



## **Renewable Energy for the City of Marrakech Bus Rapid Transit System**

**Global Environment Facility (GEF)**

**ID of the GEF project: 9567**

# **TERMINAL EVALUATION REPORT**

*Marrakech, Kingdom of Morocco*

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## Marrakech, Morocco Terminal Evaluation Report Renewable Energy for the City of Marrakech Bus Rapid Transit System

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Evaluation team:	Alexandre Borde (International expert)

The field mission of this evaluation took place from 19 to 21 September 2018 in Marrakech.

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<sup>1</sup> Including GEF PPG grant: USD 50 000

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## Acronyms and abbreviations

4C Maroc	Climate Change Competence Centre of Morocco
ADEREE	National Agency for the Development of Renewable Energy and Energy Efficiency (today AMEE)
ALSA	Public transport company
AMEE	Moroccan Energy Efficiency Agency ( <i>Agence Marocaine pour l'efficacité Energétique</i> ) (ex ADEREE)
ANRE	National Electricity Regulatory Agency ( <i>Agence Nationale de Régulation de l'Electricité</i> )
APR	Annual Performance Review
AWP	Annual Work Plan
BAU	Business as usual
BOT	Built Operate Transfer
BRT	Bus Rapid Transit
BUR	Biennial Update Report
CDG	Caisse de Dépôt et de Gestion
CDM	Clean Development Mecanism
CDR	Combined Delivery Report
CDRT	Development Centre of the Tensift Region ( <i>Centre de Développement de la Région du Tensift</i> )
CO <sub>2</sub>	Carbon dioxide
COP22	22nd Conference of the Parties
DGCL	General Directorate of Local Authorities ( <i>Direction Générale des Collectivités Locales</i> )
DRE	Regional Directorate of the Environment ( <i>Direction Régionale de l'Environnement</i> )
FART	Support Fund for Urban and Interurban Road Transport Reforms ( <i>Fonds d'Accompagnement des Réformes du Transport routier urbain et interurbain</i> )
FEC	Municipal Equipment Fund ( <i>Fonds d'Équipement Communal</i> )
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse gas
HCPV	High Concentration PhotoVoltaics
IEA	International Energy Agency
IRESEN	Research Institute for Solar Energy
LPAC	Local Project Appraisal Committee
M&E	Monitoring and Evaluation
MAD	Moroccan dirham
MASEN	Moroccan Agency For Sustainable Energy
MENA	Middle East and North Africa Region
MRV	Measurement, Reporting and Verification System
Mtoe	Million tonnes of oil equivalent
MW	Megawatt
MWp	Megawatt peak
NAMA	Nationally Appropriate Mitigation Action
NDC	Nationally Determined Contributions
NO <sub>2</sub>	Nitrogen dioxide
O&M	Operations & Maintenance
PIR	Project Implementation Review

PMU	Project Management Unit
PNRC	National Plan to Combat Global Warming ( <i>Plan National de lutte contre le Réchauffement Climatique</i> )
PPG	Project Preparation Grant
PV	Photovoltaics
RADEEMA	Marrakech's autonomous water and electricity distribution board
SCCF	Special Climate Change Fund
SDG	Sustainable Development Goals
SEDD	Secretariat of State for Sustainable Development ( <i>Secrétariat d'état chargé du Développement Durable</i> )
SIE	Energy Investment Company
TLDC	Transport Local Development Company, Bus City Motajadida
UNDAF	United Nations Development Assistance Framework
UNDP	United National Development Program
UNFCCC	United Nations Framework Convention on Climate Change
USD	US Dollar
UTP	Urban Travel Plan of Marrakech

## Executive Summary

### Project summary table

Project title:	Renewable Energy for the City of Marrakechø Bus Rapid Transit System, project GEF-BRT Marrakech			
GEF Project ID:	<b>9567</b>		<i>at approval (in millions of USD)</i>	<i>at completion (in millions of USD)</i>
UNDP project ID:	<b>5890</b>	GEF financing	US\$ 1,369,863	
Country:	Morocco	Financing of the executive agency/implementing agency:	US\$	
Region :	Africa	Government :	US\$ 56,173,683	
Focal area:	Climate Change Mitigation	Other:	US\$	
Objectives FA, (OP/SP):		Total co-financing:	US\$	
Executing agent:	Secretariat of State for Sustainable Development	Total cost of the project:	US\$ <b>57,543,546</b>	
Other partners involved in the project:	Municipality of Marrakech, Wilaya of Marrakech, RADEEMA, TLDC, SIE	Signature of the DP (Project Start Date):		Sept 2016
		Closing date (operational): October/ November 2018	Proposed: October 2018	Real: December 2018

### Project description

The overall objective of the project is to support the low-carbon integration of Marrakechø Bus Rapid Transit (BRT) system through the installation of a 0.75MWp solar park based on photovoltaic panels using an innovative solar tracker technology.

The energy produced by the PV (photovoltaic) solar park helps to power electric buses, further reducing emissions from Marrakechø low-carbon transport system. This project cannot only be easily replicated in Marrakech, but also in other cities in Morocco.

An integrated approach was advocated throughout the project, combining different types of activities, such as capacity building, awareness raising and improved governance. Important changes in sustainable development are being initiated not only in the urban transport sector of the city of Marrakech, but also with other aspects such as improving air quality, energy efficiency, strengthening social inclusion in the suburbs, improving the quality of life, guaranteeing safety, creating jobs, enhancing the cityø tourist appeal, etc.

## Evaluation Rating Table

<b>1 Monitoring and evaluation</b>	<i>Rating</i>	<b>2 Executing agency / implementing agency</b>	<i>Rating</i>
Design of monitoring and evaluation at entry	HS	Quality of UNDP implementation	HS
Implementation of the monitoring and evaluation plan	HS	Quality of execution: execution agency	HS
Overall quality of monitoring and evaluation	HS	Overall quality of implementation and enforcement	HS
<b>3 Evaluation of results</b>		<b>4 Evaluation criteria</b>	
Achievement of outputs - component 1	HS	Relevance	R
Achievement of outputs - component 2	HS	Effectiveness and efficiency	HS
Achievement of outputs - component 3	HS	Country ownership	HS
Achievement of the SDGs	HS	Overall probability of sustainability	L
		- Financial sustainability	L
		- Socio-political sustainability	L
		- Institutional sustainability	L
		- Environmental sustainability	L
Achievement of cross-cutting priorities	HS	Impact	S
<b>Overall project completion score</b>	<b>HS</b>		

### Summary of conclusions, recommendations and lessons learned

The final evaluation of the project shows that, overall, all results have been achieved. The activities were implemented effectively and produced highly satisfactory results. The deadlines were also met, and the project can be considered very innovative and easy to replicate and applicable in other cities. Exchanges between stakeholders, communication and project impact are considered very satisfactory.

At the time of project closing, it will be necessary to ensure that the solar power plant is transferred to the local authorities and that it is properly commissioned to supply the BRT electric bus depot knowing that, technically, everything is in place for the commissioning of the plant allowing self-consumption of electricity from the solar PV plant to benefit the BRT line, which has been in operation since September 2017.

#### *a) Proposals for future directions in support of key objectives*

Scaling up the project requires new investments, following the integrated planning document resulting from the project. For the purchase of 48 electric buses (18 meters long), including 44 in operation and 4 in reserve on the 4 lines by 2030 and for the installation of a solar installation with a capacity of 5.7 MWp, financing is required for an amount of 82 million USD (695 million MAD for buses, 83 million MAD for solar power plants, or a total of 778 million MAD).

A request to the Green Climate Fund (GCF) and the *Caisse de Dépôt et de Gestion* (CDG) may be recommended in order to raise the necessary additional resources. Funding may also be available, in addition to the municipal budget, from public institutions such as the Urban Municipality, the Marrakech-Safi Region, the FART, the DGCL, the FEC, the SIE, the SEDD, etc. The private sector can

also be involved as well as international donors (for example: development financial institutions: AFD, EIB, EBRD, AfDB... and investment funds: Energy Development Fund, Africa 50...)<sup>2</sup>.

In addition, it is recommended to build on integrated planning and take into account all stakeholders. The involvement, mobilization and commitment of many actors at different levels such as institutional entities, private sector companies and the population ensure that the expected results are achieved. Such an approach will also ensure optimal country ownership and meet stakeholders' expectations.

The creation of the Transport Local Development Corporation (TLDC) prior to the project was very valuable. While ensuring local political support, the TLDC has made it possible to streamline the decision-making process. It is recommended to support the TLDC in order to continue to develop transport specific to Marrakech, not only for the development of the BRT, but also for other modes of transport such as car-pooling, car sharing, the introduction of two-wheel electric vehicles, support for taxi companies wishing to replace combustion vehicles by electric vehicles, etc.

More generally, the institutional capacity triggered by the project and the high political interest in electric transport must be maintained and strengthened.

*b) Best and worst practices in addressing issues of relevance, performance and success*

The main lessons learned from the project are as follows:

- In a Moroccan context of the evolving energy sector, it is important to ensure that a small or medium-sized solar power plant can be connected to the grid or bus station (direct) from the planning and project development phase (provide sustainable solutions to cope with legal and institutional conditions);
- The integration of the gender approach into all project activities, actions, publications and purchases has had a catalytic effect, especially for a project with a significant social dimension;
- Adopting an effective communication policy from the beginning of the project has been very beneficial, following a participatory approach.

For the replication of the project, the prospects are promising, not only in Marrakech, but also in Morocco and more broadly on the African continent. It is recommended to use this pilot project as a leverage to carry out similar pilot projects in other African cities.

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<sup>2</sup> For example, the Casablanca tramway extension project was financed by: FART, the Municipality of Casablanca, the Casablanca-Settat Region, AFD (loan of EUR 30 million and a grant of EUR 0.5 million) and the EIB (EUR 60 million)

## 1. Introduction

### 1.1. Context and justification: Reminder of the Moroccan context and aspects related to renewable energies and sustainable transport

#### 1.1.1. General presentation of the country and the city of Marrakech

In recent decades, the Kingdom of Morocco has experienced very significant economic and demographic development in a context of climate change affecting all sectors. Aware of this situation, the country has embarked on a voluntary and serious approach to combating climate change at the national level while simultaneously respecting the decisions taken collectively at the international level.

Indeed, since the ratification of the United Nations Framework Convention on Climate Change (UNFCCC) in 1995, the ratification of the Kyoto Protocol in 2002 and the ratification of the Paris Agreement on 21 September 2016, Morocco has been fully committed to the fight against climate change. In 2009, a national plan to combat global warming (PNRC) was adopted. In addition, Morocco was one of the first countries to participate in the Clean Development Mechanism (CDM) under the Kyoto Protocol, with - in Marrakech - a project for the production of electricity from biogas operated by Marrakech's autonomous water and electricity distribution board (RADEEMA)<sup>3</sup>.

The country has developed nationally appropriate mitigation actions (NAMAs), which now cover the following sectors. These are the pre-2020 actions communicated by Morocco to the United Nations to date<sup>4</sup>.

- Energy (a series of 17 measures relating to renewable energy, energy efficiency and electricity),
- Transport (7 measures concerning road and rail transport, as well as (sub)urban infrastructure),
- Industry (6 measures relating to energy efficiency and the integration of renewable energies),
- Waste (3 measures concerning landfills and waste water treatment),
- Agriculture (1 measure concerning the performance of agricultural land),
- Forest (2 measures concerning reforestation and fire prevention),
- Buildings (8 measures covering their ecology and energy efficiency as well as green areas).

This represents an improvement from its last Biennial Update Report (BUR), submitted on May 7, 2016, mainly because the 2016 NAMAs did not yet cover the transport sector<sup>5</sup>. Although there are now more measures, the GHG emission reduction potential of each measure has not been clearly identified. However, they reflect sectoral initiatives.

In its Nationally Determined Contribution (NDC), Morocco committed to reduce its GHG emissions by 42% in 2030 compared to the projected emissions for the same year under a business as usual (BAU) scenario. The country has set an unconditional GHG emission reduction target of 17% below the projected emissions for 2030 under a business-as-usual scenario, and an additional 25% of conditional GHG reductions depending on access to new sources of financing and enhanced international support.

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<sup>3</sup> <https://cdm.unfccc.int/Projects/DB/BVQI1321636951.04/view>

<sup>4</sup> *NAMA map ó Pre-2020 action by countries*, CCNUCC, <https://unfccc.int/topics/mitigation/workstreams/nationally-appropriate-mitigation-actions/nama-map-pre-2020-action-by-countries>.

<sup>5</sup> *Premier Rapport Biennal Actualisé du Royaume du Maroc*, Royaume du Maroc, CCNUCC, <https://unfccc.int/sites/default/files/resource/MARBUR1.pdf>.

These GHG reduction targets will be achieved through measures in all sectors of the economy, particularly in the energy and transport sectors. To this end, Morocco is committed to the development of renewable energies and the strengthening of its institutional capacities in the field of climate change<sup>6</sup>.

In its third National Communication to the UNFCCC submitted in April 2016, Morocco presents a summary of its GHG emissions. In recent years, Morocco has seen an increase in its emissions, mainly due to an increase in energy demand<sup>7</sup>. Given the country's significant economic growth, the objectives of reducing its GHG emissions by 17% or even 42% are essential. However, Morocco remains a low emitting country and contributes only about 0.2% globally. Rather, the reduction targets reflect Morocco's commitment to contribute to international efforts.

Renewable energy and transport have an important role in planning the implementation of GHG reductions. The objective is to produce 42% of Morocco's electricity from renewable sources, including 14% from solar energy, by 2020. In addition, the objective by 2030 is to reach 52% of installed capacity from renewable sources. In 2017, renewable energy consumption accounted for 11.3% of total final energy consumption across the country<sup>8</sup>. Regarding transport, Morocco wants to reduce its energy consumption by 2.76% by 2020 and by 3.45% by 2030.<sup>9</sup> This is important since energy consumption in the transport sector (road transport accounts for 87%, air 12%, and rail 1%) increased by 81% between 2004 and 2014<sup>10</sup>. In addition, the electrification rate remains very low<sup>11</sup> and the consumption of oil resources (mainly diesel) very high in this sector. As a result, energy consumption is expected to continue to increase despite significant opportunities for energy efficiency<sup>12</sup>. The National Determined Contribution (NDC) of September 2016 emphasizes in particular the importance of the Urban Public Transport Improvement Programme<sup>13</sup>: it is a matter of

- Providing large urban areas with high-capacity public transport using renewable energy,
- Setting up an urban transport road support fund, capitalized to the amount of US\$200 million,
- Establishing a Taxi Fleet Renewal Program.

In general, the achievement of renewable energy and energy consumption reduction targets can also reduce Morocco's energy dependence on imported energy. Indeed, in 2016, the country's net energy imports were 18.59 Mtoe (million tonnes of oil equivalent)<sup>14</sup>. Developing its resources at the local level is therefore a major challenge and the country's topography allows for great solar, wind and hydroelectric potential.

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<sup>6</sup>Maroc ó Contribution Déterminée au niveau National (CDN) dans le cadre de la CNUCC, CCNUCC, 19 septembre 2016, <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Morocco%20First/Morocco%20First%20NDC.pdf>.

<sup>7</sup>3<sup>ème</sup> Communication Nationale du Maroc à la Convention Cadre des Nations Unies sur les Changements Climatiques, Royaume du Maroc ó Chargé de l'Environnement, CNUCC, avril 2016, <https://unfccc.int/resource/docs/natc/marnc3.pdf>

<sup>8</sup><http://hdr.undp.org/en/2018-update>

<sup>9</sup>Maroc ó Contribution Prévue Déterminée au niveau National (CPDN) dans le cadre de la CNUCC, CCNUCC, juin 2016, <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Morocco/1/Maroc%20CPDN%20soumise%20a%CC%80%20la%20CNUCC%20-%205%20juin%202015.pdf>.

<sup>10</sup>Clean Energy Technology Assessment Methodology Pilot Study ó Morocco, Agence Internationale de l'Énergie, 2016, <https://webstore.iea.org/partner-country-series-clean-energy-technology-assessment-methodology-pilot-study-morocco>.

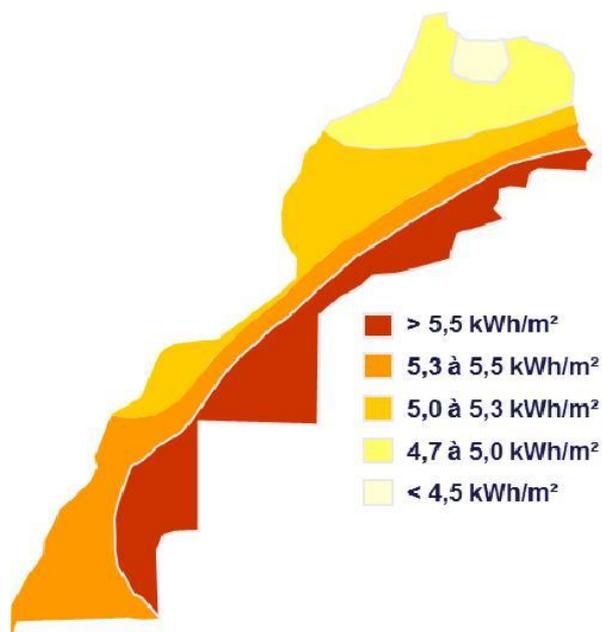
<sup>11</sup> Statistics ó Morocco: Electricity and Heat for 2015, Agence Internationale de l'Énergie, <http://www.iea.org/statistics/statisticssearch/report/?country=MOROCCO&product=ElectricityandHeat&year=2015>.

<sup>12</sup> Statistics ó Morocco : Balances for 2015, Agence Internationale de l'Énergie, <http://www.iea.org/statistics/statisticssearch/report/?year=2015&country=MOROCCO&product=Balances; Clean Energy Technology Assessment Methodology Pilot Study ó Morocco, Agence Internationale de l'Énergie, 2016, https://webstore.iea.org/partner-country-series-clean-energy-technology-assessment-methodology-pilot-study-morocco>.

<sup>13</sup> <http://www4.unfccc.int/ndcregistry/PublishedDocuments/Morocco%20First/Morocco%20First%20NDC.pdf>

<sup>14</sup> Agence Internationale de l'Énergie, Statistics, <https://www.iea.org/statistics/?country=MOROCCO&year=2016&category=Key%20indicators&indicator=NetImports&mode=chart&categoryBrowse=true&dataTable=INDICATORS&showDataTable=true>.

Figure 1: Solar potential in Morocco



The transport sector is one of the targeted sectors due to its high energy consumption and greenhouse gas (GHG) emissions. Taking all modes together (freight transport, urban transport, suburban transport, etc.), the transport sector consumes 38% of national energy<sup>15</sup>, emits 14,813,300 tCO<sub>2</sub>eq, which represents 14.7% of national GHG emissions<sup>16</sup>, contributes 5% of national GDP and 9% of the added value of the service sector<sup>17</sup>.

The national logistics strategy and the deployment of integrated logistics platforms aim, for example, to reduce CO<sub>2</sub> emissions in the road freight transport sector in Morocco by 35% by optimising the movement of goods throughout the national territory. In terms of urban transport, cities such as Casablanca and Rabat have taken the lead by opting for electric trams as low-carbon modes of transport.

The government also supports other programs such as the renewal of the fleet of old freight, bus and taxi trucks by supporting the construction of new, more efficient vehicles.

More specifically, the installation of trams in the country's major cities is considered one of the major projects to reduce GHG emissions in the transport sector. The use of public transport is encouraged to support a transition to less energy-intensive transport. The municipality of Marrakech has decided to introduce electric buses with the objective of zero diesel fuel from August 2017.<sup>18</sup>

This corresponds to an analysis by the International Energy Agency (IEA) dated June 2016 concerning the commercial potential of clean technologies. In the transport sector, opportunities for renewable energy have been identified for electrification and biofuels, despite the fact that the latter are facing reserves related to the sustainability of their production. There are therefore many opportunities for electrification, also because the government has put an end to diesel subsidies<sup>19</sup>.

<sup>15</sup> Kingdom of Morocco (2016) : Third National Communication to the UNFCCC

<sup>16</sup> Kingdom of Morocco (2016) : First Biennial Up-date Report (BUR)

<sup>17</sup> National Strategy for Sustainable Development 2015 ó 2030: Final report August 2014

<sup>18</sup> Marrakech : Enfin, les bus électriques , BadraBerrissoule, L'Économiste.com, le 11 août 2017, <https://leconomiste.com/article/1016137-marrakech-enfin-les-bus-electriques>.

<sup>19</sup> Clean Energy Technology Assessment Methodology Pilot Study ó Morocco, Agence Internationale de l'Énergie, 2016, <https://webstore.iea.org/partner-country-series-clean-energy-technology-assessment-methodology-pilot-study-morocco>.

Beyond that, the project is anchored in other national priorities. On the one hand, the National Strategy for Sustainable Development (SNDD)<sup>20</sup> of October 2017 should be mentioned. It aims to implement the foundations of a green and inclusive economy in Morocco by 2030 and includes the objectives of promoting sustainable mobility and accelerating the penetration rate of renewable energy.

On the other hand, it is worth mentioning the United Nations Development Assistance Framework for Morocco (UNDAF) 2017-2021.<sup>21</sup> It provides inclusive and sustainable solutions to increase energy efficiency and equitable access to clean energy as well as inclusive and sustainable cities.

So far, the great efforts made in promoting clean and sustainable energy have resulted in Morocco becoming the leading country in the MENA region in the field of renewable energy. With these new perspectives, Morocco represents an example to be followed by all neighbouring countries and is engaged in a process of experience sharing and technology transfer.

### **1.1.1. The city of Marrakech's commitment to a low-carbon economy**

The city of Marrakech has decided to modernize its bus fleet in order to meet the needs of the growing population. The integration of suburban areas into the bus system in particular will help to reduce the social exclusion of the peripheral population. In addition, the project promises to facilitate the increase in the number of tourists and reduce the number of road accidents. And since May 2018, the Regional Council of the Marrakech Safi region has been committed to promoting sustainable urban mobility through the scaling up of the electric BRT project through the convention to implement the National Strategy for Sustainable Development in the Marrakech Safi Region.

Marrakech is the 4th largest city in the country with 1,330,468 inhabitants and the largest non-coastal city. The city is characterized by significant urban and demographic growth. The prefecture of Marrakech is located in the region of Marrakech-Safi and covers an area of 230 km<sup>2</sup>. Tourism is an essential vector of its economic development given the large number of visitors it receives, which brings the number of nights spent in Marrakech's classified hotels to 6,640,152 in 2016, or about 35% of the national total, with an occupancy rate of 48%. It benefits from a wealth and diversity through its heritage and tourist sites, as well as through its biological diversity associated with its geographical position and climate.

The city of Marrakech is located in the semi-arid bioclimatic area. Its average annual temperature is 19.6°C. The city receives low rainfall, about 250 mm per year. In Marrakech, winters are often cool in the morning and evening (about 6°C), but temperatures rise very quickly in the middle of the day to reach 18°C on average. Summers are very often hot, with minimum temperatures of 20-22°C. During the day, it is not uncommon to exceed 40°C. Relative humidity rises on average from 71% in January to 47% in July, while evaporation demand is very high, around 1500 mm/year. Marrakech enjoys a significant annual sunshine, of the order of 340 days. Solar irradiation is between 5 and 5.3 kWh/m<sup>2</sup>/day, and is therefore a favourable factor for the development of solar energy projects at city level. To respond to this great solar potential, solar energy is the most appropriate to supply the city with electricity.

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<sup>20</sup>[https://www.4c.ma/medias/synthese-sndd\\_fr.pdf](https://www.4c.ma/medias/synthese-sndd_fr.pdf)

<sup>21</sup><http://ma.one.un.org/content/dam/unct/morocco/docs/Publications/UNCT-MA-UNDAF%202017-2021%20web.pdf>

## 1.2. Objectives of the final evaluation

In accordance with UNDP and GEF monitoring and evaluation policies and procedures, all medium- and large-scale projects supported by UNDP and funded by GEF must be subject to a final evaluation at the end of their implementation. The objective of the final evaluation mission is to verify whether the objectives and expected results of the project have been achieved after the three years of implementation, to identify the factors that have favoured or hindered the project, to determine the lessons learned and to capitalize on this experience for other similar projects in the future. Recommendations to all project stakeholders are made in this final evaluation report.

The final field evaluation mission took place the week of 19 September 2018, with the aim of analysing the strengths and weaknesses of the project, assessing the overall and activity-based completion rate based on the UNDP evaluation criteria grid, and assessing the dynamics and significance of the project's impacts.

## 1.3. Methodology and scope of the evaluation

The final evaluation includes the following activities: (a) preparation of the mission (with submission of a start-up report), (b) field evaluation mission, (c) draft evaluation report, (d) final report.

A comprehensive approach and methodology for conducting final evaluations of UNDP-supported and GEF-funded projects has developed over time. The evaluator articulates evaluation efforts around criteria such as relevance, effectiveness, efficiency, sustainability and impact, as defined and explained in the UNDP guidelines for conducting final evaluations of UNDP-supported and GEF-funded projects.

The evaluation provides factual, credible, reliable and useful information. The evaluator's approach is participatory and consultative, ensuring close collaboration with government counterparts, in particular with the GEF operational focal point, the UNDP country office in Morocco and the UNDP-GEF Regional Technical Advisor, the project team and key stakeholders.

The rating scale is as follows:

<i>Ratings for results, efficacy, effectiveness, efficiency, monitoring and evaluation and surveys</i>	<i>Sustainability ratings:</i>	<i>Relevance ratings</i>
6 Highly satisfactory (HS): no deficiencies	4 Likely (L): negligible risks to sustainability	2 Pertinent (P)
5 Satisfactory (S): minor deficiencies	3 Moderately likely (ML): moderate risks	1 Not pertinent (PP)
4 Moderately satisfactory (MS)	2 Moderately unlikely (MU): significant risks	<b><i>Impact ratings:</i></b>
3 Moderately Unsatisfactory (MU): significant deficiencies	1 Unlikely (U): serious risks	3 Significant (S)
2 Unsatisfactory (U): major problems		2 Moderate (M)
1 Highly unsatisfactory (HU): serious problems		1 Negligible (N)
<i>Additional ratings if applicable:</i>		
Not applicable (N/A)		
Unable to assess (U.A.)		

To realize the objective of the final evaluation, the methodological approach comprised the review of relevant documents related to the proposed project and interviews with stakeholders on the basis of a previously established evaluation questionnaire as well as open discussions. The collection of the

relevant documents related to the project was made possible by the Regional Directorate of the Environment (DRE MS) and the UNDP.

This method of data collection proves to be adaptable to possible unscheduled raised points of discussion by the interlocutors during interviews and the document review provides a diverse, detailed and extensive overview of the development of the project activities. Furthermore, the approved documents of reunions throughout the project implementation assure that the correctness of the information is accounted for by the GEF implementing agency and the executing agency, namely the DRE MS and the SEDD. Challenges to this methodological approach are that it is possible that data is not extensively enough recorded in the documents and may require re-consultation for more concrete evidence.

This, however, was ensured through cross-checking of information by revising the relevant documents, conducting interviews on site, re-discussing the major points with the UNDP and revision of a draft report of this final evaluation by the UNDP. More concrete evidence was for example provided for the financial results after the submission of the first draft.

In general, this approach did not deviate from the steps described in the inception report of this final evaluation.

### **1.3.1. Preparation phase**

This phase involves the collection of information, documents and data necessary for the evaluation of the project (documents listed in the terms of reference) and the preparation of meetings with key stakeholders. This includes in particular the collection and review of relevant sources of information, such as the project document, project reports, including the RIP/APR and other reports, project budget revisions, progress reports/annual reviews, GEF focal area monitoring tools, project files, national strategic and legal documents and any other documents that the evaluator considers relevant for this evidence-based evaluation. A list of documents is attached in the Annex.

This phase, which lasts a total of three days, leads to the beginning of the consultation and evaluation phase in the field.

An inception report was submitted on July 17, 2018.

### **1.3.2. Field phase: consultations, site visits and initial results**

Based on the action plan established in the inception report and at the end of the mission preparation stages, the field stages serve to consult all project stakeholders and to integrate the various elements useful in formulating recommendations on the assistance and development needs of the evaluated project.

The evaluator thus carried out a site visit and met with stakeholders in Marrakech with the Project Management Unit (PMU) based at the Regional Directorate of the Environment, which is a decentralized department of the Secretariat of State for Sustainable Development (SEDD) of Morocco, as well as with project stakeholders.

This phase therefore includes:

- Interviews with the various members of the DRE and the PMU,
- Meetings with the following stakeholders:

- RADEEMA<sup>22</sup>
- Wilaya of Marrakech Safi<sup>23</sup>
- Technical Services Marrakech Municipality<sup>24</sup>
- Elected representative of the Municipality of Marrakech, President of the TLDC
- Technicians on site at the PV solar installation and electric bus depot (Route d'Agadir, near Marjane): ALSA<sup>25</sup> and MyElectrical Auto<sup>26</sup>
- Visit of the site and the BRT bus line 1,
- In-depth analysis of the consultations and a presentation of the first results was organised during a presentation meeting on 21 September 2018, with the submission of a first document (in PowerPoint format).
- Conference calls with UNDP officials

The evaluation applied the OECD/DAC evaluation criteria that speak to relevance, effectiveness, efficiency, impact, sustainability, partnership and address some cross-cutting issues such as gender equality in order to achieve its objectives. The consulting team developed guiding questions (see Annex), which was embedded within the framework of the evaluation criteria.

The interviews focused on:

- RELEVANCE, i.e. the extent to which the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional and national levels,
- EFFECTIVENESS - To what extent have the expected outcomes and objectives of the project been achieved or are expected/ likely to be achieved,
- EFFICIENCY - A measure of how economically resources / inputs (funds, expertise, time, etc.) were converted to results,
- IMPACT - Indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status? Positive and negative, primary and secondary long-term effects produced by the project directly or indirectly, intended or unintended,
- SUSTAINABILITY - The likelihood of a continuation of benefits from a development intervention after the intervention is completed. To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?
- PARTNERSHIP - An extent to which coordination, collaboration and synergy are developed and achieved among stakeholders, beneficiaries to produced desired results of the project,
- GENDER EQUALITY - An extent to which gender main streaming has been factored into the project
- SOUTH-SOUTH AND TRIANGULAR COOPERATION - An extent to which an inclusive global partnership for sustainable development was incorporated into the project
- SOCIO-ECONOMIC BENEFITS - An extent to which the project has long-lasting socio-economic benefits and positive impacts for the population affected by the project.

Once all the elements have been gathered and analysed, the terminal evaluation report is finalised.

### 1.3.3. Report writing and submission phase

The stages of drafting and finalising the report were carried out in two stages: (i) the presentation of the first evaluation results in an intermediate document, including the results on the basis of the usual evaluation criteria, and (ii) after taking into account the comments/remarks, etc., the transmission of the final report.

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<sup>22</sup> <https://www.radeema.ma/>

<sup>23</sup> <http://marrakech.gov.ma/index.php/fr/>

<sup>24</sup> <http://www.ville-marrakech.ma>

<sup>25</sup> <https://www.alsa.ma/marrakech>

<sup>26</sup> [http://maritagroup.com/home/public\\_transport](http://maritagroup.com/home/public_transport)

The final evaluation was conducted in accordance with the guidelines, rules and procedures established by UNDP and GEF as outlined in the UNDP evaluation guidelines for GEF-funded projects. The content of the report is in accordance with the terms of reference set out in the appendix. The original version was written in French for validation with its translation into English for submission to the GEF.

## 2. Project description

In accordance with the National Strategy for Sustainable Development<sup>27</sup>, mainly strategic pillar 8 'Promoting sustainable mobility', the city of Marrakech has planned a modernization of its urban transport system to meet the needs of the growing local population and tourist visitors. According to the 2014 national census, the population of Marrakech prefecture was estimated at 1,330,468 inhabitants. On the other hand, Marrakech, Morocco's leading tourist destination, receives a significant flow of tourists. For example, in 2013, tourist overnight stays reached 6,513,577<sup>28</sup>.

Due to its international influence, environmental protection has become a priority for the City of Marrakech, defended in particular by elected officials, citizens and local departments at the territorial level. In addition to infrastructure projects in the field of the environment and sustainable development (rehabilitation of illegal landfills, setting up sorting centres and recycling of household waste, etc.), it is above all an awareness and a proactive approach to environmental issues that is promoted at city level. Indeed, population growth, geographical location and local climate have given rise to several environmental problems that have led to the adoption of a global approach to environmental upgrading in the city over the past decade.

Climate change is also exacerbating environmental issues in Marrakech, particularly with regard to natural water resources and agriculture. To this end, the city has undertaken some initiatives to adapt to climate change, but these remain limited. In parallel, an ambitious climate change mitigation policy was adopted and strengthened by the organization of the 22nd Conference of the Parties (COP-22). This policy was marked by the launch of major projects to reduce GHG emissions at city level, such as the construction of the new Marrakech landfill, the optimization of public lighting, the low-carbon urban mobility project through the creation of bicycle rental stations and the promotion of clean transport, the electric mobility project (BRT).

### 2.1. Project start and duration

The project activities officially began in September 2016<sup>29</sup>, for a two-year period. The final evaluation was carried out in September 2018 and the connection of the solar photovoltaic installation to the grid is scheduled for the end of October/beginning of November 2018 after the transfer of the installation to the local authorities, materialised by the signature of an agreement.

### 2.2. Issues addressed by the project

Marrakech's urban public transport sector is one of the sectors that has set itself ambitious upgrading targets, in order to meet the needs of an ever-growing population, the specificities of the city as Morocco's leading tourist hub, and to strengthen the city's efforts to reduce its GHG emissions. To this end, the City launched a study in 2008 to improve its Urban Travel Plan (UTP) to answer the above questions, but also to contribute to national sustainable development and GHG emission reduction objectives. The UTP also supports land use planning initiatives launched under the Urban and Regional Development Plan, which has a strong environmental protection component.

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<sup>27</sup> National Strategy for Sustainable Development 2015 to 2030: Final report August 2014 to Presented at the 8<sup>th</sup> Session of the National Environmental Council held on the 19<sup>th</sup> of July, 2016

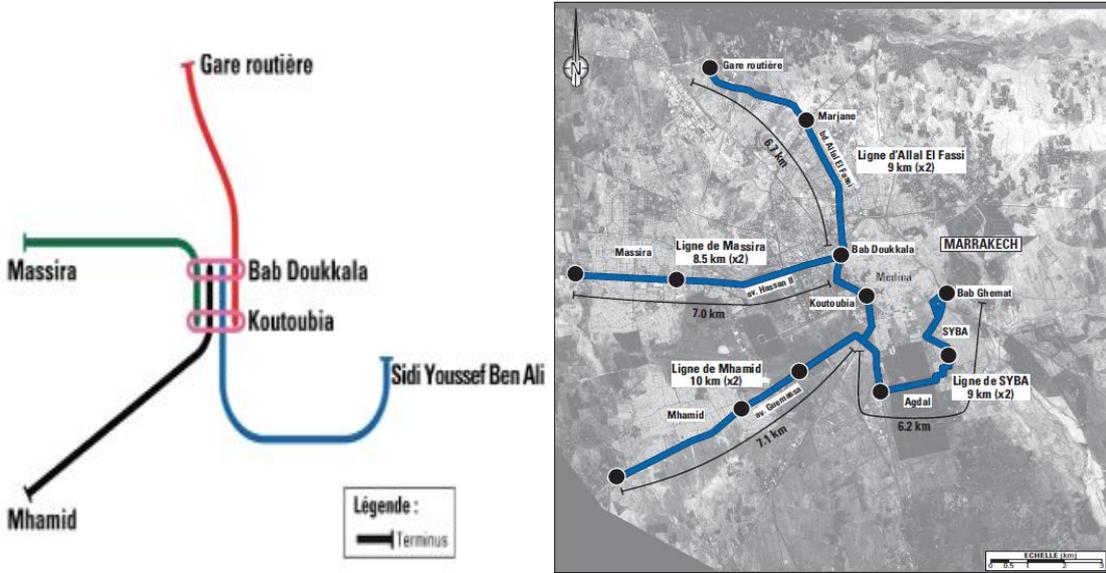
<sup>28</sup> Moroccan Tourism Observatory: Tourism statistics of December 2013 regarding number of tourist-stays in classified lodging establishments.

<sup>29</sup> Premier Local Project Appraisal Committee Meeting (LPAC) daté du 6 septembre 2016

One of the challenges that the UTP has taken into account is the increasing urbanization of Marrakech and the development of new suburbs inhabited mainly by the middle and poor classes. For example, the new districts of Møhamid and Massira are currently witnessing the planning and construction of many urban projects. With a potential increase in demand for public transport, existing means of transport must be improved to meet the needs of the community and ensure social inclusion.

Before 2017, Marrakech's public transport system had some weaknesses such as: i) a very low bus frequency, ii) uncertain bus stops, iii) a modest level of comfort, etc. In addition, the city of Marrakech is characterized by a high rate of motorization<sup>30</sup>, especially for two-wheeled vehicles<sup>31</sup>. Competition from taxis is also an issue that justifies the low rate of use of public buses. To address urban transport deficiencies, the Marrakech City Council decided to integrate a Bus Rapid Transit (BRT) system as an appropriate solution. In a first phase, two lines to Møhamid and Massira are being built to create a connection to the centre of Marrakech. The second phase of the BRT system includes the construction of two additional lines to the bus station and the district of Sidi Youssef Ben Ali.

**Figure 2: The expected BRT system in Marrakech**



By 2030, the objectives for the 4 lines are as follows:

	Massira	Møhamid	Gare Routière	Sidi Youssef Ben Ali
Length in km	8,8	10	9	9
Number of buses in line	9 (1 in reserve)	13 (1 in reserve)	13 (1 in reserve)	9 (1 in reserve)
Annual traffic 2030	7 046 024	8 561 810	9 271 383	6 487 657
Daily traffic 2030	19 304	23 457	25 401	17 774

30 In Marrakech, the motorization rate is 120 cars for 1.000 people, whereas in Casablanca and Tangier (with higher populations) it is estimated at 100 and 27 vehicles per 1000 people, respectively (source: Ministère de l'Intérieur, Wilaya de la Région de Marrakech-Tensift-Al Haouz, Préfecture de Marrakech (2009) : Plan de déplacements urbains de la ville de Marrakech, Mission 3, Elaboration du diagnostic)  
 31 170 vehicles per 1.000 people (source: Ministère de l'Intérieur, Wilaya de la Région de Marrakech-Tensift-Al Haouz, Préfecture de Marrakech (2009) : Plan de déplacements urbains de la ville de Marrakech, Mission 3, Elaboration du diagnostic)

In accordance with COP22 commitments, the Marrakech City Council decided to introduce solar-powered electric buses into the BRT system instead of the usual diesel buses to reduce GHG and air pollutant emissions. In 2015, the 121 diesel buses generated around 11,088 tonnes of CO2. The first BRT line was inaugurated less than a year after COP-22 with 10 electric buses. The electric buses had been received in Marrakech in November 2016, where they had already circulated during the COP22. To purchase this first fleet of electric buses, the City of Marrakech has mobilized funding of approximately USD 21 million.

Some of the obstacles to be overcome before the project is launched include:

1. The level of debt of the City of Marrakech, which was relatively high. The city considered avoiding additional bank loans. GEF co-financing was planned to support the development and installation of the solar park in addition to the investments in the BRT line.
2. A lack of expertise and capacity in electric vehicles at the start of the project. But thanks to the project, the implementation of so-called MRV monitoring mechanisms and capacity building on best energy management practices have been made possible.
3. Insufficient detailed financial strategies and planning to ensure that all financial resources for the expansion of the BRT system are mobilized and available. The project supported the Transport Local Development Corporation, Bus City Motajadida (TLDC) and proposed integrated planning. The TLDC was founded in March 2016 with a view to developing clean urban transport, and the project financed several documents and studies necessary for the future of the BRT.

**2.3. Specific objectives and development objectives of the project**

The overall objective of the project was to support the low-carbon integration of the BRT system as part of its implementation in Marrakech, through the development and construction of a 1 MWp solar park. The energy produced by the fleet will supply the electric buses so that they run from a low-carbon energy source.

More specifically, the expected results were as follows:

- reduce the carbon footprint of the city’s public transport (27,327 tonnes of CO2),
- build capacity in the field of energy efficiency,
- ensure sustainable and socially responsible mobility,
- implement green driving practices,
- reduce air pollution and improve public health,
- rationalize vehicle operating costs,
- improve social inclusion in the suburbs of the city of Marrakech (particularly on gender),
- create jobs in the trades of the future,
- improve the tourist attractiveness of the city of Marrakech.

For the 3 components of the project, specific objectives have been developed.

<b>Project components</b>	<b>Project Outcomes</b>
1. Integrated planning, built capacities and MRV systems for the low carbon BRT System	City of Marrakech integrates low-carbon transport principles into its municipal planning documents; builds its capacities; and ensures proper monitoring and reporting of implemented actions.

2. Commissioning of 1 MW solar farm for powering of electric buses for BRT System	Installation and operationalization of 1 MW Solar farm based on High Concentration PhotoVoltaics (HCPV) technology.
3. Knowledge management and awareness	Communication and awareness of the replication potential of the scheme shared nationally.

The project responded to the GEF theme of climate change mitigation by promoting integrated and low-emission urban systems.

As for the achievement of the UN's sustainable development goals (SDGs), this project has contributed to the following targets:

- Target 1.4 (from Goal 1: No poverty): Ensure that all men and women, especially the poor and vulnerable, have equal rights to economic resources and access to basic services
- Goal 5: Achieve gender equality and empower all women and girls
- Target 11.2 (from Goal 11: Sustainable cities and communities): Ensure access for all to safe, accessible, sustainable and affordable transport systems, including by developing public transport. Particular attention should be paid to the needs of people in vulnerable situations, women, children, people with disabilities and the elderly
- Target 13.2 (from objective 13: Measures to combat climate change): Incorporate climate change measures into national policies, strategies and planning.

#### 2.4. Reminder of the indicators put in place and the expected results

The objectives of the project can be found in the project's logical framework. They are recalled in the table below.

Project Components	Project Outcomes	Project Outputs
1. Integrated planning, built capacities and MRV systems for the low carbon BRT System	City of Marrakech integrates low-carbon transport principles into its municipal planning documents; builds its capacities; and ensures proper monitoring and reporting of implemented actions.	<p><b>1.1.</b> Sustainable transport financial strategy for development and operationalization of all current and future BRT lines.</p> <p><b>1.2.</b> An MRV system for the BRT system, integrating sustainability dimensions across all facets of operation, is in place.</p> <p><b>1.3.</b> Municipal capacities on energy efficiency best practices in transport contexts are developed.</p>
2. Commissioning of 1 MW solar farm for powering of electric buses for BRT System	Installation and operationalization of 1 MW Solar farm based on High Concentration PhotoVoltaics (HCPV) technology.	<p><b>2.1.</b> Construction and commissioning of the solar farm using a Build-Operate-Transfer (BOT) model with partial funding from GEF.</p> <p><b>2.2.</b> Sustainable O&amp;M system in place for solar farm.</p>
3. Knowledge management and awareness	Communication and awareness of the replication potential of the scheme shared nationally.	<p><b>3.1.</b> Lessons learnt, experiences and best practices related to the system are compiled and disseminated to other cities in Morocco.</p> <p><b>3.2.</b> Communication and public awareness campaign for BRT utilization developed.</p>

		<b>3.3.</b> A multi-stakeholder committee (within City of Marrakech) on low-carbon mobility is established and operational.
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Project indicators can also be found in the project logical framework. They are recalled in the table below.

	<b>Objectives and results indicators</b>	<b>Baseline</b>	<b>End of project objective</b>
<b>Project Objective:</b> To support the low-carbon integration of the Bus Rapid Transit (BRT) System under implementation by the City of Marrakech through the installation of 1 MW solar farm based on High Concentration Photovoltaic (HCPV) technology. The energy produced by the farm will help power electric buses to showcase an integrated low-carbon transport system that can be replicated in other cities in Morocco.	Extent of change in modern energy coverage by users and specific sectors (IRRF Indicator 1.5.2)	0	24% of the BRT supplied by the solar energy produced by the HCPV solar park
	Direct number of daily beneficiaries of lines L1 and L2 of the public bus system	50,000 (20,000 for L1 and 30,000 for L2) with a use rate by women of 31% in peri-urban areas and 44% (in urban areas)	71,000 (36,000 for L1 and 35,000 for L2) with a 50% female use rate in urban and peri-urban areas
	Tons of incremental CO2 equivalent avoided as a direct result of project activities	0 tCO2 (11,150 tCO2 emitted in 2015 by 121 diesel buses)	27,327 tCO2 avoided
	Km of high capacity public transport system (BRT) per 100 000 population	0	2.18
<b>Component/ Product 1</b> Integrated planning, built capacities and MRV systems for the low carbon BRT System	Completion of financial planning documents for the future BRT lines (L3 and L4)	0	100%
	Number of low carbon indicators in the MRV system	0	3
	% of TLDC technical employees and bus drivers trained on the best practices of energy efficiency	0%	100%
<b>Component/ Product 2</b> Commissioning of 1 MW solar farm for powering of electric buses for BRT System	Amount of installed MW from the HCPV solar farm	0 MW	0.75 MW (initially 1 MW, revised)
	An O&M system is in place	0	1
<b>Component/ Product 3</b> Knowledge management and awareness	Number of events organized to communicate Marrakech's sustainable urban transport experience	No events took place	At least two high-level events
	Number of platforms (TV campaigns, ads, etc.) developed for public communication and awareness regarding low-carbon transport and solar energy	0	10

	Number of replication plans proposed by the multi-stakeholder committee for other cities	0	1
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## 2.5. Main stakeholders

The main stakeholders in the project were as follows: SEDD, DRE de MS, Commune of Marrakech, TLDC, Wilaya, Regional Council, SIE, RADEEMA, ALSA, AMEE, IRESEN, DGCL, GEF, UNDP, civil society and population.

At the institutional level, the main stakeholders were members of the Project Monitoring Committee, namely:

- The Secretariat of State for Sustainable Development (SEDD), which was responsible for monitoring, developing and implementing the government's policy on the environment and sustainable development.
- The Regional Directorate of the Environment of the Marrakech-Safi region (DRE of MS) whose mission was to support the implementation of the various programmes of the SEDD and to contribute to the integration of the environmental and sustainable development component into the actions and projects carried out by the other Departments and partner actors at regional level. The Project Management Team was located at the MS DRE.
- The United Nations Development Programme (UNDP) which was the executing agency for the project under the GEF.
- The Municipality of Marrakech, one of the main infrastructure axes of which is the implementation of the urban development plan to control travel in the city. For this project, it was the main actor in the implementation of all components and as the project partner responsible for the project involved in the planning, implementation, monitoring and financing of all activities. The municipality is in charge of the solar park and will supervise the maintenance of the plant.
- The Transport Local Development Company (TLDC), responsible for the transport management. Created by the Municipality of Marrakech with more than 50% of capital shares and supported by the Council of Marrakech-Safi Region (30% of capital share), the TLDC manages the BRT system. TLDC owns the electrical buses and the solar farm and oversee the BOT contractor (namely JetEnergy). The TLDC was the recipient of the financing from the Ministry of Interior and other public or private funding sources supportive of the BRT system.
- The Energy Investment Company (SIE), which was already assisting the City of Marrakech in various projects, such as the improvement of the energy efficiency of public lighting, production of electricity from waste biogas, procurement of electrical buses, etc. For this project, SIE was in charge of preparing all the technical specifications and tendering documents for the installation of the 1 MW HCPV solar farm on behalf of the City. SIE also provided legal advice on solar farm connection to the city's electrical grid and net metering.
- Marrakech's autonomous water and electricity distribution board (RADEEMA - La Régie Autonome de Distribution d'Eau et d'Electricité de Marrakech). Created as a local utility in 1970 upon a decision of the Council of the City of Marrakech, its objective is to accompany and support the important development of the city of Marrakech and to provide it with quality infrastructure. Thus the aim is to ensure the continuous supply of water and electricity and the management of the liquid sanitation service, purification and reuse of waste water in accordance with the regulations in

force. RADEEMA's involvement in this project related to the connection of the HCPV solar farm to the city's electrical grid.

- The Moroccan Agency for Energy Efficiency (AMEE). Formerly ADEREE (Agence Nationale pour le Développement des Energies Renouvelables et de l'Efficacité Energétique), it is a public institution dedicated to the widespread use of renewable energies and energy efficiency. Under the terms of Act 16/09, the AMEE's mission is to contribute to the implementation of the national renewable energy and energy efficiency policy. AMEE has acquired significant experience in the regional deployment of renewable energy and energy efficiency. For this project, AMEE supported the bid evaluation committee and provided technical assistance during the construction and operation of the solar park. In terms of eco-driving, AMEE also shared its training experiences.
- The Institute for Research in Solar Energy and New Energies (IRESEN), which was created to promote R&D in applied sciences on a national scale, develop innovation and encourage the integration of renewable energies into the electricity grid. IRESEN also aims to ensure the definition of research areas and to implement, finance and manage research and development projects. For this project, IRESEN shared its R&D expertise to assist the Solar Park Tender Evaluation Committee, shared its knowledge with the TLDC during operations and capitalized on the project's results to improve R&D in Morocco. IRESEN is positioned in the field of R&D through its resources agency and research centre, offering several opportunities for the creation of synergy between the socio-economic world and the scientific world around collaborative R&D projects.
- The General Directorate of Local Authorities (DGCL). The DGCL is a department of the Ministry of the Interior, in particular responsible for drawing up Communal Development Plans according to a participatory strategic planning approach and monitoring decentralised cooperation actions between Moroccan and foreign authorities. For this project, she was in charge of the management of the BRT system and owner of the electric buses. The DGCL was the beneficiary of funding from the Ministry of the Interior and any other public or private source of funding supporting the BRT system.

With regard to the beneficiaries of the project, the targeted civil society groups and population can be divided into 7 categories. Thus, more than 1 million people are the direct and indirect beneficiaries of the project, namely:

- people with reduced mobility
- low-income citizens
- women and young people looking for work
- citizens to access health care
- tourists (domestic and foreign)
- female and male students
- people with reduced mobility
- more generally, users of public transport in Marrakech and peri-urban areas, users, public authorities

In the long term, other urban municipalities, through a possible extension of the project or a generalization of the model, will also be able to benefit indirectly from the project, as well as companies, the labour market or other African countries.

### 3. Findings

#### 3.1. Project design and formulation

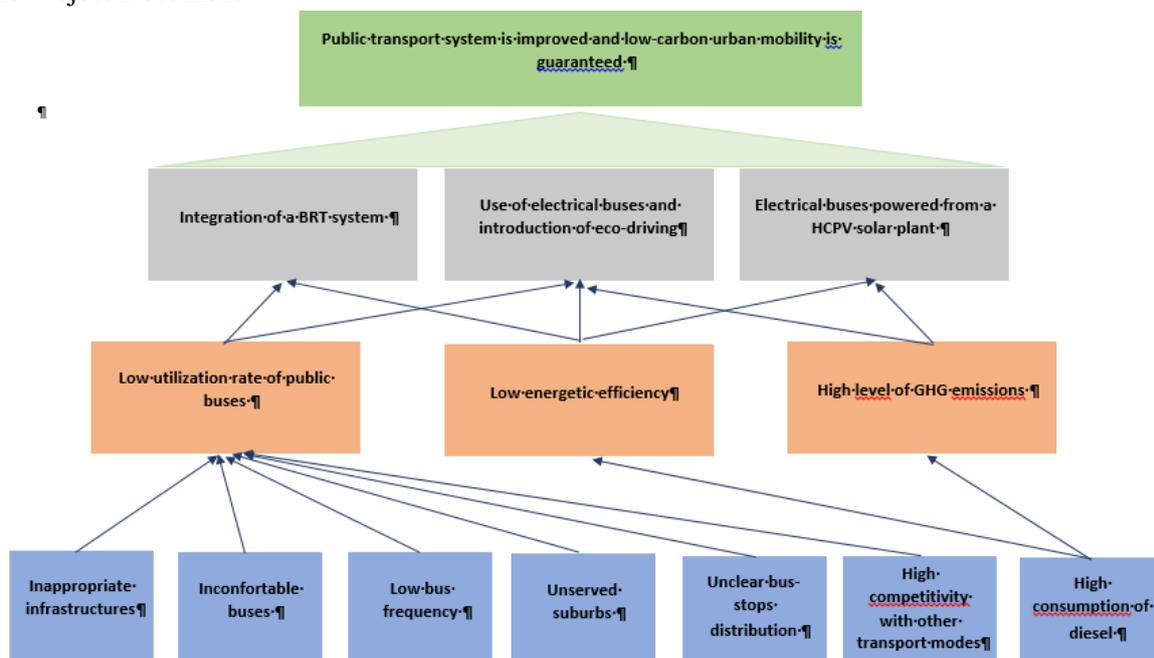
##### 3.1.1. Analysis of the results framework (Project logic/strategy; indicators)

The project logical framework and the results logical framework are presented in the annex to this document.

The analysis is done component by component and focuses on the relevance, effectiveness, efficiency, impacts and sustainability of the actions undertaken, and on the ownership by the beneficiaries of the project results. The structure defined by the project document was robust. It was based on a logical division between a governance component (component 1), a technical component (component 2) and a capacity building component (component 3). This structure is quite traditional - it is often adopted by GEF-funded projects - and has the benefit of clarity to articulate and implement activities at different levels, in terms of national administrative substance and research. In recent years and replenishment cycles, the GEF has improved the guidelines for the development of SMART activities and indicators for the results framework. This makes it possible to establish this structure in a comprehensive way.

The specific objective of the project was to support the low-carbon integration of the Bus Rapid Transit (BRT) system implemented by the City of Marrakech through the installation of a 1 MW solar power plant based on High Concentration Photovoltaic (HCPV) technology. The energy produced by the plant should help electric buses to present an integrated low-carbon transport system that can be replicated in other cities in Morocco. Both concrete and ambitious, this objective has the quality of being innovative and envisaging the dissemination of logic and technology across the country.

The objective of the project was built upon a justified theory of change model which was developed in the Project Document:



The specific objective is formulated in such a way as to be verifiable supported by four indicators, each with a baseline and a target (presented in section 2.4 of this document). The first indicator is the "Extent of change in modern energy coverage by users and specific sectors". The second one refers to the direct number of daily beneficiaries of lines L1 and L2 of the public bus system. The third indicator is related to tons of incremental CO<sub>2</sub> equivalent avoided as a direct result of project activities. Finally, the last indicator matches km of high capacity public transport system (BRT) per 100 000 users.

Indicators can be considered as "SMART" (specific, measurable, appropriate, realistic, and time-bound), as they target a specific field and area of improvement (type of energy used, social improvement, pollution and infrastructure). They are measurable as they are indicators of progress; Achievable and Appropriate as each indicator has a specific responsible that will do it; Realistic as the four indicators are meaningful and important to the outcome; And time bound, as they are included in a time frame that specify when the results will be achieved.

The project planned to achieve three outcomes presented in section 2.3 of this document. These results were accurate and realistic for the project.

Each component and result was associated with indicators that provided clear monitoring and evaluation of the progress of activities to achieve these results (presented in section 2.4 of this document). Globally speaking, the proposed indicators are relevant and can be evaluated as SMART (specific, measurable, achievable, relevant and time-bound). The exact target for each indicator by the end of the project gives precise numbers. They clearly show all aspects to consider and to effectively measure the progress made.

**3.1.2. Hypotheses and risks**

In view of the technical risks associated with the PV solar power plant and its connection to the BRT system, four difficulties had been identified. They are recalled below:

1. Injection of electricity into the electric bus station
2. Depositing aerosols on the panels
3. Flood / storm period
4. Theft and malicious acts

More fully, the assumptions and risks at the objective and outcome level had been established in the project document and are also recalled in the table below.

<b>Monitoring</b>	<b>Hypotheses and risks</b>
<p><b>Project Objective:</b> To support the low-carbon integration of the Bus Rapid Transit (BRT) System under implementation by the City of Marrakech through the installation of 1 MW solar farm based on High Concentration Photovoltaic (HCPV) technology. The</p>	Integration of electrical buses in the BRT system powered by a 1 MW HCPV solar farm Risk: insufficient financial resources to ensure the procurement of electric trolleybuses and HCPV solar plant
	Electrical buses integrated in the BRT system of Marrakech offers adequate means to count ridership Field surveys are conducted to disaggregate data by gender Risk: an increase in the bus ticket cost may reduce the attractiveness of the BRT system compared to other transport modes.
	Electric buses are integrated in the BRT system of Marrakech and powered from a 1 MW HCPV solar farm.

energy produced by the farm will help power electric buses to showcase an integrated low-carbon transport system that can be replicated in other cities in Morocco.	Diesel buses drivers are trained on eco-driving practices. Risk: low productivity of the solar farm and eco-driving not adequately applied may not provide the expected GHG reductions
	High political will from the City Council. The infrastructure of the first two BRT lines is available and the first set of electrical buses will be available before COP22.
<b>Component/ Product 1</b> Integrated planning, built capacities and MRV systems for the low carbon BRT System	Engineering studies of BRT lines L3 and L4 are almost completed and will provide a good basis for conducting the financial planning. Risk: change in the city council strategy and BRT lines L3 and L4 are not a short tem priority.
	The TLDC incorporates an adequate MRV system The design of MRV system includes low carbon indicators, e.g. kwh produced from solar farm, diesel consumption, GHG emissions, etc. Risk: Lack of sufficient human resources to design and oversee the MRV system
	TLDC will receive the necessary support to be able to higher the necessary employees. Risk: Lack of engagement from TLDC/ALSA management to support the implementation of the capacity building activities.
<b>Component/ Product 2</b> Commissioning of 1 MW solar farm for powering of electric buses for BRT System	High political will from the City of Marrakech to install a solar PV farm part of the BRT system. Risk: Lack of sufficient funding, delays in the construction and commissioning.
	A firm tendering process and technical support provided from SIE and ADEREE will ensure that an experimented BOT company will be hired. Risk: delays in the implementation of the O&M system
<b>Component/ Product 3</b> Knowledge management and awareness	COP22 a major event to demonstrate the sustainable development engagement of Marrakech and communicate around the project. Risk: Lack of financial resources to organize several events to communicate around the BRT system
	The city of Marrakech is aware of the importance of using different platforms and media to reach out different types of beneficiaries. Lack of financial resources to use different platforms to communicate around the project
	The multi-stakeholder committee incorporates the preparation of replication plans in its activities. Risk: lack of political will to ensure replication.
<b>Terminal GEF TrackingTool</b>	All necessary data will be gathered in a professional manner throughout the project duration to ensure a proper completion of the GEF Tracking Tool

Due to a good definition of the risks, and measures taken to anticipate them, the project was able to overcome these risks without difficulty.

In addition, a Social and Environmental Risk Screening Procedure (SESP) was carried out during the formulation of the project document. It was noted that the project did not include major potential risks related to the principles: human rights, gender equality and empowerment of women, environmental sustainability, as well as standards: biodiversity conservation and sustainable management of natural resources, climate change mitigation and adaptation, health, safety and working conditions in the community, cultural heritage, displacement and resettlement, indigenous peoples, pollution prevention and resource efficiency.

The conclusions of this document annexed to the project document have been taken into account.

### 3.1.3. Stakeholder participation

The implementation of a low-carbon urban transport system requires the participation of many actors at different levels, such as institutional entities, communities, private sector companies and the public. The project involved the mobilization and engagement of all stakeholders to achieve the expected results.

At the beginning of the project, a participatory and inclusive approach was adopted to mobilize and involve all stakeholders. Such an approach ensures optimal ownership and responsiveness to stakeholder expectations.

Stakeholders were thus able to express their commitment and determination to support the upgrading of the sector since the project launch meeting. The participatory approach was adopted during the planning phase and was unchanged during the implementation of the project. Indeed, the involvement of stakeholders in decision-making and validation is the main characteristic of this approach and is the guarantee of a successful implementation.

The main implementing partner, the SEDD, has thus been very active in mobilizing stakeholders through:

- Considerable experience in the design and implementation of GHG mitigation projects. The SEDD is the focal point for the GEF and the UNFCCC and was actively involved in the organization of the COP22. On this occasion, the communication on the project was important and gave it a high visibility, not only locally and nationally, but even internationally.
- Its role as chair of the project steering committee (the co-chair of the project steering committee is the National Director and the Wali of the Marrakech Safi region). The project components were implemented by the municipality for some activities within the national framework, with the support of the SEDD, which coordinated these activities and mobilized on a case-by-case basis the relevant actors to carry out these activities,
- An ability to assist local partners in the implementation of projects with the support of its permanent team of engineers and managers based in Marrakech at the DRE MS.

The main partner of the project, the Municipality of Marrakech, has shown leadership in this regard:

- The mobilisation of a significant part of the co-financing of the project and in the issuing of the necessary municipal permits.

#### **3.1.4. Ability to replicate**

The replication of the project is already planned. It consists of the extension of the BRT network for three additional lines covering major axes of the city, namely: Mohammed VI, Sidi Youssef Ben Ali and Gare Routière. The idea is to keep the same scheme: a solar power plant connected to each new BRT electric bus line, to meet the needs of the entire Marrakech network. Two projects are planned: the mobilization of 48 18m electric buses, 44 of which will be in line and 4 in reserve by 2030, and the installation of solar installations with a capacity of 5.7 MWp. For this, financing estimated at US\$82 million will be required (695 million MAD for the BRT network, 83 million MAD for the solar power plant, a total of 778 million MAD to be financed for the extension of the project).

The issue of replication also applies to other cities, and is therefore understood as the dissemination of this type of BRT system to cover a larger number of metropolitan areas and cities in Morocco, or even elsewhere in Africa. Thus, one of the results focuses on lessons learned, experiences and best practices

related to the system, so that they can be compiled and disseminated to other Moroccan cities to advance sustainable transport in the country.

Political will is important, as demonstrated by the "Roadmap for Sustainable Mobility in Morocco" of February 2018<sup>32</sup>. Representatives of twenty Moroccan regions and cities participated in the development, along with a large number of ministries, public entities, private sector companies and research and training organizations. The first point reinforces the importance of urban transformation through a strengthening of low-emission public transport. BRT systems are named as one of the preferred options<sup>33</sup>.

The final evaluation confirms that the project has good replication potential through well-documented activities and sustainable project achievements that will be detailed later in this document.

### **3.1.5. Comparative advantage of the UNDP**

UNDP's comparative advantage in this project is in capacity development. It also has extensive experience working with the Moroccan government and municipalities and has therefore played a central role as a facilitator between the Moroccan agencies involved in the project.

The UNDP country office, acting as the implementing agency for the GEF, has an operational institutional comparative advantage, based on its proven experience in managing GEF financial resources, developing projects and strategies to mitigate the effects of climate change and sustainable mobility.

In addition, UNDP has an advantage in terms of its established responsibility to comply with all monitoring and evaluation requirements at the project level.

UNDP has already supported other climate change mitigation projects and can therefore leverage its experience across the country. For example in Morocco, UNDP has been engaged in "Promoting the Development of Photovoltaic Pumping Systems for Irrigation", "Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco" or "Market Development for Solar Water Heaters". Around the world, UNDP is also supporting the development of other low carbon urban transport systems, for instance in the Philippines or in Bhutan.

### **3.1.6. The links between the project and other interventions within the sector**

The Latin American experience with the introduction of BRT lines has shown that these projects have been a key moment for Latin American metropolises and that the impact goes far beyond transport and mobility. The introduction of BRT lines in the early 2000s saw a rapid spread of the Bogota model, the *Transmilenio*. Today, the BRT system covers most metropolitan and intermediate cities. However, in Morocco, the city of Marrakech has the first network of low-carbon BRT systems in all cities in the Kingdom of Morocco, and as a result, the city is a pioneer in this field in the country and even on the continent.

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<sup>32</sup> [http://www.ppmc-transport.org/wp-content/uploads/2016/04/GMR\\_Morocco.pdf](http://www.ppmc-transport.org/wp-content/uploads/2016/04/GMR_Morocco.pdf)

<sup>33</sup> Idem

Indeed, while cities such as Casablanca and Rabat have taken the initiative to set up electric tramway systems as low-carbon transport modes, Marrakech is the first to have chosen to deploy a network of low-carbon BRT systems in Morocco.

In addition to this project, the City of Marrakech has launched other initiatives in the areas of sustainability, energy efficiency and GHG emissions reduction. An overview of the main initiatives is presented in the following table. Through the synergy of their goals and objectives with this project, the initiatives have the effect of increasing knowledge, capacity and mutual impacts in cleaner transport. For example, training in eco-driving or air quality monitoring are all assets for monitoring the positive impacts of this project.

Initiative	Description	Financial partners
Low-carbon mobility	Create bicycle rental stations and provide 300 bicycles; Equip the carriages with renewable energy lighting; Provide 2 to 3 electric cars to promote clean transport.	GEF, UNIDO, Secretariat of State for Sustainable Development, Wilaya and Municipality of Marrakech.
Integrating energy efficiency and renewable energies into public buildings	Design study for the integration of energy efficiency and renewable energies in public buildings; Implementation of the concept in 4 public buildings (Wilaya, Hospital, Airport and Environment Observatory).	GEF, UNIDO, Secretariat of State for Sustainable Development, Wilaya and Municipality of Marrakech.
Establishment of an energy performance contract for public lighting	Street lighting in the renovation of parks to reduce the annual consumption of street lighting.	Wilaya, Municipality of Marrakech and SIE.
Low-carbon buses	Transition to the electrical BRT system; 3 electric tourist buses.	GEF, UNDP, Secretariat of State for Sustainable Development, Wilaya, Municipality of Marrakech, SIE.
Initial training in eco-driving	Initial eco-driving training for all bus drivers.	Municipality of Marrakech and bus operator ALSA.
Air quality management	Implementation of the governance framework; Capacity building; Acquisition of air quality monitoring stations.	Wilaya of Marrakech, Mohamed VI Foundation for the Protection of the Environment, National Meteorological Directory, Secretariat of State for Sustainable Development.

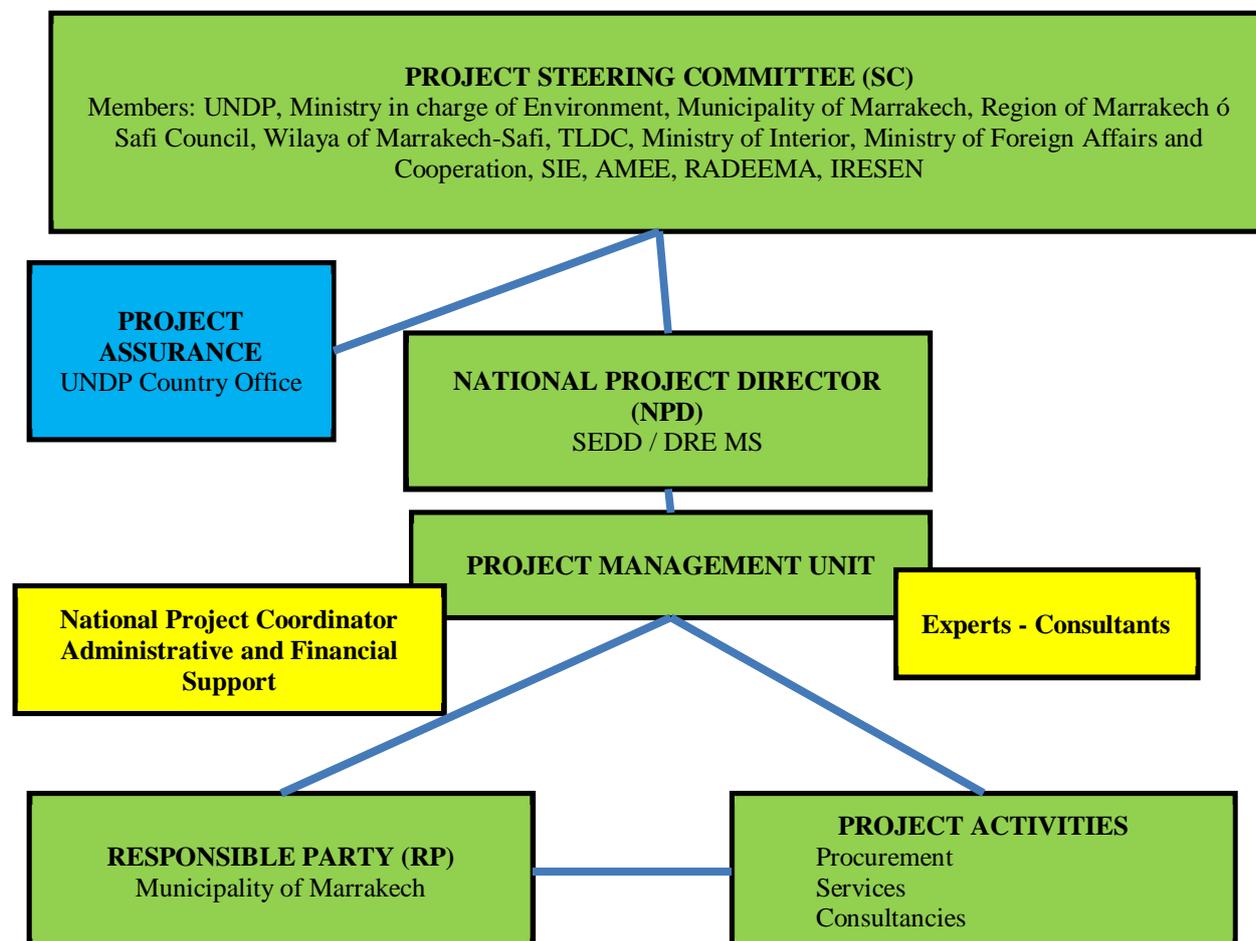
### 3.1.7. Management arrangements

The Project Management Unit (PMU) was composed of the following persons:

Title	Name
National Project Director	M. BABQIQI Abdelaziz
Project Management Unit (DRE MS)	M. ZILALI Mohamed Mlle. BAKRI Hafsa M. AMZIL Karam

	M. ALKAA Yassine
Technical assistant of the project	M. MESSOULI Mohammed

The project implementation structure and institutional arrangements are detailed in the project organizational structure as follows:



The project was implemented by UNDP (through its country office in Morocco), in accordance with the national implementation modalities, the Basic Assistance Agreement between UNDP and the Government of Morocco, and the country programme. UNDP provided quality assurance throughout the project.

The implementing partner was the SEDD, which was responsible for achieving the project's objectives and ensuring appropriate alignment with national policy. The SEDD was supported by the UNDP country office.

The Municipality of Marrakech has been designated as the responsible party for all project components and to purchase goods and services from the project budget on behalf of the implementing partner on the basis of a written agreement. It was directly responsible to the implementing partner in accordance with the terms of the agreement. SEDD cooperated with the Municipality of Marrakech to leverage its expertise, mitigate risks and reduce administrative burdens

### 3.2. Project implementation

### 3.2.1. Adaptive management (changes in project design and project results during implementation)

The responsible parties demonstrated adaptability throughout the project. Thus, in November 2016, ADEREE announced that it now operates as an AMEE (Moroccan Energy Efficiency Agency). In terms of project management and operationalization, in the Steering Committee and in the partnership agreements, AMEE has retained the responsibilities initially assigned to ADEREE.

In addition, one of the objectives of the project was the construction of a 1 MW HCPV solar park. After the launch of the call for tenders for the construction, it appeared that the budget provisioned was not sufficient. With all the stakeholders concerned, it was then decided to reduce the installed capacity in the first phase to 0.75 MW.

Finally, due to the absence of a decree authorizing the feeding-in of solar electricity into the grid from small installations, numerous meetings have been held to find a solution. Finally, it was decided to connect the power plant to the power station of the bus line, i.e. in self-consumption.

### 3.2.2. Partnership agreements

At the end of the project, the plant is scheduled to start up as soon as ownership is transferred, as shown in the following diagram:

Role	Stakeholder engagement: partnership agreements
Owner	After the transfer of ownership by UNDP in October/November 2018, the city of Marrakech will own the 0.75 MW solar park
R&D	IRESEN
Technical assistance	SIE & AMEE
Connection to the network and net measurement	RADEEMA
BOT, O&M	JetEnergy
Financial support	National, sub-national and local governments

The local company ALSA is responsible for the operation and management of the Marrakech BRT system. The TLDC, Transport Local Development Company, is responsible for the supervision and management of public transport.

These partnerships have facilitated the implementation of project activities and have been of great help in achieving project results.

Particularly the city of Marrakesh has been highly involved in the project implementation and financing, as foreseen in the partnership for this project.

With the RADEEMA, cooperation with regard to the electricity operations and grid connection has been realized. RADEEMA and SIE have furthermore contributed to a feasibility study of the direct connection to the bus station, a system impact study, security devices and a Technical Monitoring Committee. SIE and JetEnergy have for instance supported the technical report of the project, JetEnergy has been the BOT contractor and the O&M system for the solar PV plant is 100% in place, with JetEnergy as the responsible party.

The partnership with IRESEN enabled to developed green mobility competences in Morocco, and raise awareness with for instance dedicated events organized during COP-22 or the Green Mobility Forum organized on September 25, 2018 in Marrakech.

### 3.2.3. Project financing

The total cost of the project is USD 57,493,546.

This project is funded by a GEF grant of USD 1,369,863, a cash co-financing of USD 55,473,683 from the city of Marrakech and a parallel in-kind co-financing of USD 700,000. UNDP, as an implementing agency of the GEF, was responsible for the implementation of GEF resources.

Source of cofinancing	Type de cofinancing	Amount of cofinancing	Planned activities / Results
National Government - Secretariat of State for Sustainable Development	In-kind	300 000	Management and coordination
Municipality of Marrakech - City of Marrakech	In cash	55 473 683	Construction of the BRT system infrastructure, acquisition of electric buses and installation of a maintenance and recharging station for buses.
Municipality of Marrakech - City of Marrakech	In-kind	300 000	Coordination of offices and projects
SIE	In-kind	100 000	Technical and legal expertise

The Municipality of Marrakech also contributed through co-financing in kind: the 3 hectare site where the solar power plant is located.

The planned and actual expenditures for the project are shown below.

Budget plan approved in the Prodoc	Amount Year 1 (USD)	Amount Year 2 (USD)	Total (USD)
P1	87 375,00	82 500,00	169 875,00
P2	475 000,00	475 000,00	950 000,00
P3	33 000,00	47 000,00	80 000,00
P4	61 500,00	58 488,00	119 988,00
Total GEF	656 875,00	662 988,00	1 319 863,00

Funds, approved in the Prodoc	Amount Year 1 (USD)	Amount Year 2 (USD)	Total (USD)
GEF	656 875,00	662 988,00	1 319 863,00
National government	28 086 842,00	28 086 841,00	56 173 683,00
TOTAL	28 743 717,00	28 749 829,00	57 493 546,00

Year	2016		2017		2018		Grand Total	
Product	Budget approved AWP	Actual expenditure CDR	Budget approved AWP	Actual expenditure CDR	Budget approved AWP	Actual expenditure CDR	Total budget	Total expenditure
P1	0	0	169 875,00	0	21 500,00	12 425,23	191 375,00	12 425,23
P2	388 200,03	388 355,25	561 541,27	489 376,32	182 000,00	168 835,94	1 131 741,30	1 046 567,51
P3	3 574,08	0	76 425,92	69 159,52	89 400,00	68 785,11	169 400,00	137 944,63

P4 PMU	9 129,56	12 807,13	110 858,44	25 665,01	41 599,77	34 469,67	161 587,77	72 941,81
Activity 5 (PPG PV solar power plant)						50000	0,00	50 000,00
Projet total	400 903,67	401 162,38	918 700,63	584 200,85	334 499,77	334 515,95	1 654 104,07	1 319 879,18

	2016	2017	2018	Total	
Annual implementation rate (CDR/AWP)	100,00%	63,59%	100,00%	79,794%	
				P1	6,49%
				P2	92,47%
				P3	81,43%
				P4	45,14%

Co-financing (type/source)	UNDP own funding- GEF Trust Fund (in millions of USD)		Government (in millions of USD)		Partner organization (in millions of USD)		Total (in millions of USD)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Subsidies	1,369,863	1,319,863					1,369,863	1,319,863
Loans/concessions								
• In-kind support			700,000	700,000			700,000	700,000
• In Cash			55,473,683	55,473,683			55,473,683	55,473,683
Totals	1,369,863	1,319,863	56,173,683	56,173,683			57,543,546	57,493,546

These financial results show that the total expenditure of 1,319,879.18 USD after the three years is almost exactly the total GEF grant of 1,319,863.00 USD for the project. Nevertheless, when inspecting more closely the annual implementation rate of the project's budget as compared to the envisaged budget in the Annual Work Plans (AWP), during the year 2017, the financial resources were not as efficiently allocated (rate: 63.59%). This is due to the need to find a solution to overcome the impossibility to inject power from the solar PV station into the grid. Furthermore, the detailed comparison of the AWP budget and the actual expenditure per project component demonstrates that for component 1 and for the Project Management Unit (PMU), the expenditure was significantly below the planned budget.

While the total effective expenses are lower to the approved ones, the Government and the local authorities plan to further invest in the power plant for its extension.

Despite the deviation from the planned expenditure for component 1 in 2017, the three indicators for this component were all achieved by 100% (see 3.3.1. Overall results (achievement of objectives)).

#### 3.2.4. Monitoring and evaluation: design at entry and implementation

The monitoring and evaluation (M&E) system was undertaken in accordance with UNDP requirements, as set out in the UNDP programme and operations policies and procedures and the UNDP evaluation policy. The activities and the activities' progress was monitored and recorded by the UNDP Country Office, with a sufficiently budgeted M&E plan by the DRE.

The project results, described in the logical framework, have been subject to biannual and annual reviews to ensure the progress of the project, as well as bi-monthly progress reports. In addition, minutes

were prepared for each meeting, which the evaluator was able to consult freely. Furthermore, the implementation statuses were reported to the project steering group.

The implementation of an M&E system was used to directly supervise several activities. This is rated as highly satisfactory. In fact, the M&E plan was well conceived and its articulation helped to monitor results and track progress toward achieving objectives. Also, the quality of the M&E plan implementation was very good as the plan was sufficiently budgeted and funded during both project preparation and implementation. The M&E system includes reports of very regular project team meetings, detailed progress reports, minutes of meetings with partners, evaluations and audits, minutes of technical and steering committee meetings. The monitoring plan for the indicators has also been carried out in a very satisfactory manner with the development of a system known as MRV for monitoring, reporting and verification within the meaning of the UNFCCC<sup>34</sup>. This exercise was done by mobilizing partners for data collection (reports, letters, meetings, emails). Also, monitoring indicators from the project document were very effective for measuring performance and objectives progress.

In addition to the display of the advancement of the activities, several recommendations were brought forward and recorded in the meetings' minutes. These, as well as the bi-monthly progress reports allowed for the timely implementation of the project activities and quick discussion of arising issues.

It needs to be mentioned, that in this M&E system, PIR self ratings were complete and very detailed. They are completely consistent with the terminal evaluation rating.

In accordance with the expected results 3.1. Lessons learned, experiences and best practices related to the system are compiled and disseminated to other Moroccan cities and 3.2. A communication and public awareness campaign for the use of the BRT system is being developed, the project facilitated learning and allowed knowledge to be shared and widely disseminated to promote the capitalisation and replication of the project results.

The role of the Project Board and UNDP in M&E activities was very crucial as they participated in the project planning and the implementation of the strategy. Monitoring responsibilities was given to the National Project Coordinator, which was responsible for regular monitoring of project results and risks; the Project Steering Committee ensured the project achieves the final objectives and desired results; and the Project Implementation Partner which had to provide any additional information necessary project reporting.

In fact, project-level Monitoring & Evaluation was undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNPD Country Office worked and collaborated with the relevant stakeholders of the project to be sure that all UNDP M&E requirements are met. UNPD Country Office supported the National Project Coordinator as needed.

In conclusion, the implementation of the M&E system has been highly satisfactory. The project was able to ensure a good follow-up of the activities, which made it possible to respect the schedule. Local consultants and the project management team provided frequent monitoring reports on implementation and activities. They were important efforts to know the progress of activities during the project period, as well as the budget allocation and integration of project indicators into the national M&E system.

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<sup>34</sup> <https://unfccc.int/media/47849>

This criterion is rated **HS (highly satisfactory)**.

### **3.2.5. Coordination at the level of implementation and enforcement and operational aspects**

Control and responsibilities for M&E and the implementation of activities were shared between the different agencies responsible for the implementation of the project in a coordinated and effective manner. Collaboration between UNDP and the project management team can be considered close and good. Throughout the project, there were no less than ten field visits by UNDP.

UNDP's role has also been to inspire and support the promotion of national leadership, strengthen national ownership and stimulate national accountability. At the stakeholder level, a participatory approach and integrated planning have been adopted. Thus, the involvement, mobilization and engagement of many actors at different levels such as institutional entities, local authorities (not only the city of Marrakech, but also the region), private sector companies and the population have ensured optimal national ownership. For example, for component 2, the construction of the solar park was carried out with clearly assigned roles for local institutions and companies in terms of ownership, R&D, technical assistance, grid connection, invoicing and M&E.

For both the PV solar power plant and the electric BRT system, operational aspects have been entrusted to national companies through concessions, thus ensuring proper implementation and a monitoring mechanism.

The Secretariat of State for Sustainable Development's (SEDD) of Morocco role in this project was important, and succeeded in achieving its objectives during the project. In fact, SEDD was responsible for monitoring, developing and implementing the government's policy on the environment and sustainable development. Also, SEDD contributed in the good management of the project, and especially during the evaluator site visit during which the evaluator met stakeholders in Marrakech with the Project Management Unit (PMU) based in a decentralized department of the SEDD.

By both UNDP and the executing agencies SEDD and DRE MS, the work was focused on the identified results of the project. The implementation of the activities was recorded in the M&E system described above, which was set out with regard to the results' achievement. They also worked together on the regular reporting as part of the M&E system and kept the implementation statuses transparent. Furthermore, UNDP and the implementing partners were open to share information and analyses with the project steering committee members for feedback.

The assumed risks of the project activities did not realize and therefore did not have to be managed. With regard to the insufficient financial resources for a 1 MW solar PV plant, all partners responded quickly and smoothly by deciding to reduce its capacity in the first phase to 0.75 MW and to build the supplementary capacity in the forthcoming phases, i.e. the upscaling of the project.

This criterion is rated **HS (highly satisfactory)**.

### **3.3. Project results**

The results of the project evaluation are based on stakeholder consultation and documentation review. In parallel to these consultations, the evaluation focused on the analysis of the results in the form of

deliverables, based in particular on the project document and the reports of the economic, financial and technical studies carried out as part of the project.

The section presents the evaluation results in their entirety and then by criteria.

### 3.3.1. Overall results (achievement of objectives) (\*)

The final evaluation of the project shows that all the results were achieved on time. All that remains is to connect the power plant to the power bus station when the power plant is handed over. The activities were implemented effectively and produced highly satisfactory results. In addition, the project is very innovative and easy to disseminate and replicate in Marrakech or other cities. At the level of stakeholders, communication and impact, the project is also considered highly satisfactory.

#### 3.3.1.1. Evaluation of results and products

The tables below show the objectives set at the beginning of the project, and the degree of completion of these at the date of the evaluation, component by component.

#### Component 1

Component title: Integrated planning, capacity building and MRV systems for the low-carbon BRT system.

Objectives and results indicators	Baseline	End of project objective	Evaluation
Completion of financial planning documents for the future BRT lines (L3 and L4)	0	100%	Result achieved at 100% with a technical feasibility study as well as an economic and financial feasibility study (completed studies)
Number of low carbon indicators in the MRV system	0	3	Result achieved at 100%: study completed
% of TLDC technical employees and bus drivers trained on the best practices of energy efficiency	0%	100%	Result achieved: Training workshop in partnership with the GEF transport / CDRT project <sup>35</sup> (04/07/2018) for 10 drivers to obtain an eco-driving qualification

#### Component 2

Title of the component: Commissioning of a 1 MW solar park to supply electrical BRTs.

Objectives and results indicators	Baseline	End of project objective	Evaluation
Amount of installed MW from the HCPV solar farm	0 MW	0.75 MW (initially 1 MW)	Result achieved at 100% (since the reduction in installed capacity was validated during implementation):

<sup>35</sup> <https://www.thegef.org/project/mainstreaming-climate-change-national-logistics-strategy-and-roll-out-integrated-logistics>

			<ul style="list-style-type: none"> <li>" PV worksites / reception</li> <li>" Attachment</li> <li>" Report Control Office</li> <li>" Invoices</li> <li>" Amendment (feasibility of connection to bus station, network impact study, cables and trenches, control and approval)</li> <li>" Completion of the connection work from the solar station to the electric bus charging station</li> </ul> <p>The plant covers an area of 3ha and can accommodate a total installed capacity of 1MW, including 750 KWp in the first phase and an installation of approximately 3900 polycrystalline photovoltaic panels in series and a rotary solar radiation monitoring system (trackers). The potential for reducing carbon dioxide emissions is estimated at 1300 tonnes CO2eq/year.</p>
An O&M system is in place	0	1	<p>Result achieved at 100%:</p> <ul style="list-style-type: none"> <li>" Study completed</li> <li>" Report on the terms of operation and maintenance approved</li> <li>" Agreement DRE Municipality of Marrakech ready for the transfer of ownership with a maintenance contract with the company Jet Energy.</li> </ul>

### Component 3

Title of the component: Knowledge Management and Outreach.

Objectives and results indicators	Baseline	End of project objective	Evaluation
Number of events organized to communicate Marrakech's sustainable urban transport experience	No events took place	At least two high-level events	<p>Result achieved at 100%:</p> <ul style="list-style-type: none"> <li>" High visibility of the project at the COP22</li> <li>" Minutes of the visits to the solar station</li> <li>" National Seminar on Urban Mobility</li> <li>" PollutecMaroc (2017)</li> <li>" Photovoltaica (2018)</li> </ul>
Number of platforms (TV campaigns, ads, etc.) developed for public communication and awareness regarding low-carbon transport and solar energy	0	10	<p>Result achieved at 100%:</p> <ul style="list-style-type: none"> <li>" 3000 communication supports on the Marrakech solar station during the COP22</li> <li>" Closing seminar: design of communication tools</li> </ul>

Number of replication plans proposed by the multi-stakeholder committee for other cities	0	1	Result achieved at 100%: " Seminar for the benefit of Moroccan municipalities " Exchange seminar with elected representatives/ presidents of municipalities in partnership with 4C Morocco
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### 3.3.1.2. Evaluation of other objectives and priorities

## Sustainable Development Goals

With regard to the SDGs targeted by the project, the final evaluation makes the following observations:

Objective	Evaluation
SDG1: Have access to basic services for men and women (vulnerable)	Result achieved First functional Massira line with buses with a high level of electrical service " MRV frame " Operating report " Testimony of users " Interview with the technical services of the municipality and an elected official
SDG5: Achieve gender equality and empower all women and girls	Result achieved : First functional Massira line with buses with a high level of electrical service " MRV frame " Testimony of users " Interview with the technical services of the municipality and an elected official
SDG11: Ensure access for all to safe, accessible, sustainable and affordable transport systems	Result achieved : Implementation of BRT line with the same pricing " TLDC / ALSA Operator Operations Report " Testimony of users " Interview with the technical services of the municipality, the Wilaya and an elected official
SDG13: Incorporate climate change measures into national policies, strategies and planning	Result achieved : Electrification of the electric bus line via the solar station connected to the BRT line substation " Site visits and interviews with technicians " MRV frame " TLDC / ALSA operator operating cost report " Interviews with RADEEMA, DRE, etc.

## Equality of the sexes and gender

In relation to the cross-cutting priority of gender equality and women's empowerment, the project took this into account during the implementation of the project. The project's programming principles were based on the following points:

- Promote gender mainstreaming by quantifying and monitoring the number of direct beneficiaries disaggregated by sex;

- Improve the quality of service to encourage women to use the bus (safety and comfort);
- Ensure the social inclusion of women in the suburbs with particular attention to the most vulnerable people;
- Take into account the gender distribution in relation to the organisation of some events. For example, for example:
  - A workshop to launch the electric cars in Bonn was held for 22 Moroccan and 12 Swiss and French high school students. The aim of this workshop was to raise awareness among young people to adopt an eco-responsible attitude, promote low-carbon technology and encourage tolerance and solidarity among peoples. The gender distribution was 14/20 (male/female).
  - A training workshop on eco-driving for 10 drivers with the objective of adopting ecological and sustainable driving, and reducing consumption/GHGs. The gender distribution was 6/4 (male/female).

With regard to cross-cutting themes, gender and women's empowerment is an important subject that is well integrated into the project. In urban public transport, this subject is important in Morocco. Indeed, women are less likely than men to have a driver's licence. Cases of misconduct, harassment or violence against users in general and women in particular have sometimes been reported. The state of public transport, particularly in terms of safety, can hinder women's access to basic social services, limit their participation in the labour market and potentially reduce their income.

Recognizing the importance of gender equality, the municipality of Marrakech is using this project to promote gender mainstreaming by quantifying and monitoring the number of direct beneficiaries disaggregated by sex. Women tend to choose their public transport according to specific criteria, such as comfort and safety. During the design phase of the urban transport plan, safety and comfort aspects were considered a priority by the municipality to ensure optimal and equal use of the system by men and women. In this context, it was hoped that the BRT system would be extended to serve suburbs that are currently less accessible by the bus network. In addition, electric buses offer a significant improvement in comfort and quality of service, which not only meets the needs of women, but also those of other vulnerable categories of beneficiaries such as the elderly, pregnant women and people with reduced mobility.

The BRT line thus creates better access to labour market opportunities and easier access to certain vital social services available in the city centre, such as educational institutions (universities, technical training centres, private schools, etc.) and health care centres.

### **Socio-economic benefits**

The profitability of urban public transport is a key element for the city in a context of good use of public finances. The current urban public transport system is not economically viable. The increase in the utilization rate targeted by the project increases the sector's added value and profitability, particularly with a reduction in the cost per kilometre.

In addition, urban public transport acts as an accelerator of economic activity. Consequently, the increase in the utilization rate strengthens the city's economic vitality. In addition, the system contributes significantly to reducing traffic jams, unproductive hours, etc. and thus generates indirect socio-economic benefits.

The evaluation found that the project's impacts on the cross-cutting priority 'socio-economic benefits for the municipality of Marrakech' are positive, namely:

- The value added per passenger increased from 1.19 MAD in 2017 to 1.24 MAD in 2018. By 2030, it is estimated to reach 1.30 MAD. In addition, with the extension of the BRT network to 4 lines, it is estimated that this value could increase to 2.24 MAD. The savings in energy consumption will improve the profitability of the urban bus transport sector. The only factor limiting today is the cost of batteries. Thus, this performance will be more remarkable with the end of bus battery leasing.
- The cost of energy consumption decreased from 37,420,000 MAD in 2017 to 37,200,000 MAD in 2018. The extension of the BRT network to 4 lines will further reduce the invoice by 12.3% compared to the reference scenario, representing a saving of 8.3 million MAD per year (4% of turnover).
- There is also a health gain with a significant reduction in fine particulate emissions. The same applies to GHG emissions. It is estimated that in 2030, the cost of GHG emissions with the extension of the BRT network will be limited to 1.8 million MAD against 2.3 million MAD without the extension of the BRT network. These costs include diesel bus emissions (2.68 tonnes CO<sub>2</sub> per litre) and solar power plant emissions (0.055 tonnes CO<sub>2</sub> per litre). In addition, with the extension of the BRT network, electric buses will have to travel 3,802,247 kilometres per year and thus reduce the cost of pollution caused by diesel buses by 2 million MAD per year by 2030.<sup>36</sup>

### South-South and Triangular Cooperation

South-South and triangular cooperation (SSC/TC) is necessary to ensure an inclusive global partnership for sustainable development. Within the framework of this project, it was envisaged to support and encourage the SSC/TC through knowledge sharing in order to exchange experiences and best practices related to the complementarity of the solar power plant and the BRT system and to have technology transfers.

In addition, during the COP22, delegations from African countries were able to visit the facilities and learn about the project. The Project also received a visit from an Iraqi delegation and several other African countries, notably as part of the International Seminar on Transport in Marrakech.

With regard to the cross-cutting priority 'South-South and Triangular Cooperation', the project had a positive impact on three levels. In order to allow an exchange of experiences and best practices on solar installations and BRTs, and to facilitate technology transfers, meetings with African government delegations were held. On the media side, exchanges with journalists took place. Finally, a meeting involved the private sector and young African green entrepreneurs. Capacity development has been strengthened through training and an exchange platform. To strengthen and deepen partnerships with other developing countries, GEF and UNDP have shared results at a high level for scaling up.

The criterion concerning overall results and achievement of objectives is rated **HS (highly satisfactory)**.

### 3.3.2. Relevance

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<sup>36</sup> Présentation de mobilité durable à Marrakech : État d'avancement et perspectives du 28 juin 2018 ; Etude de faisabilité technique de l'extension du réseau du BHNS électrique et de la capacité solaire installée à Marrakech de septembre-octobre 2017 ; Etude de faisabilité économique et financière de l'extension du réseau du BHNS électrique et de la capacité solaire installée à Marrakech de septembre-octobre 2017

The relevance of the project is obvious, as solar PV technology seems to be adapted to the Marrakech context, all the more so when this is coupled with clean urban transport. The desire to extend the project to other bus lines is the best demonstration of this. This should be achieved by increasing the supply of renewable energy installations to 5.7 MWp. This project can therefore be considered as an important first step because of its relevance. This is an important demonstration pilot to replicate the project.

The relevance was also verified with regard to the need to clarify the legal aspects during the implementation phase of the project. Legal provisions allowing small and medium-sized renewable energy installations to successfully feed electricity into the grid were missing.

The construction of the solar park proved that it was urgent to take these legal aspects into account: the project served as a case study for the creation of a National Electricity Regulatory Agency (ANRE) and the appointment of a General Directorate. This project led to a request to fill this gap with the formulation of a decree so that it would be possible for a small power plant to feed electricity into the grid managed by RADEEMA.

With regards to the UNDP country programming, it can be said that the project is in line with UNDP Country Programme 2017-2021 in Morocco. UNDP aims to support the transition to renewable energy sources in the country and help Morocco meeting emission reduction targets, most notably by intensifying the use of appropriate technologies in all key economic sectors, including agriculture, transport, logistics and construction. UNDP states that specific emphasis will be placed, in particular, on Morocco's solar resources, which are among the most important in the world. Hence, the project clearly falls under one of the three UNDP priorities in Morocco, namely "Environment and Energy" and is clearly relevant for the country programming.

The most relevant GEF programming direction addressed by this project is the climate change mitigation focal area. The strategy for this focal area is aligned along three objectives: (a) Promote innovation, technology transfer, and supportive policies and strategies; (b) Demonstrate mitigation options with systemic impacts; and (c) Foster enabling conditions to mainstream mitigation concerns into sustainable development strategies. These objectives can be achieved particularly by: (1) Promote timely development, demonstration and financing of low-carbon technologies and mitigation options; (2) Develop and demonstrate innovative policy packages and market initiatives to foster new range of mitigation actions; (3) Promote integrated low-emission urban systems; (4) Promote conservation and enhancement of carbon stocks in forest, and other land-use, and support climate smart agriculture; and (5) Integrate findings of convention obligations and enabling activities into national planning processes and mitigation contributions. This project responds predominantly to points 1, 2 and 3, and can therefore be considered as relevant to the GEF programming directions.

This criterion is rated **R (relevant)**.

### **3.3.3. Effectiveness and efficiency**

This part of the evaluation examines the effectiveness and efficiency of the expenditures and financial means used to achieve the desired results. One of the objectives of the project was the construction of a 1 MWp solar park. However, after the call for tenders for the construction of the plant was launched, it became clear that the budget provisioned was not sufficient to cope with this size.

With all the stakeholders concerned, it was decided to reduce the installed capacity in the first phase to 0.75 MWp. The Marrakech solar photovoltaic plant covers an area of 3ha, with a total installed capacity of 1MWp, of which 0.75 MWp is installed, i.e. approximately 3900 polycrystalline photovoltaic panels

in series with a rotary solar radiation monitoring system. The efficiency of these expenditures is considered satisfactory to very satisfactory: the construction and commissioning of a 0.75 MW solar farm has been successful. The photovoltaic solar power plant will be connected to the electric bus station in November 2018, at the time of the transfer of ownership: the agreement is ready.

The management of GEF funds has been very efficient. In addition, the municipality and other co-financing partners also contributed financially to the project with USD 55,473,683 in cash co-financing from the city of Marrakech and USD 700,000 in parallel co-financing in kind. This is considered very satisfactory, with strong national ownership and high efficiency.

The efficiency in terms of the use of the financial resources is based on the information presented in 3.2.3. Project financing. These financial results show that the total expenditure of 1 319 879,18 US\$ after the three years is almost exactly the total GEF grant of 1 319 863,00 US\$ for the project. However, in 2017, the financial resources were not as efficiently allocated (rate: 63.590%). Furthermore, the detailed comparison of the AWP budget and the actual expenditure per project component demonstrates that for component 1 and for the Project Management Unit (PMU), the expenditure was significantly below the planned budget. Still, when one considers the successful realisation of the project's components, as elaborated in the chapters above, the efficiency of the project's budget use can be evaluated as satisfactory.

There have been numerous communication and public awareness campaigns on the use of the BRT and the solar power plant in the city of Marrakech. The city is also very transparent about the projects, which can be found on the city's official website. As regards component 3 of the project, a seminar and round table were organised with representatives of municipalities (Marrakech and the periphery), regional and local authorities. The project was also discussed and brought to the attention of the public through a meeting on sustainable development projects in the Marrakech Safi region, at Wilaya headquarters, as well as through the visit of the solar power plant of several international and national delegations. The COP22 and the "Photovoltaic International Renewable Energy Exhibition & Conference" in Marrakech also drew the attention of the many participants to this project. On the basis of this important communication effort, it will be possible in the future to raise even more awareness on the replicability of the project.

This criterion is rated **HS (highly satisfactory)**.

#### **3.3.4. Country ownership**

The municipality of Marrakech was a significant partner for the co-financing of the project. For the strategic and financial planning and future development of the low-carbon BRT system in Marrakech, the municipality's financial capacities also make it possible to replicate the project's financial set-up.

Stakeholder engagement, including technical engagement for the construction of the solar park, has been strong and consistent, with clear roles for local institutions and companies in ownership, R&D, technical assistance, grid connection, net metering and M&E. The use of a BOT (Build-Operate-Transfer) model has helped to strengthen the capacities of local actors. It should therefore be stressed that participation and ownership have been highly satisfactory.

This criterion is noted **HS (highly satisfactory)**.

#### **3.3.5. Sustainability**

The economic model of the Marrakech BRT system already demonstrates that it is sustainable. It is expected to be even more so with the connection of the plant to the electric bus station.

The municipality has established a sustainable transport financial strategy for the development and operationalisation of four BRT lines. The operating and maintenance costs increase from 3.51 MAD (per person per trip, for diesel buses) to 3.1 MAD for electric buses. The upgrading of electric buses (3 new BRT lines) will further reduce operating and maintenance costs per passenger and increase the sustainability of the project; projections estimate operating and maintenance costs per person and per trip at 1.96 MAD. The operation and management of the electric buses of the Marrakech BRT system, alongside the operation of diesel buses, is handled by ALSA until 2019, the year in which the concessions will be reallocated following a call for tenders.

The financial sustainability is thus noted **L (likely)**.

On the socio-political dimension, it has to be mentioned that, on the one hand, the project is clearly in line with the Moroccan, the UNDP and the GEF policy objectives to enhance sustainable development, low carbon urban transport systems and the uptake of low carbon electricity generation. These objectives obtain a nearly global socio-political support and are sought to underline the goals subscribed to under the Paris Agreement, but also numerous other climate change adaptation and mitigation movements. The project thus supports this movements and it is highly likely that the support remains on a sustainable level.

On the other hand, the measures of the project have been observed by other countries and municipalities, particularly through the delegation visits to the site in Marrakech. There is interest to replicate the project in other African cities and to leverage the technology transfer and knowledge exchange for the benefit of Morocco and other countries.

The socio-political sustainability is noted **L (likely)**.

Institutional sustainability is ensured by transferring ownership of the solar park to the implementing partner, in this case the municipality of Marrakech. The agreement will enter into force on the official day of the project's closure.

On that day, the solar photovoltaic plant should be officially connected to the BRT's line 1 bus substation. The regulations allow for the self-consumption of electricity supplied by solar photovoltaic energy.

JetEnergy is responsible for the operation and maintenance of the solar installation, thus ensuring the sustainability of the operation and management.

In general, therefore, the risks to the institutional sustainability of the project can be classified as low, and the sustainability of the project in terms of financial and institutional aspects is high.

The sustainability in terms of institutional framework and governance is therefore noted **L (likely)**.

Environmentally, the project contributes to the avoidance of CO<sub>2</sub> emissions through the introduction of an electric BRT system powered by a solar power plant. As shown in the chapter below (3.3.6. Impact), it is estimated to reduce emissions from diesel fuel combustion by 1,003 tonnes of CO<sub>2</sub>, and the total GHG emission reductions from the road transport sector after the scaling up of the BRT project is expected at 372,226 tonnes of CO<sub>2</sub>.

Furthermore, the estimated life time of solar PV is around 30 years. After construction of the plant, electricity generation has little maintenance and no fuel is needed or burnt for electricity generation.

Even though the 3 ha land are used and reduce the space for biodiversity in this area, as well as potential module soiling which can require the use of water, both the environmental sustainability of the BRT system and the solar PV plant can be associated with low risks.

The environmental sustainability is therefore noted **L (likely)**.

### 3.3.6. Impact

The project's impact in terms of CO<sub>2</sub> emissions avoided is significant, with an estimated 8.6% reduction in GHG emissions compared to the baseline scenario. Indeed, the transportation sector is a major source of GHG emissions. The introduction of the 10 electric BRTs reduces the annual consumption of diesel and therefore reduces emissions from diesel fuel combustion by 1,003 tonnes of CO<sub>2</sub>, representing a 9% reduction in total public transport bus emissions before the introduction of electric BRTs.

In total, the GHG emission reductions from the introduction of electric BRTs powered by the solar power plant are estimated at 952 tonnes CO<sub>2</sub>, or about 8.6% of total public transport emissions by bus before the introduction of electric BRTs. The extension of the project, which provides for the mobilisation of 48 electrical BRTs, including 44 online and 4 in reserve, to satisfy all passenger traffic on the 4 lines by 2030, and which plans to install a solar installation with a capacity of 5.7 MWp, will further reduce GHG emissions. The project's greenhouse gas reduction potential is linked to the reduction in diesel consumption, resulting in a gain of 37,866 tonnes of CO<sub>2</sub>, and to the transition from two-wheeled vehicles to public bus transport by improving the quality of public transport service. To this end, the total GHG emission reductions from the road transport sector after the scaling up of the BRT project is estimated at 372,226 tonnes of CO<sub>2</sub>.<sup>37</sup>

As for air quality, it should be mentioned that Marrakech is not a highly industrialized city. The problem of air pollution in Marrakech is linked to transport with a negative impact on the respiratory tract. Results from air quality monitoring stations have revealed some exceedances, including NO<sub>x</sub>, PM10 and ozone.

The BRT electric system powered from the solar power plant reduces the number of diesel buses used to provide public transport for citizens, particularly on high-traffic density roads, thus leading to a significant improvement in air quality. In 2017, the 10 electric buses on Line 1 Massira travelled 936,069 kilometres. This reduces the pollution caused by diesel buses. Translated into economic impacts on health, the amount is 0.5 million MAD<sup>38</sup>. The extension of the project will further improve air quality in the city of Marrakech.

The improvement of the bus public transport system in Marrakech is already beginning to direct citizens to the BRTs, which offer a multitude of advantages, including accessibility, comfort, speed and punctuality, which remains a determining factor and sought by the majority of public transport users. This shift towards electric BRTs increases the modal share of this mode of transport, indirectly leading to a reduction in the use rate of other modes, in particular passenger cars and two-wheelers. Noise pollution will therefore be reduced, particularly on the main traffic routes within the city, which are currently marked by considerable noise pollution.

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<sup>37</sup> Présentation de mobilité durable à Marrakech : État d'avancement et perspectives du 28 juin 2018 ; Etude de faisabilité technique de l'extension du réseau du BHNS électrique et de la capacité solaire installée à Marrakech de septembre-octobre 2017 ; Etude de faisabilité économique et financière de l'extension du réseau du BHNS électrique et de la capacité solaire installée à Marrakech de septembre-octobre 2017

<sup>38</sup> Etude de faisabilité économique et financière de l'extension du réseau du BHNS électrique et de la capacité solaire installée à Marrakech de septembre-octobre 2017

Finally, there has been an increase in the share of public transport travel from 5% in 2008 to 14% by 2030. Although the expected targets of 9% in 2015 were not met, this delay was mainly due to the lack of financial resources to undertake the necessary road works, purchase of the rolling stock, etc.

During the duration of the project, the BRT has experienced strong development, without the project being partly responsible for it: the Massira line with its 10 electric buses is characterised by a service life of 17 hours (from 6am to 11pm), a commercial speed of more than 18 km/h, a frequency of 6 minutes, a travel time of 25 minutes per direction and a beat time of 20 minutes. Compared to the daily traffic of the old line, the 10 electric BRTs on the Massira line carry an average of 13,376 passengers per day. The impact on user behaviour is therefore very significant and can be further intensified by the extension of the project.

More generally, the environmental, socio-economic and communicative impacts of the project on the image of Marrakech as a sustainable city are very positive, both for the local population and for the tourist attraction.

This criterion is noted **S (significant)**.

The table below presents all the results of the evaluation.

<b>Evaluation ratings:</b>			
<b>1 Monitoring and evaluation</b>	<i>Rating</i>	<b>2 Executing agency / implementing agency</b>	<i>Rating</i>
Design of monitoring and evaluation at entry	HS	Quality of UNDP implementation	HS
Implementation of the monitoring and evaluation plan	HS	Quality of execution: execution agency	HS
Overall quality of monitoring and evaluation	HS	Overall quality of implementation and enforcement	HS
<b>3 Evaluation of results</b>		<b>4 Evaluation criteria</b>	
Achievement of outputs - component 1	HS	Relevance	R
Achievement of outputs - component 2	HS	Effectiveness and efficiency	HS
Achievement of outputs - component 3	HS	Country ownership	HS
Achievement of the SDGs	HS	Overall probability of sustainability - Financial sustainability - Socio-political sustainability - Institutional sustainability - Environmental sustainability	L L L L L
Achievement of cross-cutting priorities	HS	Impact	S
<b>Overall project completion score</b>	<b>HS</b>		

## 4. Conclusions, recommendations and lessons learned

The overall results of the terminal evaluation of the project are highly satisfactory, in terms of overall project implementation, impacts and sustainability. The strengths of the project were the good institutional arrangements and cooperation between institutions to enable to find solutions whenever a problem occurred, such as the underestimation, and the formulation stage, of the budget (in relation to the initial expected installed capacity of 1 MWp downgraded to 0,75). Below are some more specific conclusions and recommendations.

### 4.1.1. Corrective measures for project design, implementation, M&E

The entire project can be assessed as highly satisfactory. As a result, there are no corrective measures to recommend.

### 4.1.2. Measures to monitor or enhance the initial benefits of the project

It is essential to ensure that at the end of the project, the solar power plant is commissioned and supplies the electric bus station. This goes hand in hand with the transfer of ownership to the municipality of Marrakech in accordance with the agreement prepared for the occasion. Thus, the effective implementation of the project components can still be brought to a complete and above all sustainable success of the project.

### 4.1.3. Proposals for future directions in support of key objectives

Scaling up the project requires new investments, following the integrated planning document resulting from the project. For the purchase of 48 electric buses (18 meters long), including 44 in line and 4 in reserve on the 4 lines by 2030 and for the installation of a solar installation with a capacity of 5.7 MWp, financing is required for an amount of 82 million USD (695 million MAD for buses, 83 million MAD for solar power plants, or a total of 778 million MAD).

A request from the Green Climate Fund (GCF) and the *Caisse de Dépôt et de Gestion* (CDG) may be recommended in order to raise the necessary additional resources. Funding may also be available, in addition to the municipal budget, from public institutions such as the Urban Commune, the Marrakech-Safi Region, the FART, the DGCL, the FEC, the SIE, the SEDD, etc. The private sector can also be involved as well as international donors (for example: development financial institutions: AFD, EIB, EBRD, AfDB... and investment funds: Energy Development Fund, Africa 50...)<sup>39</sup>.

In addition, it is recommended to build on integrated planning and take into account all stakeholders. The involvement, mobilization and commitment of many actors at different levels such as institutional entities, private sector companies and the population ensure that the expected results are achieved. Such an approach will also ensure optimal country ownership and meet stakeholders' expectations.

The creation of the Transport Local Development Corporation (TLDC) prior to the project was very valuable. While ensuring local political support, the TLDC has made it possible to streamline the decision-making process. It is recommended to support the TLDC in order to continue to develop

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<sup>39</sup> For example, the Casablanca tramway extension project was financed by: FART, the Municipality of Casablanca, the Casablanca-Settat Region, AFD (loan of EUR 30 million and a grant of EUR 0.5 million) and the EIB (EUR 60 million).

transport specific to Marrakech, not only for the development of the BRT system, but also for other modes of transport such as car sharing, the introduction of two-wheel electric vehicles, support for taxi companies wishing to replace combustion vehicles with electric vehicles, etc.

More generally, the institutional capacity triggered by the project and the high political interest in electric transport must be maintained and strengthened.

#### **4.1.4. Best and worst practices in addressing issues of relevance, performance and success**

The main lessons learned from the project are as follows:

- In the Moroccan context of a rapidly evolving energy sector, it is important to ensure that a small or medium-sized solar power plant can be connected to the grid or bus station (directly) from the planning and project development phase (provide sustainable solutions to cope with legal and institutional conditions);
- The integration of the gender approach into all project activities, actions, publications and purchases has had a catalytic effect, especially for a project with a significant social dimension;
- Adopting an effective communication policy from the beginning of the project has been very beneficial, following a participatory approach.

For the replication of the project, the prospects are promising, not only in Marrakech, but also in Morocco and more broadly on the African continent. It is recommended to use this pilot project as a catalyst to carry out similar pilot projects in other African cities.

## 5. Annexes

### 5.1. Summary of field visits

The field visit followed the following itinerary and schedule:

- 19 September 2018: Working meetings with the Regional Environment Directorate / Project Management Unit
- September 20, 2018: Visit of the project site (solar photovoltaic installation, bus depot and BRT line 1 route): interviews with technicians and drivers. Meeting with the Municipality of Marrakech, Meeting with the Wilaya of Marrakech, Meeting with RADEEMA, Meeting with an elected official of the City of Marrakech
- 21 September 2018: Meetings with the Regional Environment Directorate / Project Management Unit, Presentation of the first results
- 25 September 2018: Conference call with UNDP Country Office
- 11 October 2018: Conference call with UNDP Regional Office

### 5.2. List of persons interviewed for the terminal evaluation

<i>No.</i>	<i>Name</i>	<i>Attributions / Functions</i>	<i>Institution</i>	<i>Contacts Phone / mail</i>
1	Said EL HALKAOUP	Controller	ALSA	
2	Zakar ABD ELLAH	Technician	ALSA	
3	Ait OubnaCAHEN	Driver	ALSA	
4	Hamid AITIBOURK	Technician	MyElectrical Auto	
5	Hamza IVZANE	Technician	MyElectrical Auto	
6	Abessamad WAAMAR	Technician	MyElectrical Auto	
7	Mustafa BOULMANE	Head of Technical Studies Department	Prefecture of Marrakech / Wilaya	<a href="mailto:de_wilaya@gmail.com">de_wilaya@gmail.com</a> 0661440275 <a href="mailto:btamine2002@yahoo.fr">btamine2002@yahoo.fr</a> +212 6 61 44 02 75
8	Taybi SNINEH	Head of the Technical Division	Urban Commune of Marrakech	212 6 61 49 21 67 <a href="mailto:sninrht@hotmail.com">sninrht@hotmail.com</a>
9	Kamal NØZOULOU	Head of Electricity Operations Department	RADEEMA	05 24 42 43 00 <a href="mailto:kamalnzoulou@gmail.com">kamalnzoulou@gmail.com</a> , <a href="mailto:K.nzoulou@radeema.ma">K.nzoulou@radeema.ma</a>
10	Mohamed ZILALI	Head of the Environmental Management Department and member of the PMU	DRE MS	
11	Younes BENSLIMANE	District Mayor/ President of the Council	City of Marrakech (Médina District) / TLDC	
12	Amal NADIM	Program Officer	PNUD CO	<a href="mailto:amal.nadim@undp.org">amal.nadim@undp.org</a>
13	Saliou TOURE	RTA	PNUD Regional Bureau	<a href="mailto:saliou.toure@undp.org">saliou.toure@undp.org</a>

14	Hafsa BAKRI	Head of Department of the Regional Observatory for the Environment and Sustainable Development	DRE MS	<a href="mailto:bakri.hafsa86@gmail.com">bakri.hafsa86@gmail.com</a>
15	Karam AMZIL	Programme and Project Officer in the Environmental Management Department	DRE MS	<a href="mailto:karam.amzil@gmail.com">karam.amzil@gmail.com</a>
16	Non précisé	Taxi driver		

### 5.3. List of documents reviewed

- ✓ Project document (PRODOC) and GEF CEO Endorsement Request
- ✓ Reports of the thematic studies carried out as part of the project (Technical and economic feasibility studies for scaling up the BRT project, Assessment of the environmental, social and economic impact for the system, Development of an MRV framework for the Bus Rapid Transit (BRT) system in the city of Marrakech, reports for the preparation of the project concept note to be submitted to the Green Climate Fund;
- ✓ Report on the development of the modalities for the transfer, operation and maintenance of the solar power plant as part of the project;
- ✓ Report of the National Seminar on Sustainable Mobility: Towards new modes of urban mobility in Morocco ;
- ✓ The study on the reinforcement of the rainwater sanitation network in the installation area of the BRT solar station for the protection of the project against runoff water;
- ✓ The study of the connection of the solar station to the electric bus station;
- ✓ The RADEEMA network impact study;
- ✓ Periodic progress reports on the project;
- ✓ Report on the physical and financial implementation of the project;
- ✓ Minutes of the main meetings and workshops;
- ✓ Audit report;
- ✓ Report and follow-up plan on the recommendations of the annual reviews;
- ✓ Annual PIR reports of the project;
- ✓ Monitoring tools for the GEF focal area;
- ✓ Other documents considered useful for the mission.

### 5.4. Logical framework of the project

This project will contribute to the following Sustainable Development Goal (s): Low-carbon public transport
<b>This project will contribute to the following country outcome included in the UNDAF/Country Programme Document:</b>
Outcome 5: The principles of the National Charter for the Environment for Sustainable Development are implemented in coherence between sectoral strategies and priorities for the environment, climate change adaptation and risk management and by strengthening territorial convergence in areas and the most vulnerable populations with special attention to gender.
<b>This project will be linked to the following output of the UNDP Strategic Plan:</b>

Output 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)

	<b>Objectives and results indicators</b>	<b>Baseline</b>	<b>End of project objective</b>	<b>Assumptions</b>
<p><b>Project Objective:</b> To support the low-carbon integration of the Bus Rapid Transit (BRT) System under implementation by the City of Marrakech through the installation of 1 MW solar farm based on High Concentration Photovoltaic (HCPV) technology. The energy produced by the farm will help power electric buses to showcase an integrated low-carbon transport system that can be replicated in other cities in Morocco.</p>	Extent of change in modern energy coverage by users and specific sectors (IRRF Indicator 1.5.2)	0	24% of the BRT supplied by the solar energy produced by the HCPV solar park	Integration of electrical buses in the BRT system charged by the HCPV solar plant
	Direct number of daily beneficiaries of lines L1 and L2 of the public bus system	50,000 (20,000 for L1 and 30,000 for L2) with a use rate by women of 31% in peri-urban areas and 44% (in urban areas)	71,000 (36,000 for L1 and 35,000 for L2) with a 50% female use rate in urban and peri-urban areas	A BRT system with a high level of comfort and service will be attractive to new beneficiaries, particularly women, in comparison to other transport modes. Specific communication and awareness campaigns will be designed to improve bus ridership among women with respect to other urban transport modes.
	Tons of incremental CO2 equivalent avoided as a direct result of project activities	0 tCO2 (11,150 tCO2 emitted in 2015 by 121 diesel buses)	27,327 tCO2 avoided	Electric trolleybuses are integrated in the BRT system of Marrakech and powered from a 1 MW HCPV solar farm. Diesel buses drivers are trained on eco-driving practices.
	Km of high capacity public transport system (BRT) per 100 000 population	0	2.18	Two BRT lines will be operational by COP22 and will service a population of 900 000. The new lines L1 and L2 will have a length of 10.9 and 8.8 km, respectively. The dedicated road infrastructure for these two BRT lines is available.
<p><b>Component/ Produit 1</b> Integrated planning, built capacities and MRV systems for the low carbon BRT System</p>	Completion of financial planning documents for the future BRT lines (L3 and L4)	0	100%	The engineering studies of L3 and L4 are ongoing. Political will to follow-through on commitments to extend the BRT system and potentially set user fees at a level that allows for cost-recovery for operations and maintenance.
	Number of low carbon indicators in the MRV system	0	3	The MRV system of the BRT system will integrate at least 3 low carbon indicators regarding diesel consumption, electrical production of the solar farm, and electrical consumption of the electrical buses

	% of TLDC technical employees and bus drivers trained on the best practices of energy efficiency	0%	100%	High level of involvement and participation rate of TLDC management and technical employees. Political will at the City Council. The actual bus operator (ALSA) will provide an initial training to all drivers (270) on eco-driving before COP22 and set-up an eco-driving performance bonus system.
<b>Component/ Produit 2</b> Commissioning of 1 MW solar farm for powering of electric buses for BRT System	Amount of installed MW from the HCPV solar farm	0 MW	0.75 MW (initially 1 MW, revised)	Successful tender and selection of an appropriate firm on BOT contract. GEF supports the incremental investment cost
	An O&M system is in place	0	1	O&M will be included in the tender specifications to ensure the durability of solar energy production. The BOT company will be responsible for operations and maintenance (as part of its contract) for an initial period while arrangements are put in place at TLDC.
<b>Component/ Produit 3</b> Knowledge management and awareness	Number of events organized to communicate Marrakech's sustainable urban transport experience	No events took place	At least two high-level events	High level of commitment and engagement of all stakeholders. COP22 represents an ideal event to communicate and exhibit Marrakech's initiatives.
	Number of platforms (TV campaigns, ads, etc.) developed for public communication and awareness regarding low-carbon transport and solar energy	0	10	The City of Marrakech is aware of the importance of using various means to outreach various population groups such as a web site, social media, radio, TV, brochures, etc.
	Number of replication plans proposed by the multi-stakeholder committee for other cities	0	1	High level of commitment and engagement of all stakeholders. COP22 will spur a paradigm shift and other municipalities will be interested in investing in similar systems.

### 5.5. Table of evaluation questions

Relevance: How does the project relate to the main objectives of the GEF focal area and to local, regional and national environment and development priorities?
Effectiveness :

To what extent have the expected results of the project been achieved?
Efficiency: Has the project been implemented efficiently, in accordance with national and international norms and standards?
Sustainability: To what extent are there financial, institutional, socio-economic or environmental risks to the maintenance of project results in the long term?
Impact: Is there any evidence that the project has contributed to (or allowed) progress in reducing environmental stress, or improving ecological status?
Is the project in line with the United Nations Development Assistance Framework for Morocco (UNDAF) 2012-2016 and 2017-2021 and the UNDP Strategic Plan? Is it relevant to the country's needs?
UNDP programmatic approaches: Does the project integrate the 5 UNDP programmatic approaches: RBM, Environment, Gender, Capacity Development and Human Rights
Gender: 1) Does the project document include a gender context and needs analysis - as an integrated part of the overall needs assessment? Are the data mentioned in the project document disaggregated by gender - thus illustrating the realities of men and women? 2) Does the project document identify achievable, clear and gender-sensitive objectives, outcomes and performance indicators? Is this based on the findings of gender context and needs analyses? 3) Are the human and financial resources foreseen for the implementation of the project appropriate and sufficient for the achievement of specific and gender-sensitive objectives? 4) Is there an equitable representation of women and men on the project team, taking full advantage of the vision, potential and skills of women and men? If not, is there at least one critical mass of the under-represented gender (i.e. 30%)? or a gender expert? 5) Are gender-specific and sensitive results included in performance evaluation and monitoring plans? 6) If a gender or social evaluation took place, what were the results? How has this been reflected in the redefinition of project activities or the introduction of new activities in response to the recommendations? 7) Would the project have contributed to a "Success Story" reflecting the change in the lives of women and men, if so which one?
South-South cooperation: Specify the knowledge and good practices produced by the project in Morocco that can be promoted through South-South cooperation. How could these gains be capitalized and exported to other countries in the region? Which countries have a similar context to Morocco?

## 5.6. Monitoring and Evaluation Plan

Monitoring	Indicators	Description	Data source / Collection methods	Frequency	Responsible for data collection	Means of verification	Assumptions&Risks
<b>Project Objective:</b>  <b>To support the low-carbon integration of the Bus Rapid Transit (BRT) System under implementation by the City of Marrakech through the installation of 1 MW solar farm based on High Concentration Photovoltaic (HCPV) technology. The energy produced by the farm will help power electric buses to showcase an integrated low-carbon transport system that can be replicated in other cities in Morocco.</b>	Extent of change in modern energy coverage by users and specific sectors (IRRF Indicator 1.5.2)	Share of renewable energy in the public bus transport system	Share of solar energy consumed by electrical buses (Kwh) in the overall energy mix of the bus transport system	Monthly & Annual aggregation	TLDC, ALSA, RADEEMA & National Project Coordinator	Electric meters	Integration of electrical buses in the BRT system powered by a 1 MW HCPV solar farm Risk: insufficient financial resources to ensure the procurement of electric trolleybuses and HCPV solar plant
	Direct number of daily beneficiaries of lines L1 and L2 of the public bus system	Assess the bus ridership by counting the number of users using lines L1 and L2 and disaggregating by gender	Field surveys Report of TLDC and ALSA	monthly & Annual aggregation	TLDC & ALSA	Reports of surveys	Electrical buses integrated in the BRT system of Marrakech offers adequate means to count ridership Field surveys are conducted to disaggregate data by gender Risk: an increase in the bus ticket cost may reduce the attractiveness of the BRT system compared to other transport modes.
	Tons of incremental CO2 equivalent avoided as a direct result of project activities	Estimate the amount of GHG emissions avoided due to the integration of BRT system and application of eco-driving practices	MW produced by the solar farm Diesel fuel consumption by buses	Daily basis with monthly and annual aggregation	TLDC & ALSA	Monitoring Reports of TLDC and ALSA	Electric buses are integrated in the BRT system of Marrakech and powered from a 1 MW HCPV solar farm. Diesel buses drivers are trained on eco-driving practices. Risk: low productivity of the solar farm and eco-driving not adequately applied may not provide the expected GHG reductions
	Km of high capacity public transport system (BRT) per 100 000 population	Measure the ratio of BRT lanes length over the serviced population	Engineering and construction reports	Annually	City of Marrakech and TDLC	Reports from TLDC	High political will from the City Council. The infrastructure of the first two BRT lines is available and the first set of electrical buses will be available before COP22.
<b>Component/Produit 1</b>  <b>Integrated planning, built capacities and</b>	Completion of financial planning documents for the future BRT lines (L3 and L4)	Financial planning of the future BRT lines are completed	Financial studies conducted for Lines L3 & L4	Annually	City of Marrakech TLDC	Financial planning reports	Engineering studies of BRT lines L3 and L4 are almost completed and will provide a good basis for conducting the financial planning.

<b>MRV systems for the low carbon BRT System</b>							Risk: change in the city council strategy and BRT lines L3 and L4 are not a short tem priority.
	Number of low carbon indicators in the MRV system	Establish adequate indicators to MRV sustainable and low carbon components	Reports from TLDC and ALSA MRV system	Annually	TLDC and ALSA	MRV reports	The TLDC incorporates an adequate MRV system The design of MRV system includes low carbon indicators, e.g. kwh produced from solar farm, diesel consumption, GHG emissions, etc. Risk: Lack of sufficient human resources to design and oversee the MRV system
	% of TLDC technical employees and bus drivers trained on the best practices of energy efficiency	Enhancing capacities of TLDC technical employees and bus drivers to intensify positive impacts of the project	Training reports	Annually	TLDC and ALSA	Progress project reports Minutes of workshops, trainings, etc.	TLDC will receive the necessary support to be able to higher the necessary employees. Risk: Lack of engagement from TLDC/ALSA management to support the implementation of the capacity building activities.
<b>Component/ Product 2 Commissioning of 1 MW solar farm for powering of electric buses for BRT System</b>	Amount of installed MW from the HCPV solar farm	Counting the total installed capacity from the HCPV solar farm	Commissioning and testing reports	Annual	BOT company and TLDC	Technical reports	High polical will from the City of Marrakech to install a solar PV farm part of the BRT system. Risk: Lack of sufficient funding, delays in the construction and commissioning.
	An O&M system is in place	Ensure the durability of solar energy production from the solar farm and allow the optimization and efficiency of preventive maintenance	Results of O&M activities	Annually	BOT company and TLDC	Reports on O&M activities	A firm tendering process and technical support provided from SIE and ADEREE will ensure that an experimented BOT company will be hired. Risk: delays in the implementation of the O&M system
<b>Component/ Product 3 Knowledge management and awareness</b>	Number of events organized to communicate Marrakechø sustainable	Communicate around the importance of the BRT system	Minutes of communication events	Annually	City of Marrakech and TLDC	Minutes of communication events	COP22 a major event to demonstrate the sustainable development engagement of Marrakech and communicate around the project.

	urban transport experience						Risk: Lack of financial resources to organize several events to communicate around the BRT system
	Number of platforms (TV campaigns, ads, etc.) developed for public communication and awareness regarding low-carbon transport and solar energy	Measure the variety of platforms used to launch communication and awareness activities	Means used to communicate around the project	Annually	City of Marrakech TLDC National Project Coordinator	Means used to communicate around the project	The city of Marrakech is aware of the importance of using different platforms and media to reach out different types of beneficiaries. Lack of financial resources to use different platforms to communicate around the project
	Number of replication plans proposed by the multi-stakeholder committee for other cities	Evaluate the possibility of replication and propose replication plans for other cities	Replication plans proposed by the multi-stakeholder committee	Annually	Multi-stakeholder committee National Project Coordinator	Replication plans	The multi-stakeholder committee incorporates the preparation of replication plans in its activities. Risk: lack of political will to ensure replication.
<b>Terminal GEF TrackingTool</b>	N/A	N/A	Standard GEF Tracking Tool available at <a href="http://www.thegef.org">www.thegef.org</a> Baseline GEF Tracking Tool included in Annex D.	After final PIR submitted to GEF	National Project Coordinator	Completed GEF TrackingTool	All necessary data will be gathered in a professional manner throughout the project duration to ensure a proper completion of the GEF Tracking Tool

- 5.7. Signed Report clearance form

Rapport d'évaluation examiné et approuvé par

Bureau de pays du PNUD

Nom : \_\_\_\_\_

Signature : \_\_\_\_\_ Date : \_\_\_\_\_

CTR du PNUD-FEM

Nom : \_\_\_\_\_

Signature : \_\_\_\_\_ Date : \_\_\_\_\_

## 5.7. Terms of reference

### INDIVIDUAL CONSULTANT PROCUREMENT NOTICE

<b>Country:</b>	Morocco
<b>Description of the mission:</b>	Terminal evaluation of the <i>Project Renewable Energy for the City of Marrakechø Bus Rapid Transit System, project GEF-BRT Marrakech/ Award ID: 00097409</i>
<b>Duration of the mission:</b>	30 working days
<b>Location:</b>	Rabat and Marrakech
<b>Ref:</b>	<b>IC 01-05-2018</b>

### INTRODUCTION

In accordance with UNDP and GEF monitoring and evaluation policies and procedures, all medium- and large-scale projects supported by UNDP and funded by GEF must be subject to a final evaluation at the end of implementation.

These Terms of Reference (TOR) set out the expectations for a terminal evaluation (TE) of the project øRenewableEnergy for the City of Marrakechø Bus Rapid Transit System, GEF-BRT Marrakech Projectö.

The essential elements of the project to be evaluated are as follows:

Title of the project:	Renewable Energy for the City of Marrakechø Bus Rapid Transit System, projet GEF-BRT Marrakech			
GEF Project ID:	<b>9567</b>		<i>at approval (in millions of USD)</i>	<i>at completion (in millions of USD)</i>
UNDP project ID:	<b>5890</b>	GEF financing	US\$ 1,369,863	
Country:	Morocco	Financing of the executive agency/implementing agency:	US\$	
Region :	Africa	Government :	US\$ 56,173,683	
Focal area:	Climate Change Mitigation	Other:	US\$	
Objectives FA, (OP/SP):		Total co-financing:	US\$	
Executing agent:	Secretariat of State for Sustainable Development	Total cost of the project:	US\$ <b>57,543,546</b>	
Other partners involved in the project:	Municipality of Marrakech, Wilaya of Marrakech, RADEEMA, TLDC, SIE	Signature of the DP (Project Start Date):		Sept 2016
		Closing date (operational): October/ November 2018	Proposed: October 2018	Real: December 2018

### OBJECTIVE AND SCOPE

The project was designed to: support the integration of low-carbon mobility via a Bus Rapid Transit (BRT) system currently being implemented by the City of Marrakech, through the installation and commissioning of a solar power plant. The solar power plant, covering an area of 3 ha, has a total capacity of 1MW, including 750 Kwp in the first phase and an installation of approximately 2944 multi-crystal photovoltaic panels in series for phase 1 of

the project and a rotating solar radiation monitoring system. It is connected to the medium-voltage network and is designed to recharge high-service electric buses. The potential for reducing carbon dioxide emissions is estimated at 1300 tonnes per year. This integrated low-carbon transport system has an estimated GHG reduction potential of 27,327 tonnes of CO2 over the lifetime investment period.

The GEF-BRT Marrakech is designed according to an integrated approach throughout its duration by combining different types of activities, namely: capacity building, awareness-raising and improving governance through the implementation of an MRV system.

The arrival of the first 100% electric bus marks a key step in the energy transition from urban transport in Morocco and demonstrates that there are now long-term alternative solutions to meet current environmental challenges. It is positioned as a flagship project that can be replicated in other Moroccan cities, taking into account the significant changes in sustainable development expected, such as: reducing congestion, improving air quality, improving energy efficiency, improving social inclusion in the suburbs, improving quality of life, ensuring safety, creating jobs, improving the city's tourist appeal, etc.

The final evaluation will be conducted in accordance with the guidelines, rules and procedures established by UNDP and GEF as outlined in the UNDP evaluation guidelines for GEF-funded projects.

The objectives of the evaluation are to assess the achievement of the project's objectives and to draw lessons that can improve the sustainability of the project's benefits and contribute to the overall improvement of UNDP programmes.

**APPROACH AND METHODOLOGY OF THE EVALUATION**

A comprehensive approach and methodology for conducting final evaluations of UNDP-supported and GEF-funded projects has developed over time. The evaluator should focus evaluation efforts on criteria such as **relevance, effectiveness, efficiency, sustainability and impact**, as defined and explained in the UNDP guidelines for conducting final evaluations of UNDP-supported and GEF-funded projects. A series of questions covering each of these criteria have been drafted and are included in these terms of reference (Appendix G). The appraiser must amend, complete and submit this table as part of an initial appraisal report and attach it to the attached final report.

The evaluation must provide factual, credible, reliable and useful information. The evaluator should adopt a participatory and consultative approach that ensures close collaboration with government counterparts, in particular with the GEF operational focal point, the UNDP country office in Morocco and the UNDP-GEF Regional Technical Advisor, the project team and key stakeholders. The evaluator should conduct a mission to the main programme intervention sites, and hold interviews that will take place - at a minimum - with the team of the Secretariat of State for Sustainable Development (SEDD) of Morocco, as well as with the UNDP Morocco Programme team and the UNDP-GEF Regional Technical Advisor; a more extensive list of target groups for interviews and evaluation is provided in Annex E of these Terms of Reference.

The evaluator will review all relevant sources of information, such as the project document, project reports, including the RIP/APR and other reports, project budget revisions, progress reports/annual reviews, GEF focal area monitoring tools, project files, national strategic and legal documents and any other documents that the evaluator considers relevant for this evidence-based evaluation. A list of documents that the project team will provide for review is attached as Appendix A to these Terms of Reference.

**EVALUATION CRITERIA AND RATINGS**

An evaluation of the project's performance, based on the expectations set out in the project's logical framework/results framework (see Annex H) which provides performance and impact indicators for project implementation and the corresponding means of verification, will be carried out.

The evaluation will cover at least the criteria of relevance, effectiveness, efficiency, sustainability and impact. Ratings must be provided against the following performance criteria. The completed table must be attached to the Executive Evaluation Summary. The mandatory rating scales are included in Appendix B.

<b>Evaluation ratings</b>
---------------------------

<b>1 Monitoring and evaluation</b>	<i>Rating</i>	<b>2 Executing agency / implementing agency</b>	<i>Rating</i>
Design of monitoring and evaluation at entry		Quality of UNDP implementation	
Implementation of the monitoring and evaluation plan		Quality of execution: execution agency	
Overall quality of monitoring and evaluation		Overall quality of implementation and enforcement	
<b>3 Evaluation of results</b>		<b>4 Sustainability</b>	
Relevance		Financial resources :	
Efficiency and effectiveness		Sociopolitical:	
Efficiency and effectiveness		Institutional framework and governance:	
Overall project completion score		Environmental :	
		Overall probability of sustainability:	

## PROJECT FINANCING / COFINANCING

The evaluation will cover the main financial aspects of the project, including the share of co-financing planned and implemented. Data on project costs and funding will be required, including annual expenditures.

Differences between planned and actual expenditures will need to be assessed and explained. The results of recent available financial audits should be taken into account. The evaluator will be supported by the UNDP country office (CO) and the project team in their search for financial data to complete the co-financing table below, which will be included in the final evaluation report.

Co-financing (type/source)	UNDP own funding (in millions of USD)		Government (in millions of USD)		Partner organization (in millions of USD)		Total (in millions of USD)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Subsidies								
Loans/concessions								
• In-kind support								
• Other								
Totals								

## INTEGRATION

UNDP-funded and GEF-supported projects are key elements of the UNDP country programme, as well as regional and global programmes. The evaluation will assess the extent to which the project has been successfully integrated into UNDP priorities, including poverty alleviation, improved governance, natural disaster prevention and recovery and gender issues.

## IMPACT

Evaluators will assess the extent to which the project is achieving or progressing towards impacts. The main conclusions of the assessments should include the following: has the project demonstrated: (a) verifiable progress in ecological status, (b) verifiable reductions in stress on ecological systems, or (c) significant progress towards these impact reductions.

## CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

The evaluation report should include a chapter proposing a set of conclusions, recommendations and lessons learned.

## IMPLEMENTATION MODALITIES

Primary responsibility for managing this evaluation rests with the UNDP country office in Morocco in close collaboration with the Project Management Unit. The UNDP country office will contact the evaluator to ensure the timely payment of daily allowances to the evaluation team and to finalize the team's travel arrangements in the country, if necessary. The project team will be responsible for liaising with the evaluator to organise stakeholder interviews and field visits, as well as coordination with the government, etc.

## EVALUATION CALENDAR

The evaluation is estimated at a total number of 30 working days according to the following plan:

Activity	Durée
Preparation	3 days
Evaluation mission	7 days
Draft evaluation report (French version)	10 days
Final report (English version)	10 days

## EVALUATION DELIVERABLES:

The following elements are expected from the evaluation:

Deliverables	Content	Deadline	Responsibilities
<b>Inception report</b>	The evaluator provides details on the timetable and methodology	At the latest 5 days before the evaluation mission.	The evaluator sends the inception report to UNDP Morocco
<b>Presentation of initial conclusions</b>	Initial Conclusions	End of the evaluation mission (field visit/interviews at central and local level)	Presentation at a restitution workshop in Marrakech with the project monitoring committee.
<b>Draft final report</b>	Full report, (according to the attached template) with appendices	Within two weeks after the evaluation mission	Sent to UNDP Morocco, reviewed by UNDP, CTR, PMU, Monitoring Committee and GEF OFP
<b>Final report*</b>	Revised report	Within one week after receipt of final comments on the draft report	Sent to UNDP Morocco and CTR who will share it with the project management to prepare the follow-up plan for the recommendations
<b>Final report (English version)</b>	Final report translated into English	Within 10 days of approval of the French version	Sent to UNDP Morocco and CTR who will share it with the GEF.

\*When submitting the final evaluation report, the evaluator is also required to provide an *audit trail*, explaining in detail how the comments received were (and were not) addressed in the final evaluation report.

The evaluation report should not exceed a total of 40 pages (excluding appendices), and will follow the table of contents proposed in Appendix D.

## QUALIFICATION AND REQUIRED EXPERIENCE

The evaluator must have previous experience in evaluating similar projects. Experience in GEF-funded projects is an advantage. The evaluator must not have been involved in the preparation or implementation of the project and must not have a conflict of interest with the project activities.

He/she must have the following qualifications:

- Academic background: Graduate university degree (doctorate, engineer/scientific master's degree) in the field of the environment, sustainable development, climate change, transport or similar;
- Minimum of 10 years of relevant professional experience;
- Knowledge of UNDP and GEF;
- Previous experience with results-based monitoring and evaluation methodologies;
- Technical knowledge in the targeted focal areas; and
- *In-depth knowledge in the field of climate change and particularly in the mitigation component;*
- *Adequate command of the French and English language for on-site interviews and exchanges as well as an understanding of project documentation and guidelines in English and French*

## CODE OF ETHICS OF THE EVALUATOR

The evaluator is required to observe the highest ethical standards and must sign a code of conduct (see Appendix C) upon acceptance of the engagement. UNDP evaluations are conducted in accordance with the principles set out in the UNEG Ethical Guidelines for Evaluations.

**PAYMENT TERMS AND SPECIFICATIONS**

The following payment schedule applies to this evaluation:

%	Stage
10 %	Following receipt and validation of the inception report
30 %	Following the presentation and approval of the 1st draft of the terminal evaluation report
60 %	Following the presentation and approval (notably by UNDP Morocco and the UNDP RTC) of the final terminal evaluation report (English version)

**EVALUATION CRITERIA FOR THE CONSULTATION**

The evaluator will be evaluated according to a combination of technical and financial criteria

**Phase 1: Technical evaluation of offers**

The technical evaluation will be carried out on the basis of the following criteria:

Technical evaluation criteria	Points
<i>Consultant profile</i> Academic background: Graduate university degree (doctorate, engineer/scientific master's degree) in the field of environment, sustainable development, climate change, transport or similar.	10
Proven experience in the field of the environment, energy, transport, sustainable development, climate change 10 years - 15 years: 20 points > 15 years: 30 points	30
Previous experience in results-based monitoring and evaluation; 10 points per experience with a maximum of 30 points	30
Previous experience in UNDP/GEF project evaluation 10 points per experience with a maximum of 30 points	30
Total	100

Important : At the end of this phase, all offers will be systematically eliminated if they have obtained:  
 → A technical score below the minimum technical score of 70 points.  
 Technical offers will be evaluated on the basis of their degree of response to the Terms of Reference.

**Phase 2: Comparative financial analysis of the offers**

At the end of this phase, each financial offer will have a rating (F) out of 100:

A score of 100 will be awarded to a technically valid and the lowest priced offer. For other offers, the score will be calculated using the following formula:

$$F = 100 * \frac{P_{min}}{P}$$

P: Price of the offer  
 Pmin: technically valid and the lowest priced offer.

**Phase 3: Technical and financial analysis**

The technical (T) and financial (F) scores obtained for each candidate will be weighted respectively by the following coefficients:

- 70% for the technical offer
  - 30% for the financial offer
- $$N = 0.7 * T + 0.3 * F$$

The candidate who receives the highest technical and financial rating will be selected to conduct the consultation

## **SUBMISSION OF OFFERS**

**The technical offer** must include the following elements:

- Consultant's P11 form highlighting her/his experiences and skills related to the consultation (According to Annex 3 - P11 modified for SCs and ICs)
- Certificates of similar references issued by the skilled professionals under whose direction the said services were performed by the public or private beneficiaries of the said services, with an indication of the nature of the services, the amount, deadlines and dates of performance, the assessment, the name and capacity of the signatory.

Letter of interest and availability (according to model in appendix 2)

### **The financial offer**

The financial offer for the service must include a total fixed fee (including all other expenses related to the performance of the services, travel, etc.).

In order to ensure a proper comparison of financial proposals, the financial proposal will include a breakdown of the lump sum.

NB: The currency of the offer:

- Local currency (Moroccan Dirham -MAD) or
- US Dollar or
- Euro

Currency conversion requirements: For the purpose of comparing all offers, UNDP will convert the currency indicated in the offer into the currency preferred by UNDP using the United Nations operational rate of exchange that will be in effect on the bid submission deadline;

Consultants governed by Moroccan law are required to submit their proposals in local currency (MAD).

## **BID DEPOSITS**

Offers will be submitted or sent by post no later than **30 May 2018 at 16:00 (Rabat time)** to the following address: Avenue Ahmed Belafrej, 13, Souissi, Rabat or by email to [procurement.morocco@undp.org](mailto:procurement.morocco@undp.org), specifying in the subject line: « **IC 01-05-2018 Evaluation finale du projet Renewable Energy for the City of Marrakech's Bus Rapid Transit System, projet GEF-BRT Marrakech** ».

UNDP applies a fair and transparent selection process that takes into account the skills and abilities of candidates, as well as their financial proposals. Qualified women and members of social minorities are invited to apply.

## **ADMINISTRATIVE ANNEXES**

**Annex 1-** Individual consultant general terms and conditions

**Annex 2-** Template for letter of interest and availability, and template for financial offer

**Annex 3-** P11 modified for SCs and ICs

## 5.8. Consultants Code of Conduct Form

### EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

(To be annexed to the TE report)

#### Evaluators:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

<b>Evaluation Consultant Agreement Form<sup>1</sup></b>
<b>Agreement to abide by the Code of Conduct for Evaluation in the UN System</b>
<b>Name of Consultant:</b> <u>    ALEXANDRE BORDE    </u>
<b>I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.</b>
Signed at <i>Paris</i> on <i>4<sup>th</sup> Sept 2018</i>
Signature: <u>         </u>

<sup>1</sup>[www.unevaluation.org/unegcodeofconduct](http://www.unevaluation.org/unegcodeofconduct)

## 5.9. Audit Trail

# Renewable Energy for the City of Marrakech Bus Rapid Transit System

## Global Environment Facility (GEF)

**ID of the GEF project: 9567**

## TERMINAL EVALUATION: AUDIT TRAIL

Note: The following is a template for the TE Team to show how the received comments on the draft TE report have (or have not) been incorporated into the final TE report. This audit trail should be included as an annex in the final TE report.

### To the comments received between 2019-01-02 and 2019-02-19

The following comments were provided in track changes to the draft Terminal Evaluation report.

- **Comment No 1:**

**Comment (02 January)**

Some adjustments and modifications needed (Grammar etc)

Ask for French and English version adjusted

**Answer (07 January)**

Delivery of French version 1.1 adjusted

**Answer (11 January)**

Deliver of French and English version 1.2

- **Comment No2:**

**Page #9**

**Section 3.1.1 Analysis of the results framework**

**Comment (28 January)**

This section states, "Indicators can be considered as "SMART" (specific, measurable, achievable, realistic, and time-bound)." but there is no discussion/evidence to support this statement.

**Answer**

“Globally speaking, the proposed indicators are relevant and can be evaluated as SMART (specific, measurable, achievable, relevant and time-bound). The exact target for each indicator by the end of the project gives precise numbers. They clearly show all aspects to consider and to effectively measure the progress made.”

### **Comments (19 February)**

There are two additional sentences in this section about the indicators but there is still no real justification to support that all indicators are SMART (other than that they have precise numbers as targets, which only minimally covers “specific” and “measurable.”)

### **Answer**

“The specific objective is formulated in such a way as to be verifiable supported by four indicators, each with a baseline and a target (presented in section 2.4 of this document). The first indicator is the “Extent of change in modern energy coverage by users and specific sectors”. The second one refers to the direct number of daily beneficiaries of lines L1 and L2 of the public bus system. The third indicator is related to tons of incremental CO2 equivalent avoided as a direct result of project activities. Finally, the last indicator matches km of high capacity public transport system (BRT) per 100 000 users.”

“Indicators can be considered as “SMART” (specific, measurable, appropriate, realistic, and time-bound), as they target a specific field and area of improvement (type of energy used, social improvement, pollution and infrastructure). They are measurable as they are indicators of progress; Achievable and Appropriate as each indicator has a specific responsible that will do it; Realistic as the four indicators are meaningful and important to the outcome; And time bound, as they are included in a time frame that specifies when the results will be achieved.”

- **Comment No3:**

**Page #34**

### **Section 3.2.3 Project Financing**

#### **Comment (09 January)**

Important note on efficiency in terms of the use of the financial resources made available (see my comment on page 42). Indeed, the table you have indicated only concerns the year 2018 and does not reflect the situation for the entire duration of the project (2016, 2017 and 2018).

A detailed comparative analysis (by component and year) should be made between the annual approved budget (Annual Work Plan - AWP) and the actual CDRs expenditures by component and year. Do this analysis in terms of %.

### **Answer :**

“South-South and triangular cooperation (SSC/TC) is necessary to ensure an inclusive global partnership for sustainable development. Within the framework of this project, it was envisaged to support and encourage the SSC/TC through knowledge sharing in order to exchange experiences and

best practices related to the complementarity of the solar power plant and the BRT system and to have technology transfers.

In addition, during the COP22, delegations from African countries were able to visit the facilities and learn about the project. The Project also received a visit from an Iraqi delegation and several other African countries, notably as part of the International Seminar on Transport in Marrakech.

These financial results show that the total expenditure of 1 319 879,18 US\$ after the three years is almost exactly the total GEF grant of 1 319 863,00 US\$ for the project. Nevertheless, when inspecting more closely the annual implementation rate of the project's budget as compared to the envisaged budget in the Annual Work Plans (AWP), it becomes clear that in the year 2017, the financial resources were not as efficiently allocated (rate: 63.590%). Furthermore, the detailed comparison of the AWP budget and the actual expenditure per project component demonstrates that for component 1 and for the Project Management Unit (PMU), the expenditure was significantly below the planned budget. Still, when one considers the successful realisation of the project's components, as elaborated in the chapters above, the efficiency of the project's budget use can be evaluated as satisfactory.

**Comment (28 January)**

More information and detail should be added to this section: *(some of the financial info from the Effectives & Efficiency section could be moved to this section)*

- explain and assess variances between planned and actual expenditures
- provide observations from financial audits (if applicable)
- were strong financial controls in place to allow for the timely flow of funds?
- was there due diligence in the management of funds?
- provide a table showing planned and actual co-financing and explain reasons for differences (if any) between planned and actual co-financing
- if additional resources were leveraged for the project, how did this affect project outcomes? Or if the planned co-financing was not realized, how did this affect project outcomes?

**Answer**

The planned and actual expenditures for the project are shown below.

Budget plan approved in the Prodoc	Amount Year 1 (USD)	Amount Year 2 (USD)	Total (USD)
P1	87 375,00	82 500,00	169 875,00
P2	475 000,00	475 000,00	950 000,00
P3	33 000,00	47 000,00	80 000,00
P4	61 500,00	58 488,00	119 988,00
Total GEF	656 875,00	662 988,00	1 319 863,00

Funds, approved in the Prodoc	Amount Year 1 (USD)	Amount Year 2 (USD)	Total (USD)
GEF	656 875,00	662 988,00	1 319 863,00
National government	28 086 842,00	28 086 841,00	56 173 683,00
<b>TOTAL</b>	<b>28 743 717,00</b>	<b>28 749 829,00</b>	<b>57 493 546,00</b>

Year	2016		2017		2018		Grand Total	
Product	Budget approved AWP	Actual expenditure CDR	Budget approved AWP	Actual expenditure CDR	Budget approved AWP	Actual expenditure CDR	Total budget	Total expenditure
P1	0	0	169 875,00	0	21 500,00	12 425,23	191 375,00	12 425,23
P2	388 200,03	388 355,25	561 541,27	489 376,32	182 000,00	168 835,94	1 131 741,30	1 046 567,51
P3	3 574,08	0	76 425,92	69 159,52	89 400,00	68 785,11	169 400,00	137 944,63
P4 PMU	9 129,56	12 807,13	110 858,44	25 665,01	41 599,77	34 469,67	161 587,77	72 941,81
Activity 5 (PPG PV solar power plant)						50000	0,00	50 000,00
<b>Project total</b>	<b>400 903,67</b>	<b>401 162,38</b>	<b>918 700,63</b>	<b>584 200,85</b>	<b>334 499,77</b>	<b>334 515,95</b>	<b>1 654 104,07</b>	<b>1 319 879,18</b>

	2016	2017	2018	Total	
Annual implementation rate (CDR/AWP)	100,065%	63,590%	100,005%	79,794%	
				P1	6,49%
				P2	92,47%
				P3	81,43%
				P4	45,14%

These financial results show that the total expenditure of 1,319,879.18 USD after the three years is almost exactly the total GEF grant of 1,319,863.00 USD for the project. Nevertheless, when inspecting more closely the annual implementation rate of the project's budget as compared to the envisaged budget in the Annual Work Plans (AWP), it becomes clear that in the year 2017, the financial resources were not as efficiently allocated (rate: 63.590%). Furthermore, the detailed comparison of the AWP budget and the actual expenditure per project component demonstrates that for component 1 and for the Project Management Unit (PMU), the expenditure was significantly below the planned budget.

Despite the immense deviation from the planned expenditure for component 1 in 2017, the three indicators for this component were all achieved by 100% (see 3.3.1. Overall results (achievement of objectives)).

**Comments (19 February)**

The updated report explains what the difference was between planned and actual expenditures but does not really provide an analysis or reasons behind the differences. For example, updated text states that financial resources were not as efficiently allocated in 2017. What were the reasons for this? Were activities not moved forward by the project team, or were funds not properly managed so that they did not flow effectively, or other reasons?

The co-financing table does not follow the structure of the co-financing table in the TOR. There is no discussion on how any differences in actual co-financing affected project outcomes.

**Answer**

Co-financing (type/source)	UNDP own funding- GEF Trust Fund (in millions of USD)		Government (in millions of USD)		Partner organization (in millions of USD)		Total (in millions of USD)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Subsidies	1,369,863	1,319,863					1,369,863	1,319,863
Loans/concessions								
• In-kind support			700,000	700,000			700,000	700,000
• In Cash			55,473,683	55,473,683			55,473,683	55,473,683
Totals	1,369,863	1,319,863	56,173,683	56,173,683			57,543,546	57,493,546

These financial results show that the total expenditure of 1,319,879.18 USD after the three years is almost exactly the total GEF grant of 1,319,863.00 USD for the project. Nevertheless, when inspecting more closely the annual implementation rate of the project’s budget as compared to the envisaged budget in the Annual Work Plans (AWP), during the year 2017, the financial resources were not as efficiently allocated (rate: 63.59%). This is due to the need to find a solution to overcome the impossibility to inject power from the solar PV station into the grid. Furthermore, the detailed comparison of the AWP budget and the actual expenditure per project component demonstrates that for component 1 and for the Project Management Unit (PMU), the expenditure was significantly below the planned budget.

While the total effective expenses are lower to the approved ones, the Government and the local authorities plan to further invest in the power plant for its extension.

### **Section 3.2.4 M&E: design at entry and implementation**

#### **Comment (28 January)**

Provide more information in this section to support the HS rating:

- was the M&E plan sufficiently budgeted during project preparation and during implementation?
- extent to which follow-up actions were taken in response to annual PIRs
- were the PIR self-evaluation ratings consistent with TE findings?
- what role did the Project Board and UNDP take in M&E activities?

#### **Answer**

The monitoring and evaluation (M&E) system was undertaken in accordance with UNDP requirements, as set out in the UNDP programme and operations policies and procedures and the UNDP evaluation policy. The activities and the activities progress was monitored and recorded by the UNDP Country Office, with a sufficiently budgeted M&E plan by the DRE.

The project results, described in the logical framework, have been subject to biannual and annual reviews to ensure the progress of the project, as well as bi-monthly progress reports. In addition, minutes were prepared for each meeting, which the evaluator was able to consult freely. Furthermore, the implementation statuses were reported to the project steering group.

In addition to the display of the advancement of the activities, several recommendations were brought forward and recorded in the meeting minutes. These, as well as the bi-monthly progress reports allowed for the timely implementation of the project activities and quick discussion of arising issues.

It needs to be mentioned though, that in this M&E system, no self-evaluation ratings were given, so that the consultant cannot compare the ratings of the terminal evaluation with self-evaluation ratings.

#### **Comments (19 February)**

Overall, there still seems to be insufficient justification in this section for the HS rating for M&E at design and HS rating for M&E implementation.

Refer to page 18 in the TE Guidance for UNDP-supported GEF-financed projects for guidance on assessing M&E.

The updated text states that there were no self-ratings given, but this project completed a PIR in September 2018. The TE consultant should have been given access to the 2018 PIR and checked if the PIR self ratings were consistent with this TE ratings.

What about the role of the Project Board and UNDP in M&E activities?

**Answer**

The implementation of an M&E system was used to directly supervise several activities. This is rated as highly satisfactory. In fact, the M&E plan was well conceived and its articulation helped to monitor results and track progress toward achieving objectives. Also, the quality of the M&E plan implementation was very good as the plan was sufficiently budgeted and funded during both project preparation and implementation. The M&E system includes reports of very regular project team meetings, detailed progress reports, minutes of meetings with partners, evaluations and audits, minutes of technical and steering committee meetings. The monitoring plan for the indicators has also been carried out in a very satisfactory manner with the development of a system known as MRV for monitoring, reporting and verification within the meaning of the UNFCCC40. This exercise was done by mobilizing partners for data collection (reports, letters, meetings, emails). Also, monitoring indicators from the project document were very effective for measuring performance and objectives progress.

In addition to the display of the advancement of the activities, several recommendations were brought forward and recorded in the meeting's minutes. These, as well as the bi-monthly progress reports allowed for the timely implementation of the project activities and quick discussion of arising issues.

It needs to be mentioned, that in this M&E system, PIR self ratings were complete and very detailed. They are completely consistent with the terminal evaluation rating.

The role of the Project Board and UNDP in M&E activities was very crucial as they participated in the project planning and the implementation of the strategy. Monitoring responsibilities was given to the National Project Coordinator, which was responsible for regular monitoring of project results and risks; the Project Steering Committee ensured the project achieves the final objectives and desired results; and the Project Implementation Partner which had to provide any additional information necessary project reporting.

In fact, project-level Monitoring & Evaluation was undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNPD Country Office worked and collaborated with the relevant stakeholders of the project to be sure that all UNDP M&E requirements are met. UNPD Country Office supported the National Project Coordinator as needed.

- **Comment No5:**

**Page #36**

**Section 3.2.5 Coordination at the level of implementation and enforcement and operational aspects**

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<sup>40</sup> <https://unfccc.int/media/47849>

### **Comment (28 January)**

This section should provide an assessment of UNDP's role and the Implementing Partner's role in the project.

For UNDP, consider addressing the following topics:

- Was there an appropriate focus on results?
- quality and timeliness of technical support
- candor and realism in annual reporting
- quality of risk management
- responsiveness to any significant implementation problems

Consider addressing the following topics when assessing the quality of the Implementing Partner's role:

- Was there an appropriate focus on results?
- adequacy of management inputs and processes, including budgeting and procurement
- candor and realism in annual reporting
- quality of risk management

### **Answer**

By both UNDP and the executing agencies SEDD and DRE MS, the work was focused on the identified results of the project. The implementation of the activities was recorded in the M&E system described above, which was set out with regard to the results' achievement. They also worked together on the regular reporting as part of the M&E system and kept the implementation statuses transparent. Furthermore, UNDP and the implementing partners were open to share information and analyses with the project steering committee members for feedback.

The assumed risks of the project activities did not realize and therefore did not have to be managed. With regard to the insufficient financial resources for a 1 MW solar PV plant, all partners responded quickly and smoothly by deciding to reduce its capacity in the first phase to 0.75 MW and to build the supplementary capacity in the forthcoming phases, i.e. the upscaling of the project.

### **Comments (19 February)**

It seems that there is not sufficient analysis and assessment to support an HS rating of UNDP's and especially SEDD's role in this project.

### **Answer**

The Secretariat of State for Sustainable Development's (SEDD) of Morocco role in this project was important, and succeeded in achieving its objectives during the project. In fact, SEDD was responsible

for monitoring, developing and implementing the government's policy on the environment and sustainable development. Also, SEDD contributed in the good management of the project, and especially during the evaluator site visit during which the evaluator met stakeholders in Marrakech with the Project Management Unit (PMU) based in a decentralized department of the SEDD.

- **Comment No6:**  
**Annexes**

**Comment (28 January)**

Include the following in the Annexes:

- Evaluation Consultant Agreement Form
- Signed Report clearance form
- Audit Trail (*annexed in a separate file*)

**Comments (19 February)**

Include the following in the Annexes:

- Evaluation Consultant Agreement Form
- Signed Report clearance form
- Audit Trail (*annexed in a separate file*)

Be sure that the actual Audit Trail is not attached to the final report. The report will eventually be publicly posted and the Audit Trail should not be public.

Also, Annex 5.6 is titled "Monitoring and Evaluation Plan" but it is really the "Results Framework". A Monitoring and Evaluation Plan consists of the Results framework and much more.

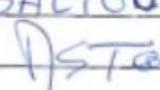
**Answer**

Include Audit Trail as an additional annexe.

## 5.10. Evaluation Report Clearance Form

### **EVALUATION REPORT CLEARANCE FORM**

*(to be completed by CO and UNDP GEF Technical Adviser based in the region and included in the final document)*

Evaluation Report Reviewed and Cleared by	
UNDP Country Office	
Name: <u>YASSIR BENABDALLAOUI</u>	
Signature: <u></u>	Date: <u>22/05/19</u>
UNDP GEF RTA	
Name: <u>SALIOU TOURE</u>	
Signature: <u></u>	Date: <u>11/06/2019</u>