Supporting data-driven decision of municipality: A case of mapping rooftop farming using Geospatial Technology

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Abstract: Many municipalities in Nepal are growing rapidly. Due to rapid urbanization, agricultural lands have been converting into buildings and infrastructures. This has negatively impacted the urban environment with decrease in greeneries, local food production. Urban farming is considered as one of the strategies to address social, economic and environmental gaps in cities. Beyond improving food security and local food production, urban farming has potentials to improving microclimate, mitigating the adverse effects of urban health island and promoting psychological well-being. Among various forms of urban farming, one of the unused resources or capacities of cities is flat roofs, especially in densely populated inner-city areas where other open spaces, gardens may be lacking.

Research on rooftop farming in the context of Nepal is being conducted, especially, to understand people's response, interest and motivation towards rooftop farming. In practice, Kathmandu Metropolitan Council and local non-governmental organization started few initiatives such as providing trainings on farming technique, distributing farming kits to few residents, providing funding support to households, to encourage rooftop farming among residents. Nonetheless, rooftop farming has not been developed in every household. Besides social factors, uncertainty and fear in building structures, lack of training is considered as barriers to wide adoption. This suggests that comprehensive approach to the development of strategy promoting rooftop farming is needed in cities. Nonetheless, due to lack of comprehensive information on current situation and potential of rooftop farming in municipalities, promoting rooftop farming in municipalities has been carried out on ad hoc basis.

Against this background, a project was initiated to develop data-driven support for municipality on identification and assessment of rooftop farming in municipality. Using geospatial technology together with OpenStreetMap, UAV and adopting volunteered geographic information (VGI) approach, the project mapped the current state and analysed the future potential of rooftop farming in Banepa municipality. A young group of geospatial professionals initiated and led this project. Municipal practitioners were involved at various stages of the project, however, not without challenges. In this forum, we would like to present how developing field of geospatial technology, open data source

and VGI could be leveraged to support municipality in the management and promotion of rooftop farming, what challenges and what lessons could be learned for improving adoption of result in actual practice and how young generation could be motivated towards transdisciplinary research work. While the young group of initiated the project, I was involved in the project as an advisor with my background in urban planning and specialization in geoinformation science.