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# The science-policy adaptive capacity building for local herding and government groups to reduce climate vulnerability: case of Gobi-Altai province, Mongolia

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**Key words**: Climate-pasture-livelihood nexus; pastoral vulnerability; climate adaptation; science-policy adaptive capacity (SiPAC)

**Abstract**

The effects of climate change and active use of natural resources are the key factors to pastoral social-ecological vulnerability in agriculture-based developing countries. Pastoral vulnerability is a base to measure how climate change affects pasture, livestock and the livelihoods of herding communities. It is explained by natural stressors and human factors of pasture use and vegetation cover change as a set of interlinked impacts on social and economic conditions and coping strategies of herder communities. Rural herding communities and local government units lack scientific information to better understand the nexus of Climate-Pasture-Livelihood and how it might impact their well-being now and in the future. They also have limited capacity building resources in science, policy, and its implementation. The science-policy adaptive capacity program (SiPaC) was implemented in Gobi-Altai province, Mongolia to build capacity of local herding communities, practitioners, and government units. The SiPAC served as a platform to facilitate knowledge, management, skills, networking, partnership and ultimately, formulation of local adaptation strategy of targeted stakeholders through scientific contributions, methodologies, training manuals, practical and interactive sessions tailored to local needs.

## Introduction

In Mongolia, 57-70% of the local economy and 80% of total labour force in rural areas depend on animal husbandry (NSO 2020). The vulnerability of pastoralism is linked with natural stressors such as drought and zud (harsh winter condition) (Togtokh et al. 2014), human factors such as pasture use and vegetation cover change, the impacts on social and economic conditions and coping strategies of herder communities (Troy 2014). The western region of Mongolia, where Gobi-Altai province is located, is an arid, non-equilibrium environment with highly variable weather (Gomboluudev 2019) and affected by climate change related disaster extremes, water resources shortage, and cultural changes.

To effectively align adaptation policies and prioritise implementation measures, policy makers require comprehensive information obtained via vulnerability assessments of regions and various sectors (Benjamin et al. 2011). It is important for sustainable pasture use, pasture management planning, and

the effective implementation of adaptive measures. Suvdantsetseg et al. (2020) found that local policy documents have 'limited alignment' with climate change responses, particularly inadequate adaptation measures adopted to strengthen social resilience. Gobi-Altai province has, indeed, not updated its development policy in accordance with Vision-2050, national development policy and global Sustainable Development Goals (SDGs). This finding revealed the urgent need to formulate new policies to align climate change adaptation and sustainable development at local level.

However, local governments have limited capacity to formulate science-based policy. Therefore, the science-policy adaptive capacity program (SiPaC), funded by Asia-Pacific Network on Global Change Research, was implemented in Gobi-Altai province. Building on the past pastoral social-ecological vulnerability assessment, the SiPaC program aimed at enhancing local herding communities, young leaders/researchers, practitioners, and government units to participate in, and connect to, local, national, and regional science and policy agenda (SDGs) on climate change adaptation and enable them to learn science-based pastoral management, best practices, and innovative solutions.

**Methods**

Description of study area. Located in the western Mongolia, Gobi-Altai is a sparsely populated province with total area of 141.1 thousand sq.km and a population of 58.4 thousand, 67 percent of whom live in rural areas and practice nomadic herding. The livestock sector, with its 3.8 million sheltered livestock generates 55% of the province's GDP (NSO, 2024). The SiPAC was implemented in 5 sub-provinces (Biger, Bayan-Uul, Khaliun, Taishir, and Tugrug) of Gobi-Altai province (Figure 1).



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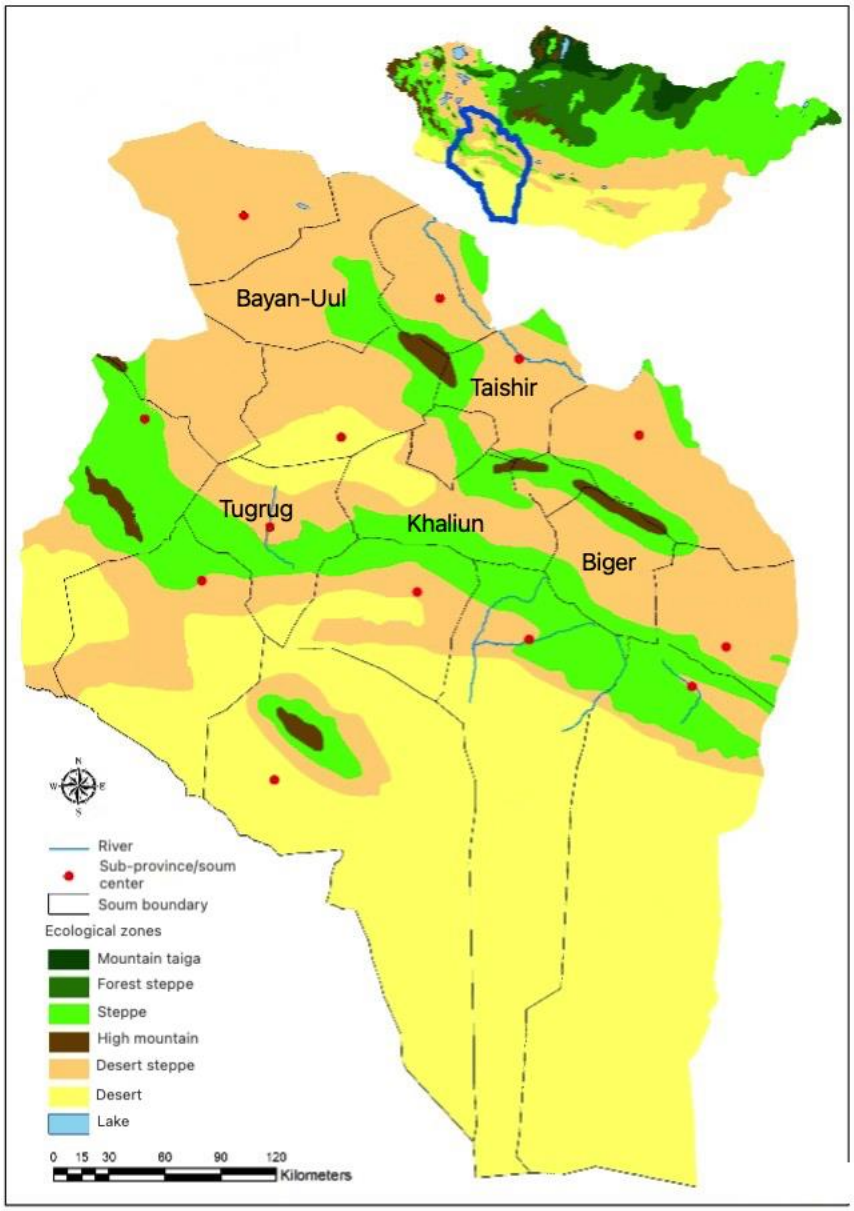


Figure 1. Location of study area.

The participants included diverse stakeholders of young leaders, herding communities, government officers, practitioners, and active persons, who were selected based on their interest, participation in problematic issues, and future contributions to the local development. The training used integrated training curriculum-based participatory approach through a variety of structured learning tools, methodologies including lectures, teamwork, leadership managements, and practical and interactive sessions to facilitate their knowledge, skills, formulation of local adaptation strategy or other documents, reduction of pastoral vulnerability and science-based pastoral managements. The interactive sessions provided theoretical presentations, lectures, and methodologies followed by exercises.

**Results and Discussion**

In total, five capacity building trainings were organized, each session was designed as a 2-4-day workshop to provide insights into specific topics including pastoral socio-ecological vulnerability assessment; local and national policy interrelation analysis; science-based policy training curriculum; and local strategic development plans. Trainings involved active participation by multiple academic

researchers, policymakers, and representatives of rural herding communities, young leaders, and local government units.

There were pre and post-evaluation of the impact of training and feedback of trainees after the training was concluded.

Throughout the project period of two years, the representatives of five soums, Bayan-Uul, Biger, Taishir, Khaliun and Tugrug, learned about climate change and its effects on their environment, wellbeing and livelihoods, what strategies to implement to adapt and become more resilient against those adversaries, and did practical training on how to integrate adaptation strategy into local policy. As a result, the participants jointly developed the first draft of the adaptation strategy plan for their respective soums. In the final dissemination workshop, each team presented brief introduction of their draft strategy plan which would later be adopted by the respective local governments.

The SiPAC program was successful as it served as a platform to facilitate knowledge, management, skills, networking, partnership and ultimately, formulation of local adaptation strategy of targeted stakeholders through scientific contributions, methodologies, training manuals, practical and interactive sessions tailored to local needs.

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