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博士（環境科学）

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The role of community trust in mining companies with focus on environmental perception: two case studies in Mongolia

(地域コミュニティの環境認知が鉱山会社への信頼に及ぼす役割：モンゴルにおける2つの事例研究)

Many countries face challenges to reserve natural environment while extracting mineral resources for economic development. Mining industry in the world has crucial role for supplying minerals and metals for production of energy and goods. Mines operate in areas where communities are engaged in agriculture that supplies food in the countries with close connections of natural environment from ancient time. Agriculture and mining industry should co-exist to sustain both industries; however local communities resist mining operations due to perception of negative environmental impacts. Studies focused to avoid the resistances and agreed that trust of local community is an important factor.

This research investigated local community's trust in two mining companies in Mongolia using a questionnaire survey. The mining operations have important role for the economy of Mongolia, operating in grassland areas. In the same areas nomadic herders graze livestock for living and produce food in the country. Local residents perceive negative environmental impacts and resist the mining operation. These kinds of conflicts have been reported in several studies. Therefore, it is crucial to study the local community's environmental perceptions particularly, their concerns in order to maintain trust in mining companies. Literatures described about residents who live with close connection to natural environment value ecosystem more than other people. Considering this statement, we aimed to clarify the difference within the local communities including the respondents with different residential types as well as different relation with the mining companies: nomadic herders and town citizens. In addition, a private and a state owned mining companies were selected to measure trust levels.

Two mining companies, abbreviated as G and U, are described as following. G company is a gold mining, foreign invested private company and located in Selenge Province. The main facilities consisted of an open pit mine, process plant and tailings facility. The company highly prioritized to establish a positive relationship with the local community, contributing a financial fund and providing information for the residents through two representative offices. U company is a fluorite and iron mining, state owned company in Khentii Province. The company extracted ore at several mines in the nearest provinces and processed in a plant. The survey was conducted in a town which was constructed by U company for the workers.

We assessed the determinants of trust including motivation and ability. In addition, a new determinant "Environmental protection" was tested through evaluating the company's effort to maintain environment. The trust

level differences within the local communities were tested in relation of the determinants. The roles of other influential factors such as information communicability, and salient value were considered in the study. Further, the relation of trust and risk perception was tested.

Firstly, the results about G mining company showed that the trust levels varied within the local communities and the determinants of trust differentially explained the state of trust. The nomadic herders residing close to the mine site observed the mining operation in daily lives and they had low trust being sensitive to the environmental changes of the mining operation. Other herders, who lived in far distances from the mine site, had neutral opinions. Town citizens, who lived in tens of kilometers distances, had high trust which was related to positive perceptions of financial contributions for the local area developments. Information provided by the company were distributed unevenly, thus the nomadic herders had less information than the town citizens. In addition, trust of the members of local community affected risk perception on human health. Previous studies defined that this kind of result might lead to opposition of an institution. In order to mitigate risk perceptions, mining companies need to inform local community about their activities of risk management and safe condition. In this study, the respondents did not have much knowledge about risk management.

Secondly, in case of U mining company, the respondents were grouped who worked and did not work at the mining company. However, the opinions of the respondents did not differ much between the groups. Few responses were collected from the herders, thus the herder's voices not much reflected about U company. In terms of trust of all the respondents, the determinants related with trust differently. Motivation correlated positively with trust. The new determinant "Environmental protection" had positive correlation with trust; however the respondents expressed in open-ended answers various negative impacts on environment. In addition, the respondents were concerned about working condition in the mine and process plant which caused health problem for some workers because of old equipment and machineries. Salient value represented in this site as stable mining operation of the company which the workers and the town citizens can benefit through salary and tax in the town. We assume that salient value was an important factor that affected trust. Trust did not affect risk perception.

Overall, trust in the mining companies showed different characteristics around the two mine sites. Nomadic herders who lived close to the mine site had low trust due to perception of environmental impacts such as landscape alteration, risks of a toxic chemical. Environmental perception can play role as a power balance between local community and a mining company. When local residents perceive negative impacts on environment, the mining operation might be interrupted. On the other hand, in the case of U mining company, where mining industry was dominant in the area, environmental perception had less influence on trust due to benefit of the mining. In this situation mining companies should obey related laws and regulations and the administrative controls should be strict for reservation of natural environment.

Mining companies need to reveal the differences within the local communities and reflect in their public communication policy in order to maintain trust in the local area. Specially, whose livelihood is dependent on ecosystem and value it more than other people.