Thota Sai Durga Malleswar, a PhD student in the Department of Earth Science and the SyDE program, has undertaken an internship offered by Nippon Koei, Japan, under the industry-government-academia collaborative training. My research field is specific to rural planning, and my interest is mainly on patterns of rural settlements and internal migration. My previous work is dedicated to revealing the hidden problems that control the functioning of rural regions. Rural regions are known for long travel distances to facilities, low population, and poverty. Rural planning is essential in understanding rural area's relationship with nearby towns and cities. The definition of a developed rural area is that all its residents are satisfied with the accessibility to daily necessities and planning literature helps to achieve this goal by identifying the problem in functioning of settlements. I chose NK because of its experience in regional development projects and planning. Nippon Koei (NK) is a Japanese Engineering consultancy giant that takes over projects in more than 150 countries. I was welcomed in the "Western Dedicated Freight Corridor (WDFC)" project, a 1,506 km long railway line construction and the study area and track alignment can be seen in the map below.
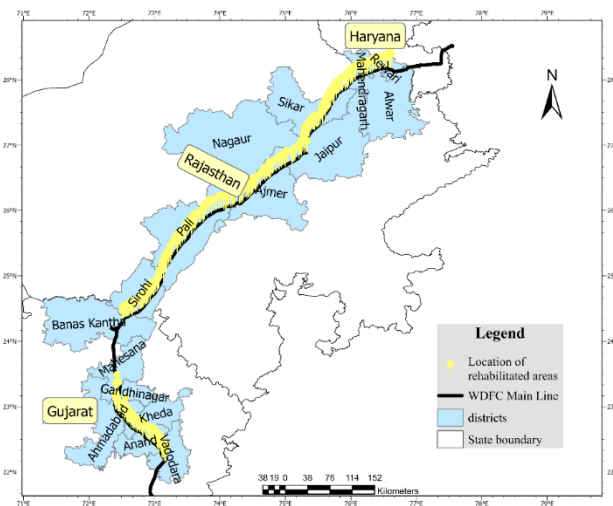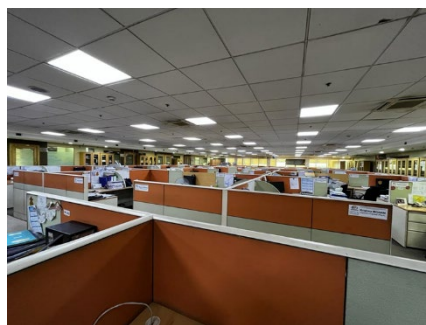

Black line shows the track allignmnet and Yellow pins　show the rehabilitated households

This project helps to increase freight railways and reduce carbon emissions. Construction of this track also allows the rural villages to develop a regional economy. For this project, 23,537 households were rehabilitated to other regions. As my background is in Human Geography, I chose to study the migration patterns and spatial distribution of rehabilitated residents. In this study, we want to check the economic benefit of the strategy used by the company to

rehabilitate the residents. The company collected the data using an individual survey which is rich in information. This internship was a collaboration between Tohoku University and Nippon Koei to conduct a study using the abovementioned dataset. We used attributes like income, type of occupation, accessibility measures, and loan-debt situation of rehabilitated residents. We know it is difficult for farmers to relocate to a new place as their source of income depends on location. Our study results show that the strategy used for laying the track was beneficial to the rehabilitated residents. This means the highest percentage of rehabilitation occurred in districts with low income in agriculture and vice versa.

During this time, I faced various challenges and learned new skills useful for my academic career. One of the challenges is geocoding for each of the 23,537 individual households and technical skills like data visualization and software TILOS and Primavera, which are used for planning and progress monitoring of mega projects. I've got to learn the steps involved in the preliminary stages of such mega projects, which demand a lot of planning expertise from social sciences background. I've got the opportunity to discuss my study at the office with the environmental department and have field experience in conducting the face-to-face interviews about the topics of income inequalities, internal migration, and employment, which were extremely useful for my upcoming doctoral study. After interacting with the social experts at NK, I've got a new perspective on rural areas and their problems. This study helped me understand more about the spatial variation in the distribution of income sectors in rural areas from the discussion with the environmental department. I benefitted from the perspective of both technical and networking from this experience and significantly improved my literature knowledge on regional planning which in turn will help my doctoral research and thesis.

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