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Overview of Environmental and Economic Theories of the Impact of Dams in Different Regions

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Abstract : The number of large hydroelectric dams in the world has increased from almost 6,000 in the 1950s to over 45,000 in 2000. Dams are often built to increase the economic development of a country. This can occur in several ways. Large dams take many years to build so the construction process employs many people for a long time and that increased production and income can flow on into other sectors of the economy. Additionally, the provision of electricity can help raise people's living standards and if the electricity is sold to another country then the money can be used to provide other public goods for the residents of the country that own the dam. Dams are also built to control flooding and provide irrigation water. Most dams are of these types. This paper will give an overview of the environmental and economic theories of the impact of dams in different regions of the world. There is a difference in the degree of environmental and economic impacts due to the varying climates and varying social and political factors of the regions. Production of greenhouse gases from the dam's reservoir, for instance, tends to be higher in tropical areas as opposed to Nordic environments. However, there are also common impacts due to construction of the dam itself, such as, flooding of land for the creation of the reservoir and displacement of local populations. Economically, the local population tends to benefit least from the construction of the dam. Additionally, if a foreign company owns the dam or the government subsidises the cost of electricity to businesses, then the funds from electricity production do not benefit the residents of the country the dam is built in. So, in the end, the dams can benefit a country economically, but the varying factors related to its construction and how these are dealt with, determine the level of benefit, if any, of the dam. Some of the theories or practices used to evaluate the potential value of a dam include cost-benefit analysis, environmental impacts assessments and regressions. Systems analysis is also a useful method. While these theories have value, there are also possible shortcomings. Cost-benefit analysis converts all the costs and benefits to dollar values, which can be problematic. Environmental impact assessments, likewise, can be incomplete, especially if the assessment does not include feedback effects, that is, they only consider the initial impact. Finally, regression analysis is dependent on the available data and again would not necessarily include feedbacks. Systems analysis is a method that can allow more complex modelling of the environment and the economic system. It would allow a clearer picture to emerge of the impacts and can include a long time frame.

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