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論文題目	Towards Public Participation for Effective Air Pollution Risk Management: Case Studies from Mongolia and Iceland (効果的な大気汚染リスクマネジメントのための住民参加に向けて: モンゴルとアイスランドの事例から)		
<p>(論文内容の要旨)</p> <p>The overall aim of this dissertation is to elucidate authentic opinions of stakeholders and residents regarding air pollution issues through participatory approaches to identify critical challenges and barriers that have limited the success of various government policies that tackle air pollution problems in the ger areas of Ulaanbaatar, Mongolia. In order to do this, this study attempts to: 1) review the existing laws and policies concerning air pollution reduction; 2) analyze them by taking into account the perspectives of stakeholders and residents through participatory approaches; 3) collect and organize public discourse and community preferences on air pollution issues; and 4) suggest policy directions and several recommendations. The study highlights the need to consider communities views and challenges when developing air pollution risk management strategies. The findings from this study provide suggestions for addressing the challenges that communities face when stakeholders involved in air pollution risk management plan to improve air pollution problems.</p> <p>This study is also interested in understanding if the awareness and perception concerning air pollution in a developed country, Iceland, differed greatly from the situation in a developing country, Mongolia. Thus, a questionnaire survey on air pollution awareness and perceptions of ger residents in Ulaanbaatar conducted in the author's previous study was applied in Reykjavik, Iceland. This thesis consists of seven chapters described in detail below.</p> <p>Chapter 1 (Introduction) addresses the research introduction, research questions, and research aims. This study was initiated with the question: Why have air pollution problems in Ulaanbaatar, Mongolia, persisted for decades and are still ongoing despite various stakeholders' numerous efforts to solve the problems? One of the reasons may be that the projects and policies for air pollution risk management have been pushed forward without a thorough survey into the ger areas, so they do not reflect the residents' actual needs and conditions. Therefore, it is necessary to survey and analyze the difference between residents' actual needs and perceptions in the ger areas and policymakers by using participatory research approaches, which have been noted can ensure that public needs and demands are taken into account. On the other hand, understanding public perception and attitude toward air quality and regulation is significant for successful public participation in the transition to new technologies and management alternatives. In this respect, a survey on air pollution awareness and perception of residents was conducted in Reykjavik, Iceland, following the survey in Ulaanbaatar, Mongolia, in the master's program of the author to compare differences in air pollution awareness and perceptions of residents in a</p>			

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<p>developing country and a developed country.</p> <p>Chapter 2 (Literature Review) presents the literature review that includes previous studies regarding community-based air pollution, indoor air quality, and limitations of existing studies; interests in air pollution as a global risk and importance of its research; indoor air pollution problems in developing countries; definition and concepts regarding particulate air pollution and its health effects, and particulate air pollution in developing countries; concepts of participation; needs for public participation in environmental policy-making; participatory methods for research; and the benefits of community-based participatory research. Previous community-based participatory research on air pollution has focused mainly on engaging residents in air quality measurement or monitoring to raise their awareness of air pollution. Besides, studies on indoor air pollution from household solid fuel combustion in developing countries have focused on addressing health issues. Therefore, compared to previous studies, a study to understand the views and socio-economic context of resident when faced with air pollution policies using participatory research is needed to provide information and make policy recommendations to governments, public health authorities, policymakers, and other stakeholders in air pollution risk management-related sectors to develop and strengthen effective air pollution policies.</p> <p>Chapter 3 (Methodology) describes the overall research methodology used for data collection, including semi-structured and narrative interviews, a community-based participatory workshop, a focus group meeting, and a questionnaire survey.</p> <p>Chapter 4 (Participatory Approach to Gap Analysis between Policy and Practice Regarding Air Pollution in Ger Areas of Ulaanbaatar, Mongolia) presents the results of a gap analysis between policy and practice regarding air pollution in ger areas of Ulaanbaatar, Mongolia. Based on the collected data from participatory approaches, including interviews and a workshop, the gaps between the policy approaches of the government, the actual conditions in ger areas, and the desired situation of ger residents were analyzed. The results of this study demonstrate that the reduction of air pollution in Ulaanbaatar requires solutions for fundamental and complex problems that are based on a better understanding of the specific conditions and needs of the residents of the ger areas.</p> <p>Chapter 5 (Using a Narrative Approach to Understand Views on Air Pollution: Stories from Communities in Ulaanbaatar, Mongolia) demonstrates an attempt to collect and organize public discourse and community preferences on air pollution issues in Ulaanbaatar through a narrative approach and its analysis, which is regarded as a way to enhance public participation. The narrative analysis conveyed</p>			

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<p>the community's concerns about air pollution and provided a structure and context for understanding and presenting the stories communicated during the workshop and the focus group meeting. Through the interview results and narrative analysis using Labov's evaluation model, it was possible to identify stories and counter-stories. It is possible to see where the views of the various groups (interviewees and workshop and focus group participants) diverge or converge. These organized narratives could contribute to the discourse on air pollution and bring about changes in the community, which will enable stakeholders, including the government, to promote more effective air pollution reduction measures.</p> <p>Chapter 6 (Public Perception of Air Pollution in Reykjavik, Iceland) presents the results of an air pollution awareness and perception survey in Reykjavik, Iceland. The survey results in Reykjavik showed that the residents have a high level of awareness concerning air pollution and the main causes of air pollution. The perception level of air pollution among residents was higher among women than men and younger age groups than older age groups. Also, people who use public transport perceived the air pollution level as higher than people who drive their cars. Even in Reykjavik, where air pollution and its effects are not significant, the level of awareness and perception of air pollution among residents was relatively high.</p> <p>Chapter 7 (Discussion and Conclusions) presents the key findings and the conclusions and limitations of the study, and the recommendations.</p>			

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(論文審査の結果の要旨)

本論文は、深刻な大気汚染の問題を抱えるモンゴル・ウランバートルとアイスランド・レイキャビクを対象に、住民等の利害関係者の真の認識や意見を解明することを目的としている。モンゴルの大気汚染は、伝統的住居「ゲル」において暖房や調理に石炭ストーブを使用することによる室内空気汚染が主たる原因になっている。20年以上にわたり政府が大気汚染対策をとってきたにもかかわらず、問題は解決していない。本研究は、先行研究には見られない形態の参加型アプローチを通じて、政府によるウランバートルのゲル地域における大気汚染対策の妨げとなっている課題と障壁の特定を試みており、具体的には以下の成果を得ている。

- (1) モンゴルの大気汚染削減に関する既存の法律や政策をレビューして、政府の政策アプローチとゲル地域の現状、ウランバートルの大気質を改善するためのゲル住民の望ましい状況の間のギャップを明らかにしている。
- (2) ナラティブと参加型調査手法を用いて、ウランバートルのさまざまな利害関係者のストーリーとカウンターストーリーを理解し、より現実的な目標や、ゲル居住者による提案された政策への賛同、および住民への行動のためのエンパワーメントに基づいて前進する方法を提案している。そこでは、大気汚染の問題だけでなく、飲料水、下水システム、防災などの差し迫ったニーズも議論の対象になっている。
- (3) ウランバートルとレイキャビクでの調査結果を比較して、発展途上国と先進国のさまざまな文化的状況の違いの下での、大気汚染問題の類似点と相違点を考察している。その結果、両地域の住民とも大気汚染の原因と解決方法に対する理解は高いことを明らかにしている。その一方、モンゴルでは石炭の使用が、レイキャビクではスタッドタイヤの使用が大気汚染の最も大きな原因となっている。そしてそれらはそれぞれの地域で日常生活の重要な要素になっており、ゆえに住民が積極的に使用を取りやめる行動をとらない理由になっていることを指摘している。また本論文は、根本的な原因を理解するための参加型アプローチの重要性を浮き彫りにしている。

本論文は文化的・社会経済的背景が異なる二国を対象に、大気汚染リスク管理戦略の実効性を制限する障壁に関する理解を深めるための貴重な知見を提供している。加えて、住民参加が大気汚染削減戦略とコミュニティのエンパワーメントへのより高い賛同につながり、最終的にはより効果的な大気汚染リスク管理につながる可能性があることを示している。なお博士論文公聴会では、参加型アプローチにおける適切なサンプルサイズの問題や、研究結果をリスク管理の実践につなげる方法、研究フレームの設計の改善の方向性等について、指摘と議論が行われた。それらは最終提出論文に反映されている。以上のように、本論文は学術上、實際上寄与するところが少なくない。よって、本論文は博士（工学）の学位論文として価値あるものと認める。また、令和3年2月15日、論文内容とそれに関連した事項について試問を行って、申請者が博士後期課程学位取得基準を満たしていることを確認し、合格と認めた。