

(続紙 1)

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論文題目	Enhancement of Drought Risk Management Policy and Actions Incorporating Farmer's Adaptive Practices in Northwestern Bangladesh		
（論文内容の要旨） The drought risk arises from climate change causing sufferings to hundreds of millions of people. Rising pressures of drought risk, caused through the impacts of climate change increasingly affect on number of sectors and resources, including agriculture, water availability and quality, and ecosystems. It has a significant impact on farmer's livelihood as they mainly depend on agriculture for their livelihood subsistence. For any drought driven consequences, farmers are in the forefront of facing its impacts. Particularly Rajshahi and Chapai Nawabganj located at northwestern part of Bangladesh are exposed to climate related drought disaster. Currently this insidious disaster drought, is taking place in this region more frequently than the past years. Low rainfall accompanied with high temperature accelerates drought severity in this area and leads to crop failure and loss of livestock, which in turn increases farmer's livelihood insecurity. Thus, the aim of the research, is to understand the resilience of different socio-economic, institutional and physical aspects of a drought affected upazila (sub-district). Following this, contextualized action measures for drought risk management are proposed in form of a Drought Adaptive Practices (DAP) to enhance farmer's drought resilience in context of northwestern Bangladesh. The thesis is divided into 3 parts and consists of 7 chapters. Part I includes chapter one, chapter two and chapter three. This part provides the overview of drought and the issue of adaptation in contrast with climate change. Part II includes chapter four and chapter five that explains the approach for measuring the drought resilience and describes various types of adaptive practices of farmers to cope with drought. It also picked up farmers recommended DAP which help to enhance the drought resilience in northwestern part of Bangladesh and in particular in Rajshahi and Chapai Nawabganj district. Part III includes chapter six and chapter seven. In chapter six, it analyses the policy and actions for drought risk management and in chapter seven, it highlights the key findings of the results. Chapter one introduces the background, objectives and questions of this research. This chapter briefly describes the problems of climate change and drought impacts and significance of adaptation towards drought by the policy level. It also describes the			

methodological approach of the research and presents research location. Finally, it provides the outline of the thesis.

Chapter two provides detailed overview of drought. It discusses drought's concept, causes, types, characteristics, and various impacts. The linkages among climate change, drought and adaptive practices are also explained in this chapter.

Chapter three reviews the background information of Bangladesh, drought scenario, drought impacts and various risk management actions at different levels such as institutional, infrastructural, and individual and community level.

Chapter four examines the drought resilience at the institutional level. Therefore, this chapter provides the methodology of Socio-economic Institutional and Physical (SIP) approach to assess the existing level of different socio-economic, institutional and physical conditions of a drought affected area. It also demonstrates the results of a study where the SIP approach was conducted among 14 upazilas in two severe drought-prone districts in northwestern part of Bangladesh.

Chapter five provides a meticulous study that is carried out at farmer's level. Considering farmer's demand and local circumstances, this chapter highlights suitable DAP that are obtained from secondary indicators of SIP approach. Based on the drought adaptive options, farmers recommended and prioritized suitable DAP that help them to enhance their resilience towards drought.

Chapter six presents a framework for enhancing drought risk management policy and actions for northwestern Bangladesh. Therefore, these DAP that come from farmer's prioritization and recommendation are integrated into SIP approach. To implement through national level to local level, these DAP are further assembled into short-term (during drought period), mid-term (two to three years) and long-term (three to five years) basis and identified specific role of stakeholders. It further discusses the issues which need to be addressed in order to make a clear policy in a form of DAP to enhance drought resilience of northwestern Bangladesh.

Chapter seven summarizes the key findings of this research and provides the scope for further research in the field of drought resilience in northwestern areas of Bangladesh.

(続紙 2)

(論文審査の結果の要旨)

本論文は、気象災害が多発するバングラデシュ北西部における干ばつリスク軽減の手法について論考したものである。同国の北西部では、気候の変化および人的要因の累積効果により、干ばつの頻度が上昇していることから、農業生産セクターが多大な影響を受けている。本論文は、現地でのインタビュー調査、アンケート調査および各種の収集データを基に、干ばつリスク軽減の手法開発と政策提言を行ったもので、評価すべき主な点は次の通りである：

1. SIPという3つの要素（Socio-economic：社会経済、Institutional：制度、Physical：基盤）、11の一次指標、55の二次指標から成る新たな評価手法を開発し、バングラデシュ北西部の2地区（district）の14小区域（sub-district）の分析に活用した。分析の結果、SIP指数が高い小区域は、農業管理、灌漑システム、住民の対応力、行政およびNGOとの協働関係を有することが判明した。更に、地方自治体の制度および意思決定能力は、干ばつ管理に与える大きな要因であることが明らかになった。
2. 14小区域すべての灌漑・非灌漑農地の農民718名を対象とし、干ばつの影響と個人およびコミュニティの適応行動に関するアンケート調査を行った。その結果、個人レベルでは、作物の多様化、マンゴー栽培、農業普及指導の支援に対して優先度が高く、コミュニティレベルでは、共同野菜農園、マンゴー園およびコミュニティのヘルスセンターの整備に対して優先度が高いことを明らかにした。上記で示した適応行動の実施には、様々な関係者の参画が必須であり、地域NGOがコミュニティの優先事項と自治体による活動をつなげる重要な仲介役を担うことを明確にした。
3. SIP分析および60の優先適応行動を組み合わせ、干ばつリスク軽減にかかる短期・中期・長期的な行動を提案した。また、全国および地方レベルにて、数回に及ぶワークショップを実施し、ステークホルダー分析を行うことにより、全国レベルの政策の枠組に地方レベルの適応行動の優先事項を取り入れる統合的な手法を提案した。

本論文は、バングラデシュで最も干ばつの発生が多い2つの地区の分析を行い、統合的に干ばつへの対応力を分析する手法を開発・活用し、農民の適応行動の特定および優先度付けを行った。この手法は、同様の課題を持つ他地域の問題解決に貢献するものと考えられる。よって、本論文は博士(地球環境学)の学位論文として価値あるものと認める。また、平成24年8月20日、論文内容とそれに関連した事項について試問を行った結果、合格と認めた。

論文内容の要旨及び審査の結果の要旨は、本学学術情報リポジトリに掲載し、公表とする。特許申請、雑誌掲載等の関係により、学位授与後即日公表することに支障がある場合は、以下に公表可能とする日付を記入すること。

要旨公開可能日： 年 月 日以降