

Due Diligence on Resettlement for Sample Subprojects

May 2014

MLD: Preparing Outer Islands for Sustainable Energy Development

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Background

1. The Maldives, located 750 km south west of Sri Lanka, is an archipelago consisting of 26 atolls¹ and a total land area of about 300 sq. km. About half the country's population lives on the outer islands. The Maldives has about 100 MW of installed diesel generation capacity on the inhabited islands and another 100 MW on the tourism islands. While the Maldives has the unique distinction of being the first country with 100% access to electricity, this achievement has come at a cost. Given the geographic location of islands, each island is electrified with its own diesel powered mini grid system resulting in expensive and not very reliable supply. The cost of diesel power is unaffordable at 30-70 cents/kWh and requires government subsidies in excess of \$40 million annually. Electricity sector subsidies are also one of identified areas for government expenditure management. In 2012, Maldives spent over \$470 million for oil imports of which fuel imports for electricity generation contributes significantly.² The 100% diesel dependence of Maldives also makes its carbon emissions per unit of electricity among the highest in the region.

2. The Maldives has significant renewable energy resources namely solar and in some pockets wind energy. Energy sector studies reveal that energy generation based on renewable energy and fossil fuel hybrids would be significantly lower compared to existing options. The transition to renewable energy based systems has sound economic rationale. The Government's effort to increase electricity production from indigenous sources, including solar and wind power, to enhance energy security will reduce the pressure on the balance of payments and improve the fiscal position. The Government has initiated two programs – one for the Male region to replace base load generation with renewable energy and the other on the Outer Islands to replace existing diesel based generation with renewable energy.

3. The Project is aligned to ADB's Strategy 2020 of supporting sustainable energy growth, Energy Policy 2009 and is a part of the Maldives COBP for 2013-2015. Based on the government's investment plan for the outer islands and the characteristics of the electricity systems, a sector lending approach would support the transition of those islands that meet the investment criteria. The proposed project on the outer islands would transform the existing mini grids through physical investments in renewable energy, energy management and control systems, energy storage and distribution networks. The private sector would have a role in supporting the renewable energy investments in identified outer islands. De-carbonization of the private tourist islands would be separately pursued by the Government through policy instruments.

4. The investments under the project are broadly in the areas of renewable energy based electricity generation and energy efficiency improvements at the generation and distribution of electricity.

Introduction

5. The executing agency will be the Ministry of Finance and Treasury (MOFT). A Project Management Unit (PMU) comprising the officials from Ministry of Environment and Energy (MEE), Fenaka and STELCO has been setup for coordination of activities under the project. The implementing agencies would include MEE, Fenaka and STELCO Project agreements would be entered into with Fenaka and STELCO. The PMU will be strengthened with external experts in the areas of finance, procurement, and contract management. Project Implementation Units (PIU) will be established in FENAKA and STELCO to assist in preparing an overall implementation plan, contract packing and annual budgets.

¹ The Maldives has 1192 islands of which 194 islands are inhabited.

² The Maldives is considered one of the most oil vulnerable countries with oil imports close to 35% of GDP in 2012. References...

6. The project components and outputs will be: (i) development of renewable energy ready mini grid systems for outer islands, (ii) capacity enhancement of PMU, STELCO and FENAKA to implement renewable energy mini grid projects. Under the component one, there will be 138 islands already selected for the project. Of 138 islands, there are five islands (as indicated below) selected as sample subprojects. The project activities of these islands will be managed by FENAKA.

7. The project will initiate the transformation process for reducing diesel dependence and emissions on the outer islands and reducing the government subsidy burden. As highlighted above, there are three phases. The first phase will begin in this year (2014). In the first phase, the project has planned to implement its 5 sample islands (Buruni, Goidhoo, Kurendhoo, Villin Gili, and Addu) renewable energy (RE) installation target. The input from this project intervention is expected to change the consumption of diesel use for power generation as shown below.

Table 1: Technical Details in Sample Subproject Islands

Island	RE Supply %	Places selected for Solar	Required area for installation Sq. m
Kurendhoo	35%	Plot besides existing harbour (B2) on Kurendhoo Island	4500 sq.m. (open ground next to harbor)
Goidhoo	37,5%	Plot located west of the school (G1) on Goidhoo Island	3000 sq.m. (G1 –open area located west of the school)
Buruni	31%	Roof-top of school building (B3, B4, B5) on Buruni Island.	1500 sq.m. (roof-top of school buildings)
Villin Gili	11%	Rooftop of Hospital and School Buildings on Villingili Island	3600 sq.m. (rooftop of school and hospital building)
Addu City	7.3%	Rooftop and ground installations.600kW at Convention Center (on roof) 1000kW at Stadium area (on ground)	24000 sq.m. (roof top of various buildings)

8. As highlighted in table 1, there are certain line ministries (Ministry of Education, Ministry of Health, ICs or CC, etc.) that the EA is supposing to use building structures to establish solar PV systems on the roof tops. Therefore, it is important to have an agreement between these institutions on using their premises and structures for project purpose.

9. When there is a need of using such institutional buildings and structures for solar PV system and other renewable energy sources Ministry of Environment and Energy (EA) is responsible for identifying, handing over access, and/or making available the required land to the PMU. Therefore, Fenaka, is responsible for coordinating all aspects of the transactions with the Island Councils (ICs) and City Councils (CCs).

10. Any land requirements for non-sample subprojects will follow the guidelines provided in the resettlement framework.

Social and Economic Background of Sample Subproject Islands

11. A Social Impact Assessment (SIA) was conducted in all sample subproject locations in two consecutive phases. It has encountered some issue of meeting people due to the Presidential Election of 2013. Therefore, second phase of data collection has done on January 2014 and two sample subprojects (Addu and Villingili) were covered in this phase. A random sample has been utilized to select the households and table 03 provides more details about five islands already completed. The sample size and method decided on the basis of household list taken from each island council or city council.

Table2: Household Head of the Sample (565)

Sex	Island					Total	%
	Buruni	Goidhoo	Kurendhoo	Addu	Villingili		
Male	10	16	42	247	47	362	64.1
Female	1	4	5	177	16	203	35.9
Total	11	20	47	424	63	565	100
%	14.1	25.6	60.3	75.0	11.2	100	

Social Survey Data: 2013

12. As highlighted in table 2, majority of household heads are male while representing 36% of female household heads in the sample. When compared with census data the representation of female household heads is relatively high than the sample taken in this SIA.

13. Educational background of most of household heads is fairly low. Majority of them (52%) can place their signature only. The second highest is having a primary level education (33%). Table 3 illustrates more details on educational background of the household heads. Of 565 53% of them are belongs to 40-59 age cohort. Others are older than this major age cohort except 1.4% representation of 18-30 age cohort.

Table 3: Educational Background of Household Heads (565)

Educational Level	Island					Total	%
	Buruni	Goidhoo	Kurendhoo	Addu	Villingili		
Illiterate	0	0	0	14	5	19	3.4
Can place signature	7	6	30	212	40	294	52.0
Primary	1	10	11	151	10	184	32.6
Secondary	2	0	2	17	0	21	3.7
O/L Pass	0	2	2	19	7	30	5.3
A/L Pass	0	0	0	3	0	3	0.5
Undergraduate/Graduate	0	1	1	2	0	4	0.7
Post Graduate	0	0	1	3	0	4	0.7
Diploma	1	1	0	3	1	6	1.1
Total	11	20	47	424	63	565	100

Social Survey Data: 2013

14. It is a fact that majority of household heads are engaging in government and private sector non-executive grade jobs. Next highest pattern is retired members. However, the sample represents 20.4% of housewives and they are coming under female headed families. Fishing in other boat is also a common occupational activity in these subproject locations. Furthermore, there are 85 (15%) household heads not employed at the time of SIA. For details see table 4.

Table 4: Occupational Patterns of Household Heads (565)

Category	Island					Total	%
	Buruni	Goidhoo	Kurendhoo	Addu	Villingili		
Fishing in own boat	0	0	0	5	0	5	0.9
Fishing in other boat	1	2	4	12	12	31	5.5
Skilled Labourer	1	1	2	9	4	17	3.0
Unskilled Labourer	0	0	2	10	0	12	2.1
Farming in own land	0	1	1	0	0	2	0.4
Commercial Activities	1	2	7	17	2	29	5.1
Professionals (Teacher/Doctors/lawyers)	1	0	3	12	1	17	3.0
Government Services/	1	1	1	15	2	20	3.5

Executive							
Government Services/ other grades	2	4	3	35	13	57	10.1
Private Sector/ Executive	0	0	1	16	1	18	3.2
Private Sector/ other grades	2	5	8	37	0	52	9.2
Armed forces	0	0	0	1	0	1	0.2
Police/ Private Security Services	0	0	0	6	0	6	1.1
Housewife	1	3	5	101	5	115	20.4
Retired person	1	0	4	56	7	68	12.0
Unemployed	0	0	3	75	7	85	15.0
Other	0	1	3	17	9	30	5.4
Total	11	20	47	424	63	565	100

Social Survey Data: 2013

15. The Vulnerability and Poverty Assessment of 2004 has assessed the overall poverty and vulnerability situation using a composite 'human vulnerability index' (HVI). Between 1997 and 2004, the HVI fell from 4.6 to 3.1, an improvement of some 30 percent. In the atolls, major improvements were realized in physical and social infrastructure such as electricity supply, communication opportunities, health and education. Apart from the poverty and income levels of households, the SIA has focused on social vulnerability of households. In this assessment of vulnerability, few dimensions have been utilized; namely disability level, elderly, female headed family and male headed family. In addition, it is measured the levels of vulnerability using single and multiple vulnerability. Overall 38% of household heads are having at least single vulnerability and among them 13% them are under gone multiple vulnerability conditions. Table 5 provides more details.

Table 5: Levels of Social Vulnerability among Household Heads (565)

Type of Vulnerability	Frequency	%
Single	214	37.9
Multiple	74	13.1
No Vulnerability	277	49.0
Total	565	100.0

Social Survey Data: 2013

16. The expenditure pattern of selected sample households is given in table 6. It indicates that Villingili islander's expenditure is lower than other islands. However, majority of them are representing Rf. 8,001 – 12,000 expenditure cohort.

Table 6: Total Monthly Expenditure of the Household (565)

Category	Island's Name										Total	
	Buruni	%	Goidhoo	%	Kurendhoo	%	Addu	%	Villingili	%	No.	%
Below 2001	0	0	0	0	0	0	12	2.8	23	36.5	35	6.2
2001 – 5000	4	36	0	0	8	17	33	7.8	2	3.2	47	8.3
5001 – 8000	0	0	2	10	6	13	72	17.0	3	4.8	83	14.7
8001 – 12000	2	18	10	50	17	36	96	22.6	9	14.3	134	23.7
12001 – 15000	1	9	4	20	4	9	63	14.9	5	7.9	77	13.6
15001 – 18000	0	0	1	5	3	6	47	11.1	4	6.3	55	9.7
18001 – 21000	3	27	0	0	3	6	27	6.4	3	4.8	36	6.4
21001 above	1	9	3	15	6	13	74	17.5	14	22.2	98	17.3
Total	11	100	20	100	47	100	424	100	63	100	565	100.0

Social Survey Data: 2013

17. When compared with the income, Buruni, Goidhoo, Addu, and Villingili communities are having much higher income pattern than the Kurendhoo. However, the rest of households in Buruni are having low income pattern than other islands. Overall, Goidhoo is

having a high income pattern than other islands. Grand total of monthly income is higher than the grand total monthly expenditure. Table 7 illustrated details.

Table 7: Total Monthly Income of the Household (565)

Category	Island's Name										Total	
	Buruni	%	Goidhoo	%	Kurendhoo	%	Addu	%	Villingili	%	No.	%
Below 2001	0	0	0	0	0	0	23	5.4	5	7.9	28	5.0
2001 – 5000	3	27	0	0	7	15	53	12.5	6	9.5	69	12.2
5001 – 8000	1	9	3	15	6	13	45	10.6	4	6.3	59	10.4
8001 – 12000	2	18	1	5	14	30	57	13.4	11	17.5	85	15.0
12001 – 15000	0	0	2	10	4	9	47	11.1	7	11.1	60	10.6
15001 – 18000	0	0	3	15	2	4	24	5.7	2	3.2	31	5.5
18001 – 21000	1	9	1	5	6	13	25	5.9	5	7.9	38	6.7
21001 above	4	36	10	50	8	17	150	35.4	23	36.5	195	34.5
Total	11	100	20	100	47	100	424	100.0	63	100.0	565	100.0

Social Survey Data: 2013

18. Subsequently, the SIA has filtered the poverty level through very meaningful facts selected in related to the food security of the island communities. Table 8 gives a statistical description on the poverty level of the target communities. According to the findings of table 08, there is no chronic poverty level in these islands.

Table 8: Food Security and the Level of Poverty (565)

Previous condition	Yes	No	Don't know	No change	Not applicable
1. In the past 12 months, has the family reduced quality and amount of meals per a day, because of poor income?	12.7	78.4	0.7	8.1	.0
2. During the past 12 months, are there any dates in which your family starved?	1.9	91.3	0.5	6.2	.0
3. During the past 12 months you or any member of your family had to work extra hours or to engage in an extra work in order to earn enough to feed the family?	5.3	87.4	1.1	6.2	.0
4. In the past year, did your family sell (or consume) more of your small livestock than usual (e.g. chicken and other fowl) in order to have enough food to eat?	2.5	88.1	0.5	6.0	2.8
5. In the past year, did your family sell off some household possessions, in order to buy food?	0.9	92.6	0.5	6.0	.0
6. In the past year, did your family borrow food or money for food from relatives, friends or neighbours?	9.0	84.4	0.5	6.0	.0

Social Survey Data: 2013

19. Overall, majority of inhabitants in sample subproject locations are having a satisfactory livelihood and their income level is higher than the expenditure. Therefore, this project may leads to establish a good socioeconomic condition among them.

20. The current situation of energy use among these households is mainly depending on electricity which is supplying by government owned company – Fenaka. This situation has been improved very recently as a result of the government intervention. In 1997 on two thirds of the islands electricity supply was limited to less than six hours per day; now a 24-hour electricity supply is available to nearly all islands (Vulnerability and Poverty Assessment 2004). Almost all households are getting the government subsidy except business purposes. The sample taken in these five islands are using a substantially high number of electricity units in their daily life. Table 9 depicts the scenario as given below.

Table 9: Number of Electricity Units Consumed Per Month (565)

Electricity Usage in Units	Island					Total
	Buruni	Goidhoo	Kurendhoo	Addu	Villingili	
Below 100	0	2	4	132	10	148
101-200	6	3	11	67	5	92
201-300	3	11	23	50	10	97
301-500	2	4	8	87	17	118
501-725	0	0	1	40	11	52
726 and above	0	0	0	48	10	58
Total	11	20	47	424	63	565

Social Survey Data: 2013

21. The level of use is fairly high due to higher trend of use various electricity equipment such as TV, VCD, DVD, computer, radio, electric water pump, electric cooker, washing machine, grinder, oven, iron, fan, air conditioner, refrigerators, mobile phones, etc. Other than, there are few number of households use water heater, sewing machine, and defreezer in their daily use. More details are given in table 10 below and it reveals that many of them are willing to have at least 3-6 electric fans for their daily use.

22. Of 565 households 542 of them are using electric water pumps for their sanitary purposes since they have a ground well linked with the bathrooms. Other equipment such as grinder, electric oven, electric iron, and air conditioners are consuming very high voltage. Thus, many households are having relatively high number of electricity units used in daily needs. Furthermore, many of them are having future plans to buy more electric appliances for their daily use; mainly air conditioners. Therefore, the entire demand for electricity supply to their houses will be increased.

Table 10: Number of Electric Appliances Using in Daily Life (565)

Units	TV	VCD	DVD	Computer	Radio	Water Pump	Cooker	Washing Machine	Grinder	Oven	Iron	Fan	AC	Refre.
No	25	349	445	137	209	22	92	20	48	135	12	8	325	36
1	478	212	110	236	302	496	435	474	432	390	450	19	145	475
2	46	2	10	120	47	44	35	59	75	32	78	33	62	43
3	16	2	0	39	5	2	1	11	8	5	19	71	16	9
4	0	0	0	21	2	0	1	1	1	2	4	93	11	1
5	0	0	0	9	0	1	0	0	1	1	1	118	3	0
6	0	0	0	1	0	0	0	0	0	0	0	78	3	1
7	0	0	0	1	0	0	1	0	0	0	0	56	0	0
8	0	0	0	1	0	0	0	0	0	0	0	42	0	0
9	0	0	0	0	0	0	0	0	0	0	0	24	0	0
10	0	0	0	0	0	0	0	0	0	0	1	10	0	0
11	0	0	0	0	0	0	0	0	0	0	0	5	0	0
12	0	0	0	0	0	0	0	0	0	0	0	3	0	0
13	0	0	0	0	0	0	0	0	0	0	0	3	0	0
15	0	0	0	0	0	0	0	0	0	0	0	1	0	0
17	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Total	565	565	565	565	565	565	565	565	565	565	565	565	565	565

Social Survey Data: 2013

23. The SIA has indented that there are certain issues in existing power supply system. Especially, it has a load shedding issue which is a frequent issue in these islands. About 29.2% have accepted that there is a problem of load shedding. Among them, majority of them (55%) perceived it as once in while they have to face this problem.

24. Energy use by the people in subproject location is not limited to electricity; it combined with LP gas and petrol. Most of them are using LP gas for their cooking purposes. It is about 59% among the sample households. In addition, about 1% of them are using electricity for their cooking purposes. However, about 40% of them have not given a perfect answer for this matter. The filed observation and FGDs shows that they are using electric appliances than what they have responded in the sample survey. Table 11 illustrates the current situation in each island. Moreover, there is an increasing trend of using a motor vehicle among islanders. The most popular vehicle is motor bicycle. Consequently, it is a contemporary issue to align with renewable energy source for the sustainable livelihood.

Table 11: Energy Use for Cooking Purpose – First Priority (565)

Source	Island's name										Total	%
	Buruni	%	Goidhoo	%	Kurendhoo	%	Addu	%	Villingili	%		
LP Gas	11	100	19	95	44	94	241	56.8	16	25.4	331	58.6
Kerosene	0	0	0	0	0	0	1	0.2	0	0.0	1	0.2
Firewood	0	0	1	5	0	0	0	0.0	0	0.0	1	0.2
Electricity	0	0	0	0	3	6	1	0.2	0	0.0	4	0.7
Not responded	0	0	0	0	0	0	181	42.7	47	74.6	228	40.4
Total	11	100	20	100	47	100	424	100.0	63	100.0	565	100.0

Status of Gender and Women Participation in Project Activities

25. It is a common fact that cultural and social factor in many developing countries are having certain limits for women's behavior and practices. Therefore, there are certain gender related issues that need to address in development related projects. However, the situation of women in Maldives continues to improve. They have achieved parity in both primary and secondary education, and almost all are literate in the Divehi language. Close to half of households were headed by a woman, about half of them because the husband was working in a resort, in Male' or at sea – and one sixth of them as a result of divorce or death. Overall, female-headed households were somewhat poorer than those with male heads: one-third were below the Rf.15 income line, while for those with a male head the proportion was one-quarter (Department of Planning, Household Income and Expenditure Survey 2009 – 2010). The SIA has revealed that the decision making process at household level is happening with a participatory approach of both men and women. If it is the current situation in Maldives, there is no much gender related issues. However, all FGDs conducted with Women's Development Committees in these sample subproject locations revealed that all critical decisions are taken by the men and all household management issues are taken by the women. SIA results are given in table 12 below.

Table 12: Decision Making Process at Household Level % (78)

Responsible Person	Yes	No	Not Responded	Total
Mostly men	34.5	65.5	0.0	100
Mostly women	27.8	72.2	0.0	100
Both men and women	35.4	64.6	0.0	100
Other	0.5	86.5	12.9	100

Social Survey Data: 2013

26. When concern on the freedom of women to move and participate in island's social activities, many respondents conformed that it is occasional when there is a need. It proves that women are having some limitations in engaging social activities. Table 13 illustrates this situation prevailing in all three islands.

Table 13: Freedom of Women to Engage in Social Activities (78)

Answer	Frequency	%
Mostly	84	14.9
No	313	55.4
Occasionally, when there is a need	168	29.7
Total	565	100.0

Social Survey Data: 2013

27. Meanwhile, SIA has identified what are the available community organizations for women to initiate their activities in their respective islands. About 18% of them are accepted that Women Development Committee is an ideal platform for women. However, it is a new platform introduced by the government recently. A considerable proportion (74%) of household heads has not responded for this question.

Table 15: Community Platform Available for Women (78)

Name of Community Organization	Frequency	%
Annenunge Committee	2	0.4
Goidhoo Youth Society	8	1.4
KDC	1	0.2
Keesa	3	0.5
NGO	2	0.4
Skys	1	0.2
Women's Development Committee	102	18.1
Youth Society (NGO)	4	0.7
Zifises Sports Club (NGO)	1	0.2
School PTA	6	1.1
Food and Coporative Safety'	1	0.2
Adaalath Party	1	0.2
Maldivian Democratic Party	2	0.4
Progressive Party of Maldives	2	0.4
Politics	2	0.4
Others	4	0.7
Not responded	423	74.9
Total	565	100.0

Social Survey Data: 2013

28. The qualitative data also reveals that women are having a greater opportunity in energy saving activities at household level. Energy saving is not a practical event in all sample subproject locations. Women are the key to introduce energy saving models and they are ready to work as social mobilizers under this project to promote the energy saving models. Therefore, women should be a specific target group in the capacity development program of the project.

Conclusion

29. In all the sample sub projects all Island Councils (ICs) and City Councils (CCs) have their own land and building structures that can be utilize for solar panel installation. Especially, there are several government and ICs or CCs buildings (schools, playgrounds, hospitals, ICs and CCs administrative buildings) . These islands do not have Involuntary Resettlement impact under the solar PV installation. All ICs and CCs under the sample subproject islands are agreed to provide necessary lands and building structures for the project. Therefore, there is no need of land acquisition or impacts due to involuntary resettlement. There are no indigenious people or communities identified in Maldives. The Resettlement Framework (RF) prepared for the project will guide the preparation of non-sample subprojects.

30. In addition, the project has identified several activities to keep up the project outcomes. Among them, school awareness program on renewable energy, energy saving program at island level (women should be focused), capacity development program for Women Development Committee members, and income generation program at cottage level or CBO level are suggested.

Annexure 1

Photos of FGDs and KIIs Conducted during the Stakeholder Consultations



Annexe 2

PV INSTALLATION DRAWINGS

