

Reducing
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impacts of a railway
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Local officials, developers, and planners have increasingly realized the economic development and the perfect environmental components for the purpose of community growth. However, this awareness comes from the times of environmental neglect, quick and irreversible conversion of good land for farming, excessive development in the urban areas, increased population, as well as, loss of icons in the plant and animal communities. Also, increased development in the recent day affects the air, water, land, and biological resources overtaking the protection measures. Various development projects have their different economic benefits. On the other hand, such development projects result to scarcity of natural resources and endanger the lives of living creatures in such an area. This paper evaluates the use of Environmental Impact Assessment, Strategic Environmental Assessment, and Environmental Review in a bid to cutting down the environmental effects related to the development of a new railway in an area.

Environmental Impacts of Railway Development

According to Corrales, Grant, Chan (2000, p. 99), the purpose of new railway construction is related to " efficient operations, competitive services, better access to industrial facilities, and high-speed passenger service". In the monitoring of the railway track existence, its construction and abandonment plays a crucial role in the environmental impact assessment. As Corrales, Grant, Chan (2000), illustrates, the most environmental impacts occur due to the drilling and excavation activities. Profillidis (2006) outlines other significant environmental impacts that extend to include disposal of hazardous and excessive harmful materials on areas near the railway

construction. Also, railways take part in the disruption of the natural habitat and intake excessive land amounts. In addition, large emissions are transmitted during the construction and maintenance of the railways. The environment is affected with the large exhaustion of diesel fumes, spillage while refueling. Noise and dust during construction, trains and rail cars have impacted the environment through the release of toxic elements to the soil, air, and water (Corrales, Grant, Chan, 2000). The FEPA (2004) summarizes the issues related to railway and road projects to range from the economy, population, environment, health, gender, participation, and health outcomes. Source: Corrales, Grant, Chan (2000)

Environmental Impact Assessment

This is one of the crucial tools applied in the management of contemporary environment. It involves identification of the environmental consequences resulting from environmental problems of human activities before the start of the activities. To understand Environmental Impact Assessment (EIA) it is important to understand Environmental Assessment (EA). EA describes the method or the process by which information about the environmental effects of a project is simply collected both by the developer and from other sources, this helps the planning authority in coming to a judgment on whether the development should go ahead (Glasson, Therivel, Chadwick, 2012). In maintaining sustainable management of the environment, the crucial requirement is the ability of foreseeing the consequences and implications of the actions to be performed (Caratti and Dalkmann, 2004). The method provides a means of identifying, evaluating, and describing the human and natural factors essential for critical decision making (Morgan,

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1998). The EIA examines the environmental consequences of development actions in advance (Glasson, Therivel, Chadwick, 2012). The EIA attempts to predict likely environmental effects of a proposal and provide an opportunity for the developer and other decision maker to respond to this information (Fuller, Trosman, 2003). According to International Institute for Environment and Development (2009), the EIA consists of steps from the screening stage, consideration of alternatives, preliminary assessment, scoping, and EIA study. Source: International Institute for Environment and Development (2009) According to Caratti and Dalkmann (2004), this method has no implication of the protection of resources but benefits the planners on the resources available so as to identify a development that reflects the values in the based community. It also evaluates the possible destruction of the environmental resources by the proposed development. Also, it does an evaluation into the capacity of community for allowing added developments based on protection measures. Also, the process determines the persons to be affected by the project and identifies the limitation of the possible alternative developments and the impacts associated with each alternative (Morgan, 1998). It is also essential for ensuring compliance with the appropriate and relevant environmental regulations and laws. An EIA is relevant to a broad spectrum of development actions, which includes policies, plans, programmes and projects (Glasson et al, 2012). In railway construction, it ensures that developers and planners pay attention to the environmental factors and effects before the construction.

Strategic Environmental Assessment

This is a defined strategic action in the Environment Assessment (Caratti and Dalkmann, 2004, and Partidsirio, 1996). It is also defined as " as a systemic process for evaluating the environmental consequences of a proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations" (Sadler and Verheem 1996). According to Therivel (2010), the tool aims at integrating the environmental and sustainability regards in strategic decision making. The tool's ultimate aim is the protection of the environment as well as promotion of sustainability. It is an environmental assessment tool used for the evaluation of the appropriate decision making from the earliest stage of decision making based on the environmental quality and consequences (Caratti and Dalkmann, 2004). Its evaluation is based on the planning, policy, and program initiatives, alternative developments in the aim to ensure economic, biophysical, political, and social impacts (Buckley, 1998). While building a railway, the planners consider the benefits involved in the development such as cheap and affordable transport. On the other hand, the limitation of the railway project, as evaluated by the SEA, is the impact on the natural habitat, harmful emissions, and toxic exhaustion. Using an appropriate example such as the proposal for the development of a new railway and stations between Bicester and Oxford, Consultation was undertaken to ensure that statutory consultees and others were given the opportunity to express an opinion on the details of the project and the scope and methodology of the EIA reported in this Environmental Statement (ES).

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com/~media/Images/A/Atkins-Global/Images/project/main/evergreen.

jpgFigure: On-going construction at BicesterSource: [https://www. google. co.](https://www.google.co.uk/search?hl=en&sitekey)

uk/search? hl= en&sitekeyThis environmental consultation was carried out through the issuing of the Scoping Report. Each was invited to comment on the scope and methodology of the EIA described in the Scoping Report. The responses received have been taken into account in the EIA. From the scoping stage onwards, consultation with Natural England, the Environment Agency and English Heritage has been on-going during the preparation of this ES. Chiltern Railways has participated in the EIA consultation through regular liaison with Oxfordshire County Council, Cherwell District Council and Oxford City Council, within whose administrative areas the works would be carried out (Chiltern Railways, 2010). SEA provides the planners with strategic nature of intentions, decisions, regulations, and orientation during construction of the new railway as a new development project. The tool deals with concepts in general and not a single activity in the project development location. Its difference with EIA is the provision of adequate context and rationale for integrated and sound decision making (Caratti and Dalkmann, 2004). This is linked with the achievement of sustainable, cumulative, and long term effects of the development project. As identified by Caratti and Dalkmann (2004), Strategic Environment Assessment has limitations as in that the processes, procedures differ within countries, and there is a requirement of a flexible system to ensure environmental integration in the world. The SEA also uses the closed nature of decision making, which requires additional experts and public in all stages of the project development.

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Environmental Review

Environmental review, according to McGuire (2012), determines the environmental effects associated with the project being undertaken. If the significant impact exists, the environmental review conducts an alternative analysis that includes rejection of the alternative. At most times, as established by McGuire (2012), the environmental review is conducted through the use of the benefit-cost analysis. In such a case, the review in the construction of a new railway would include the evaluation of the environmental impacts of the same. The potential impacts are established and are then aggregated to determine the general environmental impacts. Monetary value is not mostly used, but it is noteworthy as it gives an indication in terms of costs in the value of the projected project (McGuire, 2012). The following are some environmental impacts that needs to be reviewed and mitigation measures must be considered and implemented. (Chiltern Railways, 2010) In railway development projects, environmental analysis is similar to the goals of environmental decision making including the questions based on impacts of the project, alternatives, and the cost and benefits involved in the project. Below are environmental impacts that may need to a review; • Land Use; • Noise and Vibration; • Landscape and Visual Impacts; • Ecology; • Water Resources and Flood Risk; • Cultural Heritage and Archaeology; • Traffic and Transport; • Public Rights of Way; • Air Quality and Dust; • Carbon Dioxide Emissions; and • Land Quality. (Chiltern Railways, 2010)