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Sustainability indicators for run of the river (RoR) hydropower projects in hydro rich regions of India

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ABSTRACT

Any hydropower project whether mega, large or small is to be weighed for sustainability at the time of its inception. Without proper sustainability assessment, the project may face many problems during its construction or/and operational phase(s). Legally also, this aspect has been made mandatory in many countries across the globe to check the feasibility of the project from sustainability point of view beforehand. This study intends to emphasise sustainability of run of the river (RoR) hydropower projects in hydro rich regions of India where these types of projects are being undertaken on a large scale. In addition, this study has compiled a list of sustainability indicators which may be of use for policy makers and designers while planning RoR projects in hydro rich regions of India and similar regions throughout the world.

Contents

1. Introduction

India with a population of about 1.25 billion is one of the fastest growing economic powers of the world and envisages becoming a developed nation by 2020. This calls for rapid development of the country's power sector, especially hydropower sector where the growth has not been so satisfactory during the recent years. To bridge a large gap between demand and production of electricity, tapping of unutilised hydropower potential in a fast and sustainable way presents both an opportunity as well as a challenge. Run of the river (RoR) mode (with and without small storage) of power generation is considered to be a comparatively fast and sustainable

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mode of power generation as compared to storage or reservoir based projects mainly due to saving of submergence area and quite less dislocation of people in the former mode. This mode of power generation has become a favourite amongst most of the countries across the globe in general and developing countries in particular. However, there is no direct or standardised method of measurement or even assessment/estimation of the sustainability of a hydropower project.

'Sustainability' is a buzz word these days. But, it is a complex and multi-disciplinary term [1]. Many studies and a quantum of research work have already been undertaken to predict/list sustainability indicators of hydropower projects. However, majority of the work pertains to reservoir based hydropower projects. Minuscule literature is available which presents sustainability indicators especially catering to the RoR projects. Hence this study is an effort to bridge this gap and enlist indicators

Fig. 1. Political map of India showing location of hydro rich states [4].