Investment and Financing

Investment and Financing Aspect of Small

Hydropower Projects

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Contents

Small Hydro Status

S.No	Category	Below 1 MW		1 to 3 MW		3-5 MW		Total	
		Projects	Capacity	Projects	Capacity	Projects	Capacity	Projects	Capacity
1	Survey License Applied	1	0.67	0	0	3	12	4	12.67
3	Survey License Received	15	10.74	7	16.35	16	67.58	38	94.67
2	Generation License Applied	1	0.49	0	0	5	18.78	6	19.27
4	Generation License Received	25	19.63	42	59.69	35	158.84	102	238.16
5	Project Under Operation	15	11.24			41	143.59	56	154.83
	Total	**57**	**42.77**	**49**	**76.04**	**100**	**400.79**	**206**	**519.6**

Investment Status

S.No	Category	Total		Invetment Study Cost		Invetment Plan		Total Invest Req		Bank Loan
		Projects	Capacity	Per MW	Total	Loan	Equity	Per MW	Total	
1	Survey License Applied	4	12.67	0.10	1.27	-	1	20	253	
2	Survey License Received	38	94.67	0.20	18.93	-	19	20	1,893	
3	Generation License Applied	6	19.27	0.50	9.64	-	10	20	385	
4	Generation License Received	102	238.16	1.00	238.16	-	238	20	4,763	
5	Project Under Operation	56	154.83	22.00	3,406.26	2,384	1,022			
	Total	**206**	**519.6**	**23.80**	**3674.26**	**2,384**	**1,290**		**7,295**	5,107

Investment in Project Under Operation

S.No	Category	Capacity		Expected revenue		Revenue (Real)		Loss Per Year	
		Expected	Capacity	Per MW	Total	Per MW	Total		
	Project Under Operation	56	154.83	2.50	387.1	1.750	271	0.75	116
	Total	**56**	**154.83**	**2.50**	**387.1**	**2**	**271**		

Real Cash flow Below 1 MW

						Below 1 MW		
	Per Mw Investment	100%	20	Crore				
	Loan	70%	14	Crore				
	Equity	30%	6	Crore				
	Generation Scenarios				100%	80%	75%	70%
A	**Revenue - Per Year**				**2.75**	**2.20**	**2.06**	**1.93**
	Expenses							
1	Total Royalty			**0**	**0**	**0**	**0**	**0**
2	Operation Cost/ Admin	Rs	Fixed	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
4	Insurance		Rs 6 lakh Per MW	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**
5	General Repair		Rs 1.5 Lakh / Month	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
B	**Total Expenses**			**0.66**	**0.66**	**0.66**	**0.66**	**0.66**
C	**Surplus**				**2.09**	**1.54**	**1.40**	**1.27**
D	Bank Service							
	Loan		14					
	Loan Repay- Qtry (12 Yrs)		12 Years		Installment			
	Interest rate		8%		1.83	1.83	1.83	1.83
			9%		1.92	1.92	1.92	1.92
			10%		2.02	2.02	2.02	2.02
			11%		2.12	2.12	2.12	2.12
			12%		2.22	2.22	2.22	2.22
			13%		2.32	2.32	2.32	2.32
	Short fall		8%		0.26	-0.29	-0.42	-0.56
			9%		0.17	-0.38	-0.52	-0.65
			10%		0.07	-0.48	-0.61	-0.75
			11%		-0.03	-0.58	-0.71	-0.85
			12%		-0.13	-0.68	-0.81	-0.95
			13%		-0.23	-0.78	-0.92	-1.05

Real Cash flow Below 1-5 MW

						Range	1 MW to 5 MW	
	Per Mw Investment	100%	20	Crore				
	Loan	70%	14	Crore				
	Equity	30%	6	Crore				
	Generation Scenerios				100%	80%	70%	60%
A	**Revenue - Per Year**				**3.00**	**2.40**	**2.10**	**1.80**
	Expenses							
1	*Fixed Royalty*	*Rs*	*Rs 100 /KW*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
	Revenue Royalty	*Rs*	*2% of Rev*	*0.06*	*0.06*	*0.048*	*0.042*	*0.036*
	Total Royalty			**0.07**	**0.07**	**0.058**	**0.052**	**0.046**
2	Operation Cost/ Admin	Rs	Fixed	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
4	Insurance		Rs 6 lakh Per MW	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**
5	General Repair		Rs 1.5 Lakh / Month	**0.18**	**0.18**	**0.18**	**0.18**	**0.18**
B	**Total Expenses**			**0.71**	**0.71**	**0.70**	**0.69**	**0.69**
C	**Surplus**				**2.29**	**1.70**	**1.41**	**1.11**
D	Bank Service							
	Loan		14					
	Loan Repayment Period		12 Years- Qtrly		**Installment (Yearly)**			
	Interest rate		8%		1.83	1.83	1.83	1.83
			9%		1.92	1.92	1.92	1.92
			10%		2.02	2.02	2.02	2.02
			11%		2.12	2.12	2.12	2.12
			12%		2.22	2.22	2.22	2.22
			13%		2.32	2.32	2.32	2.32
	Short fall		8%		0.46	-0.12	-0.42	-0.71
			9%		0.37	-0.22	-0.51	-0.81
			10%		0.27	-0.31	-0.61	-0.90
			11%		0.17	-0.41	-0.71	-1.00
			12%		0.07	-0.51	-0.81	-1.10
			13%		0.03	-0.62	-0.91	-1.21

Real Cash flow Below 5-10 MW

						Range	5 MW to 10 MW	
	Per Mw Investment	100%	19	Crore				
	Loan	70%	13.3	Crore				
	Equity	30%	5.7	Crore				
	Generation Scenarios				100%	80%	70%	60%
A	**Revenue - Per Year**				**3.00**	**2.40**	**2.10**	**1.80**
	Expenses							
1	*Fixed Royalty*	*Rs*	*Rs 100 /KW*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
	Revenue Royalty	*Rs*	*2% of Rev*	*0.06*	*0.06*	*0.048*	*0.042*	*0.036*
	Total Royalty			**0.07**	**0.07**	**0.058**	**0.052**	**0.046**
2	Operation Cost/ Admin	Rs	Fixed	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
4	Insurance		Rs 5 lakh Per MW	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
5	General Repair		Rs 15 Lakh / year	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**
B	**Total Expenses**			**0.67**	**0.67**	**0.66**	**0.65**	**0.65**
C	**Surplus**				**2.33**	**1.74**	**1.45**	**1.15**
D	Bank Service							
	Loan		13.3					
	Loan Repayment Period		12 Years (Qtrly)		Installment (Yearly)			
	Interest rate		8%		1.73	1.73	1.73	1.73
			9%		1.82	1.82	1.82	1.82
			10%		1.92	1.92	1.92	1.92
			11%		2.01	2.01	2.01	2.01
			12%		2.11	2.11	2.11	2.11
			13%		2.20	2.20	2.20	2.20
	Short fall		8%		0.60	0.01	-0.29	-0.58
			9%		0.51	-0.08	-0.38	-0.67
			10%		0.41	-0.17	-0.47	-0.76
			11%		0.32	-0.27	-0.56	-0.86
			12%		0.22	-0.36	-0.66	-0.95

Benefit.

1. Learning by Doing from Small hydropower Project
2. Local employment
3. Tax / Vat / License fees – Contribution to Government
4. Local distribution
5. Technology handover
6. Utilization of natural resources
7. Investment opportunities
8. Contribution to National grid and Local grid.
9. Below 1 MW license period for forever – long period

Way forward / Solution for smooth operation

For Under Operation Project

1. Formation/ Creation of Rehabilitation fund .
2. How it can be establish ?

- Government contribution - Some amount from License fees
- Collection of fund through under contraction project through the 1% or certain percentage of tax on payment to Supplier / contractor
- Minimum Contribution from all hydropower projects

3. Contribution by Government

- Tax Benefit till loan repayment Period
- Local Government bodies – Participation in equity investment
- Payment of loan from rehabilitation fund if short fall of loan

4. From Bank

- Loan repayment period to be reschedule minimum 15 years to 20 years
- Interest rate should be single digit.
- Provision of soft loan through NRB
- No black list or No provision for watch list for next one year

5.From NEA

- Posted rate to be given to all small hydropower Projects / Dry-Wet Ratio 1:1 (6/6 months)
- Removable of provision of Short supply of Energy due to hydrology and line loss

6. From Equity holder

- No dividend till regulation of loan

Way forward / Solution for smooth operation

For Under study and Under process of Construction Project

1. Formation/ Creation of Rehabilitation fund
2. How it can be establish ?

- Government contribution - Some amount from License fees
- Collection of fund through under contraction project through the 1% or certain percentage of tax on payment to Supplier / contractor
- Minimum Contribution from all hydropower projects

3. Contribution by Government

- Tax Benefit till loan repayment Period
- Local Government bodies – Participation in equity investment

4. From Bank

- Minimum investment should be less than 5 or 10 MW Projects (Minimum 5 Projects and minimum 5 Arab or any amount .
- Interest rate should be single digit

5.From NEA

- No Penalty for less generation

6. From Equity holder

- Minimum investment plan

Conclusion

1 For Financial Viability

a. Cost Should be less than 6 times of Revenue for Viability

b.If Cost equal to more than 6- and in between 6-to 7 time of Revenue then Project is marginal

c.If cost is more than 7 Time it may not be feasibility

2. For Further development and rehabilitation of Project

a. Creation of Fund for project rehabilitation

b. Proper decision for responsibility of all stake holders (Equity holder, Bank, Government , NEA and Local Government)

c. Project should be proper study before implementation and more the investment in study more reliability