

Use of Geographical Information System (GIS) in the Infrastructure Development Projects: A Case of Coastal Railway Line Development Project in Sri Lanka.

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Abstract

The theme "use of Geographic Information System in Infrastructure Development projects" is primarily based on the Coastal Line Development Project (CLDP) in Sri Lanka. An age-long practice of the Social Impact Assessment (SIA) and Resettlement Action Plan (RAP) was to address the community development in a top-bottom approach. With the westernization process, the international interference for the development projects has changed its approach to a bottom to top approach. And it uses newer technological systems to so-called development projects.

The Colombo Suburban Railway Project (CSR) is one of the projects which have been considered the bottom to top approach seriously, through SIA and RAP reports. However, this exercise is to investigate how the project has used GIS practically to meet the project objectives. Therefore, the research examines "How GIS assesses the social impact in CLDP?" The objective of this study is to identify advanced technological systems that can be implemented for the upcoming development projects to address the social impact, effectively.

The methodology of this exercise was ethnography. Therefore, the inductive analytic method has been used to generalise the whole population. The chosen sample of the study was Maradana to Kaluthara railway lines.

GIS is a database software which can be used for cartography as well as data analysis. The SIA is based upon the general public as well as the PAPs within the project influenced area. The structured questionnaire was planned to get the required information with the support of GPS coordinates. The PAPs identified within 50 meters (either side of the Right of Way) area. Google Earth map was generated to identify the locations and the GPS were taken from a mobile device with the use of Google Earth and Google Map applications. SIA sample was chosen proportionally from the Grama Niladhari Divisions with the use of the GIS database.

It was found that the use of GIS for data collection purpose and preparing the SIA report was an extraordinary benefit. Because it has given more accuracy to the data collection and the data analysis through spatially and quantitatively. When identifying the of issues towards the society and for introducing the CLDP to the ordinary people, drone images, 3D modelling with clip analysis, buffer and clip analysis would have been used for a comprehensive illustration. Finally, the CSR will be benefited with GIS application in project preparatory tasks.

Therefore, it was concluded that the use of GIS is not only essential and useful for the RAP but also the SIA, as GIS could help to investigate potential issues spatially and quantitatively.

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