



Contribution ID: 93

Type: Oral

## Cost-Benefit Analysis of Small Modular Reactor Deployment for Electricity Generation in West Kalimantan

Small Modular Reactors (SMRs) are indeed gaining increasing attention due to their potential to be commercially available in the near future. The interest in SMRs has grown because of their lower investment requirements compared to large Nuclear Power Plants (NPPs). SMRs offer the promise of faster development and revenue generation, which could help offset their higher capital costs and provide a generation cost comparable to larger NPPs. However, the smaller size of SMR may lead to a loss of economy of scale, which could impact the generation costs of electricity. Therefore, conducting an economic cost-benefit analysis of an SMR program is essential for decision-makers. This analysis helps in evaluating and predicting the value of the project, determining its economic efficiency, and assessing its viability based on the net benefit it generates. The research aims to critically analyse the SMR program and conduct a Cost-Benefit Analysis (CBA) specifically focused on deployment program of SMR in West Kalimantan. The results indicate that the NPP project does not offer additional benefits over the Coal Power Plant (CPP) due to the high investment cost of SMRs. The analysis points out that if the investment cost for SMR is reduced by 10% (5,595 USD/kWe), SMR would have a higher Net Present Value (NPV) than CPP, indicating a more favourable financial outcome for the SMR project. Furthermore at a carbon tax rate of 20 USD/ton, the CPP would not be financially viable (negative Net Present Value), making the SMR a more attractive option under these conditions. At a discount rate of 5%, the NPV of SMR is higher than CPP. This information can be crucial for decision-makers when considering the economic viability of investing in SMRs as part of their energy strategy.

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### Confirm that the work is original and has not been published anywhere else

YES

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**Track Classification:** Topical Group D: Considerations to Facilitate Deployment of SMRs: Track 15: Financing, Cost & Economic Appraisals and Contracting Approaches for SMR Projects