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energy storage system. While interconnecting RE sources and storage system to the grid, the grid receives supply from all these sources and depending upon the load demand and the energy intensity of wind and solar these sources output power will vary. The focus of this study is to find the impacts on the grid ie assessing the power quality of the grid at load side when supply comes from storage as well as RE sources and the grid. This research will finally develop the mitigation techniques to overcome these impacts of storage on smart grid by evaluating the power quality at the load side. This will be helpful for the power utility companies and communities to develop a climate-friendly sustainable power system for the future.

In order to find the impacts a real life experiment will be done at the CSIRO RE Integration facility and a simulation model will be developed using PSS SINCAL to find the mitigation techniques and finally it will be validated at the CSIRO facility again.

Assessing the success of ecosystem rehabilitation on open cut coal mining in the Bowen Basin, Queensland Australia

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Achieving mine closure is intrinsically linked to the selection and successful rehabilitation of a suitable post mining land use. The diverse localities and nature of mining operations require flexible, adaptable and progressive rehabilitation techniques in order to achieve this objective. Similarly, standardised, comparative and repeatable methods for assessing the success of ecosystem rehabilitation are desirable. In Queensland Australia environmental evaluations, that quantify the risk of a rehabilitated site failing, are vital to obtaining progressive or final rehabilitation sign off.

Key aspects important to rehabilitated ecosystem assessments are characterisation of their states, identifying their transitional trajectories and assessing their resilience. A two stage assessment process is presented. The first stage involves comparative analyses of rehabilitation site monitoring data against reference or analogue sites (similarity assessments) and the second stage consists of scenario based future state simulations to determine resilience and to assess risk based potential failure (prognostic simulations). Ecological structure analysis (clustering and ordination) and probability based cellular automata spatial modelling are the respective tools and techniques employed.