

**United Nations Development Programme – INDIA**

**CPAP 2013-17**

**Annual Work Plan 2016**

**Project Title:** Improving Energy Efficiency in the Indian Railways System

**Implementing Partner:** Indian Railways

**UNDPSP Outcome(s)** Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded and development are inclusive and sustainable, incorporating productive capacities

**UNDP SP Output (s):** Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)

**UNDP SP Indicators:** Extent of change in: a) energy efficiency, and/or b) modern energy coverage by users and specific sectors

**UNDAF Outcome(s):** Government, industry and other relevant stakeholders actively promote environmental sustainability and enhanced resilience of communities in the face of challenges of climate change, disaster risk and natural resource depletion.

**Brief Description**

The project aims at improving energy efficiency in the Indian Railways system (and thereby reducing GHG emissions) by removing some of the key barriers that prevent the wide adoption of energy efficiency technologies and measures in the IR system. This is the last year of the project and therefore the project envisages to complete all the ongoing activities and showcase successful results. This year the project will undertake trainings of Railway officials at the Centre of Excellence (COE) IRIEEN developed by the project, finalise system on energy consumption monitoring and management, complete of all the pilot activities disseminate key outcomes.

More specifically the project will undertake following activities this year

- Strengthen the institutional capacity of Indian Railways by training atleast 1000 railway officials at Centre of Excellence (COE) on energy efficiency technologies and solutions established with the Indian Railway Institute of Electrical Engineering (IREEN), Nasik, Maharashtra.
- Complete all pilot projects, document and disseminate cost benefit.
- Document and disseminate outcomes of successful demonstration projects and provide hands on training to Indian Railways staff in application of energy efficient technologies and solutions.
- Develop replication and co-financing strategy to scale up energy efficiency activities demonstrated by the project.
- Ensure systems are in place for adoption of successful energy efficiency measures by Indian Railways in future.

A detail evaluation will be undertaken at the end of this year to assess the success of the project in achieving the desired results.

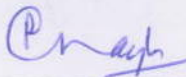
Programme Period:	2011-2016	2016 AWP budget: - **Non-core: (GEF) \$ 11,74,723  **Please specify donors and contribution.
Key Result Area (Strategic Plan):		
Award ID:	00060440	
Project ID:	00076108	
Project Start date:	Sep 2011	
Project End Date:	Dec 2116	
PAC Meeting Date	7 November 2008	
Management Arrangements	NIM	

**Project Expenditure**

Total Project Budget (USD)	Exp 2012	Exp 2013	Exp 2014	Exp 2015	Budget 2016
<b>5,200,000</b>	492,071	44,199	1,711,849	1,777,158*	<b>11,74,723</b>


\* Tentative as per January 2016 CDR

Agreed by (Implementing Partner):



निदेशक विजली इं (प.स)  
Director Elec. Engg. (PS)  
रेल मंत्रालय/Min. of Railways  
रेलवे बोर्ड/Railway Board  
बई दिल्ली./New D. Ihi

Agreed by UNDP:



Jaco Cilliers  
Country Director

## I. ANNUAL WORK PLAN

Year: 2016

Annual OUTPUTS	PLANNED ACTIVITIES	TIMEFRAME				PLANNED BUDGET			RESPONSIBLE PARTY
		Q1	Q2	Q3	Q4	Funding Source	Budget Description	Amount USD @ 66.4	
<b>Project Outcome 1: Strengthened institutional capacities and technical training</b>									
<b>1.1</b> Documenting Energy Efficiency Best practices (Measures and Technology) and define Benchmarks <b>Baseline:</b> 1 <b>Indicators:</b> Exposure visits organized and interaction report of each of the 8 groups <b>Targets:</b> 4 visits & 8 interaction reports	1.1.3 Interaction with industrialized countries (such as Spain, Germany, France, UK), including visits to their 'units of excellence', to assess the efficacy of their EE technologies and measures and define benchmarks					GEF	71200 71600 71400 74500	250,000	IR
<b>1.3:</b> improved capacities of IR staff on implementation of EE technologies and best practices. <b>Baseline:</b> 0 <b>Indicators:</b> Number of People trained on EE technologies and best practises <b>Targets:</b> At least 325 managers and 675 staff	1.3.3 Conduct of training of trainers and awareness raising workshops.					GEF	74500 72100 71300	18,265	IRIEEN, South Centre Railway(IR)
	1.3.4 Conducting training courses at divisional level.					GEF	72800 71600 74500 71300	6,024	IRIEEN, South Centre Railway(IR)
<b>Sub-total</b>								<b>274,289</b>	
<b>Project Outcome 2 –Implementation of Proven energy efficiency technologies and measures</b>									
<b>2.3</b> Completed implementation of proven energy efficiency technologies projects <b>Baseline:</b> 0	2.3.2 Implementation of proven energy efficiency technologies and good housekeeping measures as identified during project preparation and under					GEF	74100 74500 71300	301,205	IR/ UNDP

<p><b>Indicators:</b> Building Management Intelligent System (BMIS) implementation at Rail Bhawan</p> <p><b>Targets:</b> 1</p>	<p>the audits to build confidence and promote EE</p> <p><i>Implementation of BMIS project in Rail Bhawan for demonstration as pilot project.</i></p>									
<b>Sub-total</b>										<b>301,205</b>
<b>Project Outcome 3: Pilot Demonstration of Energy Efficiency Technology and measures</b>										
<p><b>3:</b> Increased confidence in the application of piloted EE technologies and practices in the IRS</p> <p><b>Baseline:</b> 0</p> <p><b>Indicators:</b> Baseline, technical evaluation and lessons learned document of pilot projects/ Railsaver portal and reports generated through it / implemented AMR</p> <p><b>Targets:</b> 9 reports one for each pilot and for Railsaver portal</p>	<p>3.1.2 Implementation of pilot demonstration projects in relevant fields of Railways i.e. EE rolling stock, TRD, BS and E&amp;M for testing house, static installation, work shop and production facilities.</p> <p>- Railsaver Portal &amp; AMR training</p>					GEF	72100 71600 74100	421,687		<b>CRIS, IR</b>
	<p>3.1.3 Technical evaluation and auditing of the pilot projects and documentation of lessons learned (linked with activity 4.1.3)</p>					GEF		60,241		<b>IR</b>
<b>Sub-total</b>										<b>481,928</b>
<b>Project Outcome 4: Information and knowledge Sharing</b>										
<p><b>4:</b> Information and knowledge on EE technologies and measures are widely available and accessible for IRS divisions and their affiliates</p> <p><b>Baseline:</b> 0</p> <p><b>Indicators:</b> Annual report at the Zonal level</p> <p><b>Targets:</b> 68</p>	<p>4.1.4 Conduct of awareness campaigns at divisional level</p>					GEF	71300 71600 74500 74100	37,650		<b>IR</b>
<b>Sub- total in USD</b>										<b>37,650</b>
Project staff salaries, Project Management expenses										30,651
Annual Audit, Evaluations, Communication expenses										49,000
<b>AWP Grand Total in USD</b>										<b>11,74,723</b>

## II. Monitoring and Evaluation

### A. Framework

(Include all monitoring and evaluation activities/events)

Project ID: **0076108** Project Title: **Improving Energy Efficiency in the Indian Railways System**

Expected Results (Outcomes & Outputs)	Indicators	Baseline	Targets	Data Collection Plan				
				Source/Method of Collection	Schedule/Frequency	Responsible Staff	Resources (\$)	Risks and Assumptions
Obtained from the CPAP and project Results Frameworks)	Obtained from the CPAP and project Results Frameworks)	At the project start date	At the project end date	Specific publication, evaluation, survey, field observation, interviews, etc	Monthly, quarterly, annually, etc	Staff member responsible for collecting and reporting data	Estimated cost of collecting and reporting data	Any risks or assumptions concerning data collection / Means of Verification
<b>CPAP Outcome:</b> Government, industry and other relevant stakeholders actively promote environmental sustainability and enhanced resilience of communities in the face of challenges of climate change, disaster risk and natural resource depletion	Cumulative emission reductions achieved in the IRS by End of Project EOP(million t CO2)	0	0.117	M&E reports of the pilot/model projects and documents available with IRS.		Indian Railways		<ul style="list-style-type: none"> <li>Timely execution of planned activities planned with adequate resource mobilization</li> <li>Efficient and quality measurement &amp; recording systems are available</li> <li>Field units of IR extend the support in desired manner and effectively implement the identified EE measures</li> </ul>
<b>CPAP Output:</b> Removal of key barriers that prevent the wide adoption of energy efficiency technologies and measures in the IRS	Total direct energy savings by End of Project (billion kWh)	0	0.142	Railsaver data Energy bills verified by IR and technical reports	Annually	Indian Railways		<ul style="list-style-type: none"> <li>Timely implementation of all identified measures</li> <li>IR zonal, division and other unit managers give EE importance in their investment decisions</li> </ul>
<b>Project Output 1:</b> Strengthened IR institutional capacity	Established and functioning of EE Centre of Excellence (COE) in IRS by EOP	0	2	<ul style="list-style-type: none"> <li>Status report</li> <li>Letter of appointment of head and staff</li> <li>Office space allocated</li> <li>APR/PIR and other progress reports produced</li> </ul>	End of Project (EOP)	Indian Railways		<ul style="list-style-type: none"> <li>Managers and technical staff are willing to benefit from training and supporting materials</li> <li>Subjected to the availability of the funds</li> <li>Identified training and testing institutes are competent and capable staff are retained on long-term</li> <li>Competent website administrator appointed</li> </ul>
	TIRFAD established and functioning by EOP	0	1		EOP	Indian Railways		
	Number of training and testing institutes with capacity to provide trainings and test EE measures/equipment respectively.	0	<ul style="list-style-type: none"> <li>At least 8</li> <li>At least 2</li> </ul>	<ul style="list-style-type: none"> <li>List of training modules of training institutes</li> <li>Inventory list of testing institutes</li> </ul>	EOP	Indian Railways		

	Number of training courses conducted by the training institutes each year.	0	64		EOP	Indian Railways		
<b>Project Output 2:</b> Improved EE management & technical capacity of IR staff	Number of managers and staff members trained on EE best practices and technologies by EOP	0	At least 325 managers and 675 staff	Training attendance sheets	EOP	Indian Railways		
	Number of successful EE projects implemented by the trained managers and staff members by EOP	0	45	APR/PIR and other progress reports produced	EOP	Indian Railways		
<b>Project Output 3:</b> Proven EE technologies and measures in traction and non-traction operations are implemented and energy savings realized.	Potential energy savings from the implementation of EE technologies and/or measures by EOP, million kWh/yr	0	• 110.40 (for non-traction)	<ul style="list-style-type: none"> <li>• Project progress reports</li> <li>• Energy audit reports</li> <li>• Project reports on implemented EE measures</li> <li>• Energy bills</li> </ul>	EOP	Indian Railways		<ul style="list-style-type: none"> <li>• The developed countries agree to share the information on technology</li> <li>• Transfer of technology is negotiated.</li> <li>• Prioritization is identified by a competent team / energy managers / auditors</li> <li>• An interaction is established with developed countries to absorb the technologies on IR</li> <li>• Resources are mobilized in time</li> <li>• Efficient and quality measurement &amp; recording systems are available for measurement</li> </ul>
	Percentage of successful pilot demonstrations adopted by IRS for replication by EOP, %	NA	At least 25%	<ul style="list-style-type: none"> <li>• Budget report to verify funds allocated for implementation of successful projects</li> </ul>	EOP	Indian Railways		
	Based on energy audits, number of EE technologies and measures identified as feasible for implementation (planned and budgeted) by EOP	NA	At least 5	<ul style="list-style-type: none"> <li>• Documentation on demonstration project design and financial closure and/or budget allocation</li> <li>• Project implementation progress reports</li> </ul>	EOP	Indian Railways		
<b>Project Output 4:</b> Information and knowledge on EE technologies and measures are widely available and accessible for IRS divisions and their affiliates	Average number of visitors visiting the web portal each year starting year 2	NA	24000	<ul style="list-style-type: none"> <li>• Web portal counter</li> </ul>	Annual	Indian Railways		<ul style="list-style-type: none"> <li>• Captured all the information, updated knowledge and documented the results</li> <li>• The web portal is created and operational</li> <li>• TIRFAD is created and operational</li> </ul>
	Number of IRS divisions that are actively participating in IRS EE programs by EOP	0	68	Annual report at the divisional level	Annual	Indian Railways		
	Number of vendors registering with TIRFAD each year starting year 3 (i.e. from 2013)	NA	About 3	TIRFAD registration log	Annual	Indian Railways		
	Cumulative number of vendors attending TIRFAD campaigns by the EOP	0	39		EOP	Indian Railways		

## B. Monitoring and Evaluation Plan

### Monitoring Plan

Monitoring Visit	Time Frame				By whom	Place	Purpose	Expected Outcome	Resources
	Q 1	Q2	Q3	Q4					
Field Visit 1					National Project Director, National Project Coordinator , Research Design and Standards Organisation	Secunderabad	Visit to CoE Secunderabad in SCR	<ul style="list-style-type: none"> <li>- Fully functional test modules for different utilities like HVAC, motors, compressors etc.</li> <li>- Training modules/ courses</li> </ul>	1000
Field Visit 2					National Project Director, National Project Coordinator , Research Design and Standards Organisation	Nasik	Visit to CoE IRIEEN, Nasik		500
Field Visit 3					National Project Director, National Project Coordinator , Research Design and Standards Organisation	Delhi	Evaluation of pilot projects in Delhi Division (NR)	<ul style="list-style-type: none"> <li>- Saving achieved and replication potential</li> </ul>	1000
Field Visit 4					National Project Director, National Project Coordinator , Research Design and Standards Organisation	Jaipur NWR.	Evaluation of pilot projects at NWR	<ul style="list-style-type: none"> <li>- Saving achieved and replication potential</li> </ul>	500

## Evaluation Plan

Evaluations/Assessments/ Reviews Planned for this year	Time Frame				By whom (External or Internal)	Purpose and how the evaluation/assessment/reviews results & Recommendation will be utilized	Resources
	Q1	Q2	Q3	Q4			
<b>Railsaver portal and AMR meter pilot project</b> i. Training, awareness, development of App					External	Purpose: Evaluation of the railsaver portal and AMR meter pilot project will ascertain that the developed application meets the project requirement and energy savings are well captured for different zones for both traction and non-traction. This will quantify the annual energy saving of the railways as a result of this programme.  With proper AMR system in place exact project specific saving can be monitored in real time which will encourage wider implementation of proven energy efficiency pilot project at an early stage.	USD 40,000
<b>BMIS installation at Rail Bhawan</b>					External	Purpose: To ascertain the effectiveness of the installed BMIS system.  The finding on the energy saved and the automated control on energy consumption shall become the basis for development of similar projects at other offices and railway stations.	
<b>Pilot projects implemented at Delhi Division</b>  i. Optimal light control system over DLI Division ii. Smart sense & smart Grid system at Baroda House New Delhi iii. Provision of automized light & fan control for New Delhi Railway Station iv. Implementation of SCADA on New Delhi Railway Station v. Supply, fixing, testing & commissioning of retro-fitment of LED lights in 150 non AC GSCN coaches of TL Depot in DLI Division vi. Automation of pumping arrangement at Ghaziabad vii. Bay lighting in workshops & Loco sheds					Internal	Purpose: RDSO & IRIEEN officials to inspect the pilot projects implemented at Delhi Division under IR-UNDP project.  Subsequently, RDSO will develop the specific formats for all such projects for assessing & expanding to other Railways	

<b>Pilot Project implementation at NWR</b> i. Energy efficient automation system for pumping installations for stations; workshops; hospitals; railway offices & colonies at Jaipur NWR.					Internal	Purpose: To study the pilot project of “Energy efficient automation system for pumping station” developed at Jaipur NWR and to train the concerned officials of NWR for effective usage of above system.	
<b>Central Railway</b> ii. Provision of building management system for stations & railway offices for implementing energy efficiency measures at Dadar Station					Internal	Purpose: Evaluation of pilot projects and training	



**III. Recruitment Plan 2016**

*(Include all the recruitments envisaged by the project in AWP 2016 - including national and international staff positions that are vacant or newly created)*

**Project ID:** \_\_\_\_\_ **Project Title:** \_\_\_\_\_

**To be provided by HR**

#### IV. Procurement Plan 2016

(Include all local and international procurements valued at or above \$ 5000 envisaged in AWP 2016 – including goods, assets, services and works)

Project ID: 0076108 Project Title: Improving Energy Efficiency in the Indian Railways System

Country Office	India
Submitted by:	Indian Railways/ EEU
Date:	

**Instructions:**

- Only include procurements to be done by UNDP for DIM, Management, support-to-NIM projects and UN Agencies
- If you need additional lines, right-click and "Insert" rows, do not copy-paste, to keep drop-down menus & format.

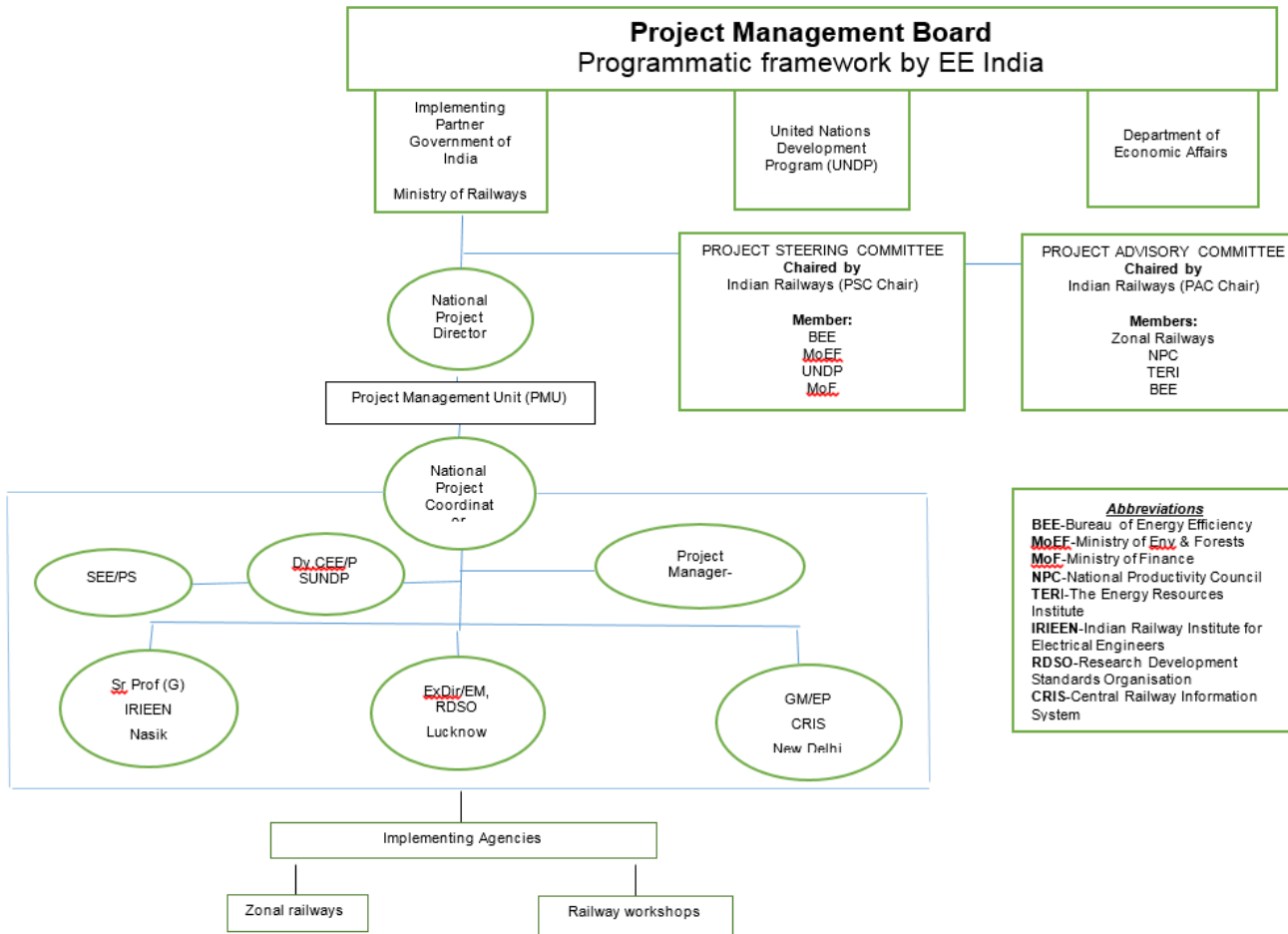
Requesting Unit	Project Name (acronym or brief name)	Type of Supply	Category	Description of goods, services or works required	Unit of Measure	Quantity	Estimated Unit Price in USD	Estimated Total Price in USD	Requested delivery date (goods, works) or start of services	Finalization of service s date	End user of goods, services or works	Procurement Process Status
EEU	Station lighting system	Institutional Contract		Consultancy service for station lighting system	Number	1	30,120	30,120	March	June	Indian Railways	Not started
EEU	Independent Consultant	Individual Contract		IC- supporting Railways to execute project activities	Number	1	9,036	9,036	January	July	Indian Railways	Not started
EEU	Execution of BMIS	Institutional Contract		Installation of building management intelligent system at Rail Bhawan.	Number	1	301,205	301,205	March	Sept.	Indian Railways	Not started
<b>Total Estimated 2016 Procurement Plan (USD)</b>								<b>340,361</b>				

## V. Management Arrangements

The management arrangements will remain same as specified in approved project document except the following changes:

At the programme level, coordination and oversight will be provided by Project Management Board established for Environmental Sustainability programme outcome area. The Project Management Board will meet twice a year.

Oversight of project level activities will be provided by the Project Steering Committee (PSC). National Project Director will be responsible for approving the Annual Work Plans and providing overall guidance and oversight. The PSC will meet at least once a year although efforts will be made to convene quarterly meetings to ensure regular follow-up. The PSC will delegate day to day management of the AWP and related decisions to a working group comprising UNDP, Implementing Partner (PMU) and other stakeholders, as appropriate.



## **Fund Flow Arrangements and Financial Management:**

At the request of the Implementing Partner (Indian Railways), UNDP will directly release funds to Indian Railways. The Implementing Partner will account for funds received from UNDP. The request from the Implementing Partner will come through the Standard Fund Authorization and Certificate of Expenditures (FACE) Report duly signed by the National Project Director or person assigned/delegated by the Implementing Partner. Only after 80% of last advance and 100% of all the previous advances are spent will the next advance be released. The Funding has since been included in the IR Budget.

Funds can also be transferred as: **a)** direct payment to vendors or third parties for obligations incurred by the Implementing Partners (Indian Railways) on the basis of requests signed by the designated official of the Implementing Partner; and **b)** direct payments to vendors or third parties for obligations incurred by UN agencies in support of activities agreed with Implementing Partners. Advance fund transfers shall be requested and released for programme implementation periods not exceeding three months. UNDP shall not be obligated to reimburse expenditure made by the Implementing Partner over and above the authorized amounts. Also Partner needs to report interest earned immediately to UNDP through next submitted FACE Form.

The Implementing Partner may request UNDP to provide support services for project implementation. These services may include procurement, recruitment, purchase of goods and services, and organisation of training activities and workshops. UNDP recruitment and procurement rules and regulations will apply for the services provided. All direct costs which are attributable to the provision of these services (direct project costs) will be charged to the project in accordance with the policies decided by UNDP decided by UNDP's Executive Board.

Books of account shall be maintained in order to ensure accurate reporting of expenditure and providing a clear audit trail. Any interest accrued on the project funds during the project cycle will be ploughed back into the project in consultation with Implementing partner and UNDP and project budgets will stand revised to this extent. If there is no scope for ploughing back the interest will be refunded to UNDP.

**Audit:** In support of fiduciary good practice and to facilitate scheduled and special audits, each Implementing Partner receiving funds from UNDP will provide UNDP or its representative with timely access to: a) all financial records which establish the transactional record of the fund transfers provided by UNDP; and b) all relevant documentation and personnel associated with the functioning of the Implementing Partner's internal control structure through which the fund transfers have passed. The findings of each audit will be reported to the Implementing Partner, DEA and UNDP. As part of the process, each Implementing Partner will: a) receive and review the audit report issued by the auditors; b) provide timely statements of the acceptance or rejection of any audit recommendation to the UNDP that provided the funds; c) undertake timely actions to address the accepted audit recommendations; and d) report on the actions taken to implement accepted recommendations to the UNDP on a quarterly basis.

## VI. Planning, Monitoring and Reporting

The project will follow the following planning, monitoring and reporting cycle during the year.

Timeline /Target Date	Activity	Primary Responsibility
15 January 2016	Submit final Annual Progress Report 2015 to UNDP	Project Director/ Project Manager
10 Jan 2016	Finalisation of audit plans	RPU in consultation with Program Units
1 Feb-15 Mar. 2016	Annual audit of the project	RPU-Program Unit
07 April 2016 07 July 2016 07 October 2016 07 January 2017	Quarterly Progress Reports, including: a) Report on project progress and financial delivery (FACE forms)	Project Manager /Program Officer, M&E
31 July 2016	Organise Project Steering Committee as agreed in the Prodoc. (Mid-year review of project progress and, if needed, revision of the AWP)	Project Director/ Project Manager/
30 November 2016	IRRF, IWP and ROAR updates	M&E and Program Units
30 November 2016	Organise Project Steering Committee to: a) Review of project contribution to results and financial delivery 2016; b) Review and endorsement of AWP 2017	Project Director/ Project Manager

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## ANNEXES

Annex 1: Cost sharing agreements signed with donors/government (if any)

Annex 2: Project cooperation agreement signed with NGOs (if any)

Annex 3: Agreements between the Implementing Partner and Responsible Parties (Government entities, NGOs, etc), if any