Lecture 10 summary: Review of Economics of Renewable Energy

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Why Financial and Economics Implication for Renewable Energy Systems

Alternate renewable energy is the resources which not gets end-up during our life's. Economic and technology provide opportunity to generated sustainable energy use full for end users. Financial and Economic viability leads to different various renewable sources and efficient technology for large scale dissemination. Integrated energy system are also very useful for rural communities, Energy resources available are Animal waste, Solar light and Wind energy sources of renewable energy useful for their day to day activities.

Technology Least Cost

Before evaluation of Financial and Economic evaluations of technology in terms of least costs. Priori resources, energy feasibility, Socio-cultural acceptability, Environmental issues and Technology awareness and related data. Also other alternatives options for the same end uses for failsafe option leads to successful sustainable operations. Financial evaluation essentially includes comparison on below parameters.

Costs(Basis of today Price)	Benefits (in Near Future)
Capital Costs	Monetary worth of fuel saved
Operation, Repair &Maintenance	Salvage Value
Taxes, Insurances & any disposal cost	Benefits after Payback period

Costs as of today and Benefits in near future should be analyzed by purchasing power and investment options. Need to account time value of money, which provides us to measures of time to recovery cost for latest date (after payback period) and after which benefits are taken into considerations. Measures of Financial performance are based on Unit cost of Renewable Energy and Benefits of Monetary worth of fuel. Unit cost of renewable energy are less as comparison of other grids, which is shown by studies. Other figures of merits helps in recovery money from new energy installations by Discounted payback period (DPP) for its life cycle. DPP considers benefits of adjust the account for changing the values over time period. Net Present Value (NPP) it provides the present value of the benefits and cost resulting from an investment. It provide go condition for project NPP>0. Benefits of Cost Ratio ration of benefits and costs as a measure of financial or economic efficiency. It should greater than one. Internal Rate of Return (IRR) is widely accepted discounted measure of investment worth. It is the interest rate at which NPV are zero.

Figures of Merits	**Feasibility criteria for an Investment project**
Simple Payback Period(SPP)	SPP < Useful Life time
Discounted Payback Period(DPP)	**DPP < Useful Life time**
Net Present Value (NPV)	**NPV >0**
Benefit-Cost Ratio (B/C)	**B/C > 1**
Internal Rate of Return (IRR)	**IRR > MARR or Rate at which NPV=0**

Method for Uncertainty Analysis

Understanding uncertaintainty is important for any sustainability projects based on many approaches Probability, Optimistic and Sensitivity Analysis. But local and global uncertainty also keeps into consideration before above economic and financial analysis of projects.