision of sectoral policies for climate resilience 2. Strengthening human resource capacity

Source: Government of Bangladesh, Bangladesh Climate Change Strategy and Action Plan 2009 (Strategy paper, Ministry of Environment and Forestry, September 2009) 32-76 <http://www.moef.gov.bd/climate_change_strategy2009.pdf>.

The BCCSAP indicates some legal and institutional principles for implementing the programs. The BCCSAP emphasizes an integrated approach by involving all stakeholders in the process.¹²⁷ This is a reflection of the principle of coordination and cooperation. The BCCSAP also stresses capacity building of the stakeholders for effective responses to climate change. To this end, the BCCSAP has developed a number of programs for capacity building of the stakeholders such as mainstreaming climate change actions in development planning of governments at all levels.¹²⁸ The importance of ensuring appropriate funding for implementing the programs are also evident in the BCCSAP.¹²⁹

The BCCSAP 2009 sets objectives, justifications, actions, timelines and responsible authorities for the programs. Local government is involved (along with other concerned government ministry and NGOs) in a program called ‘water and sanitation programme in climate vulnerable areas’ under the pillar ‘food security, social protection and health’.¹³⁰ The actions recommended for implementing the program on water and sanitation involves action in monitoring and forecasting changes in water quality due to climate change and planning and investing in water supply and sanitation facilities.¹³¹ However, the program does not clearly identify the responsibility of each of the authorities or the coordination mechanism. Also, the funding mechanisms, particularly for investment and planning for sanitation and water supply, are not clear. Understanding changes in water quality, particularly because of climate change, may require expertise in the related field but the program does not mention the capacity building of institutions like local government in this respect. The role of local government is also not visible in other programs.

¹²⁷ BCCSAP, above n 14,19.

¹²⁸ BCCSAP, above n 14, 29.

¹²⁹ BCCSAP, above n 14, 24.

¹³⁰ There are a total of 44 programmes under six pillars in BCCSAP 2009. See, BCCSAP, above n 14, 32.

¹³¹ BCCSAP, above n 14, 39.

The BCCSAP provides guidelines for implementing the programs. It mentions a ‘National Steering Committee’ (NSC) for coordinating and facilitating implementation of the programs.¹³² The NSC is constituted by the concerned ministries, civil society and business communities. There is no mention of representation of local government at the NSC. Therefore, it is understandable that the government ministries and big non-government organizations (NGOs) would take the leading role in this program and the role of local government could only be to assist those organizations.

Despite the lack of acknowledgement of the roles of local government, the BCCSAP provides a basic set of guidelines and specify the actions for addressing climate change, including impacts on food security that indicates the potential future scope of local government in climate impacted food security actions. The emphasis on integrated action, coordination and capacity building of institutions provide the basic guidelines for strengthening role of stakeholders, such as local government, in climate impacted food security.

3 Other Climate Change and Environmental Laws, Policies and Strategies in Bangladesh

Some other climate change and environmental laws, strategies and policies in Bangladesh are also addressing climate change impacts on food security in Bangladesh, such as the Environmental Policy 1992, the Bangladesh Biological Diversity Act 2012, the Climate Change Trust Act 2010, the Rio+20: National Report on Sustainable Development 2012, the Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change and the National Sustainable Development Strategy 2010-2021. The following sections will examine these laws, policies and strategies to identify the roles of local government concerning climate impacted food security and the legal and institutional principles and guidelines that are strengthening these roles.

(a) The Environmental Policy 1992: Bangladesh prepared the Environmental Policy in 1992 (EP). Some of the objectives of the EP are related to addressing climate impacted food security, such as environmental conservation, sustainable use of natural resources and protection from natural disasters.¹³³ The EP provides guidelines for addressing environmental concerns in 15 different sectors of Bangladesh. A number of the sectors are important for food security, such as agriculture,

¹³² BCCSAP, above n 14, 30.

¹³³ Government of Bangladesh, *Environment Policy 1992 (EP)* (Ministry of Environment and Forest, Bangladesh, 1992) 3-6.

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health, water development and irrigation, land, biodiversity, livestock, food, coastal environment and transportation.¹³⁴ Some of the legal and institutional guidelines mentioned under these sectors for achieving the objectives of the EP are also important for addressing food security against climate change impacts such as:

1. Encouraging public participation
2. Linkage with international initiatives
3. Recognize the linkage of agriculture with environment
4. Place importance on environmental conservation and sustainable development for agricultural development
5. Link public health with environment
6. Emphasis on water management, flood control and irrigation facilities in accordance with environmental development
7. Recognize the importance of biodiversity, forest conservation
8. Recognize the importance of keeping environment friendly livestock and fisheries development
9. Food production is to be environment friendly
10. Increasing education about environment.¹³⁵

The EP also specifies the responsibilities of different stakeholders for implementing the guidelines.¹³⁶ The ministries and departments are generally responsible for implementing the work plans.¹³⁷ However, local government institutions are also jointly involved with the government ministries and departments in some programs such as:

1. Supply of pure drinking water and introduction of sanitary latrines
2. Control of water pollution, and
3. Waste management.¹³⁸

Although the scope of the local government role in implementing the objectives and recommendations of EP is limited, the legal and institutional guidelines provide a good reference to the local government institutions to play an effective role within the limited scope.

¹³⁴ Ibid 3-6.

¹³⁵ Ibid 3-6.

¹³⁶ Ibid 7.

¹³⁷ Ibid 7-8.

¹³⁸ Ibid 9-10.

(b) *Bangladesh Biological Diversity Act 2012*: The major purpose of Biological Diversity Act 2012 (BDA) is to ensure conservation and sustainable use of biological diversity in Bangladesh.¹³⁹ The BDA acknowledges the commitment of Bangladesh as a signatory of the *Convention of Biological Diversity*, 1992, for conserving biological diversity.¹⁴⁰ The National Committee on Biological Diversity is comprised of a number of central government ministries and departments to monitor the national concerns of biological diversity in Bangladesh.¹⁴¹

The role of local government is evident in the BDA. The BDA has a provision to form a ‘biological diversity management committee’ in every local government institution.¹⁴² The role of the committee is to promote conservation, sustainable use, ecosystem conservation, cultivar and land race conservation, stock and breed conservation and documentation of information about biological diversity.¹⁴³ These roles are not evident in the local government laws discussed in the previous sections and indicate some of the future roles that local government in Bangladesh could be responsible for.

Two major legal and institutional principles and guidelines are evident in the BDA to strengthen the role of local government. The BDA strengthens the role of local government by keeping the provision of consultation with local committees in matters that are local in nature. The national committee is required to consult with the local government committee about biological diversity related issues that fall within the respective local government jurisdiction.¹⁴⁴ This provision indicates the principle of subsidiarity to strengthen local government. The BDA also provides some authority to local government such as the introduction of fees for accessing or collecting biological diversity within the jurisdiction of the local government body.¹⁴⁵ These two principles are also recommended in international policy responses to strengthen the roles of local government in climate impacted food security.

¹³⁹ *Bangladesh Biological Diversity Act 2012* (Bangladesh) s 2.

¹⁴⁰ *Ibid* preamble, s 3.

¹⁴¹ *Ibid* s 8.

¹⁴² *Ibid* s 17.

¹⁴³ *Ibid* s 17(1).

¹⁴⁴ *Ibid* s 17(2).

¹⁴⁵ *Ibid* s 17(3).

(i) *National Biodiversity Strategy and Action Plan of Bangladesh 2016-2021(NBSAP)*

The National Biodiversity Strategy and Action Plan of Bangladesh 2016-2021 (NBSAP) was prepared to fulfill the country's commitment to the Convention of Biological Diversity (CBD).¹⁴⁶ The NBSAP identified climate change as a major threat to biodiversity loss in Bangladesh¹⁴⁷ that are resulting negative impacts on both food security and human wellbeing in Bangladesh.¹⁴⁸ The NBSAP acknowledged the contribution of agriculture biodiversity on national food security.¹⁴⁹ It acknowledges the importance of sustainable water and land use, pest management, integrated crop cultivation, local seed security, conservation of wetland ecosystem and conservation of local livestock varieties are closely related with both food security and biodiversity.¹⁵⁰

The NBSAP put importance on integrated approaches to address the adverse impact of climate change and other factors on biodiversity. It recommended mainstreaming biodiversity conservation strategies into all development and institutional plans, related national laws, SDG goals, the educational system, and international conventions ratified by Bangladesh.¹⁵¹ It also recommended mainstreaming the strategies at both individual and institutional level.¹⁵² Therefore, integration of biodiversity issues into all policies and actions of the country central to the NBSAP.

The NBSAP recommended a number of strategies to address biodiversity loss and conservation in Bangladesh.¹⁵³ Some general principles and guidelines, that are relevant to the principles and guidelines discussed in chapter 3 for addressing climate change impacts on food security, could be identified from the biodiversity strategies in Bangladesh, such as:

1. public participation to raise awareness at individual level, particularly among the women¹⁵⁴

¹⁴⁶ Government of Bangladesh, *National Biodiversity Strategy and Action Plan of Bangladesh 2016-2021 (NBSAP)* (Ministry of Environment and Forest, Bangladesh, July 20) < <https://www.cbd.int/doc/world/bd/bd-nbsap-v2-en.pdf>>; Article 6 of the Convention on Biological Diversity require the Parties to develop national strategies, plans and programs for national conservation of biological diversity and its sustainable use; see *United Nations Convention on Biological Diversity* 1760 UNTS 79; 31 ILM 818 (29 December 1993) article 6.

¹⁴⁷ Ibid 17-21.

¹⁴⁸ Ibid 22.

¹⁴⁹ Ibid 25.

¹⁵⁰ Ibid 41-48.

¹⁵¹ Ibid 35-49.

¹⁵² Ibid 35-39.

¹⁵³ Ibid 60-71.

¹⁵⁴ Ibid 35-37.

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2. incorporating the value of biological diversity into institutional planning¹⁵⁵
3. ensuring participation of local level community based organization and public sectors into biological conservation¹⁵⁶
4. encouraging integrated management plan for agriculture, aquaculture and forestry sectors¹⁵⁷ (these sectors are important for food security)
5. acknowledging the value of local knowledge and local practices for biological diversity¹⁵⁸; and
6. capacity building of agencies involved in biodiversity conservation¹⁵⁹

Some focus on the role of local government are also visible in the NBSAP. The NBSAP acknowledged the role of local government importance in awareness building, facilitating local stakeholders in participating biodiversity conservation strategies and infrastructure development for effective implementation of biological diversity strategies in Bangladesh.¹⁶⁰ There is detailed discussion about capacity building, resource mobilization and monitoring frameworks for biodiversity conservation in Bangladesh in the NBSAP.¹⁶¹ However, the importance of capacity building of local government, resource mobilization to facilitate their activities, as well as involvement in monitoring activities, are not explicitly mentioned in the NBSAP.¹⁶² This indicates a mismatch between the BDA and NBSAP where the importance of a local biodiversity committee has been highlighted in the BDA. Despite that, the guidelines and principles on integration of biodiversity in every institutional plan and the scope of local government involvement in local awareness building show some indication of future roles of local government in Bangladesh for the conservation of biodiversity.

¹⁵⁵ Ibid 38-39.

¹⁵⁶ Ibid 39.

¹⁵⁷ Ibid 65.

¹⁵⁸ Ibid 70-71.

¹⁵⁹ Ibid 71.

¹⁶⁰ Ibid 39.

¹⁶¹ Ibid 73-92.

¹⁶² Ibid.

(c) *The Rio+20: National Report on Sustainable Development 2012 (NRSD)*

The Rio+20: National Report on Sustainable Development 2012 (NRSD) was prepared by Bangladesh to display the achievements that Bangladesh made for sustainable development and the future directions at the Rio+20 United Nations Conference on Sustainable Development, 2012.¹⁶³ While focusing on the achievements and future directions, the NRSD identified a few priority areas for sustainable development in Bangladesh. The areas are food security and sustainable agriculture, water security, energy security, climate change, disaster management, transportation and infrastructure.¹⁶⁴ The report recognizes the constitutional obligation of the country to protect and preserve natural resources and biological diversity of the country.¹⁶⁵

The NRSD provides an institutional framework for sustainable development in Bangladesh.¹⁶⁶ While mentioning the roles of national committees, under the framework, represented by the government ministries, the NRSD also mentions the existence and importance of local level committees for environment.¹⁶⁷ The NRSD placed importance on strengthening local government institutions for achieving sustainable development in Bangladesh. The report stated that

At the grassroots level, the local government institutions like the Union Parishads and Ward Councils also need capacity development for local level planning and implementation of sustainable development initiatives. Advocacy and awareness raising on key issues related to sustainable development are essential as well.¹⁶⁸

The report also specified some guidelines to strengthen local government such as public participation, capacity building for planning and implementation of local projects, improving service delivery at the local level, improving autonomy by devolving administrative authority and responsibility.¹⁶⁹ Therefore, local government is acknowledged in the NRSD as an important institution for sustainable development in Bangladesh and commitments to strengthen the role of local government in Bangladesh are also evident.

¹⁶³ Government of Bangladesh, *Rio+20 National Report on Sustainable Development 2012 (NRSD)* (Ministry of Environment and Forest, Bangladesh, May 2012) x< <http://www.moef.gov.bd/#>>.

¹⁶⁴ Ibid 47.

¹⁶⁵ See Ibid 6; and *The Constitution of the People's Republic of Bangladesh 1972*, art 18A.

¹⁶⁶ NRSD, above n 163, 9.

¹⁶⁷ Ibid, 10.

¹⁶⁸ Ibid, 34.

¹⁶⁹ Ibid, 34.

(d) *Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change (SNCB)*: Bangladesh prepared the SNCB partly to address the voluntary obligation under the *UNFCCC*.¹⁷⁰ The SNCB focuses on five areas where climate impacted food security issues and corresponding strategies where the GoB is prominent:

1. National circumstances: provides a brief about the conditions of different sectors of Bangladesh that also include agriculture, environment and food security.
2. Greenhouse gas (GHG) inventory: greenhouse gases (GHG) emissions from energy, industry, agriculture, waste, land use, land use change and forestry sector for the year 2001 and 2005.
3. Programs containing measures to mitigate climate change: main focus on reducing GHG emissions from energy sector. However, options for mitigation of GHGs in the agriculture sector have also been suggested.
4. Programs analysing vulnerability and measures to facilitate adaptation: specifies the impacts of climate change on various sectors like agriculture, fisheries, livestock, livelihood and health as well as suggests adaptation options for necessary interventions; and
5. Other information relevant to the objectives of *UNFCCC*: activities related to mainstreaming climate change, technology transfer, research, awareness and capacity building.¹⁷¹

The SNCB does not specify the role of local government in the report but the GoB's intention to strengthen local government is evident. The SNCB acknowledges the importance of the effectiveness of local government roles,¹⁷² and the importance of involving local government in decentralized planning.¹⁷³ The SNCB also stated the GoB's consideration of 'technology needs

¹⁷⁰Government of Bangladesh, *Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change (SNCB)* (Ministry of Environment and Forests, Bangladesh, October, 2012) i <<http://www.moef.gov.bd/#>>; Under Article 4, paragraph 1, and Article 12, paragraph 1 of the United Nations Framework Convention on Climate Change (UNFCCC) Non-Annex I countries can also submit its national communication to the UNFCCC.

¹⁷¹ Ibid i-xvi.

¹⁷² Ibid i-xvi, 56.

¹⁷³ Ibid i-xvi, 208.

assessment’ of the local government sector to identify mitigation and adaptation priorities, stated in the SNCB.¹⁷⁴

The SNCB actually facilitated the present scenario regarding climate change impact and developments made by the GoB. The acknowledgement of the role of local government and commitment to improve its role to the *UNFCCC* through the SNBC reflects the intention of GoB to strengthen the role of local government.

(e) Climate Change Trust Act 2010 and Bangladesh Climate Change Resilience Fund (BCCRF): The purpose of the Climate Change Trust Act (CCTA) is to create a fund (climate change trust fund or CCTF) for planning and implementing projects, research activities, increasing public awareness and resilience of the local community that are related to climate change impacts in Bangladesh.¹⁷⁵ The CCTA specifies the activities for using the fund.¹⁷⁶ The fund would be used for implementing the programs specified at the BCCSAP: adaptation, mitigation and technology transfer related research and the projects approved by the ‘trust board’ which is comprised of central government ministers. Local government of Bangladesh do not have any representation in the ‘trust board’. However, local government may apply for fund from the CCTF to the ‘trust board’.¹⁷⁷ Some local government projects addressing climate change impacts are currently resourced by the CCTF.¹⁷⁸

Bangladesh has another fund for facilitating adaptation, known as the Bangladesh Climate Change Resilience Fund (BCCRF). It is a multi-donor trust fund coordinated by the Government of Bangladesh (GoB), international development partners and the World Bank to implement the strategies adopted in the BCCSAP.¹⁷⁹ The government ministries, Bangladeshi NGOs and civil society organizations are eligible to apply for fund from the BCCRF.¹⁸⁰ However, the eligibility of local government to apply for fund from BCCRF is not clear.

¹⁷⁴ *Ibid* i-xvi, 209.

¹⁷⁵ *Climate Change Trust Act 2010* (Bangladesh) s 6.

¹⁷⁶ *Ibid* s 7.

¹⁷⁷ *Project selection procedure* (2014) Bangladesh Climate Change Trust <<http://www.bcct.gov.bd/index.php/projects/project-selection-procedure>>.

¹⁷⁸ *Updated Project List* (2014) Bangladesh Climate Change Trust, Ministry of Environment and Forests <<http://www.bcct.gov.bd/images/notice/40.pdf>>.

¹⁷⁹ *Bangladesh Climate Change Resilience Fund* (2013) BCCRF <<https://www.bccrf-bd.org/Default.aspx>>.

¹⁸⁰ *Applicant Eligibility* (2013) Bangladesh Climate Change Resilience Fund <<https://www.bccrf-bd.org/GrantProcessPage.html>>.

(f) National Sustainable Development Strategy 2010-2021 (NSDS)

The National Sustainable Development Strategy (NSDS) is a ten-year sustainable development strategy of Bangladesh to be implemented over the 2010-2021 period. It states that the strategies recommended in the NSDS are consistent with other national plans and policies of Bangladesh.¹⁸¹ The NSDS identified a number of challenges for sustainable development in Bangladesh that included climate change.¹⁸² The NSDS also acknowledges the present and future threats of climate change impact on the food security and agriculture of the country.¹⁸³

The NSDS provides some future roles to face the challenges of sustainable development in Bangladesh.¹⁸⁴ Some of the future roles are related to improving food security and agriculture, particularly in the rural areas, such as:

1. Increasing rice production, developing a price control mechanism, market development, rural infrastructure development, improving surface water irrigation facilities, avoiding natural resource degradation and increasing research and knowledge¹⁸⁵
2. Improving open water fisheries management, improving livestock production by providing support to smallholder farmers, increasing production of fodder and shelter from natural disasters¹⁸⁶
3. Improving services to rural communities (roads, electricity, pure drinking water, education and skills)¹⁸⁷
4. Human resource development by providing training and education on health, sanitation, nutrition and food safety.¹⁸⁸

¹⁸¹ Government of Bangladesh, *National Sustainable Development Strategy 2010-21 (NSDS)* (General Economic Division, Planning Commission, Dhaka) executive summary < <http://www.plancomm.gov.bd/wp-content/uploads/2013/09/National-Sustainable-Development-Strategy.pdf>>.

¹⁸² Ibid 27-40; The challenges for sustainable development in Bangladesh identified in the NSDS are large population, poverty and inequality, unplanned urbanization, energy insecurity, inefficiency in water resources management, occurrence of natural disaster and impacts of climate change.

¹⁸³ Ibid 15.

¹⁸⁴ Ibid 14-18.

¹⁸⁵ Ibid 15.

¹⁸⁶ Ibid.

¹⁸⁷ Ibid.

¹⁸⁸ Ibid 16-18.

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5. Improving social security options for the vulnerable people that include housing, women and children rights, services for aged people and access to information¹⁸⁹
6. Increasing surface water use efficiency, conservation of forest and biological diversity, protection of wetlands and ecosystems, adopting co-management approaches and community participation¹⁹⁰
7. Improving coastal ecosystem and land management, improving agronomic practices, developing infrastructure for disaster risk reduction, mainstreaming climate change into development activities, afforestation and development of climate resilient crops.¹⁹¹

The NSDS acknowledged the problems in governance as a challenge for implementing sustainable development in Bangladesh.¹⁹² The dominant role of central government in preparing and implementing sustainable development programs and the absence of the roles of other institutions (that include local government) have been marked as a weakness in the governance systems of Bangladesh.¹⁹³ The NSDS specifically mentions strengthening local government for overcoming the governance problems.¹⁹⁴ It stated that '[e]fficient and dedicated local government bodies can deliver services such as education, health and law and order and generate social and economic awareness to achieve the national goals.'¹⁹⁵ Therefore the capacity of local government to deliver services for sustainable development in Bangladesh has been acknowledged in the NSDS. However, detailed strategies for developing capacity and improving the role of local government have not been specified in the NSDS.

The NSDS provide an indication of the institutional framework for implementing the sustainable development strategies in Bangladesh.¹⁹⁶ The NSDS acknowledges the institutional framework provided at Agenda 21 for sustainable development and recommended for the inclusion of all major groups mentioned at Agenda 21 into the sustainable development institutional framework

¹⁸⁹ Ibid 19.

¹⁹⁰ Ibid 20.

¹⁹¹ Ibid 20-21.

¹⁹² Ibid 130.

¹⁹³ Ibid.

¹⁹⁴ Ibid.

¹⁹⁵ Ibid.

¹⁹⁶ Ibid 135-143.

in Bangladesh.¹⁹⁷ Agenda 21 specifically recognized local government as one of the major groups for ensuring sustainable development.¹⁹⁸ The NSDS specified the role of the central government representatives under a few institutional arrangements¹⁹⁹ and respective roles and responsibilities. However, the role or representations of local government in those institutional arrangements is not evident.

IV CRITICAL ANALYSIS OF THE FINDINGS: LEGAL AND INSTITUTIONAL PRINCIPLES AND GUIDELINES ADOPTED IN BANGLADESH TO STRENGTHEN LOCAL GOVERNMENT ROLE IN CLIMATE IMPACTED FOOD SECURITY

Bangladesh's climate change, food security and local government laws indicate some existing and future roles for local government and indicate some legal and institutional principles and guidelines that contribute to strengthening local government to effectively discharge its roles. This section will summarize the findings and critically analyse the strengths and weaknesses in the Bangladesh approach to strengthen local government's role in climate impacted food security.

A Local Government Roles in Climate Impacted Food Security: Summary of the Findings

The discussion of the laws, policies and strategies of local government, food security and climate change in Bangladesh showed some scope for roles of Bangladesh local government in improving climate impacted food security. *The Constitution of the People's Republic of Bangladesh 1972* mentions some the basic actions, such as the 'Fundamental Principles for State Policy' that could contribute to addressing climate impacted food security in Bangladesh, such as eliminating the distress of the farmers and local poor, considering food as a basic necessity in policy issues, improving rural living standards and improving public health.²⁰⁰ These constitutional directions could also define the role of local government in Bangladesh as it is a constitutionally recognized institution and important government entity at the local level.

¹⁹⁷ Ibid 135.

¹⁹⁸ See *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992).

¹⁹⁹ The NSDS forms National Sustainable Development Monitoring Council and Sustainable Development Board; both are headed and represented by central government representatives. The involvement of local government representation is absent. See NSDS, above n 181, 136-140.

²⁰⁰ *The Constitution of the People's Republic of Bangladesh 1972* arts 8-25; See also Table 5.1.

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The roles of local government are mainly established in the local government laws. The UPA requires the UPs to take necessary action for agriculture, fisheries and livestock development and increase food production, construction of rural roads and maintenance, environmental conservation and development, long term planning and implementation and preparation for natural disasters.²⁰¹ These functions define the role of local government in Bangladesh in climate impacted food security. Similar roles of local government are also evident in the other local government laws.

The food security and climate change laws, policies and strategies also provide some roles of local government in climate impacted food security that are not mentioned in the local government laws. Some of the roles include:

1. Role in nutritional development and public awareness building²⁰²
2. Support community based gardening and nutritional program²⁰³
3. Assisting local extension services²⁰⁴
4. Coordinate local water management plan and regulate water use, make local people aware of water pollution and use of safe drinking water²⁰⁵
5. Ensuring safe drinking water and improved sanitation options for the vulnerable people to climate change²⁰⁶
6. Contribute to national food safety policies²⁰⁷
7. Developing eco-agricultural regions and capacity building of local people to adapt ecofriendly actions,²⁰⁸ and
8. Managing local biological diversity and advising national committee for local concerns.²⁰⁹

²⁰¹ *Local Government (Union Parishad) Act 2009* (Bangladesh) sch 2.

²⁰² PoA, above n 82, 94, 97, 98, 100.

²⁰³ Government of Bangladesh, CIP, above n 88, 101.

²⁰⁴ NAP, above n 92, 10.

²⁰⁵ NWP, above n 107, 8.

²⁰⁶ BCCSAP, above n 14, 39; Government of Bangladesh, EP, above n 133, 9-10.

²⁰⁷ *Food Safety Act 2013* (Bangladesh) s 3

²⁰⁸ NAPA, above n 111, 35.

²⁰⁹ *Bangladesh Biological Diversity Act 2012* (Bangladesh) s 17(2).

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Most of these roles are identical to the future roles of local government in addressing climate impacted food security recommended in international policy responses.²¹⁰ These include:

1. Improving water, sanitation and infrastructure that has been recommended by the AR5 of the IPCC;²¹¹
2. Contributing to improving local nutritional conditions as recommended at the World Summit on Food Security 2009;²¹²
3. The roles in conserving local biological diversity as recommended in the CBD;²¹³
4. The roles in improving local food production as recommended by the FAO²¹⁴ and;
5. Facilitating local communities in climate adaptation and agriculture as recommended in Agenda 21.²¹⁵

Therefore, the roles of local government in Bangladesh to address climate impacted food security are consistent with the recommendations of international policy responses.

However, the current Bangladesh frameworks are not exhaustive. Many other important future roles of local government, mentioned in Chapter 2, are not evident in the laws, policies and strategies of Bangladesh. International policy responses recommended a wider role of local government in adapting to improve food security, such as facilitating, assessing and coordinating local adaptation activities, preparing of local adaptation plans and implementing them,²¹⁶ protecting farmer rights, improving local transportation and distribution services²¹⁷ as well as roles in improving early warning systems.²¹⁸ A number of future roles of local government to improve

²¹⁰ See section III of Chapter 2 for future roles of local government.

²¹¹ Anokhin Yury et al, 'Adaptation Needs and Options' in Christopher B. Field et al (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2013) 833, 842-843.

²¹² World Summit on Food Security 'Declaration of the World Summit on Food Security' WSFS 2009/2 (November 2009) principle 1 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

²¹³ *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Twelfth Meeting* UN Doc. No UNEP/CBD/COP/DEC/Xii/9 (17 October, 2014) Decision ix/28.

²¹⁴ Food and Agriculture Organization, 'Climate-Smart Agriculture Sourcebook' (Rome, 2013) 554 <www.fao.org/docrep/018/i3325e/i3325e.pdf>.

²¹⁵ *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) para 28.3.

²¹⁶ Yury et al, above n 211, 842-843.

²¹⁷ *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, Chapter 5[80-103] <<http://www.un-documents.net/ocf-05.htm#IV>>.

²¹⁸ *United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa* UN Doc No. A/AC.241/27 (12 September 1994).

climate impacted food security recommend by the FAO²¹⁹ are also absent in the Bangladesh context. Most of the future roles for improving climate impacted food security are evident in Bangladesh laws, policies and strategies but they lack inclusiveness and detail on the roles and functions of local government. Rather, central government ministries and other private organizations such as NGOs are responsible for improving climate impacted food security functions in Bangladesh. Many actions specified in the NFP, the PoA, the NAPA and the BCCSAP for climate impacted food security, that do not acknowledge local government roles at present, can be future potential areas for local government roles

B Comparative Analysis of Bangladesh Legal and Institutional Principles and Guidelines with International Policy Responses

International policy responses recommended a number of legal and institutional principles and guidelines for strengthening the role of local government in climate impacted food security. Chapter 3 provided five principles and guidelines by integrating the recommendations. The five legal and institutional principles and guidelines are:

1. Resources should be made available for implementing the roles of local government
2. National policies should encourage cooperation, coordination and partnership with local government
3. Local government planning, decision making process and service delivery should be improved
4. Local government roles should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing the vulnerability of local people, and
5. Good local governance principles should be adopted in the local government legal and institutional frameworks.²²⁰

²¹⁹ See Table 2.2 of Chapter 2.

²²⁰ See section III of chapter 3.

The following discussion will identify the Bangladesh approach to strengthen the role of local government in climate impacted food security by focusing on these five legal and institutional principles and guidelines.

1 Resources should be made available for implementing the roles of local government:

Ensuring availability of resources for implementing the roles of local government is one of the major legal and institutional principles and guidelines identified from the recommendations of international policy responses. In Bangladesh, the importance of resource availability is evident in climate change and food security laws, policies and strategies. The NAPA and the BCCSAP are the two major national strategy papers for addressing climate change including impacts on food security. They provide an estimate of the approximate cost for implementing the projects. The BCCSAP, in particular, provides a plan for financing the projects.²²¹ The BCCSAP is basically funded by the CCTF and the CCRF. The CCTF provides a fundamental source of financial resources for implementing the adaptation projects in Bangladesh. The sources of funds under the CCTA are government sources and the fund will be used to implement government development projects that aim to address climate change impacts, including the projects mentioned in the BCCSAP.²²² Bangladesh local government may apply for fund for addressing climate change impacts, such as adaptation actions for food security. However, the approval of local government project is dependent on the decision of the ‘trust board’ that is represented by the government ministries. The absence of representation from different stakeholders and the dominance of the central government ministries in the ‘trust board’ may influence the approval procedures.

On the other hand, the CCRF, that is basically funded by the foreign donors and the World Bank, does not clearly provide the scope to local government to access the fund for implementing the adaptation projects.²²³ The existing projects funded by the BCCRF are only implemented by World Bank and government ministries.²²⁴ Therefore, CCRF does not provide any hope for local government in Bangladesh and the only accessible fund for Bangladesh local government to implement adaptation programs is the CCTF. The NBSAP, the government strategy for addressing

²²¹ BCCSAP, above n 14, 31.

²²² *Climate Change Trust Act 2010* (Bangladesh) s7.

²²³ *Applicant Eligibility* (2013) Bangladesh Climate Change Resilience Fund < <https://www.bccrf-bd.org/GrantProcessPage.html>>.

²²⁴ *Projects* (2013) Bangladesh Climate Change Resilience Fund < <https://www.bccrf-bd.org/Project.html>>.

biodiversity conservation in Bangladesh that is important for food security and is also impacted by climate change, also emphasise on resource mobilization.²²⁵ However, it does not clearly mention about resourcing local government for facilitating their role mentioned in BDA.

Some sources of financial resources for implementing the roles of local government in Bangladesh are included in the local government laws. Each of the local government laws in Bangladesh specifies the sources of funds and vests authority on local government institutions to spend from these funds. For example, the UPA specifies the sources of funds, such as grants from government and other sources from taxes, rates, fees and tolls, government loans, gifts, funds acquired from penalties and incomes from rent and lease deeds.²²⁶ The UPA also specifies the sectors of expenditure such as salaries of staff, implementation of vested roles and government payments.²²⁷ The UPA does not specify any funds for the role of local government in implementing the roles relevant to addressing climate impacted food security. However, the UPA has a provision that states that the UPs are authorized to use the funds according to respective local needs in order to meet the objectives of the UPA.²²⁸ This provision enables UPs to use the fund to implement roles that could contribute to address climate change impacts on food security. However, the UPA puts some legal constraints on using the funds involving meeting some compulsory expenditure first, such as staff salaries, operational costs, government payments and payments instructed by courts.²²⁹ Also, the UPs have to meet the financial requirements to discharge the regular duties such as waste management, maintenance of infrastructure and other business as the usual functions mentioned in schedule four of the UPA.²³⁰ Therefore, the issue whether local government can allocate funds to address climate impacted food security may be considered only after meeting these legal and basic duties. Similar financial arrangements are also evident for other local government institutions in Bangladesh.²³¹

The above discussion shows that the major funds for implementing adaptation actions in Bangladesh are not practically and reliably accessible by local government institutions.

²²⁵ Government of Bangladesh, above n 161.

²²⁶ *Local Government (Union Parishad) Act 2009* (Bangladesh) s 53 and sch 4.

²²⁷ *Ibid* s 54.

²²⁸ *Ibid* s 54(2).

²²⁹ *Ibid* s 56.

²³⁰ See *Ibid* sch 4.

²³¹ See, *Ibid* s 35; *Local Government (Paurashava) Act 2009* (Bangladesh) sch 3, 6-8; *Local Government (City Corporation) Act 2009* (Bangladesh) sch 3; *Zila Parishad Act 2009* (Bangladesh) sch 2.

Bangladesh is heavily dependent on foreign grants to implement adaptation projects where local government has little involvement. The local government laws provide some legal authority to use funds by the local governments. However, legally binding duties and financial guarantees for local government to address climate change impacts on food security are not evident in the laws, policies and strategies discussed.

2 National policies should encourage cooperation, coordination and partnership with local government

The importance of coordinated action and cooperation among stakeholders are evident in the Bangladesh legal and institutional frameworks for local government, climate change and food security. The local government laws in Bangladesh provide scope for coordinating and cooperating adaptation actions. The scope of coordination and cooperation by UP is mentioned under the activities of ‘wards’ in the UPA.²³² Every ward can cooperate and coordinate local actions regarding social welfare and development initiatives through ‘ward meetings’.²³³ Paurashava can also coordinate the activities of government officials and departments²³⁴ and could also coordinate their own development actions.²³⁵ Coordinating and cooperating in the development activities of UpP and Paurashava has been mentioned as a fundamental task of ZP.²³⁶ However, the mechanisms of coordination and cooperation are not specified in the ZPA.

The need for coordinated action to achieve food security is evident in the NFP.²³⁷ The NFP acknowledges local authorities’ capacity for coordinating food security actions. The PoA and the CIP elaborate the NFP goals of food security by providing a number of programs. However, the reflection of local government involvement to coordinate and cooperate food security programs is absent in both the CIP and the PoA, except for few instances. The NAP, on the other hand, specifically mentions the importance of local government cooperation for effective delivery of local extension services.²³⁸ Other food security policies ignored the role of local government.

²³² *Local Government (Union Parishad) Act 2009* (Bangladesh) s 6(1).

²³³ *Ibid* s 6 (1).

²³⁴ *Local Government (Paurashava) Act 2009* (Bangladesh) s 50.

²³⁵ *Ibid* s 59.

²³⁶ *Zila Parishad Act 2009* (Bangladesh) sch 1.

²³⁷ NFP, above n 71, Section E.

²³⁸ NAP, above n 92, 10.

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There is inconsistency among the major food security policies about local government's involvement in cooperation and coordination in Bangladesh.

The importance of coordinated action and cooperation among stakeholders is visible in both the NAPA and the BCCSAP. A number of adaptation programs have been suggested to address food security issues in both of these two documents. For implementation of each of these programs, the roles of multiple government and non-government organizations have been mentioned, which indicates the importance of coordination for action as well as cooperation among them. Both the NAPA and the BCCSAP have included local government for implementation of a few programs however the mechanisms of coordination and cooperation are not specified in these documents. The scope of local government to coordinate and cooperate with influential stakeholders, like government agencies, is problematic. The scope of local government to jointly work with government agencies is possible under the EP and the NSDS, but both these documents could not specify the mechanisms for such joint actions.

Therefore, the concept of cooperation and coordination by involving local government is inconsistent in Bangladesh's legal and institutional frameworks, and in most cases the mechanisms of cooperation and coordination are not specified.

3 Local government planning, decision making process and service delivery should be improved

The importance of local government participation and involvement in national policy formulation and implementation programs is very important in international guidelines.²³⁹ National policies and implementation programs addressing food security issues threatened by climate change require government involvement in the process so that local issues and needs are addressed properly. Some of the suggestions for local government involvement in national policy and implementation include the implementing of national plans under Agenda 21, strategies and actions for national biological diversity, settlement programs and sustainable development programs.

There are few examples available about the role of local government in national policy dialogues in Bangladesh. The NFP in particular has mentioned the decision making capacity of local

²³⁹ See section III (B) and III (C) of chapter 3 for details.

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authorities in policies and strategies.²⁴⁰ The FSA has made provision for local government representation at the ‘National Food Safety Advisory Committee’ to provide advisory services regarding national policies for food safety.²⁴¹

Stakeholder consultation is practiced in Bangladesh in national policy preparation processes. The PoA was prepared by consultation with different stakeholders such as government ministries and divisions, NGOs, the academia and development partners.²⁴² Similarly, CIP process also followed consultation with stakeholders such as the government ministries, NGOs along with local farmers and civil society organizations.²⁴³ However, consultation with local government institutions is not evident in both CIP and PoA process. Local government was not also consulted during the BCCSAP process. The only evidence of consultation with local government is in the NAPA preparation process where local government representatives were consulted in the regional workshops.²⁴⁴ However, the NAPA does not show any significant involvement of local government the ‘NAPA programs’. The involvement other stakeholders, those were consulted in policy preparation process (excluding government ministries and departments), in implementing food security and climate change adaptation strategies are not also much evident in the policy documents. However, the presence of government ministries and departments in the consultation process and involvement in implementation of strategies are very much evident. This indicates a biasness towards central government authorities in the stakeholder consultation process for policy preparation in Bangladesh.

Lack of local government involvement is also evident in the other environmental and sustainable development policies. The BDA does not include local government into the ‘National Committee on Biological Diversity’, which is comprised of a number of central government ministries and departments.²⁴⁵ The NRSD involves local government only at local level policy planning,²⁴⁶ while the national institutional framework for addressing climate change mentioned in the SNCB does not include local government and the NSDS does not mention the importance of the role of local

²⁴⁰ NFP, above n 71, Section E.

²⁴¹ *Food Safety Act 2013* (Bangladesh), s 3

²⁴² PoA, above n 82, 8.

²⁴³ CIP, above n 88, 13.

²⁴⁴ NAPA, above n 111, i, xv, 43.

²⁴⁵ *Bangladesh Biological Diversity Act 2012* (Bangladesh) s 8.

²⁴⁶ NRSD, above n 146, x.

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government in national policies. However, some roles of local government have been identified in the food security, climate change and sustainable development policies and strategies that may reflect that local government role is acknowledged for implementing national policies and strategies, although the scope of such roles is not wide enough.

Bangladesh local government laws also do not empower local government institutions to participate in national policy dialogues. None of the local government laws mention any requirement to involve local government in the national policy making process. Also, the basic roles of local government mentioned in the local government laws do not include the linkage of the roles with the national implementation process. Therefore, there is no legal requirement for the local government to follow the national implementation process.

The importance of preparing local development plans, and local implementation, is consistent in global policy responses for addressing local impacts of climate change on food security. Agenda 21 in particular notes local government roles in preparing and implementing 'local agenda 21' to address local sustainable development concerns.²⁴⁷ Some other international policy responses such as the CBD, the Habitat II program, UNCSO and the Program for the Further Implementation of Agenda 21 promote local government legal capacity to prepare local plans and implement them to address food security issues impacted by climate change.²⁴⁸

Some food security and climate change policies and strategies in Bangladesh refer to local planning by local government. The NAP requires local government to make local action plans for assisting extension services and ²⁴⁹the NWP requires local bodies to prepare, implement and coordinate sub-regional and local water management plans²⁵⁰ and regulate use of water in drought prone areas.²⁵¹ The sustainable development strategies of Bangladesh give importance to facilitating local government capacity to prepare and implement development plans. The NRSD promotes capacity building of UP and Ward Councils to prepare and implement local sustainable

²⁴⁷ *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992).

²⁴⁸ See section III of chapter 2.

²⁴⁹ NAP, above n 92, 10.

²⁵⁰ NWP, above n 107, 6. Planning and management of water resources by analysing hydrological, social, political, economic and environmental factors have been recommended important in the NWP. For this, preparation of a National Water Management Plan (NWMP) has been advised.

²⁵¹ NWP, above n 107, 8.

development plans,²⁵² the SNCB also emphasizes decentralizing development planning authorities to local level.²⁵³ Local government's functions to plan and implement local development programs are included in the laws and strategies. However, neither the local government laws nor the food security and sustainable development strategies, have direct provisions for the resources that would be required to implement local plans.

4 Local government roles should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing the vulnerability of local people

The importance of local government role in addressing impacts of climate change on food security has been well articulated in international policy responses.²⁵⁴ Bangladesh provides some limited roles of local government in this context. The discussion of different laws, policies and strategies in this chapter, as well as the previous section on 'Local Government Roles in Climate Impacted Food Security: Summary of the Findings', has provided a detailed review of the current Bangladesh local government roles.²⁵⁵ The discussion has showed that some of the existing roles of local government in Bangladesh have potential to contribute to address climate change impacts, improve resilience and adaptive capacity and reduce the vulnerability of local people. The discussion also found that many important roles of local government to address climate impacted food security are not evident in the existing roles of Bangladesh local government.²⁵⁶

The roles of local government are generally reflected in local government laws that are general in nature and do not provide necessary description about the specific role of local government. For example, the UPA states local government's role in environmental development and conservation²⁵⁷ is important for addressing climate impacted food security. Unfortunately, this statement does not specify what particular types of roles that local government should undertake to improve the environment. Also, similar roles are evident for other local government institutions. There is no mention of the coordination and cooperation criteria for development and conservation of a particular environmentally important concern that falls within the jurisdiction of a number of

²⁵² NRSD, above n 163, 34.

²⁵³ SNCB, above n 170, 208.

²⁵⁴ See section III (E) of chapter 1 for details

²⁵⁵ See section IV (A) of this Chapter.

²⁵⁶ Ibid.

²⁵⁷ *Local Government (Union Parishad) Act 2009* (Bangladesh) sch 2.

local government institutions. The Environmental Policy of Bangladesh also does not specify any such role of local government. Sector specific laws, policies and strategies such as food security, climate change and agriculture laws, policies and strategies do not acknowledge the local government laws for defining the roles of local government. This is an indication of a lack of an integrated approach in Bangladesh legal and institutional frameworks for strengthening local government roles, particularly in regards to climate impacted food security.

The major climate change response strategies (the NAPA and the BCCSAP) and food security strategies (the NFP and the PoA) of Bangladesh scarcely mention the roles of local government in Bangladesh. This is a reflection of lack of acknowledgement of local government capacity and importance in addressing climate change impacts and food security in Bangladesh. The NAPA and the BCCSAP specify some projects that could contribute to improving resilience, adaptive capacity and reduce vulnerability of local people without requiring local government involvement in these types of projects. Also, the NFP provides detailed guidelines about functions that could improve food security in Bangladesh and some activities relevant to improving resilience and adaptive capacities and reducing vulnerabilities against the impacts of climate change. However, the NFP does not recognize local government as a major player. The NBSAP emphasizes on local government role in conserving biodiversity by building awareness among local people, facilitating local stakeholders in decision making and developing infrastructure.²⁵⁸ However, it does not provide any specific outline for local government role in the strategies adopted for addressing biodiversity loss due to climate change.

5 Good local governance principles should be adopted in the local government legal and institutional frameworks

The qualities of good local governance have been discussed in Chapter 3 under the Commonwealth Principles on Good Practice for Local Democracy and Good Governance and the International Guidelines on Decentralization and the Strengthening of Local Authorities.²⁵⁹ The discussion showed some basic features that a legal and institutional framework should adopt to ensure good local governance. Some of the basic features of good local governance are constitutional and legal recognition of local government, election procedures for local representation, defined legal

²⁵⁸ NBSAP, above n 160.

²⁵⁹ See section III (E) of chapter 3.

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framework and specific roles, scope for public participation and equity in service delivery.²⁶⁰ The importance of good local governance for an effective role of local government is also reflected in many other international policy responses.²⁶¹

The ability to elect local representatives is one of the principles for good local governance that was incorporated in the Aberdeen Agenda.²⁶² *The Constitution of the People's Republic of Bangladesh 1972* refers to local democracy by requiring elected public representatives at every tier of the government.²⁶³ The local government laws of Bangladesh also include election procedures to ensure elected public representation at the local government institutions.²⁶⁴ Subsequently, the Constitution has also acknowledged the existence of local government in Bangladesh and specified its basic roles and the state obligation to prepare necessary laws.²⁶⁵ These provisions of the Constitution represent a major legal recognition of local government and its role in the governance systems of Bangladesh and it is a major strength of the legal and institutional frameworks of Bangladesh. Bangladesh has also formulated local government laws for different types of local government institutions. The local government laws specifically include the formation of local government, its power and authority, responsibility and roles. The local government laws specify audit procedures to ensure accountability of local government expenditure which reflect the provision of transparency. Local government laws in Bangladesh make local government accountable to central government for its roles; but, such accountability towards local people is not much evident in the laws.²⁶⁶

Bangladesh governance strategies for food security and climate change explicitly refer to equity in service delivery, with special emphasis upon the needs of the vulnerable people, but do not include local government in those activities. The local government laws of Bangladesh specify the duties of the respective local government institutions without specifying the basis of discharging

²⁶⁰ Ibid.

²⁶¹ Ibid.

²⁶² 'The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance' (Commonwealth Local Government Forum, April 2005)4 <http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

²⁶³ *The Constitution of the People's Republic of Bangladesh 1972* art 11.

²⁶⁴ See section II (G) of chapter 5.

²⁶⁵ *The Constitution of the People's Republic of Bangladesh 1972*, art 59-60.

²⁶⁶ See, eg, Hossain Zillur Rahman and Tofael Ahmed, 'Strategy on Local government strengthening' (Background paper for 7th five year plan, Planning Commission, Ministry of Planning, Bangladesh, Dhaka) <<http://www.plancomm.gov.bd/7th-five-year-plan/>>;

duties. Therefore, the conditions for ensuring equity and inclusiveness are not evident in the legal and institutional frameworks of Bangladesh. The existing roles of local government are not inclusive of climate impacted food security for local government in Bangladesh laws, policies and strategies.

In 2009, Bangladesh enacted the Right to Information Act (RTI).²⁶⁷ According to this law every citizen has a right to access information from the ‘authority’²⁶⁸ including local government.²⁶⁹ According to the provisions of this law,²⁷⁰ most of the local government laws in Bangladesh have incorporated the provisions for access to information which uphold the scope of improving accountability of local government as well as the scope of local people to access to information.

This discussion shows that some good local governance principles are already embedded in the Bangladesh legal and institutional frameworks for strengthening local government. However, the discussion also showed some scope for improving governance at the local level.

C Legal and Institutional Principles and Guidelines Adopted in Bangladesh to Strengthen Local Government Roles in Climate Impacted Food Security: Summary of the Findings

Local government laws, food security and climate change laws, policies and strategies in Bangladesh and the comparative analysis in the previous section indicate some legal and institutional principles and guidelines that Bangladesh legal and institutional frameworks adopted to strengthen the roles of local government in climate impacted food security. Table 5.5 provides a summary of the legal and institutional principles and guidelines identified in this chapter.

Table 5.5 Legal and institutional principles and guidelines adopted in Bangladesh to strengthen local government role in climate impacted food security

Bangladesh Local Government Laws	Bangladesh Food Security Laws, Policies and Strategies	Bangladesh Climate Change and Sustainable Development Policies and Strategies
Legal and Institutional Principles and Guidelines for Strengthening Local Government		

²⁶⁷ *Right to Information Act 2009* (Bangladesh) preamble.

²⁶⁸ Ibid s 4.

²⁶⁹ Ibid s 2.

²⁷⁰ Ibid s 6; this section specifies about disclosing information upon request by respective authority.

<ul style="list-style-type: none"> 1) Legal and constitutional recognition of local government 2) Run by elected public representatives 3) Ensure women representation in the local government 4) Roles to improve food security and address environmental concerns 5) Sources of financial resources to implement tasks 5) Authority to make local development plan and local regulations 7) Coordinate local development works and functions of different stakeholders at local level 8) Some procedures for ensuring accountability and good governance such as access to information, public participation in decision making, financial audit, control and monitoring of central government. 	<ul style="list-style-type: none"> 1) Emphasis on coordinated action in food security 2) Importance on institutional capacity building 3) Recognition of local government role in facilitating local community development activities 4) Importance of local government role in resource natural management 5) Recognition of local government representation at national policy making (only under Food Safety Act). 	<ul style="list-style-type: none"> 1) Emphasis on capacity building of local government for effective climate adaptation 2) Importance on joint action by different organizations including local government 3) Highlight on financial arrangements for ensuring implementation of climate adaptation actions 4) Recognition of local government authority on the management of local biological diversity 5) Importance of decentralizing adaptation planning and service delivery at local level.
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It is evident from table 5.5 that legal and institutional principles and guidelines adopted by Bangladesh to strengthen local government roles in climate impacted food security have ingredients that indicate a similarity with the principles and guidelines developed in Chapter 3 from the recommendations of international policy responses.

V CONCLUSION

The purpose of this chapter was to address the final part of second research question that seeks to identify the existing local government roles in Bangladesh and the legal and institutional principles and guidelines that are facilitating the existing role in addressing climate change impacts on local food security. The discussion identified a number of existing roles of Bangladesh local government that have relevance in addressing climate impacted food security. Some legal and institutional principles and guidelines are evident in the existing legal frameworks of Bangladesh (see Table 5.5) that are contributing to strengthen the existing roles of local government, particularly in addressing climate impacted food security issues.

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The results suggest that the Bangladesh legal and institutional framework for local government, food security and climate change has some properties that have been mentioned in global policy responses. However, there are a number of weaknesses in the existing framework such as:

1. Lack of access to use the climate change fund
2. Less specific roles to address climate impacted food security
3. Absence of coordination and cooperation mechanisms
4. Sources of resources and control over resources to implement plans are not well defined
5. Lack of appropriate capacity building, dependency on central government
6. Lack of recognition in national policies on food security and climate change; and
7. Absence of direction about basic standards for service delivery including environmental values, equity and human rights.

The findings suggest scope for further development. The next and final chapter will address this by recommending legal and institutional guidelines and principles that Bangladesh could adopt to improve local government roles in addressing climate impacted food security as the nation moves into a future where the nature and scale of climate impacts will severely impact local food security for a rapidly growing population with diminishing natural resources.

CHAPTER 6: RECOMMENDATIONS FOR STRENGTHENING THE ROLE OF LOCAL GOVERNMENT IN CLIMATE CHANGE IMPACTED FOOD SECURITY IN BANGLADESH

The final research question to be considered in this thesis is “what legal and institutional guidelines and principles would strengthen the role of Bangladesh local government in addressing food security impacted by climate change” and this requires a synthesis and critique of the relevant international principles and guidelines and the comparative examination of their adoption in Australia, Indonesia and Bangladesh. This concluding part of the thesis provides these recommendations for the future development of the legal and institutional guidelines considering the specific context of climate impacted food security in Bangladesh.

I INTRODUCTION

The impacts of climate change on food security, particularly at the local level, are growing with the increasing abnormalities in the climate system due to global warming.¹ Improving local governance by involving local government has been seen by many international legal and policy responses as an essential strategy to enhance resilience.² Many international legal and policy responses as well as reputed international bodies like the Food and Agriculture Organization (FAO) and the Intergovernmental Panel on Climate Change (IPCC) have recommended a number of legal and institutional principles and guidelines for addressing climate change impacts by improving local governance.³ This thesis has examined these principles and guidelines and has identified a number of such principles and guidelines that are relevant to strengthening the role of local government in climate impacted food security.

The previous chapters have addressed the first two research questions. Chapters 2 identified the future roles of local government in climate impacted food security by analysing the recommendations of some important international policy responses such as Agenda 21, the *CBD*,

¹ Christopher B Field et al., ‘Summary for Policymakers’ in Christopher B Field et al (eds) *Climate Change 2014: Impacts, Adaptation, and Vulnerability Part A Global and Sectoral Aspects Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, London, 2014).

² See, eg, *Agenda 21: Programme of Action for Sustainable Development*, U.N. GAOR, 46th Sess., Agenda Item 21, UN Doc A/Conf.151/26 (1992) <<http://www.un.org/geninfo/bp/envirp2.html>>; Richard J T Klein et al, *Adaptation Opportunities, constraints, and limits*, in Christopher B Field et al. *Climate Change 2014 Impacts Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University Press, 2014) 899, 908

³ See chapter 3 for appropriate legal and institutional principles and guidelines.

the *CCD* and the World Summit on Food Security 2009. Some reports of the FAO and the AR5 of the IPCC also provided essential future roles of local government to address climate impacted food security. The findings of chapter 2 addressed the first part of the first research question: what are the future roles of local government to address climate impacted food security?

The second part of the first research question was: what international legal and institutional principles and guidelines have been recommended to strengthen the future roles? Chapter 3 aimed to identify internationally recommended legal and institutional principles and guidelines to strengthen the role of local government in climate impacted food security by examining the outcomes of major international policy responses and international reports. The identified legal and institutional principles and guidelines were further examined and five international legal and institutional principles and guidelines for strengthening the role of local government in climate impacted food security were developed.⁴ These are not new principles and guidelines; rather, they represent an integrated form of the international legal and institutional principles for strengthening the role of local government in the specific context of climate impacted food security.

In chapters 4 and 5, the thesis addressed the second research question: what current legal and institutional principles and guidelines have been adopted by local government to address food security impacted by climate change in a selected developed country (Australia) and developing countries (Indonesia and Bangladesh). Chapter 4, in particular, examined the laws and strategies on local government, climate change and food security of New South Wales, Australia and Indonesia that have a reputation of improved local government systems in this regard. Chapter 4 identified the current roles of local government in respect of climate impacted food security in these two countries and the legal and institutional principles and guidelines that contribute to strengthening these roles.

The legal and institutional principles and guidelines followed in national frameworks may vary from one country to another depending on the vulnerabilities due to the impacts of climate change, governance priorities for strengthening the role of local government as well as governance structures for addressing problems. The comparative examples of the legal and institutional structures of both Australia and Indonesia have provided some insights about the current principles

⁴ See section III of chapter 3 for the developed five legal and institutional principles and guidelines for strengthening local government role.

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and guidelines followed to involve local government in environmental and food security issues as well as the difference in the legal and institutional frameworks of both the countries.

The Bangladesh legal and institutional structures for local government, food security and addressing climate change impact have their own pattern and priorities. Chapter 5 has identified a number of legal and institutional principles and guidelines that have been adopted in the Bangladesh legal and institutional frameworks for strengthening the existing local government roles.⁵ The findings address the Bangladesh part of the second research question.

Chapter 5 analysed the existing legal and institutional framework for strengthening local government roles in climate impacted food security of Bangladesh under the five international principles and guidelines developed in chapter 3. The analysis identified a lack of access to use climate change funds, less specific roles to address climate impacted food security, an absence of coordination and cooperation mechanisms, poorly defined sources of resources and lack of control over resources to implement plans, a lack of appropriate capacity building, a dependency on central government, a lack of recognition in national policies on food security and climate change and an absence of direction about basic standards for service delivery including environmental values, equity and human rights.

The analysis and findings of the previous chapters provided the basis to critique the strengths and weaknesses in the existing Bangladesh approach to strengthen the role of local government in climate impacted food security. This thesis is intended to identify the scope of further development of Bangladesh by making appropriate recommendations for the future development of legal and institutional principles and guidelines for Bangladesh. This final chapter will recommend the appropriate legal and institutional principles and guidelines for Bangladesh based on the international and comparative analysis of legal and institutional principles and guidelines that could improve the local government's role in Bangladesh. This chapter will provide a brief summary of the findings of the previous chapters before proceeding with recommending appropriate legal and institutional principles and guidelines for strengthening the Bangladesh local government role in climate impacted food security.

⁵ See section III of chapter 5.

II REVIEW OF THE FINDINGS OF THE PREVIOUS CHAPTERS

A Climate Change Impact on Food Security and Future Roles of Local Government

The impacts of climate change on the four pillars of food security: availability, access, utilization and stability are now clearly evident from various scientific observations.⁶ The IPCC in the AR5 has provided a series of scientific evidence about the past, present and future impacts of climate change on food security.⁷ The FAO has also reported the impacts of climate change on food security and necessary actions to reduce vulnerability.⁸ There is also considerable research available on the impacts of climate change on food security under perspectives of different countries. The AR5 and the FAO reports provide up-to-date information of available global research on food security and impacts of climate change.⁹ Chapter 2 examined the reports of the IPCC (AR5) and the FAO to identify the present and future impacts of climate change on food security, particularly at the local level. Chapter 2 also identified the impacts of climate change on Bangladesh food security from various reports and strategic papers of the Government of Bangladesh. Table 6.1 summarizes the major impacts of climate change on the four pillars of food security identified in chapter 2.

Table 6.1: Summary of the major impacts of climate change on four pillars of food security

Impacts on Food Availability	Impact on Food Access	Impact on Food Utilization	Impact on Food Stability
1) Loss of major crop production 2) Decrease in freshwater and marine fisheries 3) Decrease in animal fodder and grazing land	1) Increase in food price 2) Loss of livelihood sources (assets, agricultural land, water bodies, forests, local jobs) 3) Damage to infrastructure.	1) Scarcity of pure drinking water 2) Loss of calorie and nutritional values in food intakes 3) Outbreak of diseases.	1) Loss of basic infrastructure (roads, markets, power supply, shelters) 2) Loss of investment in agriculture 3) Decrease in farm numbers and farm related jobs

⁶ See section II(B)(1) of chapter 2 for detailed impacts of climate change on food security.

⁷ John R Porter et al., 'Food Security and Food Production Systems' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014)485.

⁸ Food and Agriculture Organization, *Climate Change and Food Security: A Framework Document* (Rome, 2008) < <http://www.fao.org/forestry/15538-079b31d45081fe9c3dbc6ff34de4807e4.pdf>>.

⁹ Vicente Barros and Chris Field, 'Preface' in Christopher B Field et al. (eds), *Climate Change 2014 Impacts, Adaptation and Vulnerability Part A: Global and Sectoral Aspects* (Cambridge University press, 2014); The FAO, 'Climate Change and Food Security: A Framework Document' (2008) < <http://www.fao.org/forestry/15538-079b31d45081fe9c3dbc6ff34de4807e4.pdf>>.

4) Agricultural soil degradation 5) Scarcity of water for irrigation.			4) Biodiversity loss 5) Degradation of natural resources.
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In order to address the impacts of climate change on local food security, illustrated in table 6.1, the roles of important stakeholders have been specified in international policy responses. The role of local government has prominence in the international policy responses and reports of the IPCC and the FAO for addressing climate change impacts, particularly on food security. Chapter 2 examined the international recommendations and provided the future roles of local government in climate impacted food security. A summary of the findings is given in table 6.2.

Table 6.2 Future Roles of Local Government in Climate Impacted Food Security

Future Roles of Local Government in Addressing Climate Change Impact on Food Security
Recommendations of the Fifth Assessment Report of the IPCC
<ol style="list-style-type: none"> 1. Local government should work to place the local needs for climate adaptation into national policies 2. The implication of national adaptation goals, policies, actions and investment should be translated to the local communities and stakeholders by the local government 3. Local government should assess the role and importance of other local level stakeholders for addressing climate change impacts, especially natural disasters 4. Uphold the importance of local knowledge to the higher authority in addressing the local impacts of climate change 5. Distribute climate risks and act as a mediator among various levels of governments, society and political processes 6. Establish incentive structures to facilitate both individual and collective adaptation action 7. Support adaptation initiatives, encourage coordination among various levels of government, and facilitate implementation of adaptation action 8. Mainstreaming adaptation actions in local planning, and 9. Improve basic services such as water and sanitation, housing and infrastructure.¹⁰
Recommendations of the Report of the World Commission on Environment and Development
<ol style="list-style-type: none"> 10. Provide sustainable livelihood to the poor farmers 11. Protect subsistence farmers' rights 12. Develop integrated rural development strategies 13. Develop systems to facilitate food production, and 14. Develop transportation and distribution services.¹¹

¹⁰ Anokhin, Yury et al, 'Adaptation Needs and Options' in Christopher B. Field et al (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2013) 833, 842-843.

¹¹ *Report of the World Commission on Environment and Development: Our Common Future*, UNGAOR, 42 sess, Supp No 25, UN Doc A/42/25 (4 August 1987) annex, Chapter 5[80-103] < <http://www.un-documents.net/ocf-05.htm#IV>>.

Recommendation of the Convention on Biological Diversity
15. Implement strategic biodiversity plans by integrating biodiversity issues in development planning including agriculture, water, transport and waste management. ¹²
Recommendations of the Convention to Combat Desertification
16. Increase local awareness 17. Improve early warning systems, and 18. Promote local participation. ¹³
Recommendations of the Agenda 21
19. Organize regular dialogue with local community for adopting local agenda 21 20. Facilitate consultation for household awareness building on sustainable development 21. Facilitate participation of local stakeholders in decision making for consensus building, and 22. Foster exchange of information, experience and technical expertise among local stakeholders. ¹⁴
Recommendations of the World Summit on Food Security 2009
23. Development of measures to manage the effects of excessive price volatility and of adverse weather events. Promote well-functioning markets, better market information, transparency and competition. Smallholder farmers should be given special focus 24. Providing appropriate technologies and practices to smallholder farmers to improve the resilience of farming systems against the impacts of climate change 25. Encouragement of the consumption of foods, particularly those available locally, that contribute to diversified and balanced diets, as the best means of addressing micronutrient deficiencies and other forms of malnutrition, especially among vulnerable groups. ¹⁵
Recommendations of the FAO
26. Involvement of farmers in decision making process for adopting better agriculture planning and its implementation 27. Use of local resources more efficiently by increasing investment in agriculture and rural infrastructure so that the vulnerable people may gain benefits 28. Improving local food stability by increasing food availability, access and utilization 29. Partnership brokering role by facilitating collaboration among local stakeholders involved in local food security, ¹⁶ and 30. The recommendations of future roles provided in table 2.2 of chapter 2 ¹⁷

Source: Section III of Chapter 2 of this thesis.

¹² *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Twelfth Meeting* UN Doc. No UNEP/CBD/COP/DEC/Xii/9 (17 October, 2014) Decision ix/28.

¹³ *United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa* UN Doc No. A/AC.241/27 (12 September 1994)

¹⁴ *Agenda 21: Programme of Action for Sustainable Development* UNGAOR, 46th sess, Agenda Item 21, UN Doc A/Conf.151/26 (1992) para 28.3.

¹⁵ *'Declaration of the World Summit on Food Security'* WSFS 2009/2 (November 2009) principle 1 <http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf>.

¹⁶ Food and Agriculture Organization, *'Climate-Smart Agriculture Sourcebook'* (Rome, 2013) 554 <www.fao.org/docrep/018/i3325e/i3325e.pdf>.

¹⁷ See Table 2.2 of Chapter 2.

Table 6.2 indicates a wide scope of future roles that local government could play in addressing climate change impacts on food security. The next section will provide the summary of the identified international legal and institutional principles and guidelines developed in chapter 3.

B Summary of the International Legal and Institutional Principles and Guidelines

International policy responses, while suggesting future roles of local government in responding to climate change impacts on food security, have also provided some legal and institutional principles and guidelines that could improve local governance of climate impacted food security and strengthen local government role. In order to identify relevant international legal and institutional principles and guidelines, chapter 3 examined the outcomes of some international policy responses in the areas of environment and sustainable development, climate change adaptation and mitigation, food security and good governance such as the UNCED, the CBD, the United Nations Sustainable Development Summit 2015 (UNSDS) and SDGs, Conference of the Parties (COP) 21 of the *UNFCCC* and the *Paris Agreement*, the World Summits on Food Security, the Aarhus Convention and the Aberdeen Agenda for good local governance. The analysis of the outcomes of international policy responses indicated a number of legal and institutional principles for strengthening local governance in respective fields. Chapter 3 took an integrated approach by considering the identified principles and guidelines together and developed a set of legal and institutional principles and guidelines that could contribute to strengthen local government roles in climate change impacts on food security. The developed legal and institutional principles and guidelines are:

1. Resources should be made available for implementing the roles of local government
2. National policies should encourage cooperation, coordination and partnerships with local government
3. Local government planning, decision making process and service delivery should be improved
4. Local government roles should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing the vulnerability of local people, and
5. Good local governance principles should be adopted in the local government legal and institutional frameworks.

This abovementioned five legal and institutional principles and guidelines are a combination of the international legal and international principles and guidelines recommended by international policy responses. These five principles and guidelines provided the basis for examining the legal and institutional frameworks of Australia, Indonesia and Bangladesh that were applied in chapters 4 and 5.

C Summary of the Findings from Comparative Examples of Australia and Indonesia

Both Australia and Indonesia have reputations for strong local government systems, improved food security and success in addressing climate change impacts.¹⁸ Chapter 4 examined the laws, strategies and policies of Australia and Indonesia that are relevant to local governance, food security and the environment in order to address the second research question: to identify the legal and institutional principles and guidelines that have been contributing to strengthen the local government role in food security in these two countries, particularly addressing climate change impacts. The Australian example considered New South Wales (NSW), one of the six states of Australia, as a local government in Australia, constituted according to the state constitution.¹⁹ The analysis of the Australian example identified some legal and institutional principles and guidelines that provide a wider scope to the local government institutions in NSW to contribute to address climate change impacts on food security.

The Environmental Planning and Assessment (EPA) Act enables NSW local governments (NSWLG) to address climate change impacts, including impacts on food security, through the provision of a Local Environment Plan (LEP). A standard guideline, known as ‘The Standard Instrument Principal Local Environment Plan’²⁰ or SIPLEP, has been provided to facilitate preparation of an LEP. The SIPLEP enables each local government in NSW to prepare LEPs according to local concerns. The SIPLEP provides guidelines for agricultural land use,

¹⁸ David Michael and Rachel Crossley, 'Food Security, Risk Management and Climate Change: ' (Research Report, National Climate Change Adaptation Research Facility, 2012) 4-5 <<http://www.nccarf.edu.au/publications/food-security-risk-management-and-climate-change>>; Food and Agriculture Organization, 'The State of Food Insecurity in the World 2014: Strengthening the enabling government to improve food security and nutrition' (Rome, 2014) 16, 20 <<http://www.fao.org/publications/sofi/2014/en/>>.

¹⁹ Australian Government, 'National Food Plan Green Paper 2012' (Department of Agriculture, fisheries and forest, July 2012) 31 <http://www.agriculture.gov.au/Style%20Library/Images/DAFF/_data/assets/pdffile/0009/2175156/national-food-plan-green-paper-072012.pdf>.

²⁰ New South Wales Government, *Standard Instrument Principal Local Environment Plan* (11 March 2016) NSW Legislation <<http://www.legislation.nsw.gov.au/#/view/EPI/2006/155a>>.

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management and conservation of natural resources and other environmental management and planning. It specifies some basic objectives for environmental planning, however the NSW local governments are also authorised to consider additional objectives that are consistent with their local priorities.

There are some other principles and guidelines that contribute to strengthening the role of local government in NSW, such as provisions of public participation, adoption of the principle of ecologically sustainable development, defined powers, roles and responsibilities and incorporation of good governance elements such as elected local representation, transparency, accountability and specific sources of resources.

Despite the abovementioned legal and institutional principles and guidelines, the NSWLGs are constrained by some factors such as limited understanding of climate risks, poor leadership, a lack of resources and a lack of support from the higher tiers of the government. Australia is considering more coordinated action to address climate change impacts on food security by involving local government and other stakeholders in decision making processes. The importance of adopting ‘pro-active’ action and a ‘no-regrets’ policy in the legal and institutional framework of NSW has also been raised.

Indonesia, on the other hand, has a different local government system than Australia. The Indonesian local government system is constituted according to the national constitution of Indonesia and contains three types of local government: provinces, regencies and municipalities.²¹ Chapter 4 identified three basic legal and institutional principles that contribute to strengthen local government roles in Indonesia for addressing food security, particularly those under the potential threats of climate change, such as:

1. The ‘Principle of Autonomy’ is the key to empowering local government and its role

²¹ *Indonesian Constitution* (Indonesia) ch vi and art 18 (1); Butt, Simon, 'Regional Autonomy and Legal Disorder: The Proliferation of Local Laws in Indonesia' (2010) 32(2) *Sydney Law Review* 177; *Law 32/2004 on Regional Administration* (Indonesia), art 2; In Indonesia, local governments are known as Regional Authorities (RA). However, this chapter will keep using the term ‘local government’ in Indonesian context to avoid multiple terminology of a common subject.

2. The relation with central government and among local governments for administrative, financial and natural resources use through coordination and cooperation is essential for the effective role of local government, and
3. Integration of climate change impacts and adaptation actions as well as food security functions in local development planning is essential.²²

The abovementioned three legal and institutional principles and guidelines indicate that Indonesia has adopted a system that attempts to empower local government through following the ‘principles of autonomy’ and at the same time emphasises cooperation and coordination among different tiers of the government to address food security and climate change concerns. Indonesian legal and institutional frameworks also adopted some other principles such as legal and constitutional recognition of local government, provisions for appropriate allocation of resources, defined duties of local government and participation in the national decision making processes.²³ Despite the presence of the legal and institutional principles and guidelines, the roles of Indonesian local government are constrained because of a lack of a proper flow of financial and institutional support, a lack of application of the food laws and the weak capacity of the Food Security Council that is the apex authority to ensure food security in Indonesia.²⁴

D Present Legal and Institutional Principles and Guidelines to Strengthen Local Government in Bangladesh and the Weaknesses

Chapter 5 examined the laws, strategies and policies of Bangladesh in local government, food security and climate change and identified some legal and institutional principles and guidelines that contribute to strengthening the current roles of local government in Bangladesh. In summary, the legal and institutional principles and guidelines identified in chapter 5 are:

1. Legal and constitutional recognition of local government
2. Run by elected public representatives
3. Ensure women representation in the local government

²² See section IX of chapter 4

²³ See section IX of chapter 4

²⁴ Food and Agriculture Organization, above n 18, 31.

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4. Roles to improve food security and address environmental concerns
5. Sources of financial resources to implement tasks
6. Authority to make local development plans and local regulations
7. Coordinate local development works and functions of different stakeholders at the local level
8. Some procedures for ensuring accountability and good governance, such as access to information, public participation in decision making, financial audit, control and monitoring of central government.
9. Emphasis on coordinated action in food security
10. Importance of institutional capacity building
11. Recognition of the role of local government in facilitating local community development activities
12. Importance of local government role in resource natural management
13. Recognition of local government representation at the national policy making level (only under Food Safety Act)
14. Emphasis on capacity building of local government for effective climate adaptation
15. Importance of joint action by different organizations including local government
16. Highlight financial arrangements to ensure implementation of climate adaptation actions
17. Recognition of local government authority on the management of local biological diversity, and
18. Importance of decentralizing adaptation planning and service delivery at the local level.²⁵

Chapter 5 also analysed the existing laws, policies and strategies of Bangladesh to indicate Bangladesh's approaches to adopting the five international legal and institutional principles and guidelines for strengthening the role of local government in climate impacted food security that were developed in chapter 3. The analysis found some strengths and weaknesses in Bangladesh's approach. Table 6.3 provides a summary of the strengths and weaknesses in Bangladesh's

²⁵ See section III of chapter 5.

approach to strengthen the role of local government in climate impacted food security under the five international legal and institutional principles and guidelines.

Table 6.3: Strengths and weaknesses in Bangladesh's approach to strengthen the role of local government in climate impacted food security under the five international legal and institutional principles and guidelines

International legal and institutional principles and guidelines	Strengths in Bangladesh's Legal and Institutional Frameworks	Weaknesses in Bangladesh's Legal and Institutional Frameworks
1) Resources should be made available for implementing the roles of local government	1) Local government laws specified sources of financial resources. 2) Guidelines to use government grants for local development involve issues are related to improving food security and environmental concerns. 3) Local governments have authority to raise funds from local sources and spend according to local priorities. 4) Resource availability has priority in climate change and food security policies and strategies.	1) Local governments do not have access to a major climate change fund (i.e. Climate Change Trust Fund). 2) Funds or resources for implementing local adaptation actions are not specified in laws/strategies/policies. 3) Locally raised resources (from taxes and other sources) have to meet a number of legally binding compulsory expenditures. 4) Limited flexibility in using central government grants.
2) National policies should encourage cooperation, coordination and partnership with local government	1) Some scope of coordinating role is mentioned in the local government laws. 2) Local government as an important local level coordinator is recognized in some food security policies (e.g. NFP, NAP) and some other strategies (e.g. EP and NSDS). 3) The importance of coordination among implementing agencies for climate adaptation is visible in national strategies to address climate change.	1) Major food security policies and strategies do not involve local government in national food security programs. 2) There is not much involvement of local government in Bangladesh national strategies (BCCSAP and NAPA) to address climate impacts. 3) Coordination and cooperation mechanisms among stakeholders are not specified.
3) Local government planning,	1) The importance of local action plans for improving some elements of food security is evident in some	1) There is no guideline to address climate change impacts, particularly to

<p>decision making process and service delivery should be improved</p>	<p>policies such as the NAP, the NWP. 2) Capacity building of local government in preparing local sustainable development plan has been emphasised. 3) Local government laws have provision to prepare long and short term development plans.</p>	<p>improve food security in local planning. 2) The importance of adopting ‘local agenda’ is absent. 3) Local development responsibilities are vested on LGs, however the importance of sustainable development and principles such as the precautionary principle and intergenerational equity are not mentioned.</p>
<p>4) Local government role should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing vulnerability of local people</p>	<p>1) A number of local government roles mentioned in local government laws are relevant to improving food security and climate change impacts.</p>	<p>1) The roles are mentioned in general terms and do not provide any description about specific function of local government. 2) The roles of different types of local government mentioned at different local government laws are disjointed, and overlapping. There is no mention of coordination among local government institutions and their mechanisms of addressing particular concerns such as impacts of climate change on food security. 3) Local government roles for implementing climate change and food security strategies are not much evident. 4) Local government laws do not include the emerging roles of local government such as impacts of climate change on food security.</p>
<p>5) Good local governance principles should be adopted in the local government legal and institutional frameworks</p>	<p>1) Legal and constitutional recognition of local government 2) Run by elected public representatives. 3) Women representation in local government. 4) Some procedures of ensuring accountability and good governance such as access to information, public participation in decision making, financial audit, control and monitoring of central government.</p>	<p>1) Limited local autonomy. 2) Local government accountability towards local people is not well defined. 3) Public participation in decision making is not widely encouraged. 4) Local government has little flexibility in spending local development funds. 5) Service delivery principles are not specified.</p>

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The weaknesses in the legal and institutional framework of Bangladesh in strengthening local government roles in addressing climate change impacts on food security, mentioned in table 6.3, provide the scope of future developments. The next section will recommend legal and institutional principles and guidelines that could address these weaknesses and strengthen local government roles in Bangladesh in climate change impacts on food security. This will also address the third and final research question of this research: what legal and institutional principles and guidelines would strengthen the role of Bangladesh local government in addressing food security impacted by climate change.

III RECOMMENDATIONS FOR STRENGTHENING LOCAL GOVERNMENT ROLES IN BANGLADESH IN ADDRESSING CLIMATE CHANGE IMPACTS ON FOOD SECURITY

The discussions of Bangladesh's legal and institutional framework in the previous sections of this chapter, as well as in chapter 5, indicate that strengthening local government roles in Bangladesh will make it necessary to tackle basic weaknesses, such as:

1. Problems in governance
2. Lack of acknowledgement
3. Inconsistency in laws, strategies and policies
4. Lack of guideline to facilitate local government roles
5. Lack of access to resources
6. Absence of coordination and cooperation mechanisms, and
7. Limited scope to participate in national decision making platforms.

International policy responses on food security, climate change, sustainable development and good governance provided many recommendations to address these weaknesses.²⁶ Chapter 3 analysed the recommendations and identified five basic legal and institutional principles and guidelines that may improve local government role in addressing climate impacted food security. Also, the comparative examples of Australia and Indonesia (discussed in chapter 4) provided some national examples of effective legal and institutional principles that are contributing to strengthen local government roles in addressing climate impacted food security in those two countries.

²⁶ See Chapter 3 for the recommendations of international policy responses.

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This thesis, having discussed the weaknesses in the Bangladesh local government systems mentioned above, and the recommendations in international and comparative examples, recommends the following legal and institutional principles and guidelines that may strengthen the local government role in addressing climate change impacts on food security in Bangladesh and thus address the third and final research question of this thesis i.e what are the legal and institutional principles and guidelines that would strengthen the role of Bangladesh local government in addressing food security impacted by climate change. The recommendations are:

1. Good local governance principles should be applied for strengthening local government.
2. The importance of local government roles in addressing climate change impacts on food security should be acknowledged properly.
3. Local government roles in climate impacted food security should be consistently reflected in climate change, food security and local government laws in Bangladesh.
4. Capacity building and detailed guidelines to address climate change impacts on food security should be provided to local government.
5. Local government should have access to resources to facilitate local adaptation programs.
6. Guidelines for cooperation and coordination with other stakeholders should be provided.

The following sections explain each of the recommended legal and institutional principles and guidelines for future development in the national context of Bangladesh.

A Good local governance principles should be applied for strengthening local government

The future roles of local government in addressing climate change impacts on food security, identified in chapter 2, require improvements in local governance. International policy responses acknowledged this emerging need of developing local governance and suggested some good local governance principles in the context of climate change impacts for example the Commonwealth Principles on Good Practice for Local Democracy and Good Governance suggested some good

local governance principles,²⁷ the International Guidelines on Decentralization and the Strengthening of Local Authorities recognized governance and democracy as one of the major areas for strengthening local government²⁸ and the Aarhus Convention provided guidelines for public participation and access to information and justice for improving local governance.²⁹

The comparative examples of Australia and Indonesia have also shown that many good governance principles and guidelines are evident in the legal and institutional frameworks of these two countries, particularly in laws, strategies and policies that contribute to strengthening the role of local government in addressing climate impacted food security. The Local Government Act (LGA) of NSW specifies the governance principles for local government roles in NSW of Australia, such as the principles of public participation, equity in service delivery, appropriate planning, involving community, encouraging ecologically sustainable development for environmental management and coordination with a higher authority (state authority).³⁰ Similar emphasis on good governance principles is also evident in Indonesia where the ‘principle of local autonomy’ is the basis of strengthening the role of local government.³¹ The Law of Regional Administration (LRA) of Indonesia also emphasises the principle of legal certainty, the principle of good governance, the principle of public interest, the principles of transparency, the principle of proportion, the principle of professionalism, the principle of accountability, the principle of efficiency and the principle of effectiveness.³² These properties in the legal and institutional frameworks for local government of both Australia and Indonesia provide an indication of the relationship between good local governance and the strong role of local government in food security impacted by climate change.

In the analysis of Bangladesh’s laws, policies and strategies in the context of strengthening the role of local government in addressing climate change impacts on food security, some weaknesses in the local governance system of Bangladesh were identified, such as:

²⁷ ‘The Aberdeen Agenda: Commonwealth Principles on Good Practice for Local Democracy and Good Governance’ (Commonwealth Local Government Forum, April 2005) < http://www.clgf.org.uk/default/assets/File/CLGF_statements/Aberdeen-agenda.pdf>.

²⁸ ‘International Guidelines on Decentralization and Strengthening of Local Authorities’ (Guideline, UN-HABITAT, 2007) < http://www.uclg.org/sites/default/files/guidelines_0.pdf>.

²⁹ *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, opened for signature 25 June, 1998, 2161 UNTS 447 (entered into force 30 October, 2001).

³⁰ *Local Government Act 1993* (NSW) s 8.

³¹ *Indonesian Constitution* (Indonesia) art 18(2);

³² *Law 32/2004 on Regional Administration* (Indonesia) art 20.

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1. Limited local autonomy
2. Accountability towards local people not well defined
3. Public participation in decision making not widely encouraged
4. Little flexibility in spending local development funds, and
5. Service delivery principles not specified.³³

These weaknesses in the Bangladesh local governance system are also evident in other research. A study by Sharmin, Haque and Islam argued that the Bangladesh local government system lacks local autonomy because of excessive control of central government on local government authority, roles and jurisdictions.³⁴ Other research also found that Bangladesh local government has limited control over local resources, too many laws and regulations imposed by central government, a lack of political accountability, a domination of local elites, corruption, a lack of bureaucratic accountability and a lack of accountability towards local people by the elected local representatives.³⁵ Chowdhury showed that Bangladesh's environmental laws and strategies significantly lack the provision of facilitating public participation in environmental decision making.³⁶ This is also evident in Bangladesh local government laws where the encouragement for public participation is not much evident.³⁷ Also, the basis of service delivery by local government, such as good governance principles, is not evident in local government laws.

In order to address these weaknesses in Bangladesh local governance, some research suggests the application of some good local governance principles such as social accountability, peoples' participation, more flexibility on using funds from local resources, defining jurisdictional

³³ See section IV of chapter 5 and Table 6.3

³⁴ Zayeda Sharmin, Md. Amdadul Haque and Fakhrul Islam, 'Problems of Strengthening Local Government in Bangladesh: Towards a Comprehensive Solution' (2011) 15(1) *SUST Studies* 76, 78.

³⁵ See Pranab Kumar Panday, 'Local Government System in Bangladesh: How Far is it Decentralised?' (2011) 9(3) *Lex Localis* 205, 218-220; Sharif N. As-Saber, and Md Fazle Rabbi, 'Democratisation of the Upazila Parishad and Its Impact on Responsiveness and Accountability: Myths versus Realities' (2009) 4(2) *JOAAG* 53, 53; Hossain Zillur Rahman and Tofael Ahmed, *Strategy on Local Government Strengthening* (Background paper for 7th five year plan, Planning Commission, Ministry of Planning, Bangladesh, Dhaka) <<http://www.plancomm.gov.bd/7th-five-year-plan/>>; *ibid* 76.

³⁶ Junayed Ahmed Chowdhury, *Public Participation in Bangladesh's Response to Climate Change Issues* (Vertex Chambers, Advocates for International Development 5 March 2013) <<http://a4id.org/resources/search/all?keys=Bangladesh&cat=102>>

³⁷ *Ibid*.

boundaries of local governments, reforming field administration and enhancing the constitutional protection of local government authority and functions.³⁸

Therefore, integrating good local governance principles into the legal and institutional frameworks of Bangladesh provides an essential basis to strengthen local government roles. This would eventually contribute to strengthen the role of local government in climate impacted food security, as evident in international and comparative examples.

B The importance of local government roles in addressing climate change impacts on food security should be acknowledged properly

The Bangladesh local government and its roles are acknowledged in *The Constitution of the People's Republic of Bangladesh 1972*. The Bangladesh Constitution provides some references to address food security concerns and climate change impacts however it does not provide any specific reference to involve local government in addressing food security and climate change concerns. The National Adaptation Programme of Action (NAPA) of Bangladesh and the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), the two major strategies to address climate change impacts in Bangladesh including impacts on food security, show that local government is not acknowledged as an important stakeholder to address climate change in Bangladesh (see chapter 5) and this is reflected in the projects where local government involvement is rare. Similarly, the National Food Policy (NFP) of Bangladesh and the NFP Plan of Action (PoA), the two major food security policies in Bangladesh, do not emphasise local government roles. There is some discrete mention of local government roles in other laws related to food security and climate change in Bangladesh, but this is inadequate recognition of the importance of local government in addressing climate change impacts on food security in Bangladesh. The local government laws, on the other hand, do not mention climate change impacts at all. Therefore, specific roles to address climate change are also not evident in the local government laws in Bangladesh.

The importance of local government roles in international policy responses is growing. Chapter 2 identified the future roles of local government from the outcomes of some international policy responses that also provided some evidence of international acknowledgement of local government

³⁸ Sharmin, Haque and Islam, above n 34, 83; Rahman and Ahmed, above n 35, 25.

roles in addressing climate impacted food security. Agenda 21 in particular highlighted local government as a major stakeholder to implement ‘local agenda 21’. Similarly, the role of local government emphasises achieving the SDGs,³⁹ while the IPCC AR5 prioritized local government roles in adaptation planning and implementation⁴⁰ and the CBD emphasised managing local biological diversity.⁴¹ In Indonesia, both the Law on Environmental Protection and Management (EPM) and the National Action Plan for Climate Change Adaptation (NAPCCA) acknowledged the impacts of climate change and importance of local government roles. Similarly, in Australia, the National Climate Resilience and Adaptation Strategy (NCRAS) acknowledges the impacts of climate change on food security and emphasises local action through local government roles.⁴²

Acknowledgement of the importance and potential of local government in climate impacted food security creates the basic platform in a legal and institutional framework for generating the scope for future roles of local government. Such trends are evident in the international policy responses. Acknowledging the importance of local government in Bangladesh legal and institutional frameworks would strengthen local government roles in addressing climate impacted food security.

C Local government roles in climate impacted food security should be consistently reflected in climate change, food security and local government laws in Bangladesh

Rahman and Ahmed state that Bangladesh local government laws and rules are inconsistent, functions and jurisdictions overlap with many other authorities and are inconsistent with social transformation.⁴³ Such inconsistency is also evident in the existing laws, strategies and policies of Bangladesh in defining roles of local government for addressing climate change impacts on food security. The local government laws provide a good reference for local government roles in addressing climate change impacts on food security. However, the roles of local government in major food security (NFP and PoA) and climate change (NAPA and BCCSAP) policies and

³⁹ *Transforming Our World: the 2030 Agenda for Sustainable Development*, GA Res70/1, 70th Sess, Agenda Item 15 and 116, UN Doc A/Res/70/1 (21 October 2015) para 45.

⁴⁰ Christopher B. Field et al, above n 1, 26; Yury et al, above n 10, 836.

⁴¹ *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Twelfth Meeting* UN Doc. No UNEP/CBD/COP/DEC/Xii/9 (17 October, 2014) Decision ix/28.

⁴² Australian Government, ‘National Climate Resilience and Adaptation Strategy 2015’ (Department of Environment, Australia, 2015) 6.

⁴³ Rahman and Ahmed, above n 35, 9.

strategies are not very evident. The NWP places importance on involving local government in local water management, but such importance of involving local government is not visible in water related climate change projects in both the NAPA and the BCCSAP. Similar inconsistency is visible between the Bangladesh Biological Diversity Act (BDA) and the BCCSAP. The BDA acknowledges the importance of the ‘biological diversity management committee’ at the local government level and emphasises the function of this committee. On the other hand, the BCCSAP does not acknowledge local government roles in its climate change project on ‘Monitoring of ecosystem and biodiversity changes and their impacts’.⁴⁴ Similarly, the NFP provides an indication of the importance of local government roles in coordinating local food policy, which is only discretely reflected in local government laws and other food security policies and laws. Also, the Climate Change Trust Act (CCTA) does not mention local government access to Climate Change Trust Funds despite keeping the objective of improving the resilience of local people.

The Indonesian example showed that local government roles and involvement are consistently emphasised in the Indonesian Constitution, the LRA, the Food Law and in the EPM. The Constitution of Indonesia provides the basic guideline of involving local government in public affairs which is elaborated in the LRA. The importance of local government provided in the Constitution and the LRA have been reflected in the Food Law and the EPM, the two major laws for understanding stakeholder roles in addressing climate change impacts on food security in Indonesia. Both the Food Law and the EPM provide a detailed outline of local government roles. In the state of NSW in Australia, the importance and involvement of local government is specified in the LGA. Such importance is reflected in the EPA where the LEPs can provide a detailed guideline for local planning to address food security and environmental concerns. A number of other laws in NSW relevant to addressing climate change impacts and food security also provide some references to local government roles.

Therefore, it is important that the roles of local government in Bangladesh in addressing climate change impacts on food security are consistently reflected in the relevant laws, policies and strategies. This will also reflect Bangladesh’s intention to apply the good local governance

⁴⁴ See Government of Bangladesh, *Bangladesh Climate Change Strategy and Action Plan (BCCSAP)* (Ministry of Environment and Forests, Bangladesh, 2009)57.

principles and acknowledgements for strengthening local government roles in climate impacted food security.

D Capacity building and detailed guidelines to address climate change impacts on food security should be provided for local government

The discussion of Bangladesh local government, climate change and food security laws, policies and strategies in Chapter 5 identified some roles of local government that are related to addressing climate change impacts on food security. However, the laws, policies and strategies do not provide any guidelines for implementing the roles. Also, the roles of local government in Bangladesh are general in nature and not specific to any issues, such as roles in climate change impacts on food security. Similar criticism of the roles of Bangladesh local government is also evident in other research. Rahman and Ahmed suggest that the roles of local government in Bangladesh are not legally binding and not specific and that the roles of other central government departments working at the local level are specific or facilitated by necessary guidelines.⁴⁵

This supports the recommendation to provide detailed guidelines for Bangladesh's local governments to discharge their duties, particularly in relation to climate impacted food security. The benefit of such guidelines is evident in comparative examples. The example of NSW, Australia illustrates guidelines for local government to facilitate its roles. The SIPLEP, under the EPA, provides a guideline for local government in NSW to prepare local environmental plans that has options for addressing climate change impacts on food security. The SIPLEP provides some basic guidelines such as objectives, permissions and prohibitions, land use criteria, and development standards for the local government. It also provides flexibility to NSWLGs to include additional objectives and criteria according to local needs and priorities. This unique guideline facilitates local government roles in implementing the roles mentioned in different laws and policies in NSW, such as implementing the roles that could improve climate change impacts on food security.

The importance of improving local government capacities is well acknowledged in international policy responses. Chapter 3 developed two legal and institutional principles and guidelines that

⁴⁵ Rahman and Ahmed, above n 35, 11.

emphasise capacity building and provide guidelines for local government roles. The two principles are:

1. Local government planning, decision making process and service delivery should be improved, and
2. Local government roles should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing vulnerability of local people.

These two principles, together, indicate the importance of capacity building, as well as developing a guideline that would enable local government to address climate change impacts, improve resilience and adaptive capacity as well as reduce vulnerability by improving planning, decision making and service delivery capacities. International policy responses such as Agenda 21, the 2002 World Summit on Sustainable Development (WSSD), the 2012 United Nations Conference on Sustainable Development (UNCSD), the Millennium Summit in 2000 and the 2015 UNSDS provide guidelines to improve capacities of local government.⁴⁶ The Australian example provides a good reference in a national context in this case. Bangladesh legal and institutional frameworks for local government roles in addressing climate change impacts may, therefore, adopt the recommendation of providing detailed guidelines, as well as improve capacities, to facilitate implementing the roles of local government.

E Local government should have access to resources to facilitate local adaptation programs

Availability of resources is one of the preconditions identified in chapter 3 for strengthening local government roles in addressing climate change impacts through implementing adaptation programs. Local government laws in Bangladesh specify sources of funding for implementing roles. However, Bangladesh local governments do not get enough funds to implement local development programs,⁴⁷ let alone implement climate adaptation programs. Therefore, the traditional kinds of resources cannot meet the financial needs to implement local government roles in addressing climate change impacts on food security.

In order to meet the financial requirements to address climate change strategies, Bangladesh created a ‘Climate Change Trust Fund’ through enacting the Climate Change Trust Act 2010

⁴⁶ See Section II of chapter 3.

⁴⁷ See, eg, Sharmin, Haque and Islam, above n 34, 81; Rahman and Ahmed, above n 35, 19; As-Saber and Rabbi, above n 35, 53; Panday, above n 35, 205.

(CCTA). One of the objectives of the Trust is to improve institutional and social capacity of local people and human resource development. However, the CCTA does not incorporate provisions for accessing funds from the Trust by the local government. The Trust Board also does not include local government as a member. Similarly, food security policies and strategies in Bangladesh do not provide resources for local government to address local food security concerns. Therefore, resourcing local government to implement its tasks is poorly addressed in Bangladesh laws, policies and strategies for local government, food security and climate change.

The comparative examples, particularly the Indonesian local government system, provide a strong reference and guideline to make resources available for local government. The LRA specifies financial arrangements for local government institutions of Indonesia for implementing its tasks (articles 2 and 15). It also specifies the use of natural resources and the proceeds from natural resources between local government and central government (articles 17 and 18). The LRA also provides detailed guidelines of sources of resources, spending mechanisms and guidelines and sharing of resources (chapter 8). Moreover, the climate change strategy of Indonesia (NAPCCA) specifically emphasises funding local government for implementing local adaptation programs.⁴⁸

The existing resource scarcity of Bangladesh local government and the weaknesses in laws, strategies and policies to address funding problems of local government, suggest that ensuring availability of appropriate resources to local government and improving access to climate change trust funds will be necessary for strengthening roles in addressing climate change impacts such as impacts on food security.

F Guideline of cooperation and coordination with other stakeholders should be provided

The laws, policies and strategies of Bangladesh relevant to local government, climate change and food security specifies some coordination roles of local government and indicate cooperation among stakeholders. The NAPA and the BCCSAP in particular involve multiple agencies to implement each of the climate change projects that indicate the necessity of cooperation and coordination among the agencies. Similar emphasis is evident in the NFP, where coordination

⁴⁸ Government of Indonesia, *National Action Plan for Climate Change Adaptation (NAPCCA)* (Ministry of National Development Planning, Indonesia, 2013) 19 <https://gc21.giz.de/ibt/var/app/wp342deP/1443/wp-content/uploads/filebase/programme-info/RAN-API_Synthesis_Report_2013.pdf>.

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among stakeholders, including local government, has been given. Some local government laws of Bangladesh also provide for a cooperation and coordination role for local government.

Although some laws, policies and strategies include cooperation and coordination among stakeholders and some involvement of local government, a specific guideline about how cooperation and coordination among stakeholders, particularly the role of local government in the coordination and cooperation process, is absent. Specific guidelines for local government roles in cooperation and coordination are necessary to strengthen local government roles; in many situations, central government authorities dominate the coordination processes.⁴⁹

The importance of cooperation and coordinated action by stakeholders for addressing environmental concerns such as climate change impacts on food security has been gaining prominence in governance theories, international policy responses and national legal and institutional frameworks. Adaptive governance approaches, in particular, emphasise cooperation and coordination among stakeholders. Chapter 3 discussed the legal and institutional guidelines for developing cooperation and coordination among stakeholders.⁵⁰ Similar emphasis on cooperation and coordination is also evident in the recommendations of international policy responses. Chapter 3 developed integrated legal and institutional principles and guidelines supported by the recommendations of international policy responses on cooperation and coordination.

Providing guidelines for coordination and cooperation by local government is evident in the Indonesian example. The Indonesian Constitution specifies the principles and areas of cooperation and coordination between central government and local governments⁵¹ that were further elaborated in the LRA.⁵²

Therefore, the emerging governance strategy of coordination and cooperation among stakeholders for addressing climate change impacts, emphasized in Bangladesh legal and institutional frameworks, could strengthen local government roles in Bangladesh by developing specific

⁴⁹ Sharmin, Haque and Islam, above n 34, 78-81, 76; Rahman and Ahmed, above n 35, 11-15; As-Saber and Rabbi, above n 35, 63.

⁵⁰ See section III(B) of Chapter 3.

⁵¹ *Indonesian Constitution* (Indonesia) arts 18A.

⁵² *Law 32/2004 on Regional Administration* (Indonesia) arts 2, 15, 16, 17.

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guidelines that are evident in the comparative examples, the adaptive governance model and recommendations of international policy responses.

CHAPTER 7: CONCLUDING REMARKS AND SCOPE OF FUTURE RESEARCH

This research observes the growing impacts of climate change on local food security and admits that local government should play a wider role than its current roles to improve food security. The research also acknowledges that strengthening local government roles to address future climate actions needs greater changes, such as changes in governance approaches towards addressing climate change impacts according to the scientific evidence of future impacts of climate change and options for action (mitigation and adaptation) as well as changes in global and national political movements to facilitate the governance processes. This is a big expectation. The research also admits that scope of improving food security has been influenced by social, economic, environmental and cultural dimensions and invites huge challenges. Addressing all of these issues together was not feasible in this thesis.

This research limits this huge scope in two ways. First, it considers legal and institutional principles and guidelines as a means to strengthen local government roles in climate impacted food security. Secondly, it focuses on Australia, Indonesia and Bangladesh legal and institutional frameworks, with the major focus on strengthening Bangladesh local government. Further, three research questions were identified:

1. What are the future roles of local government to address climate impacted food security? What international legal and institutional principles and guidelines have been recommended to strengthen the future roles?
2. What current legal and institutional principles and guidelines have been adopted by local government to address food security impacted by climate change in a selected developed country (Australia) and developing countries (Indonesia and Bangladesh)?, and
3. What legal and institutional principles and guidelines would strengthen the role of Bangladesh local government in addressing food security impacted by climate change?

The first chapter provided background information about the importance of this research, the second chapter addressed the first part of the first research question and identified some future roles of local government in addressing climate change impacts on food security from the outcomes of some international policy responses and reports of the IPCC and the FAO.¹ The

¹ See section III of chapter 2.

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findings showed a wide scope of future roles for local government in addressing climate change impacts on food security.

Chapter 3 addressed the second part of the first research question. It examined the outcomes of a number of international policy responses in the areas of the environment and sustainable development, food security, climate change and good governance and identified some international legal and institutional principles and guidelines for strengthening the role of local government. Chapter 3 integrated the findings and developed five sets of international legal and institutional principles and guidelines for strengthening local government roles in addressing climate change impacts on food security. The developed international legal and institutional principles and guidelines are:

1. Resources should be made available for implementing the roles of local government
2. National policies should encourage cooperation, coordination and partnership with local government
3. Local government planning, the decision making process and service delivery should be improved
4. Local government roles should include addressing climate change impacts, improving resilience and adaptive capacity, and reducing vulnerability of local people, and
5. Good local governance principles should be adopted in the local government legal and institutional frameworks.²

These five principles and guidelines were examined in Australian, Indonesian and Bangladesh contexts. Chapters 4 and 5 examined the legal and institutional frameworks for strengthening local government for food security impacted by climate change in NSW, Australia, Indonesia and Bangladesh. The findings showed some legal and institutional principles and guidelines that are strengthening local government roles in these countries and thus answered the second research question. The findings also showed some weaknesses in the legal and institutional structures in these countries in the context of addressing climate change impacts and improving food security.

The weaknesses in the Bangladesh legal and institutional frameworks for strengthening local government in climate impacted food security provided the scope in this chapter, for

² See section III of chapter 3.

recommending appropriate legal and institutional principles and guidelines for Bangladesh.³ Chapter 6 has examined the weaknesses of selected Bangladesh laws, strategies and policies under the international legal and institutional principles and guidelines and experiences from the comparative examples of Australia and Indonesia and recommended six legal and institutional principles and guidelines for strengthening Bangladesh local government to address the future roles in improving climate change impacted food security. The six recommendations are:

1. Good local governance principles should be applied for strengthening local government
2. The importance of local government roles in addressing climate change impacts on food security should be acknowledged properly
3. Local government roles in climate impacted food security should be consistently reflected in climate change, food security and local government laws in Bangladesh
4. Capacity building and detailed guidelines to address climate change impacts on food security should be provided to local government.
5. Local government should have access to resources to facilitate local adaptation programs, and
6. Guideline of cooperation and coordination with other stakeholders should be provided.⁴

These six recommendations answered the third and final research question of this research and also provide some future scope of study for strengthening local government.

It was mentioned at the beginning paragraph of this chapter that the scope of strengthening local government in improving food security impacted by climate change is huge. This thesis has only addressed a smaller part of this huge scope and identified some basic legal and institutional principles and guidelines. Therefore, future studies could concentrate on other social, economic, political, environmental and cultural factors influencing local government roles in improving climate impacted food security. In the context of Bangladesh, future research may further concentrate on capacity building for local government institutions in relation to the specific types and nature of climate change impacts and the impacts on specific communities with particular

³ See section II (D) of chapter 6.

⁴ See section III of chapter 6.

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focus on applicable legal and institutional frameworks. This research will provide a strong foundation for the detailed development of legal and institutional frameworks and their implementation, in Bangladesh and other developing countries. It also provides some insight for future research on the strengthening of local government roles in climate change impacted food security.

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