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Report No: 84385-MV

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED SERIES OF IDA GUARANTEES
IN THE AMOUNT OF SDR 10.325 MILLION
(US$16 MILLION EQUIVALENT)

AND A

PROPOSED GRANT

FROM THE SCALING-UP RENEWABLE ENERGY PROGRAM IN LOW INCOME COUNTRIES (SREP) OF THE STRATEGIC CLIMATE FUND
IN THE AMOUNT OF SDR 7.540 MILLION
(US$11.684 MILLION EQUIVALENT)

TO THE

REPUBLIC OF MALDIVES

FOR AN

ACCELERATING SUSTAINABLE PRIVATE INVESTMENTS IN RENEWABLE ENERGY (ASPIRE) PROJECT

May 23, 2014

Energy Sector Unit
South Asia Sustainable Development Department

CURRENCY EQUIVALENTS

Currency Unit	=	Maldives Rufiyaa (MVR)
MVR 15.41	=	US$1 (as of 04/30/2014)
SDR 1	=	US$1.54969 (as of 04/30/2014)

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ASPIRE	Accelerating Sustainable Private Investments in Renewable Energy
BOOT	Build Own Operate and Transfer
CO2	Carbon dioxide
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
ESA	Environmental and Social Assessment
ESMF	Environmental and Social Management Framework
ESMS	Environmental and Social Management System
ESRS	Environment and Social Review Summary
FENAKA	Fenaka Corporation Ltd
FM	Financial Management
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoM	Government of Maldives
IA	Implementation Agreement
IDA	International Development Association
IRR	Internal Rate of Return
IS	Implementation Support
JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
kWh	Kilo Watt-hour
MDB	Multilateral Development Bank
MDG	Millennium Development Goals
MEA	Maldives Energy Authority
MEE	Ministry of Environment and Energy
MoFT	Ministry of Finance and Treasury
MW	Mega Watt
NPV	Net Present Value
NSPA	National Social Protection Agency
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PDO	Project Development Objective
PMU	Project Management Unit
PPA	Power Purchase Agreement

PPP	Public-Private Partnerships
PRG	Partial Risk Guarantee
PS	Performance Standard
PV	Photovoltaic
RE	Renewable Energy
RES	Renewable Energy Systems
SAR	South Asia Region
SE4ALL	Sustainable Energy for All
SIDS DOCK	Small Island Developing States fund
SREP	Scaling-up Renewable Energy Program
SREP IP	Scaling-up Renewable Energy Program Investment Plan
STELCO	State Electric Company Ltd
T&D	Transmission and Distribution
TA	Technical Assistance
WB	World Bank

Vice President:	Philippe H. Le Houerou
Country Director:	Françoise Clottes
Sector Director:	John Henry Stein
Sector Manager:	Julia Bucknall
Guarantee Manager:	Pankaj Gupta
Task Team Leader:	Sandeep Kohli
Co-Task Team Leader (Guarantees):	Robert Schlotterer

MALDIVES

Accelerating Sustainable Private Investments in Renewable Energy (ASPIRE) Project

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Maldives Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) Project

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

Report No.: 84385-MV

Basic Information			
Project ID P145482	EA Category B - Partial Assessment	Team Leader: Sandeep Kohli Co-Task Team Leader: Robert Schlotterer	
Lending Instrument IDA Guarantee [X]	Fragile and/or Capacity Constraints [X] Financial Intermediaries [ ] Series of Projects [X]		
Project Implementation Start Date October 1, 2014	Project Implementation End Date October 1, 2019		
Expected Effectiveness Date Same as implementation start	Expected Closing Date December 31, 2019		
Joint IFC No			
Sector Manager Julia Bucknall	Sector Director John Henry Stein	Country Director Francoise Clottes	Regional Vice President Philippe H. Le Houerou
Guarantee Manager: Pankaj Gupta			
Borrower: Republic of Maldives			
Responsible Agency: Ministry of Environment and Energy (MEE)			
Contact: Ajwad Musthafa		Title:	Permanent Secretary, MEE
Telephone : (960) 300-4131		Email:	ajwad.musthafa@environment.gov.mv
Responsible Agency: Ministry of Finance and Treasury			
Contact: Arif Hilmy		Title:	Senior Advisor to the Minister
Telephone : (960) 334-9543		Email:	arif.hilmy@finance.gov.mv

Project Financing Data(in USD Million)					
[ ] Loan	[ ] Grant	[X] IDA/WB Guarantee			
[ ] Credit	[ ] IDA Grant	[X] Other (SREP-SCF)			
Total Project Cost:	27.684		Total Bank Financing:	16.0	
Financing Gap:	0.0				

Financing Source	Amount
BORROWER/RECIPIENT	0.0
International Development Association (IDA)	16.0
SCF-SREP Grant	11.684
Total	27.684
NB: US$16 million IDA is guarantee; private investing in projects is not shown here.	

Expected Disbursements (w/o IDA Guarantee) (in USD Million)

Fiscal Year	FY15	FY16	FY17	FY18	FY19				
Annual	2.73	2.23	2.48	2.23	1.98				
Cumulative	2.73	4.97	7.46	9.69	11.684				

Proposed Development Objective(s)

The project development objective of ASPIRE Project is to increase PV generation in Maldives through private sector investment.

Components

Component Name	Cost (USD Millions)
1. Technical Assistance (TA) to Government of Maldives	1.75
a. TA for Enabling Private Investing in PV	*0.75*
b. Institutional Capacity Building and Knowledge Sharing	*0.475*
c. Development of Pipeline of Projects	*0.475*
d. Project Management and Implementation Support	*0.05*
2. Structuring and Delivery of Tariff Buy Down for Currently Planned and Subsequent Projects	6.034
3. Security Package	19.9

Institutional Data

Sector Board

Energy and Mining

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Energy and Mining	Renewable Energy	100		100
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Financial and private sector development	Infrastructure services for private sector development	100
Total		100

Compliance

Policy

Does the project depart from the Country Assistance Strategy (CAS) in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies? Currently OP 14.25, paragraph 1, only envisages the Bank providing guarantees for private loans. While the new OP10.0 will allow Bank Guarantee coverage for payment default on non-loan related government payment obligations, this new OP10.0 replacing OP14.25 will only come into effect on July 1, 2014, after approval from the Board of Executive Directors has been sought for this Project. Therefore under this Project a Waiver will be required from the Board to avail such a Guarantee under OP14.25.	Yes [X]	No [ ]
Have these been approved by Bank management?	Yes [X]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [X]	No [ ]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project (Component 1)	**Yes**	**No**
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36		X
Pest Management OP 4.09		X

Physical Cultural Resources OP/BP 4.11	X	
Indigenous Peoples OP/BP 4.10		X
Involuntary Resettlement OP/BP 4.12		X
Safety of Dams OP/BP 4.37		X
Projects on International Waterways OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X

Applicable Performance Standards (PS) (Components 2 and 3)	**Yes**	**No**
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	X	
PS 2: Labor and Working Conditions	X	
PS 3: Resource Efficiency and Pollution Prevention	X	
PS 4: Community Health, Safety, and Security	X	
PS 5: Land Acquisition and Involuntary Resettlement		X
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	X	
PS 7: Indigenous Peoples		X
PS 8: Cultural Heritage	X	

Legal Covenants		
Name	**Due Date**	**Frequency**
Institutional Arrangements		Ongoing
Description of Covenant		
The Government of Maldives shall maintain, throughout the implementation of the Project, a Project Management Unit within MEE, responsible for implementation of the Project.		
Name	**Due Date**	**Frequency**
Key Escrow Undertakings		Ongoing
Description of Covenant		
The Recipient shall: (a) notify the World Bank of any downgrade in the credit ratings of the escrow bank; (b) ensure that the escrow account(s) shall at all times contain funds at least equal to the total amount of Securities issued; (c) ensure that the escrow account(s) are replenished in the event of a draw down; (d) notify the World Bank in the event of a draw down on an escrow account; and (e) ensure that proceeds from the grant transferred to the escrow account are protected against set-off, seizure, or attachment.		
Name	**Due Date**	**Frequency**
Pre-Closing Date Escrow Arrangements – Uncommitted Funds	Prior to Project Closing Date	

Description of Covenant

In the event that any of the proceeds of the grant allocated to Securities will not have been committed to a security by the Closing Date, then Recipient and the World Bank shall consult and agree on the use of such proceeds by the Closing Date, failing which the Recipient shall refund all such uncommitted proceeds, and the World Bank shall cancel all of such proceeds.

Name	Due Date	Frequency
Post-Closing Date Escrow Arrangements – Committed Funds		Ongoing

Description of Covenant

In the event that any proceeds of the grant have been committed to Securities and will remain so committed as of the Closing Date, then the proceeds shall be retained in the escrow account(s) established for such securities until such securities have expired/terminated subject to oversight arrangements consistent with those required by the Project Operations Manual, and thereafter, the proceeds may be transferred from the escrow account(s) to the Recipient to be used for productive purposes.

Name	Due Date	Frequency
Implementation Arrangements – Project Operations Manual		Ongoing

Description of Covenant

The Recipient shall carry out the Project in accordance with the Project Operations Manual, including the bidding and selection of subprojects, and the provision of Tariff Buy Downs and/or Securities.

Name	Due Date	Frequency
Escrow Agreement(s)		Ongoing

Description of Covenant

Prior to making any Securities available to investors, the Recipient shall enter into one or more Escrow Agreements with an escrow bank acceptable to the World Bank, for the establishment and maintenance of one or more escrow accounts from which claims by investors under Securities may be paid; such Escrow Agreement(s) to be in form and substance satisfactory to the World Bank, and meeting the requirements set forth in the Grant Agreement.

Name	Due Date	Frequency
Implementation Agreements		Ongoing

Description of Covenant

For each subproject to be supported through a Tariff Buy Down or a Security, the Recipient shall enter into an Implementation Agreement with the investor, meeting the requirements of the Grant Agreement, in form and substance satisfactory to the World Bank, and containing the terms and conditions set forth in the Grant Agreement with respect to the provision of Tariff Buy Downs or Securities.

Name	Due Date	Frequency
First Investor	06/30/2015	Once

Description of Covenant

The Recipient shall ensure that, by no later than June 30, 2015, at least one subproject has been identified and the relevant Implementation Agreement and PPA have been entered into with the respective investor, all in form and substance satisfactory to the World Bank.

Name	Due Date	Frequency
Safeguards and World Bank Performance Standards		Ongoing

Description of Covenant

The Recipient shall ensure that the Project and subprojects are carried out in accordance with the provisions of the Safeguards Instruments (ESMF, EIAs, and EMPs), and the World Bank Performance Standards.

Name	Due Date	Frequency
World Bank Guarantee		

Description of Covenant

Covenants and Conditions for the World Bank Guarantees would be agreed when the guarantee related agreements are finalized with the Government of Maldives, STELCO/FENAKA and subproject investors.

Conditions

Name	Type
Withdrawal Conditions	Disbursement

Description of Condition

No withdrawal of Grant proceeds can be made prior to the date of execution of the Grant Agreement, and until the Recipient has finalized and adopted the Project Operations Manual (POM) in form and substance satisfactory to the World Bank.

Name	Type
Tariff Buy Down (Component 2) Withdrawal Conditions	Disbursement

Description of Condition

The first disbursement with respect to a Tariff Buy Down will be conditioned upon the following: (i) the investor's entry into a Power Purchase Agreement (PPA) in form and substance satisfactory to the World Bank, (ii) signing of an Implementation Agreement on the subproject, in form and substance satisfactory to the World Bank, and (iii) fulfillment of other disbursement conditions specified in the POM for release of Tariff Buy Down (Component 2) payments. Subsequent claims against Component 2 will be processed by the Bank upon submission of a withdrawal application which shall include the Bank's no-objection letter for subprojects as an attachment, as stipulated in the disbursement letter.

Name	Type
Component 3 (Security Package) Withdrawal Conditions	Disbursement

Description of Condition

The full amount allocated to Component 3 will be disbursed as advance once the following conditions are met:

a. At least one Implementation Agreement in form and substance satisfactory to the Bank has been entered between the GoM and an investor for purposes of a security.
b. At least one PPA in form and substance satisfactory to the Bank has been entered into between the STELCO/FENAKA and an investor in a subproject.
c. GoM and the Bank have reached agreement on all the terms of the escrow mechanism, including the determination of the risks to be covered by GoM under such mechanism.
d. An Escrow Agreement between the GoM and a commercial bank has been entered with respect to a related Escrow Account, in form and substance satisfactory to the World Bank.
e. All legal opinions or certificates required by the World Bank attesting that the Escrow Agreement has been duly executed, delivered and is legally binding on the parties thereto have been provided.

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Sandeep Kohli	Senior Projects Officer	Task Team Leader	SASDE
Robert Schlotterer	Senior Infrastructure Finance Specialist	Guarantee Team Lead; Co-Task Team Leader	TWIFS
Gevorg Sargsyan	Program Manager	SREP Manager	SEGEN
Gunjan Gautam	Consultant	Energy Specialist	SASDE
Tae Hwan Kwak	Financial Analyst	Guarantee Specialist	TWIFS
Navid Rahimi	Consultant	Energy Specialist	SASDC
Shaukat Javed	Program Assistant		SASDO
Boonsri Prasertwaree Kim	Program Assistant		SASDO

Hisham A. Abdo Kahin	Lead Counsel	Legal	LEGES
Shingira Samantha Masanzu	Associate Counsel	Legal	LEGES
Blanca Ximena Talero	Chief Counsel	Legal (Guarantees)	LEGSO
Chau-Ching Shen	Senior Finance Officer	Controller	CTRLN
Parthapriya Ghosh	Social Development Specialist	Social Expert	SASDS
Darshini De Silva	Environmental Specialist	Environment Expert	SASDI
Sunethra Chandrika Samarakoon	Procurement Specialist	Procurement	SARPS
Supul Chamikara Wijnesinghe	Financial Management Specialist	Financial Management	SARFM
Mohammad Anis	Senior Energy Specialist	Energy Specialist	SASDE

Non Bank Staff			
Name	**Title**	**Office Phone**	**City**
Aman Sachdeva	President-Synergy	+1-703-815-4096	Clifton, VA, USA

Locations

Country	**First Administrative Division**	**Location**	**Planned**	**Actual**	**Comments**
Maldives	Greater Male	Male’ and Hulhumale’			

I. STRATEGIC CONTEXT

A. Country Context

1. **The Maldives is among the most geographically dispersed countries; spread over 900 kilometers, with only 190 of its 1,192 islands being inhabited.** 105 of them are self-contained tourist resorts and 21 are used for commercial activities. In the early 1980s, the Maldives had a population of 156,000 and was one of the world's 20 poorest countries. Today, with a population of over 326,000, it is a middle-income country with GDP per capita of US$ 7,177.[1] Poverty rates, as measured by the headcount ratio at 15 Rufiyaa per person per day, have fallen steeply, from 21% in 2003, to 15% in 2010[2]. Other human development indicators - infant mortality, maternal mortality, or educational attainment - have registered similar improvements. The country had achieved 5 out of 8 Millennium Development Goals (MDGs) by 2007, but progress has been relatively slower towards ensuring environmental sustainability (MDG7) and developing a global partnership for development (MDG8). While poverty has declined sharply overall in recent years, vulnerability and inequality are a concern, as a significant number of people fell back into poverty during the recent crisis, and the disparities between remote islands with small populations and the capital Male' region remain substantial.

2. **The Maldives is one of six pilot countries that participated in the Scaling-Up Renewable Energy Program in Low Income Countries (SREP).** As a requirement of the SREP, an Investment Plan (IP) – "SREP IP" was prepared on how SREP resources, leveraged by co-financiers, would be used to support the scaling up of renewable energy (RE) development in the Maldives. The IP was developed by the Government of Maldives (GoM) under the leadership of the Ministry of Environment and Energy. The main objective of Maldives SREP IP is to transform the electricity sector and to develop renewable energies on a large scale. The SREP IP estimated that just rooftop space of individual households and public buildings could meet as much as 30% of the electricity demand in some islands, and as much as 80% in some other islands. The SREP IP objective of scaling-up renewable energy in the Maldives supports socioeconomic development by generating new economic opportunities and widening access to sustainable, clean and reliable energy. Thus, it effectively contributes to poverty reduction and sustainable development - benefiting the Maldives and its people as a whole. The Accelerating Sustainable Private Investments in Renewable Energy (ASPIRE) Project, with the World Bank as the lead agency, was born as a result of the SREP IP.

3. **The Maldives has been in a difficult economic situation over the last few years.** The economy is largely dependent on tourism and fisheries and vulnerable to external shocks as witnessed by the economic recession following the tsunami of December 2004. Since 2008, tourism has taken a hit from weaker demand from Europe, the country's largest market, which along with political instability and loose fiscal policy have deteriorated the country's fiscal position and made macro-management difficult. Fortunately, tourism demand has picked up and the growing Chinese tourist segment is compensating for the weaker volume of arrivals from Europe. Growth moderated to 3.4% in 2012 from 7.1% in 2010, but the outlook is positive

[1] World Development Indicators, World Bank. Please note that the Country Context section uses World Bank data.
[2] Maldives Development Update, October 2013.

at over 4% for 2014. The non-tourism sectors, such as construction, communications, and fisheries, will remain dynamic with a positive contribution to the economy.

4. Expenditure trends over the past five years show an increasing gap between revenues and expenditures, financed by unsustainable levels of public debt. Public finance imbalances in Maldives seem to lie on the expenditure side, rather than on the revenue side.[3] In 2013, total expenditures were above 42.6% of GDP, while total revenue collection stood at about 32.8% of GDP (the highest in South Asia Region (SAR)). The fiscal deficit increased from around 11.3% of GDP (including grants) in 2008 to 13.5% of GDP in 2012 - purely in cash terms and closed at 9.8% for 2013. When one includes payment arrears, the deficit is considerably higher by over 3% of GDP[4]. This is the result of higher-than-budgeted expenditures from increased subsidies (including electricity subsidies to end consumers), social welfare payments, and transfers to state-owned enterprises (SOEs). Consequently, the public sector debt dynamics worsened, reaching over 86% of GDP in 2013.

5. The country lacks land based natural and mineral resources; as a result virtually all economic production is highly dependent on imports, creating a heavy dependence on foreign exchange earnings. Intensive agricultural production is limited because of the poor quality of soil and the limited availability of fresh water. Increasing the quality of service provision to a standard commensurate with the country's income levels is a challenge in this environment.

6. **The Government has no current stabilization program with the International Monetary Fund**. The prior program lapsed in 2009 and most of the measures were reversed. The World Bank (WB) started a Development Policy Credit in 2010 for economic stabilization and recovery that was also cancelled due to lack of progress. GoM had implemented wage cuts for the public servants in October 2009 and cut domestically financed capital expenditures. These were short lived however as the Supreme Court reinstated wages to previous levels in 2011. Increasing revenues also figured prominently in the government's program: a business profits tax and a goods and services tax (on the tourism sector) were implemented in addition to the existing flat-rate bed tax.

7. A major concern of foreign investors in Maldives, outside of the tourism sector, has been their inability to reliably and consistently convert local currency to foreign currencies for reasonable transaction costs at the official exchange rate for repatriation of shareholder returns and foreign currency debt service. Currently companies operating in Maldives suffer delays, and significant transaction costs for converting local currency earnings to US$ equivalent.

8. **The country has no conventional resources of energy. Providing electricity to the dispersed islands is overwhelmingly dependent on imported diesel fuel oil, and therefore vulnerable to fuel price volatility.** Island-based distributed generation is the only viable option for most of the islands, while some level of grid integration across the more populated islands near the capital is feasible. Diesel fuel oil accounts for bulk of the energy supply in the country (about 82.5% in 2009). The Government of Maldives is aware of environmental degradation as

[3] The latest Article IV mission proposes to increase the Tourism GST from 8% to 15% and suggests the continuation of Tourist bed night tax of US$ 8, which was expected to expire by end-2013.

[4] While the Ministry of Finance and Treasury estimates arrears at 3 percent, the World Bank estimate is 6 percent or higher according to the Maldives Development Update, October 2013.

a result of the heavy dependence on diesel fuel and global warming and is therefore actively focusing on the use of renewable energy capable of supplying reliable electricity to the islands.

B. Sectoral and Institutional Context

9. **Almost all of the country's current power needs are met through diesel fired generation**. The cumulative installed electricity capacity in Maldives was approximately 245 Mega Watt (MW) in 2012. Of this, 105 MW (43% of installed capacity) is located in resort islands which run their systems independent of state-owned utilities. The fuel has to be imported and transported to the dispersed generating locations, adding to the cost and difficulty of maintaining reliable power operations. As a result, the Maldives has among the highest cost of electricity generation in South Asia - 30-40 US$ cents per kilo Watt-hour (kWh) in the larger islands, and even higher in the remote small islands. Despite these challenges, access to electricity is universal in the Maldives, and the GoM is constitutionally obligated to ensure the provision of electricity to every inhabited island at a reasonable standard. The 2010 National Energy Policy and Strategy are centered on creating an enabling environment for the growth of a reliable and sustainable energy sector.

10. **The tariff (which includes a fuel surcharge) is subsidized but remains high for consumers, and varies from island to island.** The subsidy to end consumers, driven largely by exposure to oil prices for electricity production, remains a large burden on public expenditure absorbing US$25 million in 2011, representing an average of 5 US$ cents per kWh. This subsidy amount is growing as demand for electricity grows (about 8% per annum) and oil prices remain high. Tariffs are fixed by the Maldives Energy Authority (MEA). Tariff reform undertaken in 2009, cut subsidies and increased the electricity tariff charged by STELCO by an average of 25% (without accounting for the fuel surcharge component). MEA's tariff fixing mechanism is evolving, and this process is being supported by Asian Development Bank (ADB), which is helping to implement a more rigorous methodology based on cost recognition and recovery. Ongoing tariff reforms with upcoming initiatives supported by development partners addressing transmission and distribution (T&D) performance and system integration of renewable energy would position MEA favorably to enhance its energy outlook.

11. **Increasing PV generation in Maldives has multiple benefits.** For 20 MW of installations through this Project, estimated fuel savings alone would be around $13-100 million over a 20 year period,[5] and this range increases to US$47-134 million over the same period, if one also accounts for the avoided capital cost associated with diesel generation. Data shows that diesel fueled generation on the outer islands is even less efficient than on Male' and the larger islands (and hence consumes more diesel per unit generated). Since these islands are more remote, transport of fuel to these locations is more expensive, as is the maintenance of the engines. In addition, increasing PV generation will help in achieving the goal of becoming carbon neutral. Thus, this Project takes a step towards greater energy self-sufficiency, minimizing emissions and bringing down the nation's exposure to global petroleum price volatility. Switching from a high cost diesel-based production to a lower cost PV production could also allow reductions in tariff benefiting consumers in the medium to long term. Timely

[5] This assumes a range of off-take power prices for PV (21-25 cents/kWh), 0.27-0.30 liters of diesel/kWh, and a diesel price range of 90-136 cents/liter.

implementation of SREP investment plan is critical for meeting the priorities set out in the Maldives National Energy Policy 2010.

12. **The main energy sector stakeholders include, STELCO and FENAKA, the two state owned utilities responsible for generation and distribution of electricity in the country.** Since there is no separate market in Maldives, both of these utilities would be the key off-takers of power generated from the proposed ASPIRE subprojects. STELCO, the largest state-owned company was established in 1949 to provide electricity to the islands. The company operated as a government department under Maldives Electricity Board until 1997, when "State Electric Company Ltd" (STELCO) was formed as a limited liability company that is still wholly owned by the Government of Maldives (GoM). STELCO operates in eight islands as well as the capital, Male, and provides electricity to 43% of the population of Maldives. STELCO has a total installed capacity of 80 MW. Its largest operation is in Male', with an installed capacity of 62 MW, and a 26 km underground 11kV distribution network feeding power to 99 distribution transformers providing electricity to 33,341 customers.

13. In 2009, six new utility companies were formed to provide affordable and quality utility services to six regions of the Maldives. These utility companies took over most of the power systems operated by the island councils and private power producers. The experience of the six utility companies resulted in the decision to merge them under one umbrella for better management and sharing of scarce technical man-power and resources. Subsequently, 'FENAKA Corporation Ltd.' formed in June 2012 as a public company with 100% Government share with a mandate to provide island communities (except the greater Male' region) with electricity, water and sewerage. While STELCO provides only electricity services to its consumers, FENAKA by contrast is mandated to provide utility services which include electricity, water, sewerage and waste treatment in the outer islands. FENAKA currently operates in 150 islands and is responsible for about 54 MW of total generation (22% of the installed generation capacity of the Maldives).

14. **A financial analysis of STELCO and FENAKA reveals a financial position burdened by a high fuel price component in electricity generation.** STELCO, despite an increase in consumer tariffs from November 2009 and the introduction of fuel surcharges, has experienced decreasing profitability to as low as 1% net profit margin in 2012[6]. Because of its reliance on diesel fuel, it has required as much as 66% revenue grant by GoM in 2009 to compensate for losses due to the 2008 fuel shock. With diminishing revenue grants, diesel price increase and worsening collection efficiency due to prolonged delay in receiving the government outstanding payments, STELCO is showing signs of liquidity stress representing a potential off-taker risk to investors. FENAKA is a newer company, just emerging out of its infant stage, and thus has less history than STELCO. With limited profitability at a net profit margin of just below 3%, FENAKA needs backstopping and assistance for growth. These off-takers would benefit from a power generation technology with more stable and lower cost of production, such as photovoltaic based electricity, and from improved energy efficiency measures. A full analysis of STELCO and FENAKA's operational and financial performance has been carried out and presented in Annex 10.

[6] Based on Outcomes of the Potential Investors and Credit Market Assessment (OPICMA) Report, 2014, AF- Mercados EMI and Finnacle Capital Advisors Pvt. Ltd. for Ministry of Environment and Energy, Government of Maldives

C. Situations of Urgent Need of Assistance

15. **The development of solar PV subprojects is expected to improve the country's fiscal situation by reducing both, the volume of fossil fuel imports, as well as the fiscal uncertainty arising from fuel price volatility.** This would also replace the expensive diesel based generation and result in significant reduction of the government subsidy. It is also a critical transformative initiative that would help the government reach its stated goal of becoming carbon neutral by 2020 – a sentiment that finds deep local resonance since the Maldives atolls are on very low ground, and will face the brunt of climate change effects from any rise in sea level. The introduction of renewables is therefore an essential part of this strategy.

16. **In keeping with its goal of low carbon growth, the Government aims at fostering private sector participation through Public-Private Partnerships (PPPs) for the development of RE on the islands.** MEE is also focused on strengthening the regulatory framework covering environmental protection, licensing, investment approval, monitoring, performance standards, tariff setting methodology, investment planning and contract review. Despite these efforts from the government and significant interest from private sector for investment opportunities, a variety of risks have prevented private sector investments in the sector. The investors see payment risk as a key hurdle and seek credit enhancement. Thus, an IDA Guarantee in combination with an SREP funded escrow account mechanism would provide the appropriate comfort to private sector investors.

D. Higher Level Objectives to which ASPIRE Contributes

17. The Government's priorities are reflected in the five priority areas identified below :

a) **Macroeconomic Reform to support private sector-led economic growth:** Reducing the role of the state in the economy is a core component of the Government's strategy as is facilitating condition for growth in the tourism and fisheries sectors.

b) **Public sector reform:** Public sector reform is an important area of focus for the government. The public sector is being streamlined in order to deliver more efficient and effective government services.

c) **Good governance initiatives:** Strengthening democratic institutions and processes is a priority to ensure that the new democracy is entrenched.

d) **Social development:** Investment in human resources development of the country is an immediate step required to deliver on all social development pledges.

e) **Climate change and adaptation:** Climate change poses an existential threat to the Maldives. The GoM is proposing a series of mitigation and adaptation measures.

18. While all 5 stated objectives are helped by the proposed ASPIRE Project, implications on the above points: (a) Macroeconomic Reform to support private sector led growth, (b) Public Sector Reform, and (e) Climate Change and Adaptation, are more pertinent to this Project. Furthermore, as Maldives continues to face challenges in meeting MDG7 (Environmental Sustainability) and MDG8 (Global Partnership for Development), the proposed series of IDA

Guarantees would be instrumental in fostering regional and global investment in the RE sector in Maldives, which will help in making energy access more sustainable, and open a new field for foreign investment, thus helping in the achievement of the two aforementioned MDGs.

19. ASPIRE is in line with the World Bank Group's Interim Strategy Note for the Maldives for FY14-FY16, which explicitly identifies the initiative as a means of supporting Government efforts to move to a carbon-neutral economy by transitioning to renewable technologies and away from diesel as the primary fuel for electricity generation (Environmental and Natural Resource Management area of engagement). ASPIRE will also contribute to longer term goals including the World Bank's twin corporate goals of (i) eliminating extreme poverty by 2030 and (ii) boosting shared prosperity. It would do so by providing more affordable and reliable electricity to Maldivians, freeing up government resources from operating and capital expenses of state utilities to spend on key social needs and reducing the impact of climate change which most directly affects the poor. In addition, it would directly address two of the three, Sustainable Energy for All (SE4ALL) objectives, namely (i) ensure universal access to modern energy services and (ii) double the share of renewable energy in the global energy mix by providing more reliable access to electricity and, as the Project Development Objective (PDO) states, increase PV generation in Maldives. These same SE4ALL objectives are adopted by the World Bank Group's Energy Sector in its Directions Paper. ASPIRE will support universal access to energy by moving the electricity sector from financially unsustainable diesel based generation, which is also susceptible to shocks from the volatile fossil fuel prices, to less expensive and stable PV generation. Given that electricity demand in Maldives is growing at around 8% per annum, the Project improves supply adequacy and diversifies supply options for electricity generation supporting universal access in Maldives. Under the ASPIRE subprojects' contribution to reduction of bulk power supply cost and potentially, to consumer electricity tariffs, will be monitored.

20. In addition, through engaging with private sector companies under the ASPIRE Project, financing, construction and operational risks of the new generation units will shift to the private sector. The country risk and power purchaser (off-taker) non-performance risks will still need to be assumed by public entities. In order to facilitate this structure, GoM would provide adequate support for its own and the power off-takers' performance obligations, which would be backed by the World Bank through IDA Guarantees. During the Project life, a record of timely payments and honoring of contracts will result in a greater willingness by the private sector to take on more of the commercial risks in subsequent subprojects. This approach will also alleviate the fiscal burden on GoM's budgetary resources for new subprojects, as well as exposure to oil price volatility.

21. ASPIRE will be the first Project in South Asia to extend a Series of IDA Guarantees to small solar PV installations. Its success will have an important demonstrative impact for other countries in the region as well as Small Island States like the Maldives. Under the ASPIRE Project, the Bank will work with the GoM and multi-lateral donors to standardize subproject agreements such as the Power Purchase Agreement (PPA). The use of standard documents is expected to facilitate multiple transactions, and reduce transaction costs for subproject sponsors, the Bank and GoM. The lessons learned from this operation will also help the Bank to replicate similar Project designs in other countries to develop small scale solar PV energy subprojects.

II. PROJECT DEVELOPMENT OBJECTIVES

A. Project Development Objectives

22. The project development objective of ASPIRE Project is to increase PV generation in Maldives through private sector investment.

B. Project Beneficiaries

23. The primary Project beneficiaries are citizens and consumers in the Maldives. The initial subprojects target consumer populations in Male' and Hulhumale' islands. The consumer base would later expand to other islands in Maldives. Consumers would receive improved electricity services, with lower local environmental externalities.

24. The GoM is also a key beneficiary, since the proposed Project would reduce the islands' financial exposure to oil price volatility, and generate savings by replacing higher cost, imported diesel fueled generation, with cleaner PV generation. The Project also reduces the need for public investment in the power sector, and helps reduce the operating and capital expenses of the state utility companies. Not only would this get the GoM closer to its stated goal of carbon neutrality, but it would also free up resources to fund key social needs such as education and health.

25. Finally, the project would: (i) enable private sector investing in PV infrastructure development; and (ii) diversify the investment base in the country through developing a local market and expertise in renewable energy. This will benefit the private sector engaging in the renewable energy sector of Maldives.

C. PDO Level Results Indicators

26. In keeping with the stated PDO, the key results are divided into two categories:

a) Final Results Indicators:

i. Cumulative Installed Generation Capacity of Solar Energy Constructed

ii. Annual Electricity Output from Solar Energy under the Project

iii. Private Capital Mobilized

iv. Annual Reduction in Bulk Power Cost in Project Areas

b) Intermediate Results Indicators:

i. Development of Standard Contracts and Guidelines

ii. Cumulative Megawatts of PV pipeline subprojects prepared

III. PROJECT DESCRIPTION

A. Project Components

27. **Scope and Overview of the ASPIRE Investment Framework**. Currently, the Maldives has a cumulative installed PV based generation capacity of around 2 MW, spread across several islands and programs. The proposed ASPIRE Project will combine technical assistance with private sector investment, to scale-up the deployment of PV based generation on the islands. ASPIRE seeks to provision IDA and SREP resources to develop and implement an appropriate investment framework that will result in the deployment of PV systems through private sector investments during and after the ASPIRE implementation completion. The identified hurdles to private investments in the Maldives' energy sector include the paucity of experience with project finance, limited local familiarity with the technology, and little private sector exposure to the institutions in the sector. To address these hurdles, the ASPIRE Project aims to develop the Maldives' potential for solar PV through private sector investments rolled out over the Project's implementation timeframe. This will be done through the use of an investment framework that has been developed and appraised taking into account government and institutional considerations and informed by feedback from potential private investors. In that regard, the team has undertaken a significant market sounding exercise that included an investor conference held on March 26, 2014 by the GoM.

28. The ASPIRE investment framework uses a phased approach to developing PV sector investments under which PV subprojects would be prepared by GoM and private sector investors would be selected to undertake these subprojects through a transparent bidding process. Early investors in initial subprojects will receive support from ASPIRE through greater risk mitigation measures (through a security package consisting of an IDA Guarantee and additional payment security funded through SREP), and an incentive structure (through the provision of tariff buy down funded through SREP). In addition, the investment framework includes the provision of support for technical assistance to build local capacity within GoM that will allow the continued development of a pipeline of private sector investments in PV subprojects.

29. The design and structure of each subproject under the framework is expected to be materially similar, given the underlying and relatively simple generation technology (roof or ground mounted solar PV installations). Equally it is expected that the contractual arrangements of the required commercial and security package arrangements will be materially similar for each subproject. As with the overall investment framework, the contractual arrangements have been developed during preparation of the Project and their design has been informed by feedback from potential private investors and government and institutional considerations. Appropriate incentives and risk mitigating structures, as described above, are offered under the investment framework to make each subproject attractive for private sector investments.

30. On the basis of the investment framework, the GoM has already prepared an initial subproject which encompasses up to 4 MW of PV installations on distributed rooftop PV systems on public buildings in Male' and Hulhumale'. This initial subproject will be put out for bidding following the IDA Board of Executive Directors' approval of this Project. The 4 MW

subproject is described in greater detail in Section VI and Annex 8 of this PAD. In keeping with the investment framework, provision of security package support and possibly also tariff buy down is envisioned for this initial subproject, to mitigate first mover risks and to make the subproject attractive for investment. As the GoM and private investors will develop operational experience under the first subproject, incentives for later subprojects are expected to be tapered down, moving subsequent subprojects towards greater risk taking by the private sector. This first subproject is going to be the pioneering investment of a series of subprojects to be developed under ASPIRE. While this first subproject is situated in Greater Male, similarly structured subprojects will also be designed for outer islands, where power demand loads, and hence subproject generation sizes, may be smaller. It is expected that the key parameters of each subproject including technology, economic and financial outcomes and environmental and social aspects will be materially similar.

31. The initial 4 MW subproject has been prepared in accordance with the investment framework and appraised by the Bank team, and the issuance of an IDA Guarantee for this subproject is being presented to the Board together with the overall Project for approval. The established framework will be followed for each subsequent subproject which will be similarly appraised by the Bank team.

32. The ASPIRE Project design envisages resource allocation to cover tariff buy down and payment guarantee support for around 20 MW of cumulative generation, assuming the same level of support for subsequent installations, as for the initial 4 MW subproject. The IDA Guarantee cover of up to US$16 million for termination payments, if fully utilized, will support around 8 MW of solar PV installations. In reality, it is expected that the level of support needed will taper down over time; hence, more MWs may be covered. There may also be a need to move resources across Project components, depending on the specifics of future subprojects. Furthermore, if additional support for termination cover is needed, the Project's mid-term review will provide the opportunity to re-assess that. The proposed amounts for tariff buy downs and escrow account funding purposes are sufficient to cover up to 20 MW of generation sub-projects on the basis of the current subproject cost assumptions made.

33. Based on a 10-15% penetration of PV over the Project life and beyond, it was estimated that ASPIRE can catalyze 35-50 MW of PV generation during a 10 year period[7]. This will be achieved through the establishment of a PV industry in the Maldives, and result in the mobilization of US$60-85 million in investments. Ideally, further subprojects would continue to be implemented even after the official close of ASPIRE, without need for further guarantee cover or tariff buy down.

34. In addition to the infrastructure investments under each subproject, the ASPIRE framework supports the financing of capacity building for local expertise that allows for continued development of a pipeline of private sector funded PV subprojects. To do this, the Project includes a Technical Assistance (TA) budget that promotes renewable energy awareness,

[7] The Maldives has 245 MW of built electric capacity based on diesel fired generation. The SREP IP estimates electricity demand increase at a CAGR of 8.5%. The above calculation conservatively assumes a CAGR of 4.2% for electricity demand over the next 10 years in Maldives. Thus over a 10 year period, a 10-15% penetration corresponds to 37-55 MW of capacity. SREP IP estimated that just roof top space availability is sufficient to meet 30% of electricity demand on some islands, and as much as 80% on some other islands.

supports pre-feasibility studies, and develops capacity for handling renewables within the government through training, expert advice, and knowledge sharing.

35. Components**.** The ASPIRE is structured around three main components, through which the investment framework is operationalized: (1) Technical Assistance Support to GoM for institutional capacity building, preparation of the initial set of prospective subprojects for offering to private investors, and subsequent pipeline preparation, and (2) Structuring and Delivery of Tariff Buy Down for currently planned and subsequent subprojects, and (3) Security Package to cover payment shortfalls, and early subproject termination payments. The components will make strategic use of the different funding sources (IDA, SREP, GoM and private sector funding) to push for increasing private sector risk taking in this nascent sector. It should be noted that other funding sources may be added to fund these components, as the program develops a pipeline and a track record.

36. **Component 1: Technical Assistance Support to GoM (US$1.75 million).** This component will be financed by SREP, and administered by the Project Management Unit (PMU) within the Ministry of Environment and Energy (MEE). It will encompass the following activities:

a) **TA for Enabling Private Investing in PV (US$750,000):** This includes activities that will support the creation of an appropriate environment for private investments and reducing preliminary subproject development costs. This will include working with agencies such as the Maldives Energy Authority (MEA) on follow-up work to implement the private sector policy and regulatory framework for RE subprojects, as well as developing arrangements to guide both off-take utilities and private sector investors. Such guidance will help the subproject stakeholders negotiate partnerships, comply with standard contracts such as PPAs and rooftop leasing contracts, and reduce possibilities of conflict, thus enabling the smooth execution of transactions in this energy sub-sector.

b) **Institutional Capacity Building and Knowledge Sharing (US$475,000):** ASPIRE seeks to significantly increase the amount of PV capacity in-country. As a result, there is a need to build local institutional capacity for planning, implementing, operating, and monitoring power systems that are able to absorb increasing amounts of renewable energy. In addition, Maldives is witnessing a sharp increase in demand, and the initiative will address the need to provide necessary information, training and knowledge sharing in the area of renewables and energy efficiency, so that electricity production and use can be optimized.

c) **Development of Pipeline (US$475,000):** The development of a pipeline of subprojects has to be an ongoing exercise over the Project life (and possibly beyond). Identification of appropriate subproject sites, resource assessment, pre-feasibility work, as well as aggregation of opportunities into saleable subproject bundles will form a part of this sub-component. In addition to the main islands, the Maldives also has over 190 dispersed inhabited islands, where subproject development and private investment in renewables needs to occur. Data shows that diesel fueled generation on these islands is even less efficient than on Male' and the larger islands (and hence consumes more diesel per unit generated). Since these islands are more remote, transport of fuel to these locations is more expensive, as is the maintenance of the engines. Special attention will be paid to

the development of these subprojects since the loads are smaller. Local companies, supported through capacity building and incentives are more likely to succeed in such locations.

d) **Project Management and Implementation Support (US$50,000)**: Provision of operational support for project management, supervision, and monitoring. The technical costs of the Project Management Unit are covered under parts 1.b and 1.c above. Therefore this sub-component covers only minor expenses such as logistics and office supplies that are ineligible under the earlier cited sub-components. It will also serve as a holding line for future PMU costs that are not envisioned at this stage.

37. **Component 2: Structuring and Delivery of Tariff Buy Down for currently planned and subsequent subprojects (US$6.034 million).** This allocated funding will be used to provide tariff buy down for subprojects being developed in batches under the Project. This will be delivered to the private sector subproject developers, who will be putting in the remainder of the investment for the subprojects in question. For the first 4 MW of subprojects, we estimate that the tariff buy down, if offered will be capped at US$300,000/MW. The actual tariff buy down level may be different, including complete elimination of tariff buy down - based on market assessment. Tariff buy down support for subsequent subprojects may taper; for planning purposes, the US$6.034 million allocation is based on provisioning for 20 MW based on the support cap of US$300,000/MW. This component will be financed by SREP, and administered by the Project Management Unit (PMU) within the MEE. The tariff buy down is expected to be delivered in 1-3 installments either upon commissioning, or towards the end of the construction of a particular subproject (i.e. after the rest of the investment has been completed).

38. **Component 3: Security Package (US$19.9 million).** This component mobilizes US$3.9 million of SREP resources alongside US$16 million of IDA Guarantee exposure to provide a total of US$ 19.9 in security cover. It will function as a combination of a funded escrow account and an IDA Guarantee to (i) backstop short term payment delays by STELCO/FENAKA under PPAs, as well as (ii) termination events caused by defaults for which either STELCO/FENAKA or GoM are responsible. A US$3.9 million escrow amount is expected to cover up to 6 months of payments for 20 MW of installations and US$16 million of the IDA Guarantee will partially cover termination payments. The utility and GoM will be obliged to replenish the escrow account once it is drawn. Thus, through this mechanism, short-term cash shortfalls and payment delays can be handled in a timely manner – a key risk identified under the market sounding exercise.[8]

39. In the very rare cases where there are very serious and chronic utility and GoM non-performance issues, contract termination proceedings under the subproject contract clauses could be initiated. If such proceedings result in a termination payment obligation due to the private power developer, and if such termination payment obligation is not honored, then, once all other modalities have been exhausted, the IDA Guarantee would be used to backstop a portion of the

[8] The issue of currency inconvertibility featured prominently in discussions with potential investors, as a part of the market sounding exercise, culminating in the investor conference of March 26, 2014, organized by the Government of Maldives. Government of the Maldives recognizes the importance of addressing inconvertibility issue in order to attract foreign investments to the energy sector. The government remains fully committed to work with relevant agencies to find feasible solutions within the macroeconomic framework to ease difficulties faced by renewable energy investors in currency convertibility.

funds due to the subproject developer. While complete modalities are subject to further discussions, this part of the guarantee responds to an expressed request for risk mitigation by private developers.

40. Thus, as structured above, the security package provides risk mitigation for:

a) **Payment Risk:** This includes short term delays in payment.

b) **Termination Risks:** This would cover contract frustration prior to commissioning, as well as termination after commissioning. The World Bank guarantee would fall off or taper down after a period of time to be agreed between the World Bank and subproject stakeholders. The actual amount of termination cover would be decided for the first 4 MW after discussion with the Government and private sector developer/s.

41. It is expected that under the ASPIRE Project a number of PPAs would be concluded between the utility and private sector subproject developers. It is expected that for each PPA, the utility/GoM would establish an escrow account as payment security and the private sector subproject developer will have to submit a performance bond for its implementation obligations until at least commercial operations date.

42. The security package has been discussed with the GoM. The proposed structure will be further refined prior to bidding, and finalized before financial closure.

B. Project Financing

43. The proposed Project will use US$11.684 million of SREP funds together with a US$16 million IDA Guarantee. The SREP and IDA financing will be used to attract private sector investments by (i) providing US$16 million of IDA Guarantee relating to early termination payments and (ii) using SREP funds strategically to provide tariff buy down, capacity building, payment guarantee or other assurances as needed to make the early subprojects financeable. The expected investment from the private sector is about US$ 42 million over the Project life.

Table 1: Use of IDA and SREP Funds

Project Components	Project cost in US$MM	IDA Financing	SREP Financing	Financed by IDA
1. Technical Assistance(TA) to Government of Maldives	**1.75**	**0**	**1.75**	**0%**
a. TA for Enabling Private Investing in PV	*0.75*	*0*	*0.75*	*0%*
b. Institutional Capacity Building and Knowledge Sharing	*0.475*	*0*	*0.475*	*0%*
c. Development of Pipeline of Subprojects	*0.475*	*0*	*0.475*	*0%*
d. Project Management and Implementation Support	*0.05*	*0*	*0.05*	*0%*
2. Structuring and Delivery of Tariff Buy Down for currently	**6.034**	**0**	**6.034**	**0%**

Project Components	Project cost in US$MM	IDA Financing	SREP Financing	Financed by IDA
planned and subsequent subprojects				
3. Security Package	**19.9**	**16**	**3.9**	**80%**
Total Financing Required	**27.684**	**16**	**11.684**	**56%**

44. **Board Waiver for IDA payment guarantee**. As part of Board approval a waiver of OP 14.25, *Guarantees*, paragraph 1 is sought for the series of IDA guarantees cumulatively of up to US$16 million to cover payment default of ***non-loan*** related government termination payment obligations. Such IDA guarantees would be provided under the ASPIRE for individual subprojects in addition to the SREP Grant of US$11.684 million. Each IDA guarantee would be used for backstopping the GoM's termination payment obligations under PPAs and IAs to be concluded for each subproject. OP 14.25, paragraph 1, only envisages the Bank providing guarantees for private ***loans***. On December 3, 2013, the Board approved Management's proposed reforms to fully integrate the Bank's policy on guarantees with those on investment project financing and development policy lending, in order to support a fuller use of Bank guarantees in its client countries and leverage its resources more effectively to deliver critical infrastructure.[9] Under the recently approved Bank/IDA's guarantee regime, the policy has been expanded. A draft revised OP 10.00 on *Investment Project Financing* allows coverage for payment default on non-loan related government payment obligations.[10] The revised OP/BP 10.00 will come into force on July 1, 2014, after approval from the Board has been sought for this guarantee project. Because OP 14.25 will still be effective until the end of June, the Managing Director endorsed the request to the Board for a waiver of the relevant provisions of OP 14.25, paragraph 1, to allow IDA to issue guarantees to cover payment default of ***non-loan*** related government termination payment obligations.

C. World Bank Approval of Subprojects

45. **The ASPIRE Project is being designed as a Series of Guarantees for subprojects developed under a standardized, pre-established investment framework for solar PV investments in the Maldives.** This PAD presents and appraises the investment framework including its technical, economic, financial, environmental and social aspects as well as the IDA Guarantee design for the complete series. In addition, this PAD also presents and appraises the first subproject under the investment framework encompassing private sector solar PV investments of up to 4 MW. It is expected that the basic terms and conditions of the IDA Guarantees (see Annex 6 for details) and the technical, economic, financial and environmental and social aspects of each subsequent subproject supported by the ASPIRE will not change materially over time.

46. **Based on the parameters developed under the ASPIRE investment framework, any subproject would meet the following eligibility criteria**: (i) a subproject shall be in the territory of the Maldives; (ii) a subproject shall utilize solar PV technology for power generation

[9] *Enhancing the World Bank's Operational Policy Framework on Guarantees,* Operations Policy and Country Services, November 19, 2013, paras. 4, 20, 21, 62; *Record of Approvals on an Absence of Objection Basis or authorizations to proceed on a Streamlined Basis between November 27, 2013 through December 5, 2013*, M2013-0068/1, para. 6.
[10] *Enhancing the World Bank's Operational Policy Framework on Guarantees,* Annex 2: OP10.00, para. 3 (ii).

with size of up to 8 MW; (iii) the cumulative amount of IDA Guarantees issued in support of subprojects shall not exceed US$16 million equivalent, in case a subproject receives support through the IDA Guarantee; (iv) the terms and conditions of each IDA Guarantee for a subproject are not materially different from the terms and conditions presented in this PAD, in case a subproject receives support through the IDA Guarantee; (v) the process for selecting an investor for a subproject under the ASPIRE will comply with the World Bank Procurement Guidelines applicable to the Project; and (vi) a subproject will comply with the World Bank's Environmental and Social Performance Standards.

47. **Subsequent subprojects will be appraised and processed for approval in keeping with the ASPIRE investment framework and as long as the Project has available resources**. It is proposed that given the small size and moderate risks that the small renewable energy subprojects are likely to have and to the extent that the terms and conditions of the guarantees are not materially different from those approved by the Board in this package, subsequent subprojects for which Guarantees are being sought would be reviewed during a Decision Meeting, chaired by the Country Director, and subsequently would be sent to the Board of Executive Directors for approval, on an Absence of Objection "AOB" basis.

48. **The preparation of this Series of Guarantees would require sufficient resources during the implementation of the proposed IDA Guarantees Project.** It is expected that several small private sector subprojects could be supported through this proposed Project. Therefore, this series of Guarantees would require more resources at the implementation phase compared to conventional loan/credit Projects.

D. Lessons Learned and Reflected in the Project Design

49. A key concern of private investors is whether government or government owned entities will honor their contractual payment obligations, including for termination. The proposed security package structure mitigates this risk by backstopping the government/utility's obligations. Such structures have been used in the past for mobilizing private investment (e.g. Kenya, Cote d'Ivoire) through efficient mitigation of such payment risks. In the case of delays in payment, the payment security provides a financially stretched utility with valuable time to make good on its obligations. In this way, provisions of the security package facilitate the continued operation of the subproject during a financially stressful time.

50. In the Maldives, both STELCO and FENAKA have successfully inducted solar PV subprojects in the recent past. STELCO is procuring power from installations aggregating to 652 kW on six islands through long term PPAs in the Greater Male' area. FENAKA, with World Bank support, has procured 300 kW on Thinadhoo Island through the engineering, procurement and construction (EPC) route at attractive prices, and is evaluating an additional 250 kW. The proposed ASPIRE Project builds upon these successes and will rapidly expand the country's solar base, the economics of which are shown to be better than diesel. Analysis of STELCO and FENAKA's operational and financial performance are in Annex 10.

51. GoM's Structuring Advisors are preparing, with the support of the Bank, standardized PPAs and Implementation Agreements. Model forms of Guarantee Agreements are expected to be part of the packaged subprojects bid out to investors. These standardized contracts are

expected to reduce transaction costs for each subproject. Furthermore, the Bank is providing technical assistance for supporting Greater Male' Region Renewable Power System Integration and for improving performance of electricity system operators with regard to PV generation. Going forward, ASPIRE will collaborate with complementary activities by GoM, ADB, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and Japan International Cooperation Agency (JICA) as envisioned in the SREP IP. This also includes potential co-financing of US$1,000,000 to develop PV subprojects from Small Island Developing States (SIDS DOCK) fund. Such collaborations are expected to improve the environment for private sector investing and the performance of electricity networks and system operators in the Maldives.

52. Against the backdrop of these apparent benefits, the initial subprojects would be appropriately structured to address risk allocation through acceptable standard contractual and regulatory mechanisms. Documentation would be introduced to reduce transaction costs and risks and also facilitate the initial subprojects in a very direct and deliberate manner.

E. Partnership with Other World Bank Group Institutions

53. There was close collaboration within the World Bank Group during the design phase of this Project. This collaboration included discussions with IFC and MIGA on their ability and interest to support the subprojects. Discussions with existing IFC clients with extensive experience in PV installations were also carried out by the Bank team, as well as discussions with MIGA on their risk perception and potential participation in Maldives. Given the pioneering nature and private sector focus of the Project, it was decided that IDA Guarantees were required to bring in private sector investments. The participation of both IFC and MIGA is envisioned to take place once the ASPIRE Project has been successfully launched with initial subprojects. The proposed ASPIRE Project is expected to develop an appropriate enabling environment for renewables and particularly PV power generation solutions, which could result in further private sector investments that could be supported by IFC and MIGA, even without additional support from IDA and SREP. Thus with the involvement of IFC and MIGA in the Project at a later stage, the overall benefits of this Project to Maldives could be increased even further.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

54. **Implementing Agencies:** ASPIRE will be managed through a Project Management Unit (PMU) at GoM's Ministry of Environment and Energy (MEE). MEE has been collaborating in active World Bank projects such as Maldives Clean Energy for Climate Mitigation Project (P128268), Maldives Environmental Management Project (P108078), and Maldives Ari Atoll Solid Waste Management Project (P130163). At present, MEE has 19 staff members working across World Bank projects. These experiences of MEE will help in implementing and coordinating activities under ASPIRE. The other key stakeholders of ASPIRE are off-taker utilities - STELCO and FENEKA, and private sector PV developers and investors.

55. The technical assistance component (Component 1), tariff buy down disbursement to private sector PV developers (Component 2), monitoring and evaluation, and implementation

support will be directly managed and coordinated through the PMU. Responsibilities of the PMU for these activities are (i) supporting project planning (e.g. implementation work-plans, budget estimates, monitoring and evaluation (M&E) implementation plans, etc.); (ii) actively overseeing project implementation to ensure quality and timely progress; (iii) implementing the M&E arrangements for the Project, including its reporting requirements; (iv) ensuring compliance with agreed procurement, disbursements and financial management policies and procedures; (v) supervising the implementation and compliance with the Environmental Social Management Framework (ESMF); and (vi) ensuring regular reports on the progress of the Project to the MEE and relevant ministries and to the World Bank, including prompt feedback on areas that need their attention or support. PMU will prepare quarterly progress reports as well as more detailed annual reports for the GoM and the Bank that provide updates on M&E procedures, implementation, budgets, and compliance with procurement, disbursement, financial management as well as environmental and social standards.

56. The security package under Component 3 will require two distinct implementation mechanisms - one to handle the escrow account, while the other for the IDA Guarantee. The escrow portion will be managed through a commercial bank (Escrow Bank) appointed to handle the escrow account and calls on it, as well as replenishments required from the utility and/or GoM. The Escrow Bank will also be responsible for certifying draw events. The IDA Guarantee will be managed directly by World Bank staff.

57. The subprojects will be implemented by the private sector that will have overall responsibility for designing, financing, constructing, and operating them for the duration of PPAs. Each subproject will be appropriately managed by the private sector company, whose credentials would be vetted and approved as part of the selection process. PPA agreements between these private sector entities and off-takers (STELCO and FENAKA) will lay out the responsibility of each party in detail.

58. **Project's Contractual Arrangements.** The contractual structure as currently designed provides for three main sets of agreements. These can be categorized as follows: a. Commercial Agreements, b. GoM Support Agreements to the commercial structure; and c. the World Bank Support Agreements.

a. Commercial Agreements: The commercial agreements currently include two main agreements in the form of the Power Purchase Agreement (PPA) and the Roof Lease Agreement (RLA)[11].

b. GoM Support Agreements: The GoM and its sector stakeholders intend to support the commercial agreements through different means, which can be summarized in three main sub-categories: (i) Security Structure in form of an Escrow Account implemented through an Escrow Agreement (and funded through SREP funds), (ii) Security Structure in form of an IDA Guarantee for each subproject provided through Guarantee Agreement, Investor/Utility Project Agreements and Indemnity Agreement, and (iii)

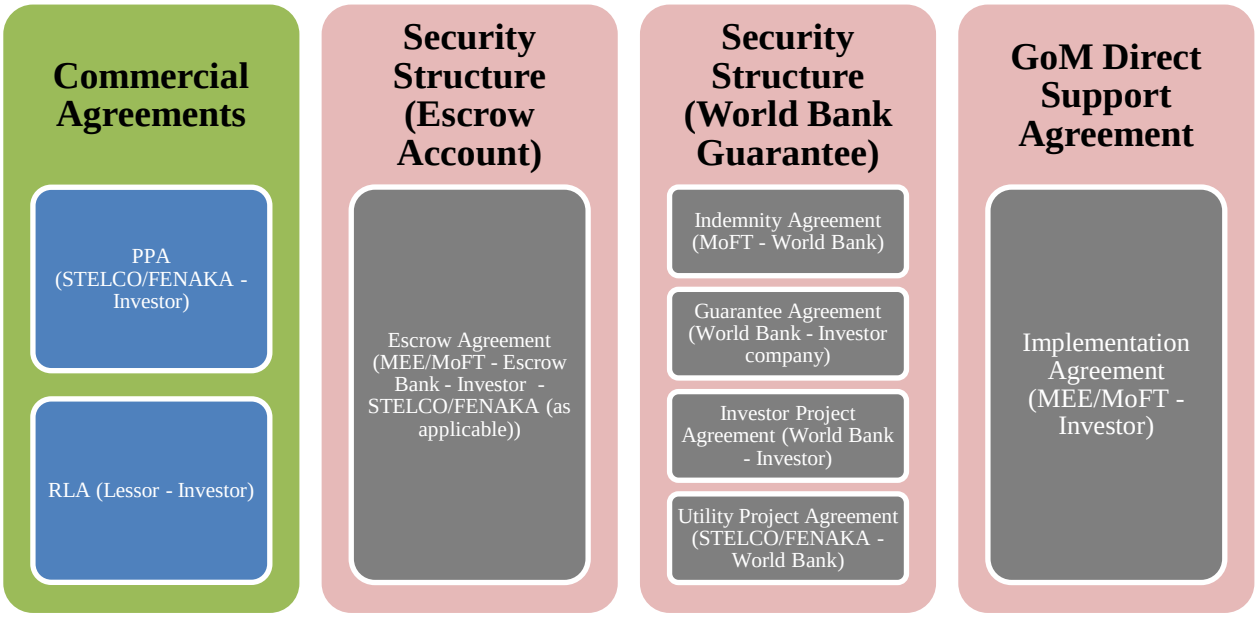
[11] RLAs for the first 4 MW subproject are expected to be carried out using publicly owned rooftops. However, subprojects may also be undertaken on privately owned rooftops, and where rooftop space is not available or appropriate, ground mounted solar PV installation may be supported by the Project.

Direct GoM support agreement to each investor company currently proposed to be called Implementation Agreement [12].

c. World Bank Support Agreements: World Bank support will be provided through (i) a Grant Agreement, through which SREP funding will be channeled, and (ii) World Bank Guarantee, Project and Indemnity Agreements. The Grant Agreement will finance technical assistance for local capacity building within GoM, tariff buy down to be provided by GoM to investors, and the funding of the Escrow Account for the Security Structure referenced above. Each investor receiving a World Bank Guarantee will enter into a Guarantee Agreement and a Project Agreement with the World Bank. In addition, the World Bank will enter into a Project Agreement with STELCO/FENAKA, as applicable. Finally, GoM will enter into an Indemnity Agreement with the World Bank, under which GoM will indemnify the World Bank for any payments made under a Guarantee Agreement.

59. Diagram 1 summarizes the main categories and sub-categories of the agreements to be concluded by also highlighting the suggested contractual parties to each agreement:

Diagram 1: ASPIRE Contractual Framework



60. With respect to the SREP Grant funding, a Grant Agreement would be signed between GoM and IDA (in its capacity as the implementing agency of SREP). This agreement would define the arrangements for the use of the SREP Grant, and also refer to the Security Package provided to the subprojects.

[12] The GoM support to the commercial agreements is currently proposed to be availed in form of an Implementation Agreement (IA), which will be signed between either the Ministry of Finance and Treasury or the Ministry of Environment and Energy and the investor Company. The final form of GoM support is yet to be decided.

B. Results Monitoring and Evaluation

61. Overall monitoring and evaluation (M&E) of subproject activities will be MEE's responsibility. The agency will carry out monitoring and evaluation of the different components/activities in accordance with the indicators included in the results framework (Annex 1). The indicators, targets, and mechanisms for monitoring will be discussed and agreed with MEE, including SREP indicators at the Project level.

62. IDA will monitor and supervise the subprojects through the submission of reports by private sponsors as required under IDA's Project Agreement with each investor company, as well as through regular field visits until the closing date of the ASPIRE Project. Thereafter, and until the expiry of the individual IDA Guarantees, the World Bank will continue to monitor and evaluate subproject performance on a desk review basis, unless otherwise warranted. The submission of relevant reports by the off-taker will therefore be required under Project Agreement with the utility, until the expiry of the guarantee.

63. Impact evaluation of the ASPIRE Project entails assessing the Project's impact on mobilizing private sector investment and assessing impacts on savings accrued at STELCO and FENAKA. For the latter, baseline information will be collected from the utilities on spending on fossil fuel and subsidies. Savings from use of PV generation both in monetary terms and in terms of fuel use will be determined for agreed time intervals. Impact evaluation will show the relation between solar PV penetration and the corresponding savings.

64. Impact of the Project in improving reliability and quality of power supply at STELCO and FENAKA's electricity networks will be evaluated at various stages of PV penetration. Baseline information will be collected from the utilities in terms of frequency of power outages and overall voltage profile. Reduction of power outages and stabilization of voltage profile from added capacity from distributed PV will be determined for agreed time intervals to show the relation between PV penetration and corresponding benefits.

C. Sustainability

65. The GoM has demonstrated strong commitment and ownership of the proposed operation. The Project concept was developed by the GoM through a participative process as part of the SREP national investment Project preparation and approved by the SREP Sub-Committee.

66. Key parameters for sustainability of the Project include the GoM's commitment to fostering public private partnerships for development of renewable energy, leading to carbon neutrality. Overall, ASPIRE is expected to reduce consumption of expensive imported diesel for electricity generation. The key drivers for the ASPIRE Project are the savings for GoM, STELCO, FENAKA, and benefits to consumers. The Project will also provide reasonable rates of return for private sector power producers, improvements in balance of trade, and alleviate environmental concerns.

67. ***Financial sustainability:*** Financial sustainability of the Project will be achieved through an integrated approach that includes investments in PV generation, capacity building of

stakeholders, private sector mobilization, and provisions of the IDA Guarantees and adequate technical assistance services. The generation assets supported by the Project will be owned and operated by private sector companies, with STELCO and FENAKA as off-takers. The private sector's contribution to the financing of PV generation assets will be accounted for separately and reported through the Project's results monitoring and evaluation framework.

68. Deployment of PV generation is expected to reduce the operating costs of Maldivian utilities and electricity service providers through reduction in fuel and other costs associated with fossil fuel-based generation such as repair, maintenance, and replacement of parts. The savings will be used to: (i) reduce financial losses at the utilities, (ii) compensate private sector power producers under standard contractual agreements, (iii) improve reliability and quality of electricity supply, and (iv) reduce electricity prices for customers.

69. MEA has the responsibility for approving tariff adjustments and estimating fuel surcharges related to increase in the price of diesel. Furthermore, National Social Protection Agency (NSPA) subsidizes residential customers by providing fuel surcharge subsidies and usage subsidies. According to the SREP IP, on average 57% of a domestic consumer's bill is written off as subsidies and paid to service providers. Cross subsidization between residential consumers on one side and governmental and business consumers on the other, are also a concern given the higher tariff for the latter group. PV generation will reduce fuel surcharge subsidies. The SREP IP found that GoM is importing 350 million liters of diesel approximating 23% of the GDP in 2012. There is firm interest at GoM to reduce fiscal and trade imbalance resulting from subsidies to residential consumers and import of diesel.

70. With regard to the sustainability of the subsequent scale-up, the entire approach is based on the engagement of the private sector for phased but transformational changes. This will only occur through the improvement of energy market conditions and financing of the energy sector, as well as the creation of specific conditions for gaining investor confidence (public and private, small/medium/large scale enterprises, national or international investors). Alongside support from ASPIRE, continued reduction in the prices of PV components is expected to attract public and private investments in PV generation in the Maldives. During the ASPIRE Project, strategically phased tariff buy down support and guarantee coverage will incentivize immediate investments in the sector. Early investors will be rewarded with higher levels of support through Project mechanisms. It is expected that beyond the duration of the Project, the PV sector in the Maldives will continue to grow. As recognized by the SREP IP, ASPIRE will produce key pieces of market information for investors, demonstrate private sector led financially viable approaches to PV deployment and generation, improve the regulatory environment, develop standard contractual arrangements for financial transactions and for siting PV generation. It will also enhance the capacity of public and private sector stakeholders, and lower the transaction costs.

71. ***Technical sustainability:*** Solar PV generation uses proven technologies. The market for PV is growing at a remarkable rate resulting in very significant reductions in panel prices. PV generation is a robust technology with low maintenance requirements. Long-term viability results from sound Project preparation, design and implementation, and this requires suitable management and operational capacity from private sector power producers and the off-takers. Under a PPA regime, power producers receive payments for energy supplied. The ASPIRE

Project needs to sufficiently incentivize developers so that the operation, maintenance, and technical sustainability of PV generation is appropriate.

72. Technical work to identify suitable subproject sites, beyond the initial 4 MW, is part of the Project design. Information on solar resources as well as roof-tops for subproject development has been generated, and this will make it possible to implement the initial subproject more promptly. Furthermore, complementary initiatives by other multilateral development banks (MDBs) and development partners in the Maldives will reduce technical risks by modernizing grid and operations at the off-taker end.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Stakeholder Risk	Rating
Implementing Agency Risk	
- Capacity	High
- Governance	Substantial
Project Risk	
- Design	Substantial
- Social and Environmental	Low
- Project and Donor	High
- Delivery Monitoring and Sustainability	Moderate
- Repatriation Risk	High
Overall Implementation Risk	Substantial

B. Overall Risk Rating Explanation

73. Over the last few years the Maldives has witnessed political and fiscal uncertainty which has restrained private investments. A new government was elected in November, 2013, and a new parliament will be sworn in on May 28, 2014. There is renewed impetus given to private investing, and infrastructure projects. The Project design proposes to improve the environment for the private sector through World Bank support. This helps lower the Project's risk profile.

74. Development of the ASPIRE investment framework for private sector funded RE subprojects is based on a good understanding of the risk appetite of the private sector, and the structuring of instruments to mitigate those risks that the private sector would not shoulder. The development of payment guarantee arrangements and implementation capacity is a critical piece in the implementation of the Project framework for private sector investing. Some of the key risks to be considered and strategies to address them are outlined in the paragraphs below.

75. **Political uncertainty*:*** Recent years, have highlighted uncertainties around political transition and changes. This is a source of concern for most private sector investors, and is a

particularly pertinent area for World Bank intervention. Dialogue under ASPIRE will include a discussion of specific political and other risks such as political force majeure events, change in law, expropriation (including creeping expropriation), breach of contract, and currency inconvertibility or transferability.

76. **Limited local capacity and experience with RE:** The TA and capacity building component will be used to strengthen local capacity within GoM, STELCO, and FENAKA. The financial and structuring advisors to GoM are providing GoM and the project management unit (PMU) with expertise in implementing and providing the correct incentives for successful PPPs in the RE space. In addition, where needed, investments will be made to enhance load forecasting capabilities, such that more renewables can become a part of the country's energy mix.

77. **Financial strength of off-taker/utility:** The current liabilities associated with end consumer electricity subsidies, increasing electricity demand, and the upward trajectory of fuel prices, all make PV based power generation attractive for the islands. Methods for ensuring timely payment to subproject developers have been discussed and agreed between GoM and the Bank team.

78. **Forex Convertibility risk:** Currency convertibility, outside of the tourism sector, is a major constraint for foreign investors in Maldives; in particular repatriation of dollars has been challenging. The issue of currency inconvertibility featured prominently in discussions with potential investors, as a part of the market sounding exercise, culminating in the investor conference of March 26, 2014, organized by the Government of Maldives. Government of the Maldives recognizes the importance of addressing inconvertibility issue in order to attract foreign investments to the energy sector. The Government remains fully committed to work with relevant agencies to find feasible solutions within the macroeconomic framework to ease difficulties faced by renewable energy investors in currency convertibility.

79. **Implementation Timeline:** Private investments in the sector will occur only when transactions acceptable to both the public and private sector stakeholders are agreed. Thus, during Project implementation, commercially acceptable solutions to Project risks will need to be found. The quality of such solutions will have an impact on the Project's pipeline and timeline. It will not be possible to commit IDA and SREP resources indefinitely, if acceptable solutions are not achieved in a timely manner. Thus, if implementation arrangements are not finalized with an investor for at least one subproject, by June 30, 2015, then the World Bank, and GoM will assess the situation and exchange views. At that point, the World Bank, based on circumstances, may decide to either: (a) agree with GoM to restructure the Project, or (b) cancel the SREP Grant and associated IDA Partial Risk Guarantee (PRG).

80. **Technology and operational risks:** Even with a successful TA and capacity building program, it must be recognized that certain RE technologies come with specific technology and operational risks that need ongoing knowledge exchange and training. There should be an attempt to partner and have frequent ongoing knowledge and training exchanges with successful practitioners of RE technologies.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

81. **Project Objectives and Brief Description of Project Components.** ASPIRE seeks to add 20 MW of photovoltaic (PV) based renewable energy generation to the islands' energy mix, using US$11.684 million of SREP funds together with US$16 million IDA Guarantees to attract private investment of around US$42 million. The Project aims to jumpstart deployment of PV generation by initially supporting private sector installation of 4 MW of PV systems on already identified buildings in Male' and adjoining Hulhumale' islands. Thereafter new subprojects will be identified and implemented over the Project life. The analysis below assumes 20 MW of PV installations as the base case for the Project. Project components include US$1.75 million in technical assistance (TA), US$6.034 million in tariff buy down, and US$19.9 million in security package support, combining IDA and SREP resources. Additionally economic and financial analysis for the first 4 MW subproject is also discussed.

82. **Economic Costs and Benefits Identified.** On the cost side, the Project analysis identifies the initial investments in the renewable energy subprojects, as well as their regular operating and maintenance costs. In addition, all technical assistance provided under ASPIRE, is also added to the cost side of the equation. Benefits identified are (a) estimated variable cost savings when diesel based generation is offset by equivalent amounts of renewable generation, and (b) the estimated benefits from reduced carbon dioxide (CO2) emissions. In addition, there are gains from reduced exposure to fuel price volatility, as well as lifetime savings in foreign exchange. Since quantifying these is difficult, these have not been included in the calculations.

83. **Rationale for Public Sector Provisioning/ Financing.** The ASPIRE supported PV installations are meant to jumpstart private sector investments in PV generation on the islands. The security package proposed under ASPIRE, is needed to provide the required confidence to potential investors in the sector. Additionally, a tariff buy down element is proposed to attract the first movers.

84. **World Bank's Value Added.** The World Bank's involvement in this Project follows from the SREP Investment Plan (IP) duly endorsed by the Government of Maldives (GoM). SREP and IDA resources will help jumpstart private sector risk taking in the sector, and move PV solar generation towards greater private sector risk taking over the Project life. The IDA Guarantee is especially valuable as a backstop to the GoM performance obligations. The Bank's contribution to building capacity, institutional strengthening, and providing global lessons of experience with similar projects further benefits the sector.

85. **Methodology of Economic Analysis.** The economic analysis estimates the benefits and costs when PV based electricity from subprojects supported by ASPIRE replaces more costly diesel based electricity. The variable cost of diesel generation (i.e. excluding capital investments) ranges from US$0.30/kWh to US$0.70/kWh. The team has taken the very conservative view, that there is an economic case for substituting diesel energy with PV energy, so long as the all-in cost of PV generation is below even the variable cost of diesel based generation. In this analysis, the economic costs of PV include the full capital for the installation (i.e. private sector investment and the tariff buy down element), all technical assistance under ASPIRE, and

estimated operation & maintenance (O&M) cost of the PV installations. Economic benefits include savings due to replacement of diesel based power generation with equivalent PV based generation and avoided environmental costs (both global and local) owing to reduced externalities. While the fuel consumption rates are estimated from existing STELCO/FENAKA operations, the CO2 emission estimates and related social costs are based on US government projections for the same (US Government, 2013). A standard project financial analysis has also been carried out to estimate equity internal rate of return (IRR) to private sector investors. Details of the methodologies are in Annex 9.

86. **Key Results and Conclusions:** Based on the cited methodology, the Project economic internal rate of return (EIRR) is estimated at 25.5%, which corresponds to a Net Present Value of US$24.64 million. This is based on putting in place 20 MW of PV capacity with an investment of US$42.10 million. If the team excludes the benefits from CO2 emission reduction (due to the uncertainty surrounding CO2 emission pricing), the Project still yields an EIRR of 20.0%. In case of first 4 MW, which will be installed in Male' and Hulhumale', similar economic returns are estimated. The subproject EIRR is estimated at 24% corresponding to a Net Present Value of US$4.3 million. The 4 MW subproject yields an EIRR of 18.5% when benefits from CO2 emission reduction are excluded.

87. The project financial analysis with costs and revenue assumptions (refer to Annex 9 for details) shows an equity IRR above 10% to private sector investors implementing PV subprojects with ASPIRE support. Estimation of the equity IRR for private sector investors implementing the first 4 MW in Male' and Hulhumale' is consistent with this analysis.

B. Technical Analysis

88. Male has an installed capacity of 61.42 MW (primarily diesel based) with annual electricity generation of approximately 224,562 MWh. Hulhumale' has an installed capacity of 5.6 MW (primarily diesel based) with an annual electricity generation of approximately 14,060 MWhs.

89. By nature of its geographical location, Maldives is endowed with sufficient sunlight. Also, its population is sparsely distributed among the various small, medium and large islands which constitute the country. The resource mapping shows that there are limited options that would be available for power generation across the expanse of islands. Therefore, the modular nature of PV generation is particularly suitable for Maldives. As part of the initial phase of the Project, only roof based PV systems are being considered.

90. The current investment cost assumed for the initial 4 MW subprojects is US$ 1,500-2,000 per kWp which is reasonable (after taking into account the impact of the nascent Maldivian market, limited market size, and island geography) compared with the tariff guidelines (US$1,300 per kWp) of neighboring India (CERC, 2013).

91. Given the decreasing cost of solar equipment, it is however expected that costs could fall further during subsequent stages of the Project. By bundling several sites (e.g. contracts for 10 sites of 100 kWp each), and maximizing international competition for procurement, the Project

will seek to accelerate cost reductions. Further, increased participation by local and international financing institutions shall reduce the overall costs of solar based power generation in Maldives.

92. As part of the initial phase of the Project, candidate subprojects aggregating to capacity of approximately 5.4 MW located both in Male' and Hulhumale' have been identified. These will span both public buildings and housing complexes. Private buildings have been kept out of the initial lot. Out of these, it is expected that about 4 MW of capacity shall be developed under the initial phase of this Project.

93. The initial phase of the Project shall lay the foundation for a well-structured, self-sustaining private sector in the PV sector of Maldives. In order to do so, internationally acceptable standard bidding documents, along with off-take agreements, sustainable tariffs and payment guarantee mechanisms backed by the World Bank Group will be in place.

C. Financial Management

94. The project will be financed by two instruments, an IDA Guarantee of US$ 16 million and an SREP grant of US$ 11.684 million, administered by IDA. For the IDA Guarantee, there are no traditional financial management-related fiduciary issues as there will be no World Bank-financed procurement or procurement-related disbursements under the Project. Should the IDA Guarantee be called, the World Bank would disburse to the beneficiary of the guarantee and the Government would then be obligated to repay IDA in accordance with the terms of the Indemnity Agreement between the GoM and IDA. The private sector subproject developers will be the primary implementing agencies for each subproject, including responsibility for managing the finances of the subprojects. According to OP/BP 14.25, IDA's operational policies on Financial Management (OP 10.00) do not apply to private sector projects supported by the IDA PRG. However, the implementing entities are expected to have adequate financial management systems in place.

95. Component 1, Component 2 and part of Component 3 financed by the SREP grant are to be implemented by a PMU that has experience of implementing several IDA financed projects. According to the most recent supervision reports, the Financial Management (FM) performance of all projects handled by this PMU has been rated as Satisfactory. The task team conducted an assessment of this PMU to ensure that the Project's FM arrangements can provide IDA with accurate and timely information regarding the activities that will be financed under the SREP grant, as well as provide reasonable assurance that SREP funds will be used for the intended purposes. FM procedures and practices for the Project are adequate to meet IDA fiduciary requirements as per OP/BP 10.00. The Project has a Moderate FM risk rating. The PMU is responsible for the Project's FM activities, including compliance with the financial covenants of the legal agreement. There are no ineligible expenditures or outstanding audit reports for IDA projects implemented by the PMU. Details of the FM assessment and the Project's FM arrangements are given in Annex 3.

D. Procurement

96. Procurement of goods, works and services under this Project will be carried out in accordance with: World Bank "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Procurement Guidelines); "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Consultant Guidelines); and the provisions stipulated in the Grant Agreement.

97. The selection of investors receiving tariff buy down under Component 2 (with or without Security Package support under Component 3) will follow open competitive bidding and ensure bidder eligibility as required by Bank guidelines for procurement under Public Private Partnership (PPP) arrangements[13]. The selection of investors receiving only Security Package support under Component 3, either under the SREP funded escrow account and/or through an IDA Guarantee, shall be carried out by the PMU in accordance with 3.18[14] of the Procurement Guidelines.

98. Procurement Capacity: The PMU at MEE, which manages several WB funded projects, will be responsible for overall procurement oversight under this Project. It would directly procure the TA activities under Component 1 and play an important role under Components 2 and 3.

99. The procurement team is well experienced in handling Bank financed procurement. MEE has experience under the following active World Bank projects: “Maldives Clean Energy for Climate Mitigation Project” (P128268) and “Maldives Environmental Management Project” (P108078). At present, MEE has 3 procurement staff working across World Bank projects.

E. Social

100. The proposed Project will be subjected to both World Bank Safeguards and Performance Standards, applying Safeguards to Component 1 and Performance Standards to Components 2 and 3. Safeguards to Component 1 will ensure that technical assistance related activities will not be detrimental to people and the environment due to the outputs and outcomes generated; Performance Standards apply for Components 2 and 3 because private developers will be investing in solar PV subprojects.

101. The Project has been classified as category B under the World Bank’s environmental and social guidelines.

102. ***Social Assessment:*** An Environmental and Social Assessment (ESA) was carried out for the Project by the GoM, based on a consultative process to identify any adverse social issues and

[13] Paragraph 3.14 of the Guidelines Procurements of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011.

[14] Paragraph 3.18 of the Guidelines Procurements of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011 ; as amended through the policy paper entitled "Enhancing the World Bank's Operational Policy Framework on Guarantees" approved by the Executive Directors on December 3, 2013 (Board paper: R2013-0206; IDA/R2013-0298, dated November 20, 2013).

its mitigation measures. Based on the findings of the ESA, an Environmental and Social Management Framework (ESMF) has been prepared by GoM. Once the developer is identified, the Bank will carry out an environment and social review of the developer's Environmental and Social Management System (ESMS) and prepare an Environment and Social Review Summary (ESRS), which will be disclosed. If the Bank's review of the developer's ESMS identifies any gaps in such ESMS, the developer will prepare an action plan to address those gaps in conformity with the Bank Performance Standards and GoM's regulations.

103. ***Social Impacts:*** There is no adverse social impact related to the acquisition of private land or loss of livelihood. Solar projects involve minimal civil works and comprise mainly solar generation equipment installation and electro mechanical works in general that are not associated with substantial risks in the geological, contractual, social, operational aspects. The Project's social impacts would not be significant and the impacts are likely to be mostly restricted to the project area and its immediate surroundings, and these impacts can be mitigated, offset, and compensated through social management measures. The solar panels will be installed on roof tops (except for a limited number of subprojects in which private investors may also choose ground mounted PV installations on islands where land is not a constraint) and therefore there will be no impacts on the present land forms and land use. For the first 4 MW subproject, social impacts have been assessed and stakeholders in Male and Hulhumale' have been consulted. The stakeholder consultations took place between March 9th and 17th, 2014. From the social impact perspective, key performance standards that are applicable to the 4 MW subproject as well as to the overall ASPIRE Project have been identified and disclosed. Potential sites proposed for setting the panels include roof tops of the existing government buildings and there will not be any site specific issues. However, the exact locations for installing solar panels for the entire ASPIRE Project are yet to be known. The sites will be identified and finalized during further stages of the Project implementation and design of subprojects beyond the first 4 MW. The developer and the owner of the building will sign a roof lease agreement. The cost of repair will be borne by the developer if any damage is caused by the developer during the implementation phase. It is expected that the activities proposed will not cause any adverse social impact on the community in terms of land acquisition and resettlement. Potentially, adverse social impacts may include: fairness and equity of decision making process, the non-use of local resident qualified manpower during the construction of the infrastructures. This could cause some frustrations at the local level. To the extent possible, employment of locals should be encouraged. This will also encourage local buy-in for the Project and its activities under implementation. Poor maintenance, following construction completion, may lower intended impacts in the community resulting in disillusionment with such subprojects. This may occur due to a lack of funds, negligence of staff, poor supervision, or failure during the monitoring stage.

104. Construction works under the ASPIRE can also contribute to creating jobs where the work is initiated. It can increase local employment and hiring of skilled workers—masons, carpenters, building workers, plumbers, electricians, and others. Increased employment will help increase the incomes of the local populations, improve their living conditions, and contribute to the fight against poverty.

105. In order to mitigate any adverse impact of the Project, as part of the ESMF, a screening checklist was prepared to identify impacts and appropriate mitigation measures. The

Environment and Social Assessment (ESA) also includes institutional arrangements for implementation; a communication plan for creating awareness among the community for the project and mechanisms for continued consultation with the stakeholders. The Project will also take written consent from the concerned stakeholders before the installation and initiation of any civil works. The summary of the ESMF has been translated in Divehi and was disclosed. A three tier procedure for grievance mechanism has been designed and discussed with key government officials and some of the potential stakeholders. The ESMF also has defined indicators for monitoring of social measures.

106. The other kind of adverse impact could be visual impacts on landscape character. Research papers note that landscapes are often an important part of people's sense of place, identity and heritage, perceived threats to familiar vistas have been fiercely resisted for centuries. The research found that if people regard a region as having 'enough' similar facilities already, then they may oppose new proposals. The second factor is the cultural context. This relates to people's perception and relationship with the landscape. In the context of proposed islands, the majority of inhabitants cannot have a strong connection with, and affinity for the large, undisturbed open spaces that are not characteristic of the landscape of the islands.

107. The inhabitants of the island are more connected to the sea due to the rather small size of the islands. However, depending on the specific site to be chosen for the solar panel installation the cumulative impact could be finally decided. Many public buildings are suitable for the replacement of the panels. In consultation with stakeholders on the island the ideal location of the panels largely will be in public buildings. The visibility factor of the panels to the population would increase their awareness and understanding of renewable energy. Examples could be the football stadium in Male' or public school provided roofs are suitable for solar panels. The establishment of more than one large solar facility in an area is likely to have a positive cumulative impact on the areas sense of place and the landscape. However, the Project will consider the overall cumulative impacts in consultation with the people affected by the Project.

108. ***Impact on local economy*:** Bearing the small size of the islands that are already connected to power, the Project is not expected to have any substantial impact on long-term employment or business opportunities due to the implementation of the Project on the islands. The Project during the construction phase will create business opportunities for the island economy. However, given the technical nature of the Project, the opportunities for the local economy, are likely to be limited (e.g. construction material-sand and cement). The non-component related expenditures (unquantified) during the construction phase will create business opportunities for the local economy.

109. The sector of the local economy that is most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport and security, etc. Construction workers will be accommodated in guest houses or by people who want to rent out their houses. In addition, a proportion of the local wage bill earned by construction workers during the construction phase of subprojects is also likely to be spent in the local economy. The injection of income into the area in the form of rental for accommodation and wages will create opportunities for local businesses. However, bearing in mind the small size of the proposed islands and the few

basics or limited possibilities for spending money on the island would rather limit the total expenditure of the foreign workers on the island to the minimum needed, namely food and accommodation. The benefits will however be confined to the construction period.

F. Environment

110. An Environmental and Social Assessment (ESA) was carried out for the Project by the GoM, based on a consultative process to identify any adverse social issues and its mitigation measures. Based on the findings of the ESA, an Environmental and Social Management Framework (ESMF) has been prepared by GoM. As described above, under the ESMF, for each subproject the investor will be required to prepare an Environmental Impact Assessment (EIA) (if necessary), and an Environmental Management Plan (EMP). Once the developer is identified, the Bank will carry out a review of the developer's Environmental and Social Management System (ESMS) and prepare an ESRS. If the Bank's review of the developer's ESMS identifies any gaps in such ESMS, the developer will prepare an action plan to address those gaps in conformity with the Bank's Performance Standards and GoM's regulations.

111. The proposed Project has substantial positive environmental effects, as it is focused on the use of renewable energy technologies and the overall negative impacts are benign. The conversion to solar energy for electricity supply will reduce fossil fuel-based power generation, and is identified as one of the most optimal solutions in terms of cost-benefits and socio-environmental needs of islands in the Maldives. Overall, the proposed Project activities which include installation of solar PVs will result in improved environmental management in the Maldives with its contribution in the reduction of greenhouse gas emissions. Although the technology is relatively simple with no significant impacts, the Project is classified under Category B, mainly to reflect the impacts associated with solar PV installation, operation and decommissioning. The proposed Project has two key elements including technical assistance (Component 1) and delivery of tariff buy down and a security package for private developers (Components 2 and 3). Therefore, the Project will be subjected to both World Bank environmental Safeguards and Performance Standards.

112. ***Applicability of World Bank and GoM Environmental Safeguards.*** The physical activities related to the Project will require complying with GoM's environmental and related legislation and policies. In order to ensure technical assistance related activities under Component 1 and any other associated activities carried out by the GoM will not be detrimental to the environment, due to the outputs and outcomes that will be generated through this component, OP 4.01 – Environmental Assessment has been triggered. The OP 4.01 will be particularly applicable to the development of the pipeline activities financed under Component 1.

113. ***Applicability of World Bank Performance Standards.*** As per OP 4.03, the Components 2 and 3 will be required to comply with Performances Standards (PS) where private developers will be investing on solar PV installation and operation on selected rooftops initially in the Greater Male area and later in other islands, including ground mounted PV. The applicable PSs for the overall Project include PS 1: Assessment and management of environmental and social risks and impacts, PS 2: Labor and working conditions, PS 3: Resource efficiency and pollution prevention, PS 4: Community health, safety, and security, PS 6: Biodiversity conservation and

sustainable management of living natural resources and PS 8: Cultural heritage. All investments under this Project will need to be in compliance with PS 1, PS 2, PS 3 and PS 4. Based on the environmental conditions of specific buildings selected for the installation of solar PVs and the impact area, the applicability of PS 6 and PS 8 will be decided. Applicability of Performance Standards for the first 4 MW of subproject, from the environmental impact perspective, is in line with assessment for the overall ASPIRE Project.

114. Since subprojects under Component 2 and 3 of the Project will not be acquiring any land and will not result in restrictions on land use which may cause adverse impacts on communities and persons that use this land, the Project has not triggered performance standard (PS 5) on Land Acquisition and Involuntary Resettlement. The solar panels will be installed on roof tops for which roof lease will be signed between the owner and the developer. For a limited number of subprojects private investors may also choose ground mounted PV installations on islands where land is not a constraint. In such cases acquisition of the land will be a private transaction with no involuntary resettlement. The project will bring substantial positive social effects, as the Project is focused on the use of renewable energy technology and energy efficiency and the overall negative impacts are benign. Proposed conversion to solar energy to produce electricity will reduce the fossil-fuel based power generation, which is identified as the best solution in terms of cost-benefits and socio-environmental needs of the island. In absence of any indigenous community in Maldives, performance standard (PS 7) on indigenous community has not been triggered.

115. ***Environment impacts.*** There are no adverse environmental impacts as a result of the proposed Project interventions. According to the ESMF, the likely negative environmental impacts would arise only during construction and future decommissioning of systems at the end of their lifetime. During installation and commissioning of the solar PV system, issues such as poor labor working conditions, safety, disturbance and generation of waste including packing material will require mitigation measures. Disposal of discarded material during installation, as well as decommissioning will need extra due diligence due to the sensitive nature of the island ecosystems. At the time when the solar PV systems have reached the end of their useful lifespan (approximately 25 years), decommissioning will take place and materials used (such as steel, gold, stainless steel, germanium, copper), which may still have considerable value would be recovered and other material disposed safely. In the absence of country-level guidelines, the project will support the GoM to develop guidelines for collection and waste disposal of decommissioned solar panels. It is expected that transmission and distribution will use the existing system; hence impacts associated with new system are unlikely. As the PV systems will be installed on public and private sector buildings, written consent from the building users/owners will be taken and documented. Similar procedures will be adopted for ground mounted systems.

116. ***Environmental assessment.*** In lieu of a Project specific environmental assessment, an environmental and social management framework (ESMF) has been prepared by GoM to guide subprojects in identifying critical safeguard issues and recommending strategies for compliance with the Bank and GoM's environmental requirements. The ESMF covers the relevant GoM legislation and policies and World Bank Safeguards policies and Performance Standards that are applicable for this Project, preliminary assessment of potential environmental impacts of the

Project, safeguard instruments that need to be used during project implementation and institutional arrangements for environmental management. The assessment of the bio-physical and socio-economic condition of the islands, where the first 4 MW subproject will be installed, has been carried out during Environmental and Social Assessment by GoM.

117. ***Disclosure*.** The draft ESMF has been publically disclosed in Maldives for comments on March 27, 2014 and has been made available in the public domain on the websites of MEE. The ESMF and appraisal stage ISDS have been published in the World Bank Infoshop.

ANNEX 1: RESULTS FRAMEWORK AND MONITORING

Project Development Objective (PDO): 22. The project development objective of ASPIRE Project is to increase PV generation in Maldives through private sector investment											
PDO Level Results Indicators	**Core**	**Unit of Measure**	**Baseline**	**Target Values**					**Frequency**	**Data Source/ Methodology**	**Responsibility for Data Collection**
				YR 1	**YR 2**	**YR3**	**YR4**	**YR5**			
Indicator One: Cumulative Installed Generation Capacity of Solar Energy Constructed	X & SREP	MW	0	4	8	12	16	20	Quarterly Annual	MEE's and MEA's annual reports and audits. Quarterly Project Reports	MEE and MEA
Indicator Two: Annual Electricity Output from Solar Energy under the Project	SREP	MWh/yr	0	6,522.2	13,044	19,566	26,088	32,610.6	Quarterly Annual	MEE's and MEA´s annual reports and audits. Quarterly Project reports	MEE and MEA
Indicator Three: Private Capital Mobilized	X	US$ Million		8.4	16.8	25.2	33.6	42	Quarterly Annual	MEE's and MEA´s annual reports and audits. Quarterly Project reports	MEE and MEA
Indicator Four: Annual Reduction in Bulk Power Cost in the Project Areas		US$ Million	0	0.32	0.65	0.97	1.30	1.63	Annual	MEE and MEA annual	MEE and MEA

Intermediate Results Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection
				YR 1	YR 2	YR3	YR4	YR5			
Indicator One: Development of Standard Contracts and Guidelines		Number	0	4	2	1			One Time	MEE's and MEA´s annual reports.	MEE and MEA
Indicator Two: Cumulative Megawatts of PV pipeline subprojects prepared		MW		4	8	16	20	35	Annual	MEE's and MEA´s annual reports.	MEE and MEA

ANNEX 2: DETAILED PROJECT DESCRIPTION

1. The ASPIRE Project follows from the SREP Investment Plan, developed for the period from 2013-17, by the Ministry of Environment and Energy. SREP operates under the Strategic Climate Fund, and this plan was developed in partnership with the World Bank Group, Asian Development Bank, and the Climate Investment Fund. ASPIRE will use US$11.684 million of SREP funding, alongside US$16 million of IDA Guarantees to develop PV subprojects with private sector investments on the islands. The ASPIRE Project has a five year proposed Project life from 2015-2019, but PV investments catalyzed by the initiative are expected to continue beyond that period, spurred by the development of the right business environment.

2. The proposed ASPIRE Project will combine technical assistance with private sector investment, to facilitate the deployment of PV based generation on the islands. Currently, the islands have a cumulative PV based generation capacity of around 1 MW, spread across several islands and programs. ASPIRE seeks to provision IDA and SREP resources to develop the appropriate eco-system that will result in the deployment of PV systems through private sector investments during and after the Project life. The identified hurdles to private investing include the paucity of experience with project finance, limited local familiarity with the technology, and little private sector exposure to the institutions in the sector. ASPIRE has adopted a phased approach to developing PV sector investments such that the early investors are supported through greater risk mitigation measures by IDA (for World Bank Guarantee) and SREP funds (for capacity building, tariff buy down, and additional security).

3. In Male, roof top space on public buildings and warehouses, aggregating to a total equivalent capacity of 2.8 MW has been identified. In Hulhumale' similarly, roof top space corresponding to 2.6 MW in aggregate, has been identified. Out of this 5.4 MW, the Project aims to initially offer one or more subprojects aggregating to around 4 MW of PV installations on distributed rooftop PV systems on public buildings in Male and Hulhumale'; both of them in the Greater Male' Region. Since these are going to be pioneering subprojects for private sector investors in PV in the Maldives, the ASPIRE Project includes provisions for guarantee cover and possibly tariff buy down – based on market assessment, to mitigate first mover risks. As the Project develops operational experience, incentives for later subprojects will taper down, moving the Project towards greater risk taking by the private sector. Similarly structured subprojects will also be designed for outer islands, where power demand loads, and hence subproject sizes, may be smaller.

4. In addition to infrastructure investments, the Project also focuses on capacity building, so that there is local institutional capacity and expertise that allows for continued development of a pipeline of private sector funded PV subprojects beyond the initially identified subprojects. To do this, the Project includes a Technical Assistance (TA) budget that promotes renewable energy awareness, does pre-feasibility studies, and develops capacity for handling renewables within the government through training, expert advice, and knowledge sharing. It also helps diversify foreign investment to the islands, currently heavily concentrated in the tourism sector, by promoting Maldives as an investment destination for renewable energy.

5. Besides the Male' Region, and other larger islands, opportunities for PV subprojects in

middle and outer islands also need to be developed, as identified under the SREP IP. Innovative subproject designs and incentives will be offered to promote PV installations in these islands too, keeping in mind their specific conditions. Such models could include telecom companies as anchor customers; ground mounted utility scale installations, as well as other more advanced approaches (e.g. building integrated PV).

6. The Project recognizes that several dynamic factors will determine the trajectory that the PV industry in general, and private investors in ASPIRE subprojects, in particular, take over the coming years. These include global macroeconomic factors such as the health of the PV industry, PV costs, the lending environment, as well as technology developments. In parallel, they also include issues intrinsic to the Maldives, such as health of the Maldivian economy, government stability, currency convertibility, as well as overall perception of Maldives as an investment destination. The ASPIRE Project must therefore have the flexibility to adapt to changing circumstances, by fine tuning the tariff buy down and guarantee incentives being offered to the private sector, while continuously abiding by the investment framework described in later sections.

7. For the initial subprojects in the Greater Male' Region, an extensive market sounding exercise has therefore been undertaken to gauge the requirements of the private and public sectors, with respect to these subprojects. The success of ASPIRE is dependent on how well the public and private actors cooperate and succeed in these early subprojects. Support provided to subsequent subprojects should be similarly gauged through market assessment, dialogue and discussion.

8. For planning purposes, the Project design envisages resource allocation to cover tariff buy down and payment guarantee support for around 20 MW of cumulative generation, assuming the same level of support for subsequent installations, as for the early subprojects. The termination guarantee cover, if fully utilized, will support around 8 MW of installations. In reality, as explained in prior paragraphs, it is expected that the level of support needed to taper down over time. Hence, more MWs may be covered. There may also be a need to move resources across components, depending on the specifics of future subprojects. Furthermore, if additional support for termination cover is needed, the Project's mid-term review will provide the opportunity to re-assess that. More details on the use of resources under the different Project components are provided in subsequent paragraphs.

9. Based on a 10-15% penetration of PV, it is estimated that the Project can catalyze 35-50 MW of PV generation during the 10 year period. This assumes 4.2% CAGR for electricity demand over the next 10 years in the Maldives. PV penetration will be through the establishment of a PV industry in the Maldives, and result in the mobilization of US$60-85 million in investments. Ideally, further subprojects would continue to be implemented even after the official close of the Project, without need for further guarantee cover or tariff buy down.

10. The ASPIRE Project follows a framework approach. Subprojects during implementation of the Project will be appraised in batches on a streamlined basis. The Project is structured around three main components: (1) Technical Assistance Support to GoM for institutional capacity building, preparation of the initial set of prospective subprojects for offering to private

investors, and subsequent pipeline preparation, and (2) Structuring and Delivery of Tariff Buy Downs for currently planned and subsequent subprojects, and (3) Security Package to cover for payment shortfalls, and early subproject termination cover. The components will make strategic use of the different funding sources (IDA, SREP, GoM and Private Sector funding) to push for increasing private sector risk taking in this nascent sector. It should be noted that other funding sources may be added to fund these components, as the Project develops a pipeline and a track record.

11. **Component 1: Technical Assistance Support to GoM (US$1.75 million).** This component will be financed by SREP, and administered by the Project Management Unit (PMU) within the Ministry of Environment and Energy (MEE). It will encompass the following activities:

a) **TA for Enabling Private Investing in PV (US$750,000):** This includes activities that will support the creation of an appropriate environment for private investment and reducing preliminary subproject development costs. This will include working with agencies such as the Maldives Energy Authority (MEA) on implementing the private sector policy and regulatory framework for RE subprojects, as well as developing arrangements to guide both off-take utilities and private sector investors. Such guidance will help the subproject stakeholders negotiate partnerships, comply with standard contracts such as PPAs and rooftop leasing contracts, and reduce possibilities of conflict, thus enabling the smooth execution of transactions in this energy sub-sector.

b) **Institutional Capacity Building and Knowledge Sharing (US$475,000):** ASPIRE seeks to very significantly increase the amount of PV capacity in-country. As a result, there is a need to build local institutional capacity for planning, implementing, operating, and monitoring power systems that are able to absorb increasing amounts of renewable energy. In addition, Maldives is witnessing a sharp increase in demand, and the initiative will address the need to provide necessary information, training and knowledge sharing in the area of renewables and energy efficiency, so that electricity production and use can be optimized.

c) **Development of Pipeline (US$475,000):** The development of a pipeline of subprojects has to be an ongoing exercise over the Project life (and possibly beyond). Identification of appropriate subproject sites, resource assessment, pre-feasibility work, as well as aggregation of opportunities into saleable subproject bundles will form a part of this sub-component. In addition to the main islands, Maldives also has over 190 dispersed inhabited islands, where subproject development and private investment in renewables needs to occur. Data shows that diesel fueled generation on these islands is even less efficient than on Male' and the larger islands (and hence consumes more diesel per unit generated). Since these islands are more remote, transport of fuel to these locations is more expensive, as is the maintenance of the engines. Special attention will be paid to the development of these subprojects since the loads are smaller. It is expected that local companies, supported through capacity building and incentives are more likely to succeed in such locations.

d) **Project Management and Implementation Support (US$50,000)**: Provision of operational support for project management, supervision, and monitoring. The technical costs of the Project Management Unit are covered under parts 1.b and 1.c above. Therefore this sub-component covers only minor expenses such as logistics and office supplies that are ineligible under the earlier cited sub-components. It will also serve as a holding line for future PMU costs that are not envisioned at this stage.

12. **Component 2: Structuring and Delivery of Tariff Buy Downs for currently planned and subsequent subprojects (US$ 6.034 million).** This allocated funding will be used to provide tariff buy down for subprojects being developed in batches under the Project. This will be delivered to the private sector subproject developers, who will be putting in the remainder of the investment for the subprojects in question. For the first 4 MW of subprojects, it is estimated that the tariff buy down level will be capped at US$300,000/MW, for any tariff buy downs that may be offered. The actual tariff buy down level may be different, including complete elimination of tariff buy down - based on market assessment. Tariff buy down support for subsequent subprojects may taper; for planning purposes, the US$6.034 million allocation is based on provisioning for 20 MW based on the support cap of US$300,000/MW. This component will be financed by SREP, and administered by the Project Management Unit (PMU) within the MEE. The tariff buy down is expected to be delivered in 1-3 installments either upon commissioning, or towards the end of the construction of a particular subproject (i.e. after the rest of the investment has been completed).

13. **Component 3: Security Package (US$19.9 million).** This component mobilizes US$3.9 million of SREP resources alongside US$16 million of IDA Guarantee exposure to provide a total of US$19.9 in security cover. It will function as a combination of a funded escrow account and an IDA Guarantee to (i) backstop short term payment delays by STELCO/FENAKA under PPAs as well as (ii) termination events caused by defaults for which either STELCO/FENAKA or GoM are responsible. A US$3.9 million escrow amount is expected to cover up to 6 months of payments for 20 MW of installations and US$16 million of the IDA Guarantee will partially cover termination payments. The utility will be obliged to replenish the escrow account once it is drawn[15]. Thus, through this mechanism, short-term cash shortfalls and payment delays can be handled in a timely manner – a key risk identified under the market sounding exercise[16].

14. In the very rare cases where there are very serious and chronic utility and GoM non-performance issues, contract termination proceedings under the subproject contract clauses could be initiated. If such proceedings result in an award in favor of the private power developer, and if such award is not honored by the GoM, then, once all other modalities have been exhausted, the IDA Guarantee would be used to backstop a portion of the funds due to the subproject developer. While complete modalities are subject to further discussions, this part of the guarantee responds

[15] IDA Guarantee is not available for the replenishment of the escrow account for the amount drawn.

[16] The issue of currency inconvertibility featured prominently in discussions with potential investors, as a part of the market sounding exercise, culminating in the investor conference of March 26, 2014, organized by the Government of Maldives. Government of the Maldives recognizes the importance of addressing inconvertibility issue in order to attract foreign investments to the energy sector. So the GoM is fully committed to work with relevant agencies to find feasible solutions to ease difficulties faced by renewable energy investors in currency convertibility.

to an expressed request for risk mitigation by private developers[17].

15. Thus, as structured above, the security package provides risk mitigation for:

a) **Payment Risk:** This includes short term delays in payment.

b) **Termination Risks:** This would cover contract frustration prior to commissioning, as well as termination after commissioning. The IDA Guarantee would fall off or taper down after a period of time to be agreed between the World Bank and project stakeholders. The actual amount of termination cover would be decided for the first 4 MW after discussion with the GoM and private sector developer/s.

16. The ASPIRE team is seeking approval for the series of subprojects framework under which private sector subprojects can be developed using the three Project components described above. While the first subprojects aggregating to around 4 MW are described in more detail, the Project will continue to develop the pipeline of future subprojects (see Component 1(c)). Approval is sought for US$16 million of IDA exposure, and US$11.684 million of SREP funds to be allocated to the components outlined above. The team also requests that there be flexibility in re-allocating resources across components. It would also be useful for ASPIRE to be able to accept new funds into the Project, as the Project pipeline develops. Future subprojects will be submitted for streamlined approval on an Absence of Objection "AOB" basis.

17. For the first subproject/s both the Power Purchase Agreement (PPA) and the Implementation Agreement (IA) will be agreed after discussions with the government and the selected private sector companies. STELCO (and in a later phase of the Project, FENAKA) will execute the PPA as the off-taker of the power. It is expected that GoM will provide adequate support to backstop the off-taker obligations under the PPA, and also provide support on implementation matters, directly to the private sector subproject developers. The GoM support to the commercial agreements is currently proposed to be availed in form of an IA, which will be signed between either the Ministry of Finance and Treasury or the Ministry of Environment and Energy and the investor Company. The final form of GoM support is yet to be decided. GoM support is envisaged to principally cover three risks: (i) STELCO's/ FENAKA's payment default

[17] As part of Board approval a waiver of OP 14.25, Guarantees, paragraph 1 is sought for a series of IDA guarantees cumulatively of up to $16 million to cover payment default of non-loan related government termination payment obligations. Such IDA guarantees would be provided under the ASPIRE for individual subprojects in addition to the SREP Grant of US$11.684 million. Each IDA guarantee and would be used for backstopping the GoM's termination payment obligations under PPAs and IAs to be concluded for each subproject. OP 14.25, paragraph 1, only envisages the Bank providing guarantees for private loans. On December 3, 2013, the Board approved Management's proposed reforms to fully integrate the Bank's policy on guarantees with those on investment project financing and development policy lending, in order to support a fuller use of Bank guarantees in its client countries and leverage its resources more effectively to deliver critical infrastructure. Under the recently approved Bank/IDA's guarantee regime, the policy has been expanded. A draft revised OP 10.00 on Investment Project Financing allows coverage for payment default on non-loan related government payment obligations. The revised OP/BP 10.00 will come into force on July 1, 2014, after approval from the Board has been sought for this guarantee project. Because OP 14.25 will still be effective until the end of June, the Managing Director endorses the request to the Board for a waiver of the relevant provisions of OP 14.25, paragraph 1, to allow IDA to issue a guarantee to cover payment default of non-loan related government termination payment obligations.
[17]

in an amount of up to 6 months of monthly invoices, (ii) STELCO's/FENAKA's/GoM's payment default of the Termination Amount in case of a Termination of the subproject by the private sector subproject developer due to a GoM/STELCO/ FENAKA Event of Default (EoD), and (iii) potentially, GoM's assumption of the currency convertibility risk. These risks need to be covered in order for the private sector subproject developers s to secure investment funds for the subprojects.

18. The security package as described above will be used to support STELCO's/ FENAKA's payment obligations to the private sector subproject developers under the PPA, and GoM's payment obligations under the IA. Annex 6 provides an indicative term sheet for the IDA Guarantee.

19. The key features of the escrow account are set forth below:

a) GoM will establish an escrow account with a commercial bank that will initially be funded with SREP resources in an amount up to 6 months of invoices under the PPA. Amounts in the escrow account could be drawn by the private sector subproject developer in the event that STELCO/ FENAKA fails to comply with its contractual payment obligations under the PPA, or if applicable, GoM fails to comply with its obligations under the IA.

b) STELCO/ FENAKA, and GoM would agree to replenish the escrow account in amounts equivalent to the amounts drawn from the escrow account within an agreed time period. If the escrow account is replenished within the agreed time period, the topped up escrow account would continue to provide up to 6 months of payment cover.

20. It is expected that under the ASPIRE Project a number of PPAs would be concluded between the utility and the private sector subproject developers. It is expected that for each PPA, the utility/GoM would establish an escrow account as payment security and the private sector subproject developer will have to submit a performance bond for its implementation obligations until the commercial operations date.

21. Thus, to simplify the issuance process, GoM will select one commercial bank to put in place either an Umbrella Escrow facility or set up individual escrow accounts as subprojects reach financial closure. The selected Escrow Bank would then issue sub-accounts for individual ASPIRE subprojects that are eligible for SREP/World Bank support.

22. The security package has been discussed with the GoM. The proposed structure will be further refined prior to bidding, and finalized before financial closure.

23. **Selection Process for Subproject Developers:** ASPIRE seeks to develop a programmatic framework under which private sector subproject developers can make investments in the PV sector in the Maldives. Since the country has over 190 inhabited islands, as well as over a 100 resort islands, it is important to select subproject developers that will take a long term view on the islands, and look to developing multiple subprojects, leveraging global expertise and financing ability while also building lasting local partnerships. Furthermore, in

order to make PV based power acceptable, it will be important, particularly for the first few subprojects, to ensure that the cost of delivered power from PV subprojects is acceptable to MEE, MEA, and to the two utilities, STELCO and FENAKA. This must be balanced against the need for providing adequate risk-adjusted returns to subproject developers; especially those taking on the first mover risks. Thus, SREP financed tariff buy down funds are to be used judiciously to combine appropriate pricing of the bulk power, with acceptable returns, through a transparent bidding process. However, both qualitative factors of company competence, record of PV based generation, financial standing, as well as financing experience must also be considered. Hence, the team proposes a selection process that considers qualitative and quantitative parameters that will ultimately result in a selection based on principles of economy and efficiency.

ANNEX 3: IMPLEMENTATION ARRANGEMENTS

A. Implementing Agencies

1. ASPIRE will be managed through a Project Management Unit (PMU) at GoM's Ministry of Environment and Energy (MEE). MEE has been collaborating in active World Bank projects such as Maldives Clean Energy for Climate Mitigation Project (P128268), Maldives Environmental Management Project (P108078), and Maldives Ari Atoll Solid Waste Management Project (P130163). At present, MEE has 19 staff members working across World Bank projects. These experiences of MEE will help in implementing and coordinating activities under ASPIRE. The other key stakeholders of ASPIRE are off-taker utilities - STELCO and FENEKA, and private sector PV developers and investors.

2. The technical assistance component (Components 1), tariff buy down disbursement to private sector PV developers (Component 2), monitoring and evaluation, and implementation support will be directly managed and coordinated through the PMU. Responsibilities of the PMU for these activities are (i) supporting project planning (e.g. implementation work-plans, budget estimates, M&E implementation plans, etc.) (ii) actively overseeing project implementation to ensure quality and timely progress; (iii) implementing the M&E arrangements for the Project, including its reporting requirements; (iv) ensuring compliance with agreed procurement, disbursements and financial management policies and procedures; (v) supervising the implementation and compliance with the ESMF; and (vi) ensuring regular reports on the progress of the Project to the MEA, relevant GoM ministries and to the World Bank, including prompt feedback on areas that need their attention or support. PMU will prepare quarterly progress reports as well as more detailed annual reports for the GoM and the Bank that provide updates on M&E procedures, implementation, budgets, and compliance with procurement, disbursement, financial management as well as environmental and social standards.

3. The security package under Component 3 will require two distinct implementation mechanisms - one to handle the escrow account, while the other for the IDA Guarantee. The escrow portion will be managed through a commercial bank (Escrow Bank) appointed to handle the escrow account and calls on it, as well as replenishments required from the GoM. The Escrow Bank will also be responsible for certifying draw events. The IDA Guarantee will be managed directly by World Bank staff.

4. The subprojects will be implemented by the private sector developers that will have overall responsibility for designing, financing, constructing, and operating them for the duration of PPAs. Each subproject will be appropriately managed by the private sector company, whose credentials would be vetted and approved as part of the selection process. PPAs between these private sector entities and off-takers (STELCO and FENAKA) will lay out the responsibility of each party in detail.

B. Project's Contractual Arrangements

5. The contractual structure as currently designed provides for three main sets of agreements. Those three sets can be categorized as follows: a. Commercial Agreements, b. GoM Support Agreements to the commercial structure, and c. the World Bank Support Agreements.

a. Commercial Agreements: The commercial agreements currently include two main agreements in the form of the Power Purchase Agreement (PPA) and the Roof Lease Agreement (RLA) [18].

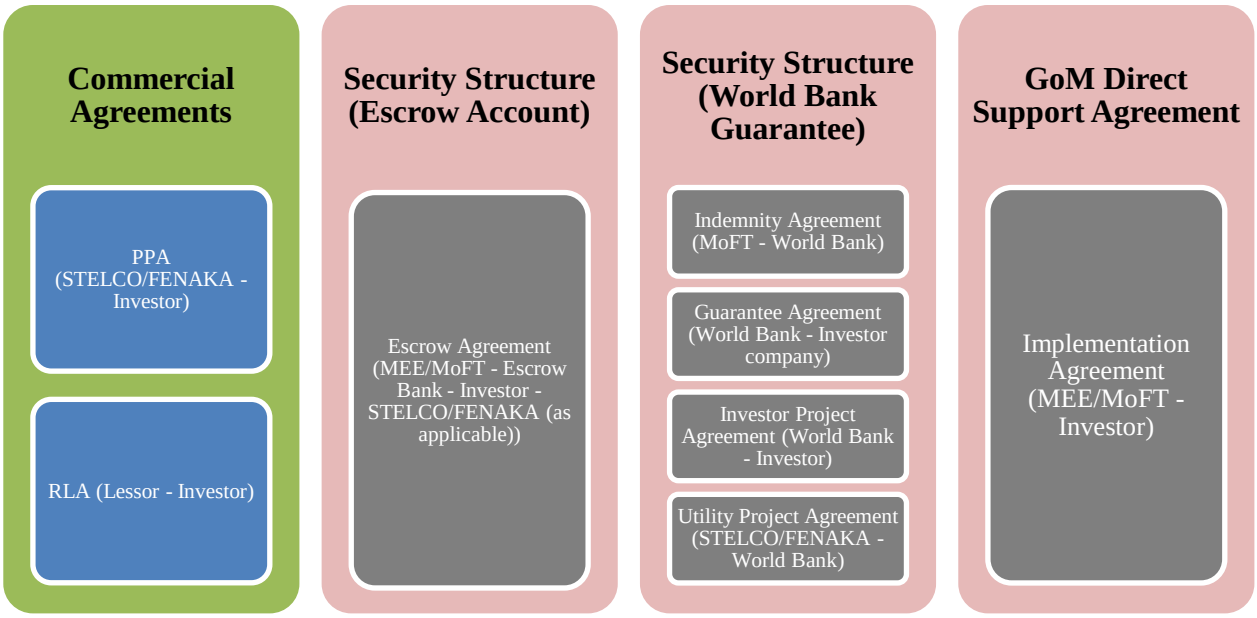
b. GoM Support Agreements: The GoM and its sector stakeholders intend to support the commercial agreements through different means, which can be summarized in three main sub-categories: (i) Security Structure in the form of an Escrow Account implemented through an Escrow Agreement (and funded through SREP funds), (ii) Security Structure in the form of an IDA Guarantee for each subproject and (iii) Direct GoM support agreement to each investor company currently proposed to be called Implementation Agreement [19].

c. World Bank Support Agreements: World Bank support will be provided through (i) a Grant Agreement, through which SREP funding will be channeled, and (ii) World Bank Guarantee, Project and Indemnity Agreements. The Grant Agreement will finance technical assistance for local capacity building within GoM, Tariff Buy Downs to be provided by GoM to investors, and the funding of the Escrow Account for the Security Structure referenced above. Each investor receiving a World Bank Guarantee will enter into a Guarantee Agreement and a Project Agreement with the World Bank. In addition, the World Bank will enter into a Project Agreement with STELCO/FENAKA, as applicable. Finally, GoM will enter into an Indemnity Agreement with the World Bank, under which GoM will indemnify the World Bank for any payments made under a Guarantee Agreement.

6. The following diagram summarizes the main categories and sub-categories of the agreements to be concluded by also highlighting the suggested contractual parties to each agreement:

[18] RLAs for the first 4 MW subproject will be carried out using publicly owned rooftops. However, subprojects may also be undertaken on privately owned rooftops, and where rooftop space is not available or appropriate, ground mounted solar PV installation may be supported by the Project.

[19] The GoM support to the commercial agreements is currently proposed to be availed in form of an Implementation Agreement (IA), which will be signed between either the Ministry of Finance and Treasury or the Ministry of Environment and Energy and the investor Company. The final form of GoM support is yet to be decided.



C. Project Administration Mechanism

Financial Management

7. The Project will be financed by two instruments, an IDA Guarantee of US$ 16 million and a SREP grant of US$ 11.684 million (administered by IDA).

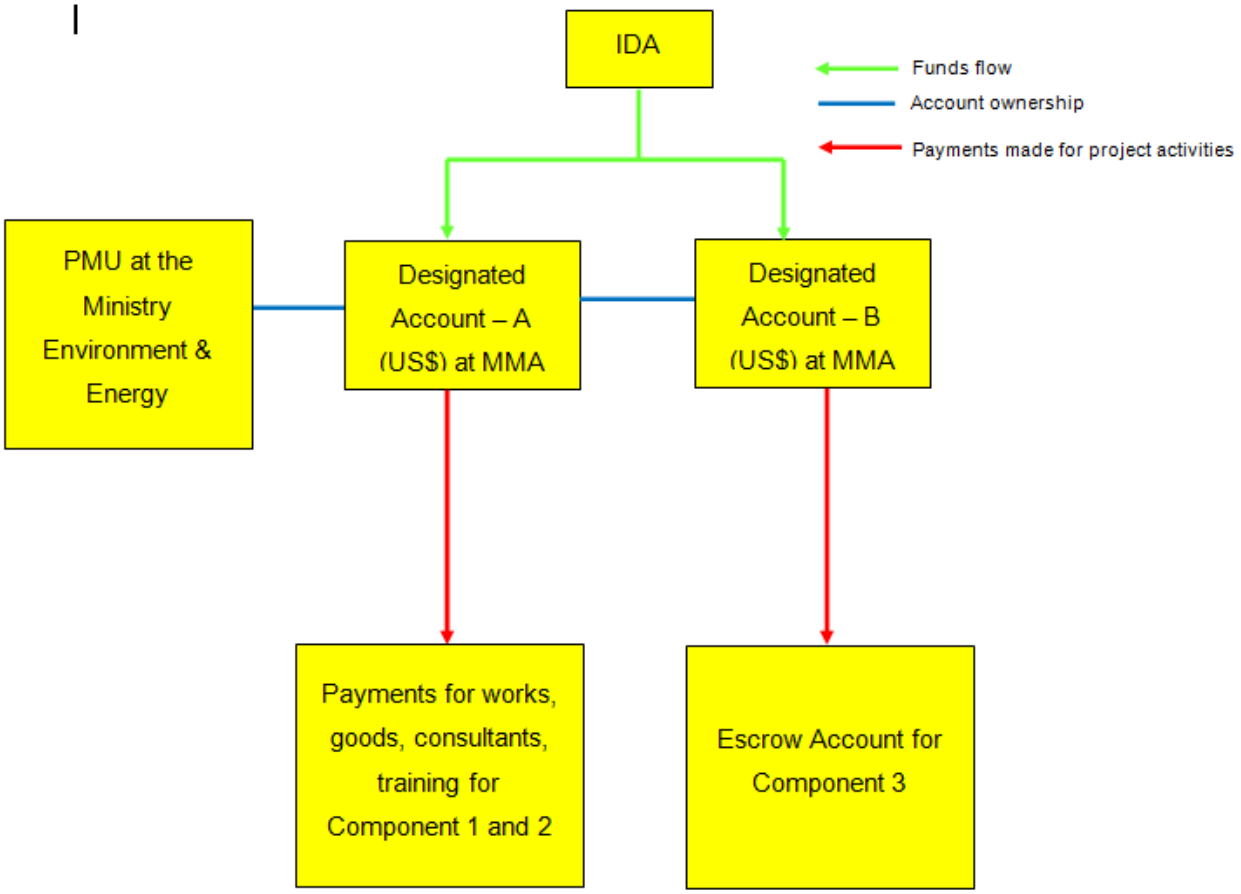
8. **IDA Guarantee.** For the IDA Guarantee, there are no traditional financial management-related fiduciary issues as there will be no procurement or procurement-related disbursements under the Project supported by the IDA Guarantee. Should the IDA Guarantee be called, the World Bank would disburse to the relevant party and the Government would then be obligated to repay IDA in accordance with the terms of the Indemnity Agreement between the Government of Maldives and IDA. The private sector subproject developers will be the implementing agencies for each subproject, including responsibility for managing the finances of the subprojects. According to OP/BP 14.25, IDA's operational policies on Financial Management (OP 10.00) do not apply to private sector projects supported by the PRG. However, the implementing entities are expected to have adequate financial management systems in place.

9. The private sector implementing entities covered under the IDA Guarantee will install and maintain adequate financial management systems, including the system of accounting, reporting, auditing, and internal controls. Qualified staff will be retained by the private sector implementing entities as required. The annual financial statements will be prepared using International Financial Reporting Standards (IFRS) and will be internationally accepted accounting principles. In addition, they will be audited in accordance with International Standards on Auditing (ISAs). The performance of each subproject will be monitored through, inter alia, regular progress reports and audited annual financial statements to be submitted by each private sector subproject developer.

10. **Component 1, Component 2 and part of Component 3 financed by the SREP grant**. The GoM has decided to keep project fiduciary responsibilities of the SREP grant with the PMU that is presently implementing several IDA projects. According to the most recent supervision reports, the FM performance of all projects handled by this PMU has been rated as Satisfactory. A comprehensive financial management assessment, that was carried out by the Bank, concluded that the proposed FM arrangements for the SREP grant fulfill IDA's fiduciary requirements as per OP/BP 10.00 and that the PMU (a) has adequate FM arrangements in place to ensure that the SREP funds will be used for the purposes intended in an efficient and economical manner (b) is capable of correctly and completely recording all transactions and balances related to the Project; (c) will prepare financial reports in an accurate, reliable and timely manner; (d) assets will be safely guarded; and (e) will be subjected to auditing arrangements acceptable to the IDA. Based on this assessment, the Project has a **Moderate FM risk rating**. Details of the FM assessment are given in the following paragraphs.

11. **Budgeting**. The proposed Project has been identified as a pipeline project in the MEE budget. Budget allocations have been done in accordance with the Financial Regulations of the Government of Maldives. The Government procedures for reporting budget allocations for foreign-funded projects covers (a) preparation of draft budget estimates, (b) budget proposal with timelines, and (c) financial covenants of the Financing Agreement between the GoM and IDA. The government system of coding of expenditure will be followed by direct transfer of funds to classified expenditure heads. Total Project expenditure with the estimated expenditure from GoM's budget for the following year will be prepared and sent to the Ministry of Finance and Treasury (MoFT) budget section before end of July every year by the project FM officer.

12. **Fund flows.** To receive SREP funds from IDA, two segregated designated accounts in USD will be set up with the Maldivian Monetary Authority and managed by the PMU of the MEE. The IDA will advance funds to designated account A to meet estimated project expenditures for the first six months for Component 1 and Component 2 as estimated in the interim financial reports (IFRs). For Component 1 and 2, payments will be made to suppliers, vendors and consultants from the designated account. For Component 3 IDA will advance the entire fund allocation to designated account B. The proceeds of the SREP grant would be disbursed against eligible expenditures; including local taxes and duties.



13. **Component 2:** Tariff Buy Downs and SREP funds will be disbursed, once the following becomes available:

a. An Implementation Agreement in form and substance satisfactory to the Bank has been entered into between the Government of Maldives and at least one investor for a related subproject.

b. A PPA (Power Purchase Agreement) in form and substance satisfactory to the Bank has been entered into between STELCO/FENAKA and at least one investor for a related subproject.

c. Any other disbursement conditions specified in the POM relating to the release of tariff buy downs has been fulfilled.

14. The above represents the disbursement conditions for the first claim against Component 2. Once these conditions have been met, subsequent claims against Component 2 will be processed by the Bank upon submission of a withdrawal application which shall include the

Bank's no-objection letter for subprojects as an attachment. The requirement of attaching a no-objection letter will be stipulated in the disbursement letter.

15. **Component 3**: Under this Component an escrow account arrangement will be established where one commercial bank (Escrow Bank) will be engaged by the GoM to provide escrow account services in respect of part of the Security Package under Component 3, being financed through the SREP Grant. Under this part of the Security Package, GoM will issue payment securities, backed by an escrow account, to investors, through an Implementation Agreement, which will provide coverage for risks relating to payment defaults under the PPA and/or Implementation Agreement. For this escrow arrangement, the following FM arrangements are planned:

a. SREP funds may be advanced from the designated account to the escrow accounts to be opened in USD with the Escrow Bank.

b. SREP funds so advanced will be recognized as expenditures (and expended or written off the SREP account on the Bank's books) as they are committed to a specific security issued to each investor. The amount that will be written off on the Bank's books will be an amount equal to the risk coverage stipulated in respective Implementation Agreement for each approved subprojects.

c. SREP funds so advanced but remaining uncommitted during the life of the Project may be reallocated to other project components or disbursement categories, as agreed to between the Government of Maldives and the Bank.

d. SREP funds so advanced but remaining uncommitted at the Project's closing date will be refunded back to the Bank and then to SREP.

e. If the security issued for the subproject remains outstanding at the Project's closing date, the corresponding amount of the security will remain in the escrow account until expiration of such security.

f. After all outstanding securities expire the proceeds may be transferred back to GoM from the escrow account to be used for productive purposes.

16. The full amount under the SREP Grant allocated to the Security Package under Component 3 will be disbursed once the following conditions are met:

a. At least one Implementation Agreement in form and substance satisfactory to the Bank has been entered between the GoM and an investor.

b. At least one PPA in form and substance satisfactory to the Bank has been entered into between the STELCO/FENAKA and an investor.

c. GoM and the Bank have reached agreement on all the terms of the escrow mechanism, including the determination of the risks to be covered by GoM under such mechanism.

d. An Escrow Agreement between the GoM and a commercial bank has been entered with respect to a related Escrow Account.

e. All legal opinions or certificates required by the Bank attesting that the Escrow Agreement has been duly executed, delivered and is legally binding on the parties thereto have been provided.

17. IDA Guarantees of a cumulative value up to US$16 million under Component 3 are to provide partial coverage of termination payments in the case where (i) a contract termination proceeding is initiated due to non-performance on the part of the utilities and the Government of Maldives, (ii) an award in favor of the private investor is made and (iii) the Government of Maldives fails to honor the termination payments. No SREP funds will be used for the purpose of backstopping termination payments.

18. Details of the operational procedures in respect of Tariff Buy Downs, Escrow Account arrangements and the IDA Guarantee will be provided in the Project Operations Manual. The finalization and adoption of a POM by the GoM, which in form and substance is satisfactory to the IDA, is a disbursement condition for the Project.

19. **Staffing**. The Finance Officer will implement the internal control arrangements, facilitate the payment process, ensure proper accounting, and submit the financial reports in an agreed format to IDA. The Finance Officer has a Master's Degree in Finance and has over five years' experience in handling IDA fiduciary requirements. Presently, the FM staff cost is financed by other IDA projects. However, once those projects close, ASPIRE has agreed to finance the FM staff costs.

20. **Accounting policies and procedures**. All funds for the Project will be routed through the MEE and the PMU will be responsible for funding all project expenditures, accounting for them, and for reporting on the financial progress of the Project. The PMU will set up a sub-ledger in the existing accounting system for the Project within the existing FM system of the PMU. All Project expenditures will be recorded in this sub-ledger. Books of accounts will be maintained on a cash basis of accounting and all applicable accounting standards and policies (detailed in the Project Operations Manual) will be applied. The number of transactions in the Project is expected to be moderate, which will enable focused attention on each transaction.

21. **Financial reporting**. The IDA-related reporting requirements and the formats will be spelled out in the Project Operations Manual and include the financial progress reports, physical progress reports and procurement, and contract progress information to enable progress monitoring on an integrated basis. The PMU will submit quarterly IFRs to IDA within 45 days of the end of the quarter, starting from the end of the first calendar quarter after effectiveness. The Project Operations Manual will provide details on the reporting mechanisms that should be adopted by the Project.

22. **Internal controls**. Internal controls include structures, activities, processes, and systems that help project management effectively mitigate the risks to achievement of the Project Development Objective. The Project follows public finance laws of the Maldives. These regulations were reviewed during Project preparation and include internal controls necessary for

authorizing, approving, executing, recording, and reporting expenditure. Hence, these regulations and circulars are considered to be adequate to ensure that reliable internal control systems are in place for the project. The PMU is in the process of preparing a Project Operations Manual which will include a detailed chapter on financial management arrangements, elaborating on additional financial and other internal controls required for ensuring seamless project implementation.

23. **Internal audit.** The existing ToR for internal audits of the IDA financed Maldives Environment Management Project will be extended to cover this ASPIRE Project. The task team assessed the MEE's internal audit division during appraisal and concluded that this division has sufficient capacity to conduct project internal audits. Incremental costs required for the internal audits will be provided by MEE. Prior to conducting the first project-specific internal audit, the PMU will share with IDA the terms of reference for the Project internal audit to ensure that the terms are acceptable to IDA.

24. **External audit.** The PMU will prepare annual financial statements that will be audited by the Auditor General of Maldives, acceptable to the Bank, to maintain full transparency and provide adequate assurance to all the stakeholders on the use of project funds. This audit will also cover the operations of the escrow account. Reasonable level of internal control testing will also be done during this external audit. The terms of reference of the annual external audit will be submitted to IDA for clearance prior to engaging the external auditor. The audited financial statements will be submitted to the IDA within 6 months of the end of the fiscal year. The PMU will disclose an English version of the Project's audited financial statements on its website, available to the public in accordance with the IDA's Access to Information (ATI) Policy. These audited financial statements will be used for obtaining reasonable fiduciary assurance that SREP funds have been used for activities specifically agreed on. Presently, there are no overdue audit reports or ineligible expenditure pertaining to projects implemented by the PMU. According to the Bank's Access to Information Policy, the audit reports for the project received by the IDA will be disclosed in the IDA's external website for public access. The following audit report will be monitored in the PRIMA system:

Implementing Agency	***Audit Report***	***Auditor***	***Date***
MEE	Project Annual Financial Statement	Auditor General	June 30

25. **Oversight arrangements for escrow account beyond the project closing date:** The GoM will submit an independent audit report covering the operations and funds of the escrow account on an annual basis for each financial year after the closing date of the project. This oversight arrangement will continue until all securities provided by the project under Component 3 have expired or terminated. IDA will monitor these reports to obtain reasonable assurance over the funds in the escrow account.

26. **Financial covenants.** The project's financial covenants are:

(a) Audited annual financial statements to be submitted to IDA no later than six months of the following fiscal year; and

(b) Interim Unaudited Financial Reports (IUFRs) to be submitted to IDA no later than 45 days following the end of the reporting quarter.

27. **Disbursement arrangements.** The applicable disbursement methods under the SREP grant will be advance, reimbursement, direct payments or special commitments. The following table shows disbursement categories for the grant along with the types of expenditures to be financed and their financing percentage. The IDA Guarantee does not disburse based on expenditures as a grant or loan and is hence not included in the below disbursement table. There will be no retroactive financing.

Category	**Amount of the Grant Allocated (expressed in USD)**	**Percentage of Expenditures to be Financed (inclusive of Taxes)**
(1) Goods, non-consulting services, consultants' services, Training and Workshops, and Incremental Operating Costs under Part 1 of the Project	1,750,000	100%
(2) Tariff Buy Down under Part 2 of the Project	6,034,000	100%
(3) Securities under Part 3 of the Project	3,900,000	100%
TOTAL AMOUNT	***11,684,000***	

28. ASPIRE is promoting: (a) a new sub-sector with limited talent pool in Maldives, (b) the development of public and private sector knowledge and expertise, and (c) the longer term sustainability of PV subproject development beyond Project life. For these reasons it is important to develop and retain civil servants with experience and expertise in this area, so that this expertise will be sustained beyond the Project life. Therefore the Project, during its implementation period, allows for the use of grant funds for fixed monthly salary top-ups of civil servants who are specifically assigned by the GoM to work in the PMU in specialized areas of the Project. This is captured by including such costs in the definition of "Incremental Operating Costs." The specific rules and conditions for this, including staff eligible for salary top-ups and basis of calculation, will be reflected in the Project Operations Manual.

Procurement

29. Procurement of goods, works and services under this Project will be carried out in accordance with: World Bank "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Procurement Guidelines); "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Consultant Guidelines); and the provisions stipulated in the Financing Agreement.

30. The selection of investors receiving Tariff Buy Downs under Component 2 (with or without Security Package support under Component 3) will follow open competitive bidding and ensure bidder eligibility as required by Bank guidelines for procurement under Public Private Partnership (PPP) arrangement[20]. The selection of investors receiving only Security Package support under Component 3, either under the SREP funded escrow account or through an IDA Guarantee, shall be carried out by the PMU in accordance with 3.18[21] of the Procurement Guidelines.

31. Investors in subprojects supported by both Components 2 and 3, will be selected using the World Bank Guidelines for procurement under Public Private Partnership (PPP) arrangements.

32. **Procurement of Goods, Works and Non-consulting Services:** Goods Works and Non-consulting Services procured under this Project's Component 1 shall be procured following NCB and may involve shopping in some cases. ICB contracts are not envisaged.

33. **Selection of Consultants:** Major consultancy services to be procured shall follow the World Bank guidelines for selection of consultants and standard documents of the Bank shall be used. Short lists of consultants for services estimated to cost less than US$300,000 or equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. The Bank's Standard Request for Proposal (RFP) (October 2011) will be used as a base for all procurement of consultancy services under the Project. The following methods will be applicable for selection of consultants, consistent with the relevant sections of the Bank's Consultant Guidelines:

a. Quality- and Cost- Based Selection (QCBS).
b. Quality-Based Selection (QBS).
c. Least Cost Selection (LCS).
d. Fixed Budget Selection (FBS).

[20] Paragraph 3.14 of the Guidelines Procurements of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011.
[21] Paragraph 3.18 of the Guidelines Procurements of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011 ; as amended through the policy paper entitled "Enhancing the World Bank's Operational Policy Framework on Guarantees" approved by the Executive Directors on December 3, 2013 (Board paper: R2013-0206; IDA/R2013-0298, dated November 20, 2013).

e. Selection based on Consultants' Qualifications (CQS): for services estimated to cost less than US$300,000 equivalent per contract, in accordance with the provisions of paragraph 3.7 of the Consultant Guidelines.

f. Single-Source Selection (SSS).

g. Procedures set forth in paragraphs 5.2 and 5.3 of the Consultant Guidelines for the Selection of Individual Consultants.

h. Sole Source Procedures for the Selection of Individual Consultants.

34. **Thresholds for Procurement Methods and Prior Review.** Review thresholds and requirements for different methods of procurement of works, goods, non-consulting services and selection of Consultants based on the current procurement risk rating are listed in the table below. These thresholds and review requirements may be modified on the basis of reassessed risk ratings during project implementation in agreement with the Bank.

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts/Processes Subject to Prior Review
Goods, Works and Non-Consultancy	>=US$1000, 000	ICB	All contracts over US$600,000 equivalent.
	<US$1000,000	NCB	All contracts subject to post review
	<=US$50,000	Shopping	All contracts subject to post review
		DC	All contracts costing more than US$50,000 equivalent.
Consultant Services (firms)	>=US$300,000	All competitive methods; advertise internationally	All contracts.
	<US$300,000	All competitive methods; advertise locally	All contracts over US$200,000 equivalent.
	<US$300,000	CQS	All contracts costing more than US$200,000 equivalent.
		SSS	All contracts costing more than US$50,000 equivalent.
Individual Consultants		IC (Section V of Consultant Guidelines)	All contracts over US$100,000 equivalent.

		IC- Sole source	All contracts costing more than US$50,000 equivalent.

35. **Post Review.** Contracts below the prior review threshold for goods, works and consultancy services will be subject to post review, as per the procedure set forth in paragraph 4 of Appendix 1 of the Bank's Procurement and Consultant Guidelines. The Borrower shall retain complete documentation for each contract and make it available to the Bank or its nominated consultant for carrying out the post review. At least 10% of contracts that have not been prior reviewed would be post reviewed.

36. **Assessment of Procurement Capacity**. The PMU of the MEE, that manages several WB funded projects, will be responsible for overall procurement oversight under this project. It would directly procure the TA activities under Component 1 and play an important role under Components 2 and 3 to competitively select private sector investors based on quality and cost considerations guided by international standards pertinent to distributed grid connected PV generation.

37. The procurement team is well experienced in handling Bank financed procurement. MEE has experience under the following active World Bank projects: "Maldives Clean Energy for Climate Mitigation Project" (P128268), "Maldives Environmental Management Project" (P108078), and "Maldives Ari Atoll Solid Waste Management Project" (P130163). At present, MEE has 19 staff working across World Bank projects.

38. Additional procurement support may be needed when the ASPIRE becomes fully functional as the same team handles several subprojects and Grants in parallel. The main procurement risks identified by the assessment were:

a. Complaint redressal system has to be streamlined
b. Poor implementation of public disclosure procurement actions
c. Inherent weaknesses on fiduciary risks of transparency and fairness
d. Varying market capacity in designing appropriate qualification requirements as per Bank's SBD Goods and Works with an ability to influence the market in receiving appropriate pricing and delivery commitments
e. Inadequate experience in contract administration

39. Risk management measures which have been agreed are:

a. Procurement staff will be trained, specifically on fraud and corruption flags, and on addressing complaints
b. The PMU will prepare and forward to the Bank an annual procurement progress report, which will include, *inter alia*, procurement plan updates, action on findings of post reviews and other procurement and contract administration issues

c. The PMU will implement a monitoring mechanism for procurement, which will include implementation, as well as the defects liability phase and warranty phase of contracts.

d. Corrective actions will be to address deficiencies identified by the Bank post reviews.

40. The overall project procurement is rated 'moderate' and will be reduced to "low" once the remedial measures listed above are in place.

41. **Disclosure.** Key documents related to procurement will be disclosed on the Borrower's Website. This will include the selection process of subproject developers.

42. **Procurement Plan (PP).**The initial procurement plan for the first 18 months of project implementation, acceptable to the Bank, has been prepared by the PMU. This plan will be available at the PMU website, MEE website, and in the Bank's external website after Board approval. The Procurement Plan will be updated annually or when required, to reflect project implementation needs and improvements in institutional capacity. SEPA, the web based procurement plan execution and management tool, will be rolled out during the first nine months of the project implementation.

D. Environmental and Social

43. The Environmental Protection Agency (EPA) of the GoM will issue terms of references agreed with the World Bank to the selected developers under this Project to conduct site-specific EA and/or prepare EMPs. These will be jointly reviewed by the EPA and the World Bank. Once the specific sites have been allocated, each developer will conduct an environmental assessment and/or prepare environmental management plans (EMPs). The environmental assessments and related EMPs will be disclosed to public.

44. The implementation of the environment management plan (EMP) for Component 2 and 3 lies with the developer and will be monitored by environment and social coordinator of the PMU, supported by the energy sector coordinator, as needed. Once the developers are identified, GoM will submit to the World Bank all information related to the current environmental standards maintained and their performance and compliance. Based on the information provided by the GoM, the Bank will carry out a review of developer's environmental and social management system to assess the environmental and social performance and compliance standards of the developers.

45. The review results will be documented in environment and social review summary. In case any gap is identified, developer will prepare an action plan to address the gaps in conformity with the Bank's performance standards and Government of Maldives regulations. The developer will follow the action plan while implementing EMP. The bidding documents will include the mitigation measures identified in the ESMF and any other measures based on the site-specific assessments which will be part of the EMPs for the contract along with other applicable clauses to ensure environmental compliance during the commissioning.

46. The associated cost to implement EMPs will be part of the developers' budget, while the monitoring cost of the PMU will be borne through the ASPIRE Project. The developer will ensure all works contracts will include the EMP and the cost of implementing the EMP will be identified as an item in the Bill of Quantities. The PMU and utility companies will be responsible for day-to-day monitoring of project implementation and ensure compliance with manufacturers' guidelines on commissioning / decommissioning of the systems. The environment and social coordinator will supervise the works on the ground as well as monitor and report to the EPA and the World Bank on the progress of environmental and social compliance of the project on bi-annual basis.

47. The Environmental and Social Coordinators will also be responsible to ensure environmental and social due diligence is incorporated in the future pipeline development activities including any pre-feasibility and/or feasibility studies that will be undertaken as part of the Project.

E. Monitoring & Evaluation

48. Overall monitoring and evaluation (M&E) of project activities will be MEE's responsibility. MEA will also contribute to assessing project outcomes. The agency will carry out monitoring and evaluation of the different components/activities in accordance with the indicators included in the results framework (Annex 1). The indicators, targets and mechanisms for monitoring will be discussed and agreed with MEE and MEA. No later than 45 days after each quarter, MEE will submit to the Bank the quarterly progress reports covering all project´s activities, including procurement, financial summary report and compliance with environmental and social standards. Annual reports will be also submitted by MEE and MEA to the Bank.

49. IDA will monitor and supervise the subprojects through the submission of reports by private sponsors as required under IDA's Project Agreement, with each company, as well as through regular field visits until the closing date of the ASPIRE Project. Thereafter, and until the expiry of the individual IDA Guarantees, the World Bank will continue to monitor and evaluate subproject performance on a desk review basis, unless otherwise warranted. The submission of relevant reports by the off-taker will therefore be required under Project Agreement with the utility, until the expiry of the guarantee.

50. Bi-annual reviews by the World Bank, the first one to take place six months after effectiveness, should provide detailed analysis of implementation progress toward achieving the Project Development Objective and include evaluation of the financial management including disbursement, procurement, guarantee structure and a post-review of private sector mobilization aspect.

51. Mid-term review of the project will be facilitated by the Bank, MEE, and MEA. This review will evaluate the project in relation to key project development objectives and intermediate objectives. Mid-term review will entail stock-taking exercise to get feedback from project stakeholders, particularly from private sector investors and subproject developers, MEE, and off-taker utilities. Project's design, instruments including provisions of guarantee and tariff buy down, and implementation arrangements will be evaluated and revised, if necessary, to

further enable private sector led PV deployment. Mid-term review will also evaluate impacts of technical assistance components in operations of MEE, PV generations, and off-taker utilities.

52. EPA will be the lead agency for monitoring, reporting and evaluation on environmental and social impacts of ASPIRE Project. EPA will also carry out supervision to monitor progress of subprojects. The main aim of supervision is to observe the issues at subproject level and to support the implementation teams. Additionally, the subproject proponent/developer(s) will be responsible for regular monitoring and reporting of progress and achievements of the ASPIRE at subprojects level. The EPA, from time to time, will conduct an oversight of the subproject results submitted by contractors and evaluate how the process was implemented.

53. Mid-Term and End-term Reviews: The EPA and PMU may conduct this, roughly during the middle of the Project period, and an end-term review close to the time when the Project closes. Important elements of these reviews will assess the Project's progress.

54. The objective of evaluation is to judge the impact of implementation effectiveness. It will be done through independent consultants having experience in similar tasks. This will be undertaken during midterm and end of the project. The evaluation will assess ESMF's effectiveness in addressing environmental and social impacts of the project. The midterm evaluation will give feedback for implementation of the ESMF.

55. Past experiences of similar projects suggest that the capacity of the government to deal with environmental issues is generally weak at all levels. The MEE, therefore, will strengthen environmental training during the ASPIRE implementation through the following suggested measures:

- Providing renewable energy related training and awareness sessions to environmental policy makers
- Providing Environmental Assessment and Monitoring training specific to energy projects to EPA staff
- Preparing manuals and guidelines on how to assess the environmental impacts of RE projects.
- Recruit an Environment and Safety Officer, who will be responsible for the following: o Liaison point for all developers/contractors to assist in following the procedures set out in this ESMF, particularly the screening and approval processes.
- Monitor the compliance of social and environment aspects related to subprojects
- First point of contact for Grievance Redress Mechanism
- Environment and Safety Officer must have a background in environmental management and be provided training specific to energy projects.

ANNEX 4: OPERATIONAL RISK ASSESSMENT FRAMEWORK (ORAF)

1. Project Stakeholder Risks						
1.1. Stakeholder Risk	**Rating**	**High**				
Description: 1. Private sector funding required for the project may be constrained by the current business environment of Maldives.	**Risk Management:** Firming up private sector interest in investing in PV generation projects is critically important for the success of ASPIRE. Off-taker analysis to assess operational and financial performance of STELCO and FENAKA has been carried out to understand and manage stakeholder risk. The team has closely worked with GoM and potential private sector investors through market sounding exercise, including an investor conference in the Maldives, and participation in the Asia-Singapore Infrastructure Round Table, to ensure that appropriate amounts are set aside to allow implementation with adequate risk mitigation measures. The proposed project design also provisions optional tariff buy down support and risk guarantee covers to reduce risks for private sector investment.					
	Resp:	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**	**Status:**
	Client and Bank	Preparation, implementation	☒	Ongoing	Ongoing	Initiated
Description: 2. Independent power producers and developers facing contractual, regulatory, and political risks may refrain from investing in RE.	**Risk Management:** The Project plans to mitigate risks faced by the private sector investors by developing standard contracts for transactions and security package cover. The Project will also develop guidelines for deploying grid connected solar PV and carry out outreach activities to attract private sector investment. ASPIRE will also enhance the capacity of public sector stakeholders for facilitating deployment of PV generations.					
	Resp:	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**	**Status:**
	Client and Bank	Preparation; Implementation	☒	Ongoing	Ongoing	Initiated

2. Implementing Agency Risks (including fiduciary)		
2.1. Capacity	**Rating**	**High**
Description:	**Risk Management:**	

<table>
<tr><td rowspan="2">1. The major risk for a successful implementation of the ASPIRE arises from the financial viability of the electricity off-takers. The Maldives follows a single buyer model whereby STELCO and FENAKA sign PPAs with all PV power producers. Historically, as the Government wanted to keep the price of electricity low, MEA approved the tariff at much lower level than the average cost of power.</td><td colspan="6">STELCO, FENAKA and MEA need to institute appropriate tariff management procedures that not only ensure payments to PV developers but also address other underlying causes of financial loss at STELCO and FENAKA. The Task Team will closely monitor the tariff setting procedures during Project implementation and intervene through its sector dialogue where necessary.</td></tr>
<tr><td>Resp:
Client, Bank</td><td>Stage:
Preparation and implementation</td><td>Recurrent:
☒</td><td>Due Date:</td><td>Frequency:
Ongoing</td><td>Status:
Initiated</td></tr>
<tr><td rowspan="2">Description.
2. Delays in procurement routinely occur in the Maldives. Delays could jeopardize implementation under the current IDA envelope.</td><td colspan="6">Risk Management:
Since the Project is a high priority project for the GoM to deliver on its 2020 vision of low carbon development, political momentum be supportive of a timely implementation of activities under the various components. In addition, the TA component 1 will enhance the capacity of STELCO and FENAKA to plan and procure components and services for system operation modernization. The TA component will also help STELCO and FENAKA to develop necessary guidelines that specify the PV developer selection requirements to ease private sector participation in PV installations.</td></tr>
<tr><td>Resp:
Client, Bank</td><td>Stage:
Implementation</td><td>Recurrent:
☒</td><td>Due Date:
Throughout project implementation</td><td>Frequency:
Ongoing</td><td>Status:
Not yet started</td></tr>
<tr><td>Description.
3. Since PV technology is new to the Maldives, STELCO and FENAKA do not have experience in this area and hence PV deployments may face risk of delays in the implementation.</td><td colspan="6">Risk Management:
As part of the TA and after consultation with STELCO and FENAKA, the project can help STELCO organize Technical Review Committees to methodically review and approve PV deployments. In addition the PV deployments supported under this Project are supposed to be implemented by the private sector, which will further be bound to a timely implementation through contractual agreements. For the PV related activities implemented by the GoM utilities and the MEE, the WB team based in the country office will liaise with the counterparts and the client on a regular basis.</td></tr>
</table>

	Resp: Client, Bank	**Stage:** Implementation	**Recurrent:** ☒	**Due Date:** Throughout project implementation	**Frequency:** Ongoing	**Status:** Not yet started
2.2. Governance	**Rating**	**Substantial**				
Description. Over the last few years the Maldives has witnessed political and fiscal uncertainty that has restrained private investment. A new government was elected in November, 2013, and a new parliament will be sworn in on May 28, 2014. There is renewed impetus given to private investing, and infrastructure projects.	**Risk Management:** Project instruments, in form of payment guarantee and termination guarantee, serve the purpose of partially insulating private sector from political risks and contract reneging by the GoM and public utilities. Project has been designed in a flexible manner with suitable implementation budget and provision for mid-review and revision of instruments to mitigate impacts of political and governance risks. Finally, the project team will emphasize on securing political commitment from all bilateral and multilateral partners to mitigate this risk. Furthermore, the project team will work closely with PMU and the country team to manage potential risks.					
	Resp: Client, Bank	**Stage:** Implementation	**Recurrent:** ☒	**Due Date:** Throughout project implementation	**Frequency:** Ongoing	**Status:** Ongoing

3. Project Risks		
3.1. Design	**Rating**	**Substantial**
Description: 1. Capacity factor of the PV generation may be lower than anticipated due to weather conditions and integration of intermittent resources may cause power system	**Risk Management:** In parallel to and following the implementation of the initial 4MW of subprojects, ASPIRE will create a pipeline of PV projects where potential projects will be identified and preliminarily developed. The project sites preliminarily developed for the project pipeline along with procurement of complementary services as necessary (such as advanced	

<table>
<tr><td rowspan="2">instabilities. Identification of project sites and permits for siting PV generation could also add risk.</td><td colspan="6">forecasting) will help in mitigating this risk. Capacity building at GoM agencies will further help in strategically siting and deploying PV generations. At preparation stage, the project has been exploring appropriate sites and negotiating PV generation siting arrangements. In addition, generation profiles of past installations have also been examined. As part of the technical assistance</td></tr>
<tr><td>Resp:
Client, Bank</td><td>Stage:
Preparation and implementation</td><td>Recurrent:
☒</td><td>Due Date:
Ongoing</td><td>Frequency:
Throughout project preparation and implementation</td><td>Status:
Ongoing</td></tr>
<tr><td rowspan="2">Description:
2. Given i) the recent past political context of Maldives, ii) limited market size for growth of PV sector, and iii) the nascent stage of PV sector (and possible high balance of system costs in hardware and labor), there may be reluctance from the private sector in investing in the project. The instruments, namely tariff buy down and guarantees, proposed by the project may not sufficiently comfort the private sector.</td><td colspan="6">Risk Management:
To mitigate this risk the project team has engaged in thorough market sounding exercise. Investor conferences were held in June 2013 and March 2014 to obtain feedback from the private sector on the design of project instruments such as the draft PPA, draft IDA guarantee Term Sheet, and implementation arrangements. The design of project instruments has been well whetted with feedback from the private sector to ensure their satisfaction and comfort. Furthermore, the project design is flexible in nature allowing for reallocation of resources across components as necessary as well as for a modification of the security package support as needed.</td></tr>
<tr><td>Resp:
Client, Bank</td><td>Stage:
Preparation and implementation</td><td>Recurrent:
☒</td><td>Due Date:
Ongoing</td><td>Frequency:
Throughout project preparation and implementation</td><td>Status:
Ongoing</td></tr>
<tr><td>3.2. Social and Environmental</td><td>Rating</td><td colspan="5">Low</td></tr>
<tr><td>Description:
1. The Project is a category “B” project. The project is not expected to have any significant social and environmental impacts (biodiversity, forests, soil erosion, etc.).</td><td colspan="6">Risk Management:
The Project is category “B” and is not expected to have significant environmental impacts. Implementation risks of project interventions are considered to be low. The Project has carried out a preliminary environmental and social assessment and prepared an Environmental and Social Management Framework to guide the project implementation.</td></tr>
</table>

	During implementation the Project will carry out a social and environmental screening to identify any adverse impacts. It will also ensure that (i) the developers have an adequate level of performance and compliance standards, (ii) environmental management plans linked to contractual arrangements are in place and (iii) the implementations of the mitigation measures will be monitored.					
	Resp:	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**	**Status:**
	Client, Bank	Preparation Implementation	☒	2014(ESMF update)	Throughout project preparation and implementation	Ongoing
Description:	**Risk Management:**					
2. A large scale solar farm could be a visual obstacle, and thus there is a possibility that protest against the project from residents in the neighbor may occur. On the other hand, distributed generations such as roof-top PV can affect cultural attractions.	The project sites will be chosen to lessen these effects and priority lists will be developed considering issues such as community buy-in and local participation.					
	Resp:	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**	**Status:**
	Client, Bank	Preparation Implementation	☒	2014(ESMF update)	Throughout project preparation and implementation	Ongoing
3.3. Program and Donor	**Rating**	**High**				
Description:	**Risk Management:**					
Other donors and multi-laterals (e.g. ADB) have significantly larger allocations for the Maldives energy sector. Proper coordination between these energy projects and ASPIRE is critical. Also, technical assistance from ADB and other development partners is expected to	WB through its outreach and communication will coordinate well with major donors, such as ADB, GIZ, JICA, and IFC to engage collaboratively as envisioned in SREP-IP. In terms of collaboration with ADB, while projects will remain separate in their initial phase, close dialogue will be maintained while management will ensure coordination as needed. TA activities will also be sequenced to holistically support the sector. The project anticipates cooperation and collaboration from other bilateral and multilateral development partners.					

help the ASPIRE activities by increasing the capacity of the stakeholders and improving the local electricity T&D networks.	**Resp:** Bank, SREP	**Stage:** Preparation; Implementation	**Recurrent:** ☐	**Due Date:**	**Frequency:** Ongoing	**Status:** Ongoing
3.4. Delivery Monitoring and Sustainability	**Rating**	**Moderate (M)**				
Description: STELCO and FENAKA are inexperienced in facilitating PV deployments. A framework for monitoring project activities needs to be developed.	**Risk Management:** Results from the technical assistance activities funded by the Project will help STELCO and FENAKA improve their institutional performance and develop a monitoring framework. Results Monitoring and Evaluation Framework and standard contracts will further mitigate this risk.					
	Resp: Client, Bank	**Stage:** Preparation Implementation	**Recurrent:** ☒	**Due Date:** Ongoing	**Frequency:** Ongoing	**Status:** Ongoing

4. Overall Risk

Implementation Risk Rating: **Substantial**

Comments:

Development of private sector funded RE subprojects under ASPIRE will require a good understanding of risk appetite of the private sector, as well as work on the development of a framework that mitigates those risks that are difficult for the private sector to shoulder. The development of payment guarantee and termination guarantee arrangements and support for strengthening implementation capacity will be a critical piece in preparation of the eco-system for private sector investing. Finally, it is important to understand and gauge the risk-return interface in the specific context of the political environment, and the type of subprojects and investments being developed. ASPIRE mitigates risks for private sector by providing appropriate security package and tariff buy down support. The Project instruments have been designed following rigorous consultation with private and public sector stakeholders and they have been developed to manage the substantial implementation risk.

ANNEX 5: IMPLEMENTATION SUPPORT PLAN

Strategy and Approach for Implementation Support

1. The strategy for implementation support (IS) has been developed based on the Project's Components, the Project's focus on private sector led development, the Project's instruments such as the IDA Guarantee structure and the Tariff Buy Down disbursement, and risks associated with project implementation. The strategy aims at making IS to the client more flexible and efficient, and will focus on implementation of the risk mitigation measures defined in the ORAF.

2. The World Bank Task Team Leader will handle the day-to-day matters of the project as well as coordination with the client and among Bank team members. The implementation support envisaged under the proposed project includes technical and fiduciary (FM and procurement) support. As envisaged under the project agreements with the private sector subproject developers and the off-taker and indirectly through the escrow agreement with the GoM, the IDA will monitor performance of subprojects, off-taker and activities of the escrow account through review of financial statements from private sector subproject developers and utilities, review of environmental and social performance standards and of escrow bank statements.

3. The team proposes bi-annual supervision missions. In line with practice at the World Bank, supervision missions will include technical and fiduciary staffs as well as World Bank Guarantee Specialists as needed. In conjunction with the Government counterparts, STELCO, and FENAKA, the World Bank team would monitor and report on progress against the monitoring indicators agreed in the Results Framework, as well as verification of their achievement. They will also monitor risks, updating the risk assessment as needed and paying particular attention to the off-taker and implementation risks.

4. A mid-term review would encompass a more in-depth stock-taking of performance under the project. The mid-term review would assess progress towards achieving the individual Project Development Indicators and Project Development Objective. Special attention to private sector engagement during mid-term review will help the project team revise tariff buy down appropriation, tariff buy down disbursement mechanism, and IDA Guarantee structure. The Mid-term review will also help the project team plan interactions with the private sector and assess the costs of deploying PV generation. The Mid-term review will also evaluate the impacts of the technical assistance component on the project implementation performance of the government and the utility counterparts.

5. Based on the assessment of progress made at the mid-point of the Project implementation and recommendations for improvements/changes would be considered by both the Government counterparts and the World Bank management team. The mid-term review would also review overall Project Implementation arrangements, making adjustments as necessary.

6. Tables 1 and 2 below map out the proposed implementation plan, skills mix and other inputs required.

Table 1: Implementation Plan

Time	Focus	Skills Needed	Partner Role
First 12 months	- Team leadership - Project implementation arrangement - Technical and procurement review of potential subprojects - Environmental and social assessments - ToRs for technical assistance - Procurement documents - Project supervision coordination	- Task Team Lead - Infrastructure Finance (Guarantee) Specialist - Energy Specialist - Environmental Specialist - Social Development Specialist - Counsel - Procurement, and - FM specialists	- Ongoing exchanges of information as required by the preparation of the project - Facilitation of PPAs between private sector power producers and off-taker utilities - Preparation of TORs for technical assistance - Procurement of goods and consultants - Preparation of project reports - Project implementation specialists and support staff appointed
12 - 24 months	- Project overall supervision - Technical and procurement review - Technical support - Project supervision coordination - Fiduciary compliance	- Task Team Lead - Infrastructure Finance (Guarantee) Specialist - Energy Specialist - Procurement, and - FM specialists	- Facilitation of PPAs between private sector power producers and off-taker utilities - Preparation of project reports - Supervision of installation and operation of PV generation - Supervision of transactions between off-takers and power producers - Monitoring of project outcomes
24-36 months	- Mid-term review - Stock-taking - Assessment and revision of project implementation arrangement - Technical and procurement review of developed and potential subprojects - Private sector engagement	- Task Team Lead - Infrastructure Finance (Guarantee) Specialist - Energy Specialist - Environmental Specialist - Social Development	- Exchange of information as required for mid-term review - Revision of project implementation arrangement - Facilitation of PPAs between private sector power producers and off-taker utilities - Preparation of project reports - Supervision of installation

		Specialist - Counsel - Procurement, and - FM specialists	and operation of PV generation - Supervision of transactions between off-takers and power producers - Monitoring of project outcomes
36-60 months	- Project overall supervision - Technical and procurement review - Technical support - Project supervision coordination - Fiduciary compliance	- Task Team Lead - Infrastructure Finance (Guarantee) Specialist - Energy Specialist - Procurement, and - FM specialists	- Facilitation of PPAs between private sector power producers and off-taker utilities - Preparation of project reports - Supervision of installation and operation of PV generation - Supervision of transactions between off-takers and power producers - Monitoring of project outcomes

Table 2: Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Team Task Lead	Project Years 1&3 – 12 SWs Project Years 2,4, & 5 – 6 SWs	2 per annum	Washington DC based
Infrastructure Finance (Guarantee) Specialist	Project Years 1&3 – 3 SWs Project Years 2,4, & 5 – 2 SWs	Project Years 1&3 – 2 per annum Project Years 2, 4&5 – 1 per annum	Washington DC based
Guarantee Specialist Counsel	Project Years 1&3 – 3 SWs Project Years 2,4, & 5 – 2 SWs	Project Years 1&3 – 2 per annum Project Years 2, 4&5 – 1 per annum	Washington DC based
Energy Specialist	Project Years 1&3 – 4 SWs Project Years 2, 4 &5 – 2 SWs	Project Years 1&3 –2 per annum Project Years 2, 4&5 – 1 SWs per annum	Washington DC based
Environmental / Social Specialists	Project Years 1&3 – 3 SWs Project Years 2, 4 &5 – 1 SWs	Project Years 1 – 2 SWs Project Years 2,3,4 &5 –1 per annum	Country Office staff
Procurement	Project Years 1&3 – 4 SWs Project Years 2, 4 &5 – 2 SWs	Project Years 1&3 –2 per annum Project Years 2,4&5 – 1 per annum	Country Office staff
FM	Project Years 1&3 – 4 SWs Project Years 2, 4&5 – 2 SWs	Project Years 1&3 –2 per annum Project Years 2,4&5 – 1 per annum	Country Office staff

Partners

Name	Institution/Country	Role
	Asian Development Bank	*T.A. Implementation*
	GIZ	*T.A. Implementation*

ANNEX 6: IDA GUARANTEE TERM SHEET

Summary of Terms and Conditions of IDA Payment Guarantees
In Support of PPAs to be signed with STELCO / FENAKA and Implementation Agreements to be signed with GoM[22]

Guarantor:	International Development Association (IDA)
Obligor:	STELCO or FENAKA (the Buyer) as buyer under a Power Purchase Agreement (PPA) and GoM under an Implementation Agreement
Beneficiary:	Each Project Company
Purpose:	The Payment Guarantee would backstop the failure by Buyer and/or GoM, as the case may be, to pay the amounts for payments due to the Beneficiary from Buyer under the relevant Power Purchase Agreement (PPA) [23] or GoM under the relevant Implementation Agreement, following the occurrence of a Guaranteed Event (as defined below).
Guaranteed Event:	Buyer's /GoM's failure to comply with undisputed/final termination payment obligations under the respective PPA and Implementation Agreement throughout the IDA Guarantee Period
IDA Guaranteed Amount:	The IDA Guaranteed Amount will be capped at a predetermined amount equivalent to [TBD per cent of the maximum termination amount payable by GoM] (or Buyer, as the case may be) as per the provisions of the Implementation Agreement and the PPA
Maximum IDA Guaranteed Amount:	The aggregate of IDA Guarantees for all subprojects will be capped at US$16 million, equal to the aggregate of the sum of the IDA Guaranteed Amount for each subproject

[22] This term sheet will be applicable to each subproject.
[23] Based on proposed template of PPA and Implementation Agreement being finalized by GoM, and to be satisfactory to IDA. The World Bank reserves the right to modify or withdraw its proposal, including for reasons relating to changes in the current terms of the PPA and Implementation Agreement.

IDA Guarantee Period:	TBD
IDA Guarantee Fees:	0.75% per annum on IDA Guaranteed amounts outstanding, payable six monthly in advance by each Beneficiary.
Front-end Fees:	(a) An Initiation Fee of US$ [TBD][24] for internal Project preparation payable by each Beneficiary. (b) Processing Fee of up to a maximum cap of 0.50% of the guaranteed amount to cover IDA designated reimbursable expenses payable by each Beneficiary.
Guarantee Agreement:	The terms and conditions of each IDA Guarantee would be embodied in a Guarantee Agreement between each Beneficiary and IDA.
Project Agreement:	Each Beneficiary would enter into a Project Agreement with IDA in respect of its Guarantee. Under such Agreement, the Beneficiary will provide relevant subproject information, and make warranties, representations and covenanted undertakings, including in respect of compliance with applicable environmental and social laws and guidelines and relevant World Bank Guidelines relating to sanctionable practices. IDA may suspend or terminate the IDA Guarantee if the Beneficiary breaches the warranties, representations or undertakings under the Project Agreement.
Buyer Project Agreement	Each Buyer would enter into a Project Agreement with IDA governing its responsibilities related to provision of relevant subproject information, make warranties, representations and covenanted undertakings, including regarding corporate governance, financial sustainability and World Bank requirements relating to Sanctionable Practices.
Indemnity Agreement:	The Republic of Maldives would enter into an Indemnity Agreement with IDA. Under the Agreement, the Republic of Maldives would undertake to indemnify IDA on demand, or as IDA may otherwise determine, for any payment made by IDA under an IDA Guarantee.

[24] The Initiation Fee amount would be calculated as follows: (IDA Guaranteed Amount /US$16 million) x US$100,000

	The Indemnity Agreement will follow the legal regime, and include dispute settlement provisions, which are customary in agreements between member countries and IDA.
Conditions Precedent to the Effectiveness of each IDA Guarantee for each subproject:	Specific conditions will include the following: (a) Firm commitment for proposed equity and debt financing for the subproject. (b) Execution, delivery and effectiveness of the relevant PPA, in a form and substance satisfactory to IDA. (c) Execution, delivery and effectiveness of the relevant Implementation Agreement, Indemnity Agreement, Project Agreement and [other key agreements to be identified] in a form and substance satisfactory to IDA. (d) Provision of relevant satisfactory legal opinions from: (i) the Attorney General of the Republic of Maldives relating to the Indemnity Agreement, and the Implementation Agreement; (ii) counsel to Buyer relating to the PPA, Buyer Project Agreement, and (iii) counsel to the Beneficiary relating to the Project Agreement, and PPA. (e) Payment in full of the first installment of the Guarantee Fee and payment of the Initiation and Processing Fees, if such amounts are in invoiced by IDA as due on or prior to the effectiveness. (f) Conclusion of a Guarantee Agreement between the Beneficiary and IDA, Project Agreement between the Beneficiary and IDA, Buyer Project Agreement between Buyer and IDA and an Indemnity Agreement between IDA and the Republic of Maldives
Exclusions:	Coverage under the IDA Guarantee shall not extend to any losses resulting from the following types of events, including: (a) acts or omissions of the Beneficiary and the direct or indirect shareholders of the Beneficiary, (b) Maldivian laws in effect on, or events occurring before, the date of effectiveness of the Guarantee Agreement, or

	(c) sanctionable practices in connection with the subproject attributable to relevant parties.
Termination by IDA:	Except in respect of demand notices already received by IDA, IDA will automatically terminate the IDA Guarantee if the Beneficiary defaults in payment of the Guarantee Fees. IDA may also terminate the IDA Guarantee if any of the following types of events occurs, including: (a) Any changes are made without IDA's prior written consent in those provisions of the project and financing agreements in respect of which IDA's consent is required; (b) It is determined that any of the project agreements is invalid, illegal, or unenforceable (other than same resulting from a Guaranteed Event); (c) IDA has determined that the Beneficiary has engaged in sanctionable practices in connection with the subproject; an untrue statement is made by the Beneficiary in connection with a demand made under the IDA Guarantee; or (d) If the Beneficiary is in violation of the World Bank guidelines, and environmental and social safeguard policies under the World Bank performance standards applicable to it.
Claims and Disputes:	Claims by the Beneficiary must be made within [90] days of nonpayment, if not disputed by the Obligor, or of dispute resolution or arbitral award in favor of the Beneficiary, in case of dispute, with IDA paying within [60] days following acceptance of the claim. If there is a dispute between the Obligor and the Beneficiary as to the Obligor's obligation to pay or the amount of its liability, the IDA Guarantee would be callable only in respect of amounts that the Obligor is obligated to pay, and fails to pay, in accordance with the dispute resolution procedures contained in the relevant agreement(s).
Other Provisions:	As part of its appraisal process for each subproject, IDA would carry out a review of the financing and commercial structure of the subproject, the PPA and any related financing and project agreements, and the proposed risk coverage, as deemed appropriate by IDA.

Amendments and Waivers:	IDA will be entitled to be kept fully informed about any proposed waivers or amendments to the terms of the transaction. Any amendment or waiver to the provisions of the project documents and the loan(s) documentation, insofar as it relates to the IDA Guarantee, requires the prior written consent of IDA. If any such amendment or waiver is made without IDA's prior written consent, the IDA Guarantee will immediately terminate.

ANNEX 7: REVIEW OF SOLAR PV DEVELOPMENT EXPERIENCE IN MALDIVES

Existing Initiatives and Programs

1. In order to design an effective program structure to promote solar PV development in the country, it is important to first review the existing initiatives and draw upon the experiences and understand challenges faced in the local context. Given below is the description of the key solar rooftop PV initiatives/programs in Maldives:

- Supply and Installation of **Grid tied Solar PV System** for integration with diesel generators on **GDh. Thinadhoo Island- Phase I**, under Clean Energy for Climate Mitigation (CECM) Project: One of the key objectives of the project was to install and commission approximately 300 kWp of PV plant in total in line with the best international practices and lowest costs. This included commissioning and installation of 120 kWp at Aboobakuru School, 134kWp at New School Annex and 46 kWp at GDh. Thinadhoo power house. The supplier obligation included design, supply, construction, installation, supervision and handover of the system to MEE, and a 12 month maintenance and handover period.

- Supply and Installation of **Grid tied Solar PV System** for integration with diesel generators **on GDh. Thinadhoo Island- Phase II,** under CECM Project: The scope of the Phase II of the project was to expand the PV capacity of the Thinadhoo Island by 250 kWp to a total of 550 kWp, raising the PV power fraction to 55%. This included commissioning and installation of 60 kWp at New Mosque (Masjidul Ikhlass) and 190kWp at Thinadhoo Regional Hospital. Further, to deal with the control challenges of high PV fraction, the scope included installation of a PV/Diesel Hybrid Control System to control both the new and the existing PV plant.

- Supply and Installation of **Solar PV in Green Building/MEE** financed by MEE through approved budget from the GoM: The key objective of the project is to install and commission approximately 25 kWp of PV plant in line with best international practices and lowest costs. The supplier obligation includes design, supply, construction, installation, supervision and handover of the system to MEE, and a 12 month maintenance and handover period.

- **Solar PV Installation on Build Own Operate and Transfer (BOOT) model on 6 islands**: the scope includes design, supply, installation, operation and maintenance of grid connected solar PV systems that supply 30% of the daytime power demand of the islands of K. Guraidhoo, K. Villingilli, K. Himmafushi, K. Maafushi, K. Kaashidhoo and K. Thullusdhoo. This project has been awarded to Renewable Energy Maldives Pvt. Ltd. (REM) wherein REM signed a Power Purchase Agreement (PPA) with STELCO while a German solar firm, Wirsol, provided technology and financing for the project. The term of the PPA is for 20 years. Comparative analysis on key parameters of different programs is provided in Table below.

Table 1: Comparative analysis on key parameters of different programs

Initiatives	GDh. Thinadhoo Island- Phase I	GDh. Thinadhoo Island- Phase II	Solar PV in Green Building- MEE	BOOT model on 6 islands
Capacity Installed	300 kWp	250 kWp	25 kWp	652 kWp
Business Model	Transfer of the project after commissioning and 12 month maintenance and handover period.	Transfer of the project after commissioning and 12 month maintenance and handover period.	Transfer of the project after commissioning and 12 month maintenance and handover period.	BOOT Model
Key Bidding Parameters	Capital cost of the project	Capital cost of the project	Capital cost of the project	Not Available
Source of Funds	Based on financing agreement between GoM and International Bank for Reconstruction and Development	Based on financing agreement between GoM and International Bank for Reconstruction and Development	Budgetary allocation of GoM	Self-Financed by suppliers/ vendors
Term of the contract	Not Applicable	Not Applicable	Not Applicable	Term period for PPA is 20 years
Electricity Provider in the Region	FENAKA	FENAKA	STELCO	STELCO
Status of the project	Awarded to CECEP Oasis New Energy Company, China in March 2013	Under Evaluation	Under Evaluation	Awarded to REM with Wirsol providing the technology and finance. REM signed PPA with STELCO in June 2011. Project build start/end: December 2011 to July 2012

2. In addition to the above, several other initiatives are underway. These include:

- **JICA Feasibility Study**: The Japan International Cooperation Agency (JICA) conducted a comprehensive study on feasibility of roof top solar PV in a number of commercial buildings in Male' city in 2009. Following the completion of this study, installation of 700 kW of PV is ongoing.

- **Dhiffushi Island**: This project involves installation of a 40 kW grid-connected photovoltaic (PV) system and an ice-making unit on Kaafu Dhiffushi Island. Besides promoting clean energy, the supply from the installation will be fed to the ice-making unit enabling preservation of fish, the key economic activity in Dhiffushi. The project is financed by ADB and being implemented by Kansai Electric Power Corporation.

Existing Supplier/Vendor Base

3. The GoM's ASPIRE structuring advisers, engaged during preparation of the Project, have been assessing the existing supplier/vendor base of Solar PV in the country. During Project preparation the advisers reported that the domestic capability to execute such projects is limited with only few local companies having capability and capacity to execute PV projects. However, according to the GoM advisers, there exist local engineering firms that could provide support to international firms looking at project development in Maldives.

ANNEX 8: ASSESSMENT OF THE RENEWABLE ENERGY CANDIDATE SUBPROJECT

1. As mentioned under the main part of this PAD, the GoM has already prepared an initial subproject which encompasses up to 4 MW of PV installations on distributed rooftop PV systems on public buildings in Male' and Hulhumale'. This initial subproject will be put out for bidding on the basis of the investment framework. The 4 MW subproject includes a number of even smaller subprojects, which are proposed to be aggregated in one (or maximum two) clusters, that will for the initial 4 MW subproject appraised within this PAD. The following describes the process that was applied by the GoM structuring advisers and the Bank team to identify and select the various roof-top solar PV capacities during the preparation and appraisal process.

Approach for assessment of candidate subprojects for Male' and adjoining islands

2. The key steps adopted to identify candidate subprojects in Male' and adjoining islands are:

i. **Selection of Island for Survey**: Based on the demand-supply conditions of different STELCO Islands, Male' and Hulhumale' Island were selected for identification and assessment of candidate subprojects for solar PV installation. The other islands were excluded since both these islands were likely to meet the target capacity of 4 MW for the initial lot. Accordingly, a preliminary list of public buildings was prepared for these indicated Islands.

ii. **Categorization of Key Public Buildings**: In discussion with the Ministry of Environment and Energy (MEE) and the National Expert, the initial list of public buildings was categorized into large, medium and small buildings depending on the roof sizes wherein buildings having roof size of <3,000 sq feet were considered as small, 3,000-8,000 sq feet were considered as medium and >8,000sq feet were considered as large buildings. Primarily, large buildings and a few medium sized buildings were shortlisted for undertaking primary assessment for solar PV installation. In case of Hulhumale', the list of large public buildings was obtained from HDC.

iii. **Parameters for Assessment of Buildings**: After the short listing of the buildings, the parameters for assessment of buildings were finalized. This included parameters such as:

a. Island management (STELCO/FENAKA/Island Councils)
b. Name of the Building
c. Ownership
d. Dimensions of Roof (Width and Breadth) in feet
e. Total Area in square feet
f. Shade Condition (to obtain useable area)
g. Age of structure
h. Design details of the roof (wherever available)
i. Expected PV capacity
j. Annual Power Generation

iv. **Survey: A** detailed assessment was undertaken through site visits to the identified buildings. The survey was undertaken for approximately 50 buildings collectively across Male' and Hulhumale'. Dimensions of the roof were obtained from the drawings of the respective buildings, as available. Otherwise the dimensions of the roof were measured/assessed by the team. Specifically, shade on the roofs from trees, other buildings or structures etc. was assessed for each of the roofs as shade has a significant impact on the sizing of solar installations and expected generation. Details with respect to the nearest interconnection feeders and transformers along with its capacity were sought from STELCO. Existing solar rooftop installations were also visited to understand the actual operating conditions.

v. **Assessment of Candidate Subprojects for initial lot**: Based on the above, candidate subprojects aggregating to a capacity of approximately 4 MW located both in Male' and Hulhumale' that could be considered in the initial lot have been identified. These will span both public buildings and housing complexes. Private buildings have been kept out of the initial lot.

Technical aspects covered for each subproject

3. Based on the approach, candidate subprojects have been identified for both Male' and Hulhumale'. The technical aspects covered for each of the subprojects is explained in detail below:

a. **Name of the Building**

b. **Ownership**- This included classification in terms of public or private building. Within public building whether owned by Ministry or Government owned companies or organizations. In the initial phase, the focus has primarily been on the public buildings.

c. **Total Available Area**- This included measurement of the dimensions of Roof (Width and Breadth) in feet. Dimensions of the roof were obtained from the drawings of the respective buildings in case available; otherwise the dimensions of the roof were measured/assessed by the team. In addition, shade condition on the roofs from trees, other buildings or structures etc. was assessed for each of the roof. This is critical as it has significant impact on the sizing of solar installations and expected generation. Thus, total available area i.e. the shade free area suitable for solar based generation was arrived at.

d. **Age of Structure**- This included understanding of the age of the roof or building.

e. **Assessment of the Strength of Roof and Reinforcement Required**: Strength of the roof was assessed to understand whether the roof would be able to withstand Solar PV modules and any reinforcement would be required before the installation of PV modules. This assessment made has been very preliminary and detailed assessment may be required during feasibility stage of the subproject subprojects.

f. **Expected PV capacity**: Based on the industry benchmarks and also on the basis of existing solar installations, PV capacity that can be installed at various locations has been estimated.

g. **Annual Power Generation:** Based on the experience of existing subprojects, annual generation has been arrived by considering daily generation at 4.5 units/day/kW.

h. **Space for Power Conditioner/Invertor:** This was assessed to understand whether sufficient space would be available to install power conditioner at the site

i. **Nearest Interconnection Feeder, Transformer No. and Capacity of Transformer (kVA):** This information was obtained from STELCO for all the subproject subprojects

j. **Latitude and Longitude of the place**

Indicative list of subprojects identified in Male' for initial phase

4. A total of 26 locations have been initially identified in Male' aggregating to a total capacity of 2.8 MW. The locations afford opportunities for installations of varied sizes ranging from 25 kW to 400 kW. The identified locations can be categorized on the basis of type/nature of building and its ownership. The key potential sites along with the ownership include the following:

5. **Educational Institutions**: Schools and colleges provide significant opportunity for installation of solar PV panels and such buildings in most of the cases are owned by the Ministry of Education (MoE). The sizing/potential capacity of PV installation at each of the location is relatively small to medium but on an aggregate basis the total potential of schools is high.

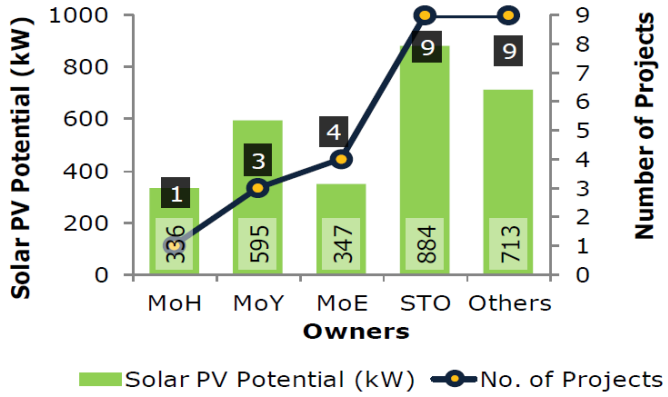
6. **Warehouses**: State Trading Organization (STO) has large no. of warehouses with significant roof space and is therefore an important stakeholder in the deployment of PV panels. Some of the STO sites have very large roofs and provides sufficient scale for installations. During the survey it was told that some of the buildings of STO may be demolished to create new buildings. While finalizing the installation sites, detailed discussion needs to be undertaken with STO.

7. **Stadiums**: Stadiums also provide high potential PV sites. The roofs of the stadium are owned by Ministry of Youth Women Affairs and Sport. During the survey, some renovation work was underway in case of National Stadium, however, it is expected that by the time subproject will be due for installation, and renovation works would be complete. Thus, while finalizing the installation sites, detailed discussion need to be undertaken with the Ministry.

8. **Hospitals:** The government hospital surveyed i.e. Indira Gandhi Memorial Hospital is owned by Ministry of Health and Gender and consist of multiple roofs and provides large opportunity for solar PV installation.

9. Out of the 26 locations identified, the majority of the sites are owned by the above stakeholders. Therefore, for ease of implementation of installation, locations can be divided into different lots depending on the owner of the site. Involvement of few owners also ensures less coordination and provides for ease of implementation of subprojects (see following Figure 8.1).

Figure 8.1: Owner wise Solar PV Potential and no. of locations and subprojects



10. It is important to mention here that during discussions with the MEE, it came out that willingness to collaborate and participate in the proposed initiatives will be a separate discussion that MEE will have with the relevant Government departments. Since, most of the buildings are publically owned; the interest will be solicited through inter-department/inter-ministry dialogue.

11. The detailed indicative list of locations for Male' is given in the following tables.

Table 8.1: Candidate Sites for Subproject in Male'

S. No.	Name of Building	Owner	Available Area (m2)	Comments on Strength of Roof and reinforcement required	Roof Orientation (N/W/S/E)	Age of Roof Structure	PV capacity (kW)	Annual Power Generation (kWh)	Space for Power Conditioner/Inverter	Nearest Interconnection Feeder	Transformer No.	Capacity of Transformer (kVA)	Latitude of the Place	Longitude of the Place
1	Maldives Polytechnic	Ministry of Education (MoE)	928	OK	N-S-E-W	16 years	93	152462	Available	Transformer Feeder	SS25	800	4.1713787	73.5101531
2	Ameenlyya School	MoE	858	Needs to be examined	Low rise	One Block very old built in 1960's, other one built in 2000	86	140952	Available	Panels main cable	SS43	630	4.176813	73.5092769
3	Dharubaaruge	Male City council	936	OK	South facing	25 years	94	153738	Available	Panels main cable	SS60	630	4.1695402	73.5133429
4	NDMC	President Office	1626	OK	East-west	>20 years	163	267002	Available	Street DBs	SS 32	630	4.1716723	73.5129962
5	National Stadium	Ministry of Youth Women Affairs and Sport		OK	N-S-E-W	30 years	400	657000	Available	Panels main cable	SS41B	1000	4.17489	73.51275
6	Indira Gandhi Memorial Hospital	Ministry of Health and Gender	3360	Ok. New roofs to be placed.	Inclination of the roof is 18 degree.	20 years	336	551880	Available	Transformer buss bar	SS24	1000	4.1735657	73.5021685
7	Villingli Ferry Terminal	MTCC-Maldives Transport	620	OK	East-West	8-10 years old	62	101835	Available. However, a secure	Transformer Feeder	SS72	630	4.1726066	73.5025933

Table 8.1: Candidate Sites for Subproject in Male' (continued)Table 8.1: Candidate Sites for Subproject in Male' (continued)

Table 8.1: Candidate Sites for Subproject in Male' (continued)

S. No.	Name of Building	Owner	Available Area (m2)	Comments on Strength of Roof and reinforcement required	Roof Orientation (N/W/S/E)	Age of Roof Structure	PV capacity (kW)	Annual Power Generation (kWh)	Space for Power Conditioner/Inverter	Nearest Interconnection Feeder	Transformer No.	Capacity of Transformer (kVA)	Latitude of the Place	Longitude of the Place
23	Police Family Block	MPS	750.75	OK	North-South, North-South, North	Building 1 >25 years, Building 2~ 10 years, Building 3 built in 2013	75	123311	Available	Panels main cable	SS94	630	4.17198	73.504326
24	Jamaludheen School	MoE	894	OK	N-S, W, E, E, N/S	Around 10 years	89	146840	Ample space	Transformer Feeder	SS30	630	4.1729958	73.5105638
25	Maldives Monetary Authority	MMA	500	OK. Terrace	Flat terrace	5 years	50	82125	Available	Panels main cable	SS91	1000	4.181639	73.511934
26	Faculty of Hospitality and Tourism Studies	GoM/ MoE	792	OK. Flat Terrace	Flat terrace	2013	79	130086	Available	Panels main cable	SS75	1000	4.170875	73.509598

Indicative list of locations identified in Hulhumale' for initial phase

12. A total of 9 locations have been initially identified in Hulhumale' aggregating to a total capacity of 2.6 MW. The opportunities for installations are of varied sizes ranging from 30 kW to 1300 kW. The identified locations can be categorized on the basis of type of building and its ownership. The key potential sites along with the ownership include the following:

- **Educational Institutions**: Schools and colleges provide significant opportunity for installation of solar PV panels and such buildings in most of the cases are owned by the Ministry of Education (MoE). Lale School and Ghazee School surveyed in Hulhumale' provides significant potential for installation of solar PV and are ideal candidates as the owner of schools in both Male' and Hulhumale' is MoE.

- **Housing Complexes:** Some of the housing complexes surveyed, 1000 housing units (2 Unit type and 3 Unit type) are newly built (2013), and collectively hold a potential of approximately 2 MW. These housing complexes are built by Housing Development Corporation (HDC). During the interactions with HDC, it was highlighted that ownership of the roofs of the HDC housing complexes gets transferred from HDC to the tenants' society after a period of 10 years (common ownership of all the tenants in the building). Hence, the complexes that are older than 10 years have roofs owned by tenants. Further, discussions with MHI indicated that currently Condominium Regulations under Land Law provides for setting up of Condominium societies for coordinating common

activities such as maintenance etc in the complexes. However, these regulations are not enforceable, and in reality such societies do not exist. Among other aspects, in order to enforce formation of condominium society, Government has drafted Condominium Law which is currently in Parliament for finalization and enactment. In such cases, an option can be a lease agreement with HDC for initial ten years, and later, once tenant societies are formed, the agreement gets novated to the society.

- **Commercial complexes of HDC-** Commercial complexes of HDC also provide significant opportunity for installation of solar PV panels. Roofs of such complexes are owned by HDC unlike housing complexes, where the roof ownership gets transferred to tenants.

- In addition, potential also exists in Industrial area of Hulhumale' that has large roofs to support solar installations. This includes privately owned warehouses, garages, cement processing, cold storage facilities, fish processing industries, Hulhumale' distribution center of STO etc.

13. Out of the 9 locations identified, majority of the sites are owned by the above stakeholders. Therefore, for ease of implementation of installations, subprojects can be divided into different lots depending on the owner of the site. Involvement of few owners also ensures less coordination and provides for ease of implementation of subprojects.

14. The detailed indicative list of locations for Hulhumale' is provided in the following tables.

Table 8.2: Candidate Sites for Subproject in Hulhumale'

S. No.	Name of Building	Owner	Available Area (m2)	Comments on Strength of Roof and reinforcement required	Roof Orientation (N/W/S/E)	Age of Roof Structure	PV capacity (kW)	Annual Power Generation (kWh)	Assessment of Space for Power Conditioner/Inverter	Nearest Interconnection Feeder	Transformer No.	Capacity of Transformer (kVA)	Latitude of the Place	Longitude of the Place
1	Lale School	MoE	1084.32	OK	SW30 degree	13 years old	108	178101	Available	Feeder No:2 (School)	15	315 kVA	4°12"50'N	73°32"42'E
2	N1 Commercial block	Housing Development Corporation (HDC)	2016.76	OK	North-South	10-13 years old	202	331254	Available	Feeder 06	14	530 KVA	4°12"58'N	73°32"23'E
3	HDC building	HDC	555.52	OK. However, little curved roof	East-West	10-13 years old	56	91245	Available	Feeder 01	12	1000 KVA	4°12"58'N	73°32"23'E
4	Ghazee School	MoE	2712.82	OK	N-S tilt of roof	6 years old	271	445582	Available	Feeder No: 6	10	315kVA	4.2071936	73.537594
5	N2 Commercial Block	HDC	278.87	OK	E-W tilt of roof	2-3 years	28	45805	Available	Feeder 01	12	1000 KVA	4°12"50'N	73°32"31'E
6	N3 Mosque	Ministry of Islamic Affairs	304.53	OK	South East	Completed in late 2012	30	50019	Available	Feeder 04	19	630 KVA	4°12"50'N	73°32"41'E
7	1000 housing (3 unit type)	HDC	6175.84	OK	North-South & East-West	2013 built	618	1014383	Available	Feeder NO: 19,01,04	19	630 kVA	4.2034994	75.5386982

Table 8.2: Candidate Sites for Subproject in Hulhumale' (continued)

S. No.	Name of Building	Owner	Available Area (m2)	Comments on Strength of Roof and reinforcement required	Roof Orientation (N/W/S/E)	Age of Roof Structure	PV capacity (kW)	Annual Power Generation (kWh)	Assessment of Space for Power Conditioner/Inverter	Nearest Interconnection Feeder	Transformer No.	Capacity of Transformer (kVA)	Latitude of the Place	Longitude of the Place
8	1000 housing (2 Unit type)	HDC	12932	OK	East-West slope for 70% units Others have South-North Slope	2013 built	1293	2124221	Available	Feeder NO: 19,01,04	19	630 kVA	4.2034994	75.5386982
9	Hulhumale Ports Terminal	Hulhumale Ports Ltd.	738	OK	North-South for Building 1 and East-West for Building 2	2 years	74	121217	Available	Feeder 01	11	315 kVA	NA	NA

Conclusions

15. The key findings of the above assessment of renewable energy candidate subprojects are as follows:

- Candidate subprojects aggregating to capacity of approximately 4 MW located both in Male' and Hulhumale' that could be considered in the initial lot have been identified and appraised.

- A total of 26 locations have been initially identified in Male' aggregating to a total capacity of 2.8 MW. The opportunities for installations are of varied sizes ranging from 25 kW to 400 kW. Out of the 26 locations identified, majority of the sites are owned by few stakeholders. This includes MoE, STO, Ministry of Youth Women Affairs and Sport and Ministry of Health and Gender. Therefore, for ease of implementation of installations, subprojects can be divided into different lots depending on the owner of the subproject. Involvement of few owners also ensures less coordination and provides for ease of implementation of installations.

- A total of 9 locations have been initially identified in Hulhumale' aggregating to a total capacity of 2.6 MW. The opportunities for installations are of varied sizes ranging from 30 kW to 1300 kW. HDC and MoE are important stakeholders in case of Hulhumale'.

- It must be noted that at present the daily peak load of Hulhumale' is around 2.5 MW. However, in future, when it is expected that there would be an interconnection among Greater Male' region, Hulhumale' can provide significant opportunity for solar PV deployment.

16. **Applicable Laws for Roofs**: In case of public buildings, issues would be limited if the parent ministry agrees to collaborate and provide the roof through an appropriate lease agreement. However, in case of housing complexes, discussions with MHI indicated that currently Condominium Regulations under Land Law provides for setting up of Condominium societies for coordinating common activities such as maintenance in these complexes. However, these regulations are not enforceable, and in reality such societies do not exist. Among other aspects, in order to enforce formation of condominium society, Government has drafted

Condominium Law which is currently in Parliament for finalization and enactment. In such cases, an option can be a lease agreement with HDC for initial ten years, and later the agreement gets novated to the Condominium society (assuming that these will come up during the next 10 years).

17. Since there are 5.4 MW of roof top space identified, out of which only 4MW is to be bid out as a part of the initial subproject, it can be observed that there exists adequate roofs for the initial installations. Furthermore, risks associated with changes in roof ownership will be taken into account during bid preparation.

ANNEX 9: ECONOMIC AND FINANCIAL ANALYSIS

A. Summary

1. **Project Objectives and Brief Description of Project Components.** ASPIRE seeks to add 20 MW of photovoltaic (PV) based renewable energy generation to the islands' energy mix, using US$11.684 million of SREP funds together with US$16 million IDA Guarantees to attract private investments of around US$40 million. The Project aims to jumpstart deployment of PV generation by initially installing 4 MW of PV systems on already identified buildings in Male' and adjoining Hulhumale' islands. Thereafter new subprojects will be identified and implemented over the Project life. The analysis below assumes 20 MW of PV installations as the base case for the Project. Project components include US$1.75 million in technical assistance (TA), US$6.034 million in tariff buy downs, and US$19.9 million in security package, combining IDA Guarantee and SREP resources.

2. **Economic Costs and Benefits Identified.** On the cost side, the Project analysis identifies the initial investments in the renewable energy subprojects, as well as their regular operating and maintenance costs. In addition, all technical assistance provided under ASPIRE, is also added to the cost side of the equation. Benefits identified are (a) estimated variable cost savings when diesel based generation is offset by equivalent amounts of renewable generation, and (b) the estimated benefits from reduced CO2 emissions. In addition, there are gains from reduced exposure to fuel price volatility, as well as lifetime savings in foreign exchange. Since quantifying these is difficult, these have not been included in the calculations.

3. **Rationale for Public Sector Provisioning/ Financing.** The initial 4 MW of installations are meant to jumpstart the private sector investments in PV generation on the islands. The security package envisaged under ASPIRE, is designed to provide the required confidence to potential investors in the sector. Additionally, a tariff buy down element is proposed to attract the first movers.

4. **World Bank's Value Added.** The World Bank's involvement in this Project follows from the SREP Investment Plan (IP) duly endorsed by the Government of Maldives (GoM). SREP and IDA Guarantee resources will help jumpstart private sector risk taking in the sector, and move PV solar generation towards greater financial sustainability over the Project life. The IDA Guarantee is especially valuable as a backstop to GoM support.

5. **Methodology of Economic Analysis.** The variable cost of diesel generation (i.e. excluding capital investments), ranges from US$0.30/kWh to US$0.70/kWh. The team has taken the very conservative view, that there is an economic case for substituting diesel energy with PV energy, so long as the all-in cost of PV generation is below even the variable cost of diesel based generation. In this analysis, the economic costs of PV include the full capital for the installation (i.e. private sector investment and the tariff buy down element), all technical assistance under ASPIRE, and estimated operation & maintenance (O&M) cost of the PV installations. Economic benefits include savings due to replacement of diesel based power generation with equivalent PV based generation and avoided environmental costs (both global and local) owing to reduced

externalities. While the fuel consumption rates are estimated from existing STELCO/FENAKA operations, the CO2 emission estimates and related social costs are based on US government projections for the same (US Government, 2013). Standard project financial analysis has also been carried out to estimate equity IRR to private sector investors. Assumptions regarding costs and revenue to potential investors, has informed the financial analysis. A detailed economic analysis for the 20 MW from ASPIRE along with a sensitivity analysis is presented in the following. Additionally, results from the economic and financial analysis of the first 4 MW subproject, which will be installed in Male' and Hulhumale', has been summarized as well below.

6. **Key Results and Conclusions:** Based on the cited methodology, the Project EIRR is estimated at 25.5%, which corresponds to a Net Present Value of US$24.64 million. This is based on putting in place 20 MW of PV capacity with an investment of US$42.10 million. If the team excludes the benefits from CO2 emission reduction due to the uncertainty surrounding CO2 emission pricing, the program still yields an EIRR of 20.0%. In case of the first 4 MW, all of which will be installed in Male' and Hulhumale', a small reduction in the economic returns is observed because of slightly lower variable costs of diesel operation in these large islands. The subproject EIRR is estimated at 24% corresponding to a Net Present Value of US$4.3 million. The 4 MW subproject yields an EIRR of 18.0% when benefits from CO2 emission reduction are excluded.

7. The Project financial analysis with costs and revenue assumptions shows an equity IRR above 10% to the private sector investors implementing PV subprojects with ASPIRE support for up to 20 MW. An estimation of the equity IRR for private sector investors implementing the first 4 MW in Male' and Hulhumale' is consistent with this analysis.

Detailed Assumptions and Methodology

8. **Financial Model and Financial Analysis. A** standard project finance model was used for assessing the returns to the private sector from investments in PV subprojects supported by ASPIRE. The financial analysis presented below estimates an internal rate of return on equity investment from the private sector. Key considerations for this estimation are (i) period of construction, (ii) capital structure, (iii) technical specifications (including irradiance, availability factor, and performance of PV system), (iv) project costs, (v) O&M costs, (vi) IDA Guarantee related assumptions, and (vii) accounting and taxation related assumptions.

Table 9.1 : Financial Model Key Assumptions

Assumption	Value	Source used
Upper Bound Capital Cost	USD 2.0 MN/ MW	CERC, India's Renewable Energy Tariff Guidelines (Rs. 80 MN/MW or USD 1.33 MN/MW) (CERC, 2013) Anecdotal data during interaction with developers
Irradiation	4.5 kWh/ kWp/day	Investment plan for Maldives, SREP (Climate Investment Funds, 2012) – effective base year PLF: 18.6%

9. The Financial analysis is based on the cost assumptions in table 9.1 above which include an upper bound off-taker tariff of US cents 25/kWh.

10. Some of the major concerns hindering private sector investment in Maldives have been sovereign risk, off-taker risk, and currency inconvertibility risk. ASPIRE proposes to mitigate these risks by providing a security package cover. The financial analysis computes the Project's IRR and equity IRR based on the given tariff and other cost assumptions. The Equity IRR to investors from ASPIRE supported PV projects is expected to be above 10%.

11. **Economic Model and Economic Analysis.** Varying from the financial analysis, the economic model and economic analysis estimate the benefits and costs when PV based electricity from subprojects, supported by ASPIRE, replaces diesel based electricity. The economic model also considers benefits from carbon emission reductions. Assumptions regarding capital cost, and irradiation are as presented in Table 9.1 above. The economic analysis does not take tariff buy downs and taxes into consideration and costs and benefits are estimated neglecting their effect.

12. **Benefits of Diesel Replacement.** Maldives uses imported diesel fuel for electricity generation. Additional associated costs with diesel based generation include transport to remote islands, capital replacement, spare parts, and lubrication oil. This requirement will get replaced by the initial capital costs of the PV modules and relatively low operating costs of PV based generation. The net difference between the two cases shall be considered as the benefit to the country/off-taker.

13. To estimate the cost of operating diesel fueled generators, four different approaches were considered. The approaches are explained below while the assumptions used are further detailed in Table 9.2.

a) Based on Recent Cost of Generation. Using recent cost data from different islands, and industry estimates, 85% of the all-in generation cost was ascribed to the variable cost component. These costs were then applied over the electricity units generated.

b) Based on Fuel Consumption. Using the recent fuel consumption cost data for different islands, the total cost of fuel was applied to the electricity units generated (ignoring other variable costs).

c) Based on Existing Cost of Generation and Capital Replacement. This approach includes the cost of capital replacement alongside the cost of generation explained in (a) above. Without such replacement, fuel consumption would increase.

d) Based on Fuel Consumption and Capital Replacement. This approach includes the cost of capital replacement without which the fuel efficiency of the generation units would deteriorate, alongside (b) above.

14. The following are the assumptions used for the diesel replacement analysis, along with their sources.

Table 9.2: Key assumptions for diesel replacement calculations

Assumption	Value	Source used
Cost of generation - Large islands	US cents 31/kWh	Investment plan for Maldives, SREP (Climate Investment Funds, 2012)
Cost of generation - Medium islands	US cents 34/kWh	Investment plan for Maldives, SREP (Climate Investment Funds, 2012)
Cost of Generation Escalation	0%	Internal estimate
Fuel costs as percentage of total cost of generation	85%	Based on cost of sales for STELCO in 2012
Diesel generation replaced in Large islands	50%	Internal estimate
Diesel generation replaced in Medium islands	50%	Internal estimate
Fuel Consumption - Large islands	0.35 Litre /kWh	Investment plan for Maldives, SREP (Climate Investment Funds, 2012)
Fuel Consumption - Medium islands	0.35 Litre /kWh	Investment plan for Maldives, SREP (Climate Investment Funds, 2012)
Fuel consumption degradation rate	0.5% p.a.	Internal estimate
Fuel Price	USD 1.05/ litre	Internal estimate
Fuel price escalation	0% p.a.	Internal estimate
Capital replacement charge rate	US cents 5.4/ kWh	Assuming a capital investment of USD 0.75 MN/MW and an IRR of 15%

15. The following Table 9.3, estimates the total savings on account of the different approaches. The EIRR analysis uses the most conservative numbers among the 4 approaches.

Table 9.3: Savings on account of diesel replacement for 20 MW of PV

Scenario	Life time savings (USD MN)
Based on existing cost of generation	118.27
Based on fuel consumption	175.40
Based on existing cost of generation and capital replacement	177.75
Based on fuel consumption and capital replacement	234.89

16. **Social benefits due to reduction in carbon emissions**. In order to estimate the social benefits of reduced carbon emissions, the US government estimate on the monetary impact of the carbon emissions (US Government, 2013), have been considered. The assumptions with regard to the social cost of CO2 are further detailed in the below table. Note that these costs are in 2007 US$ and have been suitably adjusted for the use in the model. The amount of CO2 emissions is calculated using the assumption of 2.27 kg CO2/ liter of diesel consumed (or 793.7 tCO2 eq per GWh). The diesel consumption is calculated using the assumptions detailed in Table 9.2.

Table 9.4: Social cost of CO2 (in 2007 US$)

Year	Social cost (USD/ ton CO2)
2015	58.0
2020	65.0
2025	70.0
2030	76.0
2035	81.0

17. **Overall Results.** Table 9.5 below presents the EIRR and net present value (NPV) estimates for the PV systems considered under the Project. Table 9.5 includes the economic costs and the subsequent economic gains.

Table 9.5: EIRR calculations for 20 MW

Year	Costs (USD MN)	Benefits	Net Benefits						
	Capex, including IDC	Tariff Buy Down	Tech. assistance	O&M costs	Total costs	Avoided diesel costs	Benefits from CO2 replacement	Only from diesel replacement	Total net benefits
2015	34.35	6.00	1.75	0.00	42.10	0.00	0.00	-42.10	-42.10
2016	0.00	0.00	0.00	0.53	0.53	9.01	1.75	8.48	10.23
2017	0.00	0.00	0.00	0.54	0.54	8.95	1.77	8.41	10.18
2018	0.00	0.00	0.00	0.55	0.55	8.91	1.80	8.36	10.16
2019	0.00	0.00	0.00	0.56	0.56	8.88	1.82	8.32	10.14
2020	0.00	0.00	0.00	0.57	0.57	8.86	2.08	8.30	10.37
2021	0.00	0.00	0.00	0.58	0.58	8.80	2.10	8.23	10.33
2022	0.00	0.00	0.00	0.59	0.59	8.77	2.13	8.18	10.31
2023	0.00	0.00	0.00	0.60	0.60	8.73	2.16	8.13	10.29
2024	0.00	0.00	0.00	0.61	0.61	8.72	2.20	8.11	10.30
2025	0.00	0.00	0.00	0.62	0.62	8.66	2.39	8.04	10.43
2026	0.00	0.00	0.00	0.63	0.63	8.62	2.42	7.99	10.42
2027	0.00	0.00	0.00	0.64	0.64	8.59	2.46	7.95	10.40
2028	0.00	0.00	0.00	0.66	0.66	8.58	2.50	7.92	10.42
2029	0.00	0.00	0.00	0.67	0.67	8.52	2.53	7.85	10.38
2030	0.00	0.00	0.00	0.68	0.68	8.48	2.78	7.80	10.58
2031	0.00	0.00	0.00	0.69	0.69	8.45	2.82	7.75	10.57
2032	0.00	0.00	0.00	0.71	0.71	8.43	2.86	7.73	10.59
2033	0.00	0.00	0.00	0.72	0.72	8.37	2.90	7.66	10.55
2034	0.00	0.00	0.00	0.73	0.73	8.34	2.93	7.61	10.54
2035	0.00	0.00	0.00	0.74	0.74	8.30	3.17	7.56	10.73
Net Present Value (NPV), without carbon benefits									**USD11.14 MN**
Net Present Value (NPV), with carbon benefits									**USD24.64 MN**
Economic Internal Rate of Return (EIRR), without carbon benefits									**19.99%**
Economic Internal Rate of Return (EIRR), with carbon benefits									**25.54%**

18. **Sensitivities of EIRR**. The following Table 9.6 provides the sensitivities with regard to the calculation of EIRR. The factor, whose sensitivity is being calculated, is shown in **bold.** For the set of sensitivities mentioned below, 5 factors were considered.

a) **Diesel Heat Rate Sensitivity with Increased PV Penetration**: In the base case, it is assumed that 100% of the current diesel based generation shall be replaced with PV based generation as the electricity generated from PV is significantly more cost effective. However, to check the impact of lower amount of diesel replacement, a case with only 75% and 50% replacement, has been considered.

b) **Sensitivity to PV System Capital Costs.** This sensitivity can be applied both for increase or decrease of capital costs.

c) **Sensitivity to PV System Operating Costs.** Similar to the above case, the impact of varying the operating cost of the PV based generation has been looked at.

d) **Sensitivity of Diesel Input Changes Over Time.** Currently, it is assumed that the cost of generation based on diesel shall remain constant over the entire PPA period. There can be changes in the cost of diesel or the efficiency of the generator, or a combination of the two. To examine the impact, cases of constant annual escalation and constant annual de-escalation in the cost of diesel based generation have been considered.

e) **Sensitivity to Changes in CO2 Credits Pricing.** The last factor for sensitivity analysis is the contribution of CO2 related savings. Four cases of higher and lower than base case savings to analyze the impact, have been considered.

Table 9.6: Sensitivities

Case	Diesel replacement % (a)	Upfront costs (including capex & technical costs) (b)	Operating costs (c)	Change in cost of diesel generation (d)	CO2 savings (e)	EIRR
Base case	100%	100%	100%	0%	100%	25.54%
Case 1	**75%**	100%	100%	0%	100%	18.06%
Case 2	**50%**	100%	100%	0%	100%	10.11%
Case 3	100%	**90%**	100%	0%	100%	28.66%
Case 4	100%	**110%**	100%	0%	100%	22.98%
Case 5	100%	**150%**	100%	0%	100%	16.05%
Case 6	100%	**200%**	100%	0%	100%	11.02%
Case 7	100%	100%	**50%**	0%	100%	26.31%
Case 8	100%	100%	**150%**	0%	100%	24.76%
Case 9	100%	100%	**500%**	0%	100%	19.21%
Case 10	100%	100%	**1000%**	0%	100%	10.40%
Case 11	100%	100%	100%	**2%**	100%	27.93%
Case 12	100%	100%	100%	**4%**	100%	30.38%
Case 13	100%	100%	100%	**-2%**	100%	23.21%
Case 14	100%	100%	100%	**-8%**	100%	16.72%
Case 15	100%	100%	100%	**-14%**	100%	11.31%
Case 16	100%	100%	100%	0%	**0%**	19.99%
Case 17	100%	100%	100%	0%	**50%**	22.81%
Case 18	100%	100%	100%	0%	**80%**	24.46%
Case 19	100%	100%	100%	0%	**120%**	26.61%

ANNEX 10: OFF TAKER ANALYSIS

STELCO

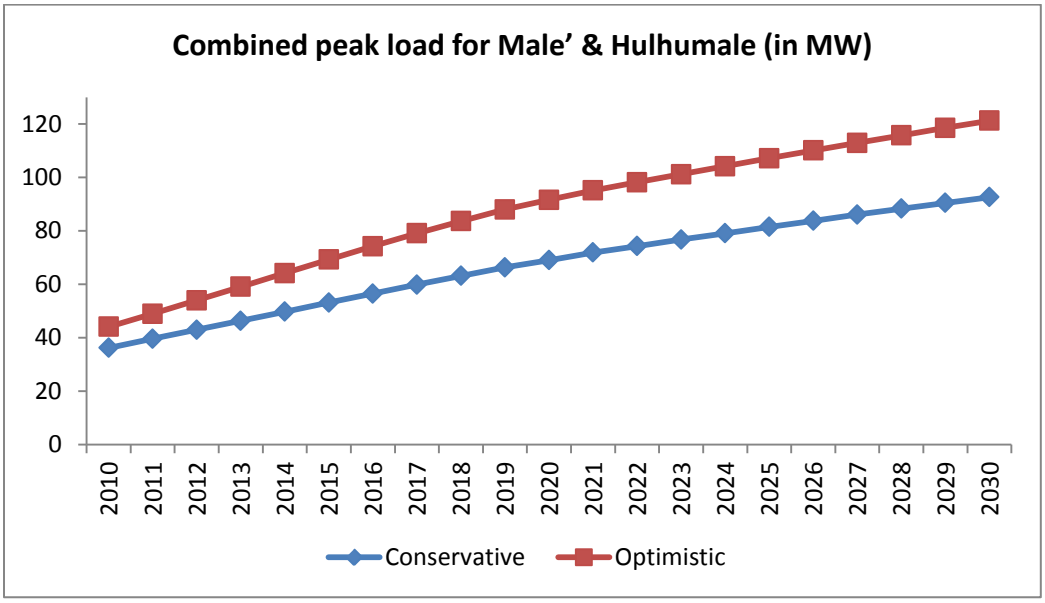
1. Electricity is provided in the islands of the Maldives through small diesel generators. The country has been limited in that it has no conventional energy resources that it can utilize to meet its energy needs. The electricity generation is based on diesel fuel engines and is distributed by underground cables. Each of the customers has a dedicated service cable with consumption meters at the customer's residence (Invest Maldives).

2. State Electric Company Ltd, STELCO, is wholly owned by the Government of Maldives. Their core business includes power generation, distribution and retail. STELCO operates 27 power systems in 27 islands out of 199 inhabited islands in the country, providing electricity to 43% of the population of the country. Each power system is independent with its own power generation and distribution infrastructure. STELCO has an installed capacity of 79.2MW (STELCO, 2014).

3. STELCO's power supply plan is based on the load forecast calculation on current rate of increase in demand for the electricity. For each power-house which is operated by STELCO further plans are done on the growth rate of the consumers, and that of installed capacity of the power plant. Projects are normally formulated in relation to calculated load forecast and also the conditions of the power system in each powerhouse. The company does carry out expansion of the power system capacity to cater for the increasing demand.

4. The following Graph 10.1, shows the conservative and optimistic scenarios for the combined peak load in the Male' and Hulhumale' areas, for the period 2010-2030. This graph is based on the data provided by STELCO.

Graph 10.1: Load Growth Male' and Hulhumale'



5. The following Table 10.1 gives an overview of the power sector in Maldives between January 2011 and November 2013. The Table gives the total monthly generation based on diesel and PV for all the STELCO islands. Also, included is the amount of billed units, Aggregate Technical, Commercial and Collection (ATC&C) losses and minimum & maximum demand for such periods.

Table 10.1: STELCO Operating Parameters

Period	Diesel generation (MWh)	PV based generation (MWh)	Total generation (MWh)	Billed units (MWh)	ATC&C losses (%)	Minimum demand (MW)	Maximum demand (MW)
Jan-11	20,692	0	20,692	18,290	11.6%	15	38
Feb-11	19,063	0	19,063	18,151	4.8%	14	39
Mar-11	23,160	0	23,160	19,875	14.2%	15	43
Apr-11	22,478	0	22,478	21,038	6.4%	18	44
May-11	22,806	0	22,806	20,708	9.2%	19	43
Jun-11	22,904	0	22,904	20,284	11.4%	19	44
Jul-11	22,875	0	22,875	19,990	12.6%	20	43
Aug-11	22,485	0	22,485	20,331	9.6%	16	42
Sep-11	22,134	0	22,134	20,758	6.2%	19	43
Oct-11	23,406	0	23,406	22,836	2.4%	18	44
Nov-11	20,906	0	20,906	21,189	0.0%	19	41
Dec-11	21,796	0	21,796	18,286	16.1%	14	41
2011	**264,707**	**0**	**264,707**	**241,735**	**8.7%**	**14**	**44**
Jan-12	22,373	24	22,397	19,938	11.0%	20	41
Feb-12	21,839	37	21,875	19,315	11.7%	20	42

Mar-12	24,295	79	24,374	21,562	11.5%	18	43
Apr-12	25,053	92	25,145	22,685	9.8%	22	45
May-12	25,179	88	25,268	22,280	11.8%	22	47
Jun-12	21,319	72	21,391	21,105	1.3%	18	48
Jul-12	23,323	122	23,445	21,778	7.1%	21	46
Aug-12	24,486	127	24,614	22,046	10.4%	14	46
Sep-12	24,093	129	24,221	22,528	7.0%	19	47
Oct-12	24,520	105	24,625	22,369	9.2%	21	46
Nov-12	23,475	121	23,596	20,413	13.5%	20	46
Dec-12	22,634	88	22,722	22,576	0.6%	19	44
2012	**282,588**	**1,084**	**283,672**	**258,596**	**8.8%**	**14**	**48**
Jan-13	24,531	82	24,613	22,359	9.2%	20	47
Feb-13	22,709	68	22,776	22,706	0.3%	22	48
Mar-13	26,264	85	26,349	21,618	18.0%	23	49
Apr-13	27,126	102	27,228	24,095	11.5%	18	50
May-13	25,284	75	25,359	23,374	7.8%	21	49
Jun-13	24,673	72	24,745	22,668	8.4%	22	47
Jul-13	25,818	82	25,901	22,738	12.2%	22	46
Aug-13	25,292	147	25,439	25,003	1.7%	14	49
Sep-13	25,321	97	25,418	23,855	6.1%	22	50
Oct-13	25,515	101	25,616	24,910	2.8%	22	49
Nov-13	24,140	85	24,226	21,257	12.3%	22	48
2013	**279,442**	**1,029**	**280,471**	**256,999**	**8.4%**	**14**	**50**

Subsidy Payments

6. In Maldives, the cost of generating power is significantly higher than the tariff realized from the consumers. To bridge this gap between the costs and tariffs, the Government of Maldives provides subsidy to the consumers.

7. The entire subsidy payments are paid by the Government of Maldives through the National Social Protection Agency (NSPA) and are directly accounted under the revenues of the company. The subsidy payments are not separately accounted. STELCO bills the customer for the total value based on consumption including any amounts due under the fuel surcharge. But as the customer is a subsidy recipient, the subsidy values (government subsidizes the fuel surcharge and also provides usage based subsidy) are deducted from the bill. The customer will have to pay the net balance. The total subsidy values from all customers are billed to the government on a monthly basis.

8. STELCO receives considerable government grants from time to time in addition to the subsidy payments. These grants are mainly released to support the company financially, as and when required. Basis of releasing grants is on ad-hoc basis by way of:

a. Settling foreign and local loan granted by Ministry of Finance & Treasury for upgrading power projects.

b. Settling STO payments (Diesel bills).

c. Settling foreign supplier's invoices for purchase of generators.

9. Currently, two types of subsidy are provided by the government, 1) Usage subsidy and 2) Fuel surcharge subsidy.

Usage subsidy

10. The usage subsidy values differ for Male' Region and other regions. The usage subsidy values for different regions are as follows:

Table 10.2: Usage Subsidy

Monthly usage	Subsidy for Male' region (Rf/kWh)	Subsidy for outside Male' region, Domestic (Rf/kWh)	Subsidy for outside Male' region, Business (Rf/kWh)
0 – 100 units	0.75	1.55	2.30
101 – 200 units	0.80	1.50	3.00
201 – 300 units	0.35	1.00	3.00
301 – 400 units	0.45	1.50	4.00

Fuel surcharge subsidy

11. The fuel surcharge subsidy is based on the fuel surcharge applied to account for the volatility in the fuel prices. Fuel surcharge is applied if the fuel cost per liter is above Rf 8. If it is above 8, then for every extra 0.1 Rf STELCO charges the customer 0.03 Rf as fuel surcharge.

12. This was introduced in November 2009, and from the period between November 2009 and June 2012, there was a system of reviewing the fuel price every week based on world fuel prices. But from July 2013 onwards this practice was changed; the fuel price would change only when our supplier (STO) changes its market price. The fuel price has remained constant from 23rd April 2013 to date (end of February 2014).

13. The basis for the fuel surcharge calculation for regions outside the Male' region is the same as in the Male' region. The only difference is that the fuel surcharge would be charged only if the fuel price goes above Rf 8.1 rather than Rf 8. The fuel prices for all regions of STELCO are revised at once.

14. The following Table 10.3 gives the fuel surcharge applied for retail bills, with last six updates included.

Table 10.3: Fuel Surcharge

Effective from	Fuel surcharge (Rf/kWh)
23/04/2013	2.15
15/03/2013	2.27
3/03/2013	2.20
1/02/2013	2.47
13/11/2012	2.20
24/09/2012	2.26

Source: (STELCO, 2013)

15. With regard to the subsidies provided, please note the following:

a. For customers who are given subsidy in Male' region, the both fuel surcharge value and usage surcharge is subsidized.

b. The customers who have not applied for subsidy are required to pay the entire bill amount.

c. Customers don't have to apply for subsidy in regions outside Male' region. All domestic and business customers automatically receive usage based subsidy.

d. However, fuel surcharge subsidy is given only to domestic customers. And as in Male' Region, the full fuel surcharge amount is subsidized.

Ratio Analysis

16. Following Table 10.4 gives a snapshot of the key indicators of STELCO financials based on the available data.

Table 10.4: STELCO Financial Ratios

Financial Ratios	Dec-12	Dec-11	Dec-10	Dec-09
Liquidity Measurement Ratios				
1. Current Ratio	0.80	0.81	0.61	0.51
2. Quick Ratio	0.70	0.66	0.44	0.35
3. Cash Ratio	0.04	0.05	0.03	0.03
4. Cash Conversion Cycle (Days)	14	19	-7	-6
5. Cash Conversion Cycle (including ODs) (Days)	1	-5	-32	-34
a. Days Inventory Outstanding	18	21	31	35
b. Days Sales Outstanding	84	58	54	62
c. Days Payables Outstanding	88	60	92	103
d. Days Payables Outstanding (including ODs)	101	84	117	131
Profitability Indicator Ratios				
6. Profit Margin Analysis				
a. Gross Profit Margin	9.73%	12.24%	19.11%	7.66%
b. Operating Profit Margin	3.44%	6.66%	11.80%	64.79%
c. Pretax Profit Margin	1.22%	5.00%	9.28%	61.71%
d. Net Profit Margin	0.52%	4.34%	9.28%	61.71%
7. Effective Tax Rate	57.36%	13.20%	0.00%	0.00%
8. Return On Assets	0.45%	5.14%	10.95%	59.36%

Financial Ratios	Dec-12	Dec-11	Dec-10	Dec-09
Liquidity Measurement Ratios				
9. Return On Equity	1.09%	10.67%	33.09%	211.96%
10. Return On Capital Employed	2.46%	6.84%	13.65%	94.91%
Debt Ratios				
11. Debt Ratio	66.88%	45.52%	62.04%	72.00%
12. Debt-Equity Ratio	2.02	0.84	1.63	2.57
13. Capitalization Ratio	49.45%	12.54%	27.98%	39.62%
14. Interest Coverage Ratio	1.55	4.00	4.68	20.97
15. Cash Flow To Debt Ratio	0.23	0.08	0.47	0.45
Operating Performance Ratios				
16. Fixed-Asset Turnover	1.14	1.60	1.61	1.31
Cash Flow Indicator Ratios				
17. Operating Cash Flow/Sales Ratio	13.93%[25]	1.48%	12.30%	17.61%
18. Free Cash Flow/Operating Cash Ratio	-2.71	-1.17	0.41	1.22
19. Cash Flow Coverage Ratio				
a. Short term debt Coverage	1.09[26]	0.14	0.90	0.88
b. Capex Coverage	0.27	0.46	1.69	-4.50
c. Dividend Coverage	NA	NA	19.26	0.62
d. Capex plus Dividend Coverage	0.27	0.46	1.55	0.72

17. Based on the above analysis and considering the overall information available, the following are the key inferences.

i. The fixed asset turnover has gone down in 2012 because of larger asset size when compared to previous periods. The fixed assets size has increased by 68% from the previous year, while the revenues have increased by only 20%. Owing to fresh assets under the company, the revenues may increase further and might get reflected from the following period.

ii. The capitalization ratio has increased significantly in 2012, owing to fresh long term borrowings by the company.

iii. The return on assets has dropped significantly in 2012 because of steep rise in the asset base, contributed by higher fixed assets and higher current assets.

iv. The return on equity fell in 2012 because of lower gross profit margin, higher financing costs and lower other income.

v. The return on capital employed has dropped in 2012 because of lower net profit margin as well as an increase in the capital employed because of additional long term borrowings.

vi. The current and quick ratios have shown a trend of improvement but this trend is due to the fact that the receivables have increased substantially, which is not a positive development.

[25] The operating cash-flows have increased substantially compared to previous periods (more than 11 times when compared to 2011). The increase is mainly due to increase in trade payables.
[26] The improvement in 2012 is because of the same phenomenon in cash-flows as explained above.

vii. Days Sales Outstanding and Days Payables Outstanding are showing a rebound, which is not a positive development.

viii. The increase in Days Payables Outstanding also raises question over the capability of the company in timely payments under PPAs.

ix. The operating cash-flows have increased substantially in 2012 compared to previous periods (more than 11 times when compared to 2011). The increase is mainly due to increase in trade payables. While this has improved the cash-flows in this period, this will not be a long term solution.

x. For 2011, the company's revenues are USD 80.75 MN (assuming an exchange rate of 15.4), with cost of sales being USD 70.86 MN. Similarly, for 2012, the revenues are USD 96.69 MN and cost of sales USD 87.28 MN.

    a. Based on above and based on the pro-forma FM developed for 20 MW PV investments, the additional annual payments on account of PV based generation will be on average USD 7.8 MN. This amount is 11% of cost of sales of 2011 and 9% of cost of sales of 2012.

    b. Further, it may also be noted that the PV based capacity is expected to replace the existing diesel generation; the impact on STELCO financials will be marginal.

FENAKA

PROFILE OF FENAKA

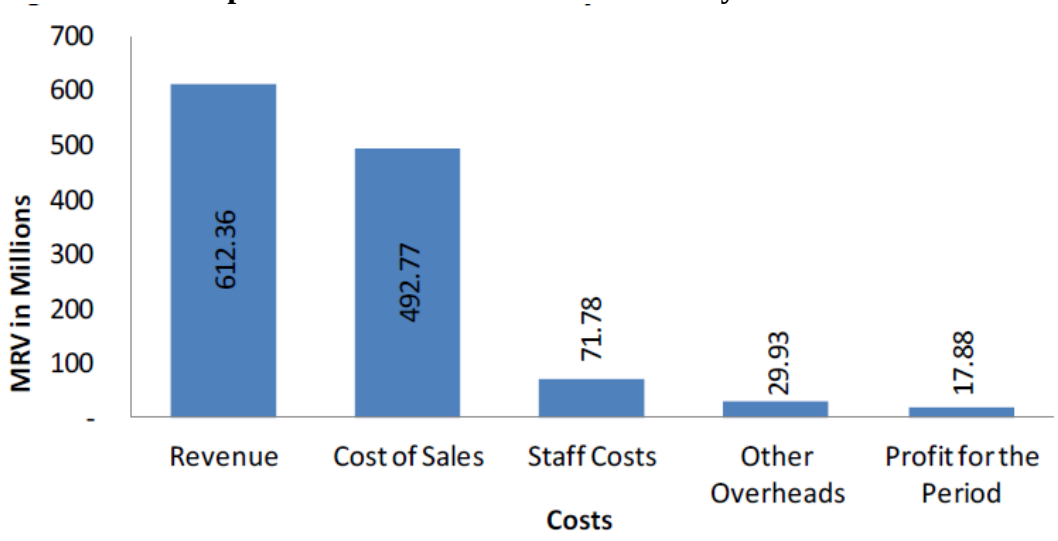
18. In 2009, six new utility companies were formed to provide affordable and quality utility services to six regions of the Maldives outside the Greater Male' Region. These utility companies took over most of the power systems operated by the island councils and private power producers. Subsequently, with the change in administration structure, the regional utility companies were merged into one utility called 'FENAKA Corporation Ltd'. FENAKA Corporation limited was established on 18th June 2012 by a presidential decree under the companies Act of 10/96, as a limited liability company. The company is registered on 1st of August 2012 and it is 100% Government owned utility company with a mandate to provide island communities except the greater Male' region with electricity, water and sewerage. One significant difference between STELCO and FENAKA is that the STELCO provides only electricity services to its consumers in contrast to the bundled services (which includes electricity, water, sanitation, and transport) provided by FENAKA to the islands served by it. FENAKA operates in around 145 islands.

FINANCIAL RATIO ANALYSIS OF FENAKA

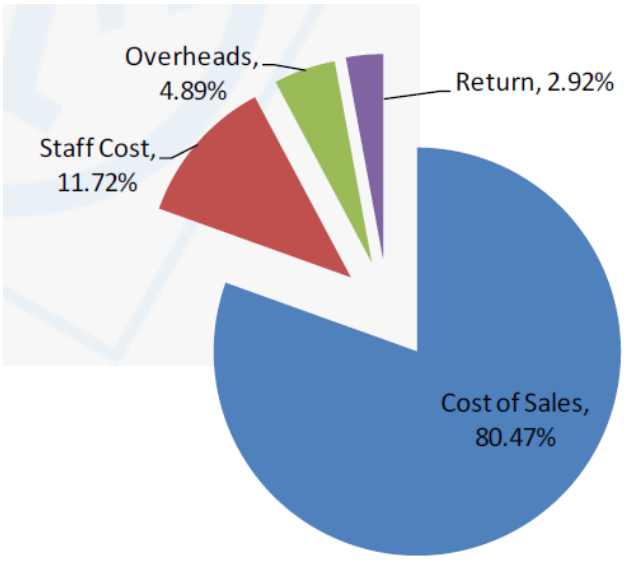
19. Since FENAKA has only recently been established, only a limited financial assessment could be undertaken based on the consolidated unaudited income statement of FENAKA for the period ended July 2013 (for 211 days).

20. The income statement summary and unit wise break-up of the revenues of FENAKA is presented below in Graphs 10.2 and 10.3:

Graph 10.2: Income Statement Summary of FENAKA



Graph 10.3: Unit wise break-up of the revenues of FENAKA



21. On the basis of the preceding analysis, the following can be observed from the above:

- FENAKA is a profitable company with net profit margin being 2.92%.
- Cost of electricity sales for the company is almost 80.47% of the revenues generated and diesel comprises the major chunk (~94%) of these costs.

IMPLICATION FOR TRANSACTION STRUCTURING

22. Since FENAKA is a newly formed company, there exists limited history or data for the company. The limited track record and information available may not provide sufficient comfort to potential investors to invest in FENAKA solar PV projects, without credit enhancement. Consequently adequate IDA guarantee support may need to be built in while structuring the transaction.

ANNEX 11: SCALING-UP RENEWABLE ENERGY PROGRAM (SREP) IN LOW-INCOME COUNTRIES

Maldives: ASPIRE Program

Table 11.1: Results Framework

Indicator	SREP/IDA Project	Transformational Scaled-up Phase[27]
Annual electricity output from RE as a result of SREP interventions (GWh)	32.61	57.0 to 81.5
Financing leveraged through SREP funding (US$ million)	US$58 million: - IDA (guarantee cover): US$ 16 million - Private sector: US$ 42 million	Between US$78 to US$100 million (private) [28]
SREP leverage ratio	1:5	
Tons of GHG emissions reduced or avoided (tCO2)	- Annual: 25,883 tCO2 - Lifetime (20 years): 517,667 tCO2	- Annual: 45,295 tCO2 to 64,708 tCO2
Other co-benefits	Annual savings from reduced imports of diesel equivalent to 11,413 kL upon completion of the program and between 19,974 kL and 28,534 kL in the transformational phase.	
	Improved reliability and quality of power resulting from integration of distributed solar PV capacity into existing systems in Greater Male' Region and smaller islands.	
	Enhanced operational and institutional capacity of relevant stakeholders, including project management unit at GoM and utilities.	

[27] Scaled up phase assumes that private sector investment will follow up in the aftermath of the ASPIRE program, given that solar PV is at grid parity in Maldives but most importantly given that ASPIRE program has successfully demonstrated returns from investments in solar PV. It is assumed that between 35-50MW of total solar PV installed capacity would have been installed over a 10 year period in the transformational phase.

[28] This includes $16 million IDA Guarantee and private sector investments. Investment from private sector is assumed to be in the range of $1.5 - 2 million/ MW.

	Reduced electricity prices to consumers resulting from less expensive power generation from solar renewable energy sources.
	Improved operational performance of Maldivian utilities and electricity service providers through cost reduction in fuel and other costs associated with fossil fuel-based generation such as repair, maintenance, and replacement of parts.
	Health and environmental co-benefits from avoided local pollution, development of local solar PV sector, increased employment, improved energy security, and positive gender impact.

Introduction

1. **The Maldives is among the most geographically dispersed countries; spread over 900 kilometers, with only 192 of its 1,192 islands being inhabited.** The Maldives is among the most geographically dispersed countries; spread over 900 kilometers, with only 190 of its 1,192 islands being inhabited. 105 of them are self- contained tourist resorts and 21 are used for commercial activities. In the early 1980s, the Maldives had a population of 156,000 and was one of the world's 20 poorest countries. Today, with a population of over 326,000, it is a middle-income country with GDP per capita of US$ 7,177.[29] Poverty rates, as measured by the headcount ratio at 15 Rufiyaa per person per day, have fallen steeply, from 21% in 2003, to 15% in 2010[30/]. Other human development indicators - infant mortality, maternal mortality, or educational attainment - have registered similar improvements. The country had achieved 5 out of 8 Millennium Development Goals (MDGs) by 2007, but progress has been relatively slower towards ensuring environmental sustainability (MDG7) and developing a global partnership for development (MDG8). While poverty has declined sharply overall in recent years, vulnerability and inequality are a concern, as a significant number of people fell back into poverty during the recent crisis, and the disparities between remote islands with small populations and the capital Male' region remain substantial.

2. **The Maldives has been in a difficult economic situation over the last few years.** The economy is largely dependent on tourism and fisheries and vulnerable to external shocks as witnessed by the economic recession following the tsunami of December 2004. The fiscal deficit increased from around 11.3% of GDP (including grants) in 2008 to 13.5% of GDP in 2012 - purely in cash terms and closed at 9.8% for 2013. When one includes payment arrears, the deficit is considerably higher by over 3% of GDP[31]. This is the result of higher-than-budgeted expenditures from increased subsidies (including the electricity subsidy), social welfare payments, and transfers to state-owned enterprises (SOEs). Consequently, the public sector debt dynamics worsened, reaching over 86% of GDP in 2013. Thus, macro-economic imbalances

29 World Development Indicators, World Bank

30 Maldives Development Update, October 2013.

31 While the Ministry of Finance and Treasury estimates arrears at 3 percent, the World Bank estimate is 6 percent or higher according to the Maldives Development Update, October 2013.

continue to derail the Government's development agenda. The country lacks land based natural and mineral resources; as a result virtually all economic production is highly dependent on imports, creating a heavy dependence on foreign exchange earnings. Intensive agricultural production is limited because of the poor quality of soil and the limited availability of fresh water. Increasing the quality of service provision to a standard commensurate with the country's income levels is a challenge in this environment.

3. **The country has no conventional resources of energy. Providing electricity to the dispersed islands is overwhelmingly dependent on imported diesel fuel oil, and therefore vulnerable to fuel price volatility.** Diesel fuel oil accounts for bulk of the energy supply in the country (about 82.5% in 2009). The Government of Maldives is aware of environmental degradation as a result of the heavy dependence on diesel fuel and global warming and is therefore actively focusing on the use of renewable energy capable of supplying reliable electricity to the islands. **Almost all of the country's current power needs are met through diesel fired generation**. **The tariff (which includes a fuel surcharge) is subsidized but remains high for consumers, and varies from island to island.** The subsidy remains a large burden on public expenditure absorbing US$25 million per year in 2011, representing an average of 5 US cents per kWh. The development of solar PV subprojects is expected to improve the country's fiscal situation by reducing both the volume of fossil fuel imports, as well as the fiscal uncertainty arising from fuel price volatility. Island-based distributed generation is the only viable option for most of the islands, while some level of grid integration across the more populated islands near the capital is feasible.

4. **Country's SREP Investment Plan**: **Maldives is one of the pilot countries selected to participate in the Scaling-up Renewable Energy Program (SREP).** The SREP Investment Plan for Maldives (SREP IP) was developed under the leadership of the Ministry of Environment and Energy (MEE) and through extensive consultation with relevant stakeholders. The SREP IP was endorsed in October 2012 by the SREP Sub-Committee. The main objective of SREP IP in Maldives is to develop renewable energies on a large scale transforming the electricity sector to effectively contribute to poverty reduction and sustainable development. Achieving this objective will contribute to the objective of becoming ***carbon neutral by 2020***, as well as low carbon emitting socioeconomic development that would generate new economic opportunities and widen access to energy services. Timely implementation of SREP IP is critical for meeting the priorities set out in the Maldives Energy Policy 2010. The table below shows tentative funding for each SREP program as envisioned in the SREP IP endorsed in October 2012.

Table 11.2: SREP Investment Plan

	Sources of Funding (USD 000)			
SREP IP Program	**Total Financing**	**Private Sector**	**SREP**	**MDBs, GoM, and others**
Accelerating Sustainable Private Investment in Renewable Energy Program (ASPIRE)	72,010	42,500	10,750	18,760
Preparing Outer Islands for Sustainable Energy Development Program (POISED)	40,150	0	12,750	27,400
Thilafushi Waste to Energy Program	20,000	5,000	5,000	10,000
Technical Assistance for Renewable Energy Scale Up Program	5,485	0	1185	4,300
Total	137,645	47,500	29,685[32]	60,460

5. Components of (former) ASPIRE and (former) Technical Assistance for Renewable Energy Scale Up Program, as envisioned in SREP IP, have been combined in this proposed ASPIRE program. During the program life, the proposed ASPIRE will utilize US$ 11.684 million of SREP and US$16 million of IDA Guarantee support to mobilize around US$42 million of private sector investments in PV generation technologies. Further, it is expected that a total of US$60-US$85 million of private sector financing will be mobilized for solar PV investments as catalytic result of the Project. This estimate includes private financing mobilized during the lifetime of the ASPIRE program, with additional private sector investments anticipated after the ASPIRE's implementation period. The demonstrational impact from the proposed program will lead to higher confidence from the private sector in solar PV investments in the Maldives, attracting larger amounts of private financing and leading toward the maturity of the sector.

Project description

6. **The project development objective of ASPIRE program is to increase renewable energy generation in Maldives through private sector investment.** The program will contribute to Maldives' goal of carbon neutrality by catalyzing the deployment of 20MW of (mostly distributed rooftop) solar PV systems in Maldives and therefore lessen the country's dependence on imported diesel fuels. Approximately US$25 million in subsidies are disbursed

[32] The Government of Maldives requested $315 thousand of SREP funding for the preparation of the SREP IP, bringing the total envelope of SREP resources available for the country to $30 million.

annually to prevent the escalation of already high tariffs to consumers, as the country yet relies on expensive imported diesel-based generation to meet the vast majority of its electricity needs.

7. ASPIRE seeks to provision IDA and SREP resources to help overcome barriers which are hindering private sector investment in RE projects, in particular with solar PV technologies. Experience of RE projects in Maldives indicate significant reluctance from private sector to invest given the nascent state of the sector, relatively limited growth potential, and high risk associated with the country. Barriers more specific to the deployment of solar PV technologies include the paucity of experience with project finance, limited local familiarity with the technology, and little private sector exposure to the institutions in the sector.

8. Depending on market circumstances and demand from the private sector developers, IDA and SREP would provide Security Package, which includes payment and termination guarantee cover of up to approximately US$19.9 million, under ASPIRE. The former mechanism will backstop a payment guarantee facility issued by STELCO and FENAKA in favor of project companies, guaranteeing timely payment obligations of the single buyer of electricity as agreed under the PPA. The termination guarantee will compensate project companies with coverage in the event of project termination. Early investors will be supported through greater risk mitigation measures and tariff buy downs, when necessary based on market assessment, to account for first mover risks. As the program develops operational experience and the nascent PV sector matures, incentives for later subprojects will taper down, moving the program towards greater risk taking by the private sector. Overall, it is anticipated that the program will mobilize around US$42 million of private funding. The proposed ASPIRE program will also provide US$1.75 million of funding for technical assistance and capacity building for scaling-up private sector investments in solar PV generation technologies. Following table shows the allocation of project funds. See Annex 2 for further information on Project components and Annex 6 for guarantee structure.

Project Components	**Project cost in US$MM**	**IDA Financing**	**SREP Financing**	**% of SREP Financing**
1. Technical Assistance(TA) to Government of Maldives	1.75	0	1	100%
a. TA for Enabling Private Investing in PV	*0.75*	*0*	*0.75*	*100%*
b. Institutional Capacity Building and Knowledge Sharing	*0.475*	*0*	*0.475*	*100%*
c. Development of Pipeline of Subprojects	*0.475*	*0*	*0.475*	*100%*
d. Project Management and Implementation Support	*0.05*	*0*	*0.05*	*100%*
2. Structuring and Delivery of Tariff Buy Down for Currently Planned and Subsequent Subprojects	6.034	0	6.034	100%

Project Components	Project cost in US$MM	IDA Financing	SREP Financing	% of SREP Financing
4. Security Package	19.9	16	3.9	20%
Total Financing Required	27.684	16	11.684	42%

9. **Transformation**: The demonstrational impact of the ASPIRE program will contribute to the establishment of the solar PV sector in Maldives, leading to the increase in solar PV installed capacity from current levels of less than 2MW to over 20MW during the lifetime of the program, and catalyze between 35-50MW in a 10-yr period. The latter scenario presumes the mobilization of US$78 - 100 million of private sector financing into the sector, most of it without the necessity for guarantee or tariff buy down mechanisms.

10. The successful implementation of the ASPIRE will lead to the transformation of the solar PV sector in Maldives by improving the risk perception of the private sector, standardizing the deployment of these technologies, and providing critical mass to ensure subsequent private sector engagement in the sector. The program's contribution to the identification of pipeline of subprojects, standard contracts and technical guidelines, capacity building, and institutional mechanisms will guide the sector towards maturity. GoM and off-taker utilities will gain significant experience in developing and integrating PV in the grid. Alongside preliminarily developed subprojects in pipeline, well vetted standard contracts, and presence of PV companies; improved institutional and operational capacity of Maldivian utilities and regulators will reduce transaction costs.

11. During the course of ASPIRE implementation, overall awareness and human resources for PV deployment will be fostered in Maldives. The costs of PV installation, which are currently at grid parity with diesel-based generation systems, will also decrease as the sector moves toward maturity. Falling costs will motivate larger utilities to replace diesel with PV and to balance growing demand with PV supply. Smaller Maldivian islands will start replacing more expensive (and inefficient) diesel-based generation system with solar PV technologies. Finally, other Island States currently facing high-dependence on imported fossil fuels for the power sector will gain from experiences and lessons learned through the implementation of the ASPIRE program.

12. **Rationale for SREP Investment:** Despite solid potential for solar renewable energy and likely opportunities for the private sector, there is to date no existing market for solar renewable energy in the Maldives. The market for solar PV is promising in the Maldives, but the presence of various barriers has obstructed private interest in this sector. These barriers include the private sector's lack of experience to finance projects using this technology, insufficient knowledge of the technical performance and overall familiarity with the technology, and limited exposure to institutions governing and operating in the sector. In this context, the SREP funding will be crucial to foster and consolidate the nascent solar PV sector in the Maldives by helping overcome the barriers hindering private sector participation in this sector. Coupled with IDA

resources, SREP funding will help increase the attractiveness of this type of investment by reducing the risk perception of private investors. Channeled through the ASPIRE program, SREP funding will help improve risk to return perception of private sector and improve financial returns from their subprojects, while maintaining reasonable prices for the off-taker utilities. SREP funding will also be utilized for technical assistance and capacity building activities aimed at standardizing and strengthening sector and stakeholder understanding for scaling-up the deployment of solar PV technologies.

Assessment of Proposed Project with SREP Investment Criteria[33]

Increased installed capacity from renewable energy sources:

13. Maldives has less than 2 MW of solar PV generation installed. ASPIRE will support the deployment of 20 MW of solar PV installed capacity, adding approximately 32.6 GWh per year of electricity generation. This estimation is based on PV capacity factor of approximately 18.6 percent. After the ASPIRE program, the Maldives is expected to continue the deployment of solar PV investments, leading to up to 35-50 MW of solar PV installations, including 20 MW directly supported by ASPIRE, with annual electricity generation in the order of 57-81.5 GWh.

Increased access to energy through renewable energy sources:

14. The main objective of the ASPIRE program is to increase renewable energy generation in the Maldives, whose residents already have full access to electricity. While ASPIRE will not increase the number of households connected to the Maldivian electricity networks, it will contribute to improving access by enhancing the reliability and power quality of these systems. Solar PV generation will help in meeting the daytime loads and allow consumers to access reliable and quality electricity. In outer islands and new settlements such as Hulhumale', where demand is rapidly increasing without much increase in supply, ASPIRE's effect on improving access to reliable electricity will be even more pronounced. The installation of 20MW of solar PV systems through the program will have a positive impact on approximately 38,605 people. Likewise, the installation of 35-50MW of solar PV systems (including those systems installed upon completion of the program) will provide more reliable and higher quality power to approximately 67,000-96,000 people.

Low Emission Development:

15. ASPIRE will significantly contribute to the GoM commitment to carbon neutrality by 2020. During the lifetime of the program, ASPIRE will deploy 20MW of solar PV generation systems which have the capacity to serve 11.3 percent of existing utility load. The deployment of 35-50MW of solar PV will be able to serve between 19 and 28 percent of existing utility load.

16. Solar PV generation deployed by ASPIRE will offset 25,883 tCO2 per year from 20 MW of solar PV installed capacity. This estimate results from applying a simple, common, and transparent proxy-based method used in SREP projects where emission equivalent based on

[33] For reference: SREP Programming Modalities and Operational Guidelines https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/SREP_Programming_Modalities_and_Operational_Guidelines_final.pdf

diesel-generated electricity is 793.7 tCO2eq per GWh. After 20 years, the program would have reduced over 517,667 tCO2 as emission from ageing diesel generation is expected to worsen over time. Upon the installation of 35-50 MW solar PV capacity, the annual emission savings capacity would be between 45,295 tCO2 to 64,708 tCO2. In terms of diesel fuel savings this means savings of 11,413 per year from 20 MW installed during Project life and between 19,974 to 28,534 kiloliters per year from total of 35-50 MW of solar PV capacity.

Affordability and competitiveness of renewable sources:

17. ASPIRE envisions deploying rooftop solar PV generations at competitive costs. Thus, SREP financed tariff buy down funds are to be used judiciously to combine appropriate pricing of the bulk power, with acceptable returns, through a transparent bidding process. However, both qualitative factors of company competence, record of PV based generation, financial standing, as well as financing experience must also be considered. Hence, ASPIRE will follow a selection process that considers qualitative and quantitative parameters that will ultimately result in a selection based on principles of economy and efficiency. Project anticipates costs to fall further as the project developers get more familiar with operations in Maldives. Additionally, ASPIRE will support lower cost solar PV generations and innovative business models with anchor customers. The off taker tariff from solar PV will be both affordable and competitive than diesel generation. This lower off-taker tariff enabled by SREP tariff buy downs supports reasonable financial returns for the investors without jeopardizing the financial health of the off-taker utilities and GoM. Compared to costs of diesel generation ranging from over US$0.30/kWh in larger islands to US$0.70 per kWh in smaller islands, off-taker tariff enabled by ASPIRE is a significant improvement. ASPIRE will also coordinate its technical assistance activities with other development partners (e.g., Asian Development Bank) to help in the tariff reform process.

Productive use of energy:

18. While the impact of the ASPIRE program on productive uses may not be as evident as in other SREP-funded subprojects (e.g., rural electrification subprojects), it is expected that there will be positive spillovers on productive uses of energy given the improved reliability and quality of power. In addition, users will be able to focus more on productive and core business activities instead of deviating their attention to procure diesel for operating their power generation systems.

Economic, social and environmental development impact:

19. The proposed ASPIRE program will help unlocking the solar renewable energy potential of the country. It will also contribute to improving the overall quality and reliability of power services in the Maldives. The increased power generation from renewable energy sources will not only contribute to the GoM's goal of carbon neutrality by 2020, but also limit the country's dependence on imported and price-volatile fossil fuels. As solar PV sector in Maldives matures as a consequence of the Project's interventions, diverse investment and employment opportunities are also expected emerge in the sector. Following sections explain various benefits from the Project.

Economic and financial viability:

20. Economic analysis of the Project has been carried out to estimate Economic Internal Rate of Return (EIRR) from replacing diesel based electricity with solar PV based electricity. On the cost side, the program analysis identifies the initial investments in the renewable energy subprojects, as well as their regular operating and maintenance costs. In addition, all technical assistance provided under ASPIRE, is also added to the cost side of the equation. Benefits identified are (a) estimated variable cost savings when diesel based generation is offset by equivalent amounts of renewable generation, and (b) the estimated benefits from reduced CO2 emissions. In addition, there are gains from reduced exposure to fuel price volatility, as well as lifetime savings in foreign exchange. Since quantifying these is difficult, these have not been included in the calculations. Details of the economic analysis are in Annex 9.

21. The Project EIRR is estimated at 25.5%, which corresponds to a Net Present Value of US$ 24.64 million. This is based on putting in place 20 MW of PV capacity with an investment of US$ 42.10 million. If the team ignores the benefits from CO2 emission reduction due to the uncertainty surrounding CO2 emission pricing, the program still yields an EIRR of 20.0%.
Standard project finance model was used for assessing returns to private sector from investments in PV subprojects supported by ASPIRE. Financial analysis presented below estimates internal rate of return on equity investment from private sector. Details of this analysis are in Annex 9. Equity IRR to investors from ASPIRE supported PV projects is expected to be over 10%.

22. ***Leveraging of additional resources:*** The proposed ASPIRE program will attract other sources of financing through credit enhancement and tariff buy down mechanisms. The US$11.684 million of SREP funding will leverage an additional US$16 million of guarantee coverage from IDA and US$42 million from private sector financing in the form of debt and equity investments for the installation of distributed rooftop solar PV systems in Maldives. The financing leverage ratio for this program is estimated at 1: 5 (US$1 from SREP leverages an additional US$5 from other sources). In the future, it is anticipated that other development partners (e.g., ADB) will collaborate under the programmatic framework of ASPIRE to further increase investments in solar PV generation.

23. ***Co-benefits of renewable energy scale up:*** Following are the key co-benefits of renewable energy scale up in addition to low carbon development and carbon emission reduction explained above.

24. Improved financial performance. ASPIRE will improve financial and operational performance of the Maldivian utilities and electricity service providers through reduction in fuel and other costs associated with fossil fuel-based generation such as repair, maintenance, and replacement of parts. Capacity of off-taker utility as well as regulatory agency, MEA, will be enhanced to improve their operational performance when working with renewable generation. The involvement of other development partners such as ADB would complement this effort.

25. Foreign exchange savings. The program will contribute to foreign exchange savings due to diesel import. On average, diesel based generation consumes 0.35 liter to produce 1 kWh in the Maldives. With 20 MW of PV installed, ASPIRE will replace 11413 kilo liters of diesel per

year. ASPIRE will also hedge GoM against volatility in oil markets and contribute to GoM's financial health. On average, GoM covers 45 percent of retail tariff for residential consumers and provides average subsidy of US$0.5 cents for kWh. The fiscal implications for GoM of such subsidy provision are significant. The program will help reduce the subsidy burden of GoM and improve its financial health.

26. Enhanced reliability and quality of power. Technical assistance in ASPIRE will assess and improve reliability and quality of electricity in Project areas. This will result from insights gained during installation of distributed PV capacity in existing systems in Maldives. Impacts on grid operation will be assessed and improved through technical assistance support.

27. Strengthened institutional capacity. The program will improve the implementation capacity of GoM by strengthening the project management unit in charge of implementing the ASPIRE program. ASPIRE will help decrease the transaction costs for solar PV investments and project development by introducing standard contracts and by creating a pipeline of identified and preliminarily developed subprojects.

28. Reduced electricity prices. ASPIRE may contribute to reduced electricity prices to consumers, resulting from cheaper PV generation and contingent on tariff reform by Maldives Energy Authority.

29. Other co-benefits. In addition, other co-benefits may also include health benefits from avoided local pollution, development of local solar PV industry and increased employment, enhanced energy security from displacement of fossil fuel-based power generation with renewable energy technologies, positive gender impact through more equal access to job opportunities through sustainable and affordable power for home-based work. It is pertinent to mention in this context that besides avoiding the bad health effects from the use of diesel for electricity generation, increased penetration of solar technologies will also reduce the diesel emissions coming from transportation of diesel fuel to the islands. Not only does this reduce emissions due to less frequent fuel runs, but it also reduces the probability of fuel spills which can damage the local habitat.

Monitoring and Evaluation

30. Overall monitoring and evaluation (M&E) of project activities will be MEE's responsibility. MEA will also contribute to assessing project outcomes. The agency will carry out monitoring and evaluation of the different components/activities in accordance with the indicators included in the results framework (Annex 1). The indicators, targets and mechanisms for monitoring have been discussed and agreed with MEE. No later than 45 days after each quarter, MEE will submit to the Bank the quarterly progress reports covering all the Project´s activities, including procurement and financial summary report. Annual reports will be also submitted by MEE and MEA to the Bank.

31. Bi-annual reviews by the World Bank, the first one to take place six months after effectiveness, should provide detailed analysis of implementation progress toward achieving the Project Development Objective and include evaluation of the financial management including

disbursement, procurement, guarantee structure and a post-review of private sector mobilization aspect.

32. Mid-term review of the Project will be facilitated by the Bank, MEE, and MEA. This review will evaluate the Project in relation to key project development objectives and intermediate objectives. Mid-term review will entail stock-taking exercise to get feedback from subproject stakeholders, particularly from private sector investors and subproject developers, MEE, and off-taker utilities. Project's design, instruments including provisions of guarantee and tariff buy down, and implementation arrangements will be evaluated and revised, if necessary, to further enable private sector led PV deployment. Mid-term review will also evaluate impacts of technical assistance components in operations of MEE, PV generations, and off-taker utilities.

Implementation Readiness

33. The GoM has demonstrated strong commitment and ownership of the proposed operation. The program concept was developed by the GoM through a participative process as part of the preparation of the SREP Investment Plan.

34. As part of project preparation, thorough market sounding exercise to understand the concerns of private sector investors and project developers is ongoing. Several private sector companies with experience in PV generation deployment have been contacted. Issues related to risks, contracts and contracting mechanisms such as PPA, guarantee structure and coverage, off taker tariff, tariff buy downs, size of the project, expected return on investment etc. have been discussed in detail with private sector. Market sounding exercise culminated in the investor conference on March 26, 2014 in Maldives where GoM agencies, off-taker utilities, and private sector investors provided inputs on provisions of ASPIRE tariff buy down and guarantee instruments.

35. Detailed market sounding exercise has been carried out. Rooftops in Male' and Hulhumale' have been identified to execute initial subprojects. These rooftops in public sector building will support around 4 MW of solar PV deployment. More subproject sites will be identified for private sector investment and development during ASPIRE implementation period. Details of the identified PV sites are in Annex 8.

Country/sector strategies

36. The Government's priorities are reflected in five priority areas. These priority areas are closely linked to the themes of good governance, social justice and economic development. The five priorities are: (1)Macroeconomic Reform to support private sector-led economic growth, (2)Public sector reform, (3) Good governance initiatives (4) Social development; and (5) Climate change and adaptation. While all stated objectives are helped by the proposed ASPIRE program, implications on (1), (2), and (5) are particularly pertinent. Furthermore, as Maldives continues to face challenges in meeting MDG7 (Environmental Sustainability) and MDG8 (Global Partnership for Development), the proposed IDA Guarantee would be instrumental in fostering regional and global investment in the RE sector in Maldives, which will help in making energy access more sustainable, and open a new field for foreign investment, thus helping in the

achievement of the two aforementioned MDGs. ASPIRE builds on SREP IP which is in conformity with GoM's goal of carbon neutrality by 2020 and several national policies such as Maldives Vision 2020, Strategic Action Plan (2008-2013), National Sustainable Development Policy (2009), National Energy Policy (2010), 3rd Environment Action Plan (3rd NEAP, 2008), and Various Climate change policies.

Institutional arrangements

37. ASPIRE will be managed through a Project Management Unit (PMU) at GoM's Ministry of Environment and Energy (MEE). MEE is an active counterpart collaborating in several World Bank projects. The other key stakeholders of ASPIRE are off-taker utilities - STELCO and FENEKA, and private sector PV developers and investors. Assessment of STELCO and FENAKA is provided in Section 1 and Annex 10 of PAD.

38. The technical assistance component (components 1), tariff buy down disbursement to private sector PV developers (component 2), monitoring and evaluation, and implementation support will be directly managed and coordinated through the PMU. The Security Package under component 3 will require two distinct implementation mechanisms - one to handle the escrow account, while the other for the IDA Guarantee. The escrow portion will be managed through a commercial bank (Escrow Bank) appointed to handle the escrow account and calls on it, as well as replenishments. The Escrow Bank will also be responsible for certifying draw events. The IDA Guarantee will be managed directly by World Bank staff.

39. The PV generation subprojects will be implemented by private sector that will have overall responsibility of designing, financing, constructing, and operating PV generations for the duration of PPAs. Each subproject company will set up an appropriate management structure to undertake its respective subprojects. PPA agreements between these private sector entities and off-takers (STELCO and FENAKA) will lay out the responsibility of each party in detail. Guarantee support from World Bank will backstop obligations to power producers from off-takers and GoM as stipulated in PPAs and Guarantee Agreements. Details of implementation arrangements are in Annex 3.

Sustainability

40. ***Financial sustainability:*** Financial sustainability of the Project will be achieved through an integrated approach that includes investments in PV generation, capacity building of stakeholders, private sector mobilization, and provision of IDA and SREP guarantee to cover payment and termination risks, and adequate technical assistance services. Deployment of PV generation is expected to reduce the operating costs of Maldivian utilities and electricity service providers through reduction in fuel and other costs associated with fossil fuel-based generation such as repair, maintenance, and replacement of parts. MEA has the responsibility for approving tariff adjustments and estimating fuel surcharges (about 45% of the total bill) related to increase in price of diesel. Furthermore, MEA subsidizes residential customers by providing fuel surcharge subsidies and usage subsidies. According to SREP IP, on average 57% of domestic consumer's bill is written off as subsidies and paid to service providers. There is firm interest at GoM to reduce fiscal and trade imbalance resulting from subsidies to residential consumers and

import of diesel. With regard to the sustainability of subsequent scale-up, the entire approach is based on engagement of private sector for transformational changes. This will only occur through the improvement of energy market conditions and financing of the energy sector, as well as the creation of specific conditions for gaining investors' confidence (public and private, small-/medium-/large-scale enterprises, national or international investors). Alongside support from ASPIRE, continued reduction in the prices of PV components is expected to attract public and private investments in PV generation in Maldives. During the Project life, strategically phased tariff buy down support and guarantee coverage will incentivize immediate investments in the sector. Early investors will be rewarded with higher levels of support through project mechanisms. It is expected that beyond the duration of ASPIRE, subprojects will contribute to growth the PV sector in Maldives. As recognized by SREP IP, ASPIRE will produce key information for investors, demonstrate private sector led financially viable approaches to PV generation deployment, improve regulatory environment, develop standard contractual arrangements for financial transactions and for siting PV generations, enhance capacity of public and private sector stakeholders, and lower the transaction costs.

41. ***Technical sustainability:*** Solar PV generations are proven technologies. ASPIRE will focus on deployment of rooftop PV while contributing to identification and preliminary development of other innovative solar PV solutions. The market for PV is growing at a remarkable rate resulting in drastic reduction in prices. PV generation is robust technology requiring low cost maintenance. Long-term viability should build on a sound design during project preparation and implementation, and a suitable management and operation capacity of private sector power producers. Under the PPA regime, power producers receive payments for energy supplied. Therefore, ASPIRE sufficiently incentivizes appropriate operation, maintenance, and technical sustainability of PV generation. Technical work to identify suitable subproject sites is underway. Information of solar resources as well as roof-tops for subproject development will be generated through ASPIRE to reduce the technical risks to private sector power producers. Furthermore, complementary initiatives by other MDBs and development partners in Maldives will reduce technical risks by modernizing grid and operations at the off-takers end.

SREP Additionality:

42. Despite the clear renewable energy potential in Maldives and interest of private sector in investment opportunities, the market for renewable energy in the Maldives is still perceived as nascent and risky. The existence of a variety of barriers still hinders private sector investments in solar PV technologies. In this context, the SREP-funded program will be essential for creating an environment which is conducive to private sector participation aimed at initiating and establishing a commercially driven solar PV sector in the Maldives.

The proposed ASPIRE program will help improve risk to return perception of private sector and improve financial returns from their subprojects, while strengthening the overall capacity of relevant stakeholders for the systematic scaling-up of solar PV systems in the Maldives. The program will help address key risks that the market has already signaled as significant barriers in order to unlock the solar renewable energy potential in the country.

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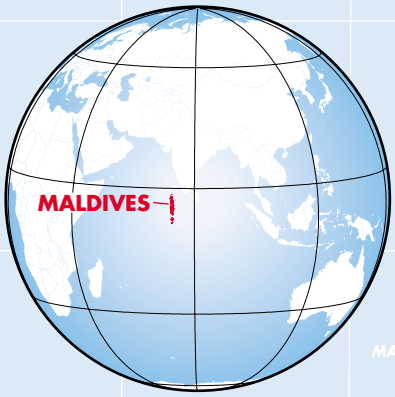

INDIAN OCEAN

HAA ALIFU
THILADHUNMATHI
UTHURUBURI
Dhidhdhoo

HAA DHAALU
THILADHUNMATHI
DHEKUNUBURI
Kulhudhuffushi

SHAVIYANI
MILADHUNMADULU
UTHURUBURI
Funadhoo

NOONU
MILADHUNMADULU
DHEKUNUBURI
Manadhoo

Ugoofaaru
RAA
MAALHOSMADULU
UTHURUBURI

LHAVIYANI
FAADHIPPOLHU
Naifaru

Eydhafushi

BAA
MAALHOSMADULU
DHEKUNUBURI

Kardiva Channel

KAAFU
MALÉ
ATOLL
Thulusdhoo

ALIFU
ALIFU
Rasdhoo
ARI ATHOLHU
UTHURUGOFI
MALÉ

Mahibadhoo

ALIFU
DHAALU
ARI ATHOLHU
DHEKUNUGOFI

Fulidhoo
VAAVU
FELIDHE ATOLL

FAAFU
NORTH NILANDHE
ATOLL
Magoodhoo

Muli
MEEMU
MULAKU ATOLL

Kudahuvadhoo
DHAALU
SOUTH NILANDHE
ATOLL

THAA
KOLHUMADULU
Veymandoo

Fonadhoo
LAAMU
HADHDHUNMATHI

One and Half Degree Channel

GAAFU ALIFU
HUVADHU ATHOLHU
UTHURUBURI

Viligili

Thinadhoo

GAAFU
DHAALU
HUVADHU ATOLL
DHEKUNUBURI

Equatorial Channel

Foamulaku
GNAVIYANI
FOAMULAKU
ATOLL

SEENU
ADDU ATOLL
Hithadhoo

71° 72° 73° 74° 75° 76°
7° 6° 5° 4° 3° 2° 1° 0°

0 25 50 75 Kilometers
0 25 50 75 Miles

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MALDIVES

- ATOLL ADMINISTRATIVE CAPITALS
- NATIONAL CAPITAL
- ATOLL ADMINISTRATIVE BOUNDARIES*

**Local Atoll Names shown in green; Official Atoll Names shown in white.*

JANUARY 2005