

**PALESTINIAN ENERGY SECTOR ASSISTANCE
PHASE V**

**End Review
FINAL REPORT**



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ABBREVIATIONS

DisCos	Electricity Distribution Companies
EC	European Commission
EIB	European Investment Bank
GWh	GigaWatt hour
GEDCO	Gaza Electricity Distribution Company
HEPCO	Hebron Electric Power Company
IEC	Israel Electric Corporation
IPP	Independent Power Producer
JDECO	Jerusalem District Electricity Company Limited
MFA	Norwegian Ministry of Foreign Affairs
MOF	Palestinian Ministry of Finance
NCC	National Control Centre
NIS	New Israeli Shekel
NORAD	Norwegian Agency for Development Co-operation
NRO	Representative Office of Norway to the Palestinian Authority
NEDCO	Northern Electricity Distribution Company
PA	Palestinian Authority
PEA	Palestinian Energy Authority
PENRA	Palestinian Energy and Natural Resources Authority
PERC	Palestinian Electricity Regulatory Council
PESAP	Palestinian Energy Sector Assistance Programme
PETL	Palestinian Electricity Transmission Company Limited
PMU	Project / Programme Monitoring Unit
PPA	Power Purchase Agreement
PwC	PricewaterhouseCoopers
SCADA	Supervisory Control and Data Acquisition
SELCO	Southern Electricity Distribution Company
TOR	Terms of Reference
UN	United Nations
WB	The World Bank

Currency conversions used (approximate): NIS 3.5 = USD 1.0 = NOK 6.0

1 EXECUTIVE SUMMARY

1.1 Background

The Government of Norway has been supporting the Palestinian Authority (PA) since the Oslo Accords in 1993. The current support programme began in 2008 and it addresses development cooperation concerning the Palestinian Energy Sector Assistance Phase V.

The overarching goal of this Phase V programme is to reduce the fiscal burden of the electricity sector on the PA's budgetary resources by reducing the Israeli deductions from the clearance revenues for arrears owed to the Israel Electric Corporation (IEC). The Palestinian designed project is attempting to achieve this by developing their electricity network, both through infrastructure and institutional improvements.

The Norwegian contribution to Phase V support is NOK 105 million. In addition, the Swedish Government added SEK 30 million to be administered by Norway under a co-financing agreement. Approximately half the support is earmarked for infrastructure projects and the other half is for capacity building and institution strengthening, including direct support to the Project Monitoring Unit (PMU).

The infrastructure investments include control systems related to the electricity transmission and distribution components, rehabilitation of the electricity network, and the installation of prepayment meters. However, due to delays in the construction of the high voltage substations, the control system support was also delayed. Some of these funds were used for other purposes and some have been deferred to an eventual Phase VI.

Institutional strengthening of the energy sector has been well achieved by the establishment of the Northern Electricity Distribution Company (NEDCO), the creation of the Palestinian Electricity Regulatory Council (PERC), and the formulation of the Palestinian Electricity Transmission Company Limited (PETL). In addition, the project has supported capacity building at the Palestinian Energy Authority (PEA) and the PMU. Hence, an institutional framework for the judicious operation and management of the Palestinian electricity subsector is well established.

1.2 Principal Findings

The evaluation was conducted with respect to the OECD-DAC criteria of relevance, effectiveness, efficiency, sustainability and impact. Based on the assessments conducted during the investigation, the review team has concluded that the project design contains relevant activities to achieve the goal to reduce the fiscal burden of the electricity sector and that tangible results were obtained.

Relevance: The Norwegian supported project targets primary drivers that address the root causes of the electricity debt situation. The support to the Northern utility (NEDCO) and the provision of prepayment meters are notable successes that benefit Palestinian society.

Effectiveness: The project has provided a positive basis for improving the electricity supply situation through several initiatives. Despite this support, the debt owed to IEC for non-payment of electricity is not decreasing. The reasons for this finding are detailed in the review and solutions are suggested.

Efficiency: The project is well run by the Palestinian team. The PMU is clearly committed to the programme. They have been very responsive to information

requests by the review team both during and after the mission to Palestine. They make efficient use of the multi-donor support and effectively coordinate the contributions. The PEA is clearly committed to finding solutions.

Sustainability: Throughout the Norwegian supported activities, it is evident that the PEA is fully engaged and assumes ownership for the project. This was also observed by other stakeholders on the site visits to the Tulkarm warehouse and municipal electricity department and to the NEDCO headquarters in Nablus.

Impact: While the Norwegian/Swedish contribution is approximately 10-12% of the total donor support package to the electricity subsector, it has significant impact by targeting high value initiatives, both infrastructure and institutional support, that improve the performance of the electricity sub-sector.

The review team spent 12 days on mission in the West Bank and visited project collaborators at the Tulkarm warehouse and at the NEDCO headquarters in Nablus. The project staff exhibited competence and a dedicated commitment to the achievement of results. Based on the assessments carried out, the project is delivering good value.

At present, there is a certain resistance on the part of many Palestinians to pay for the electricity they use because they view it as a cost of occupation. This situation is most pronounced in Gaza and in the refugee camps. The situation will likely improve as the Palestinian energy sector becomes more self-reliant and less dependent on electricity supplies from Israel. Ultimately, a cultural paradigm shift to pay for services is needed, and this will occur as Palestine assumes greater responsibility for its economic growth, independent of donor support. The establishment of PETL will have a direct impact on improving electricity revenues because PETL will be in a position to enforce collection. This will be a direct result of commercially negotiated power purchase agreements between PETL and IEC.

In addition to the Phase V project support of NOK 105 million, Norway provides an additional NOK 300 million (180 MNIS) per year in direct budget support (DBS). It is notable that the annual DBS is equivalent to about 3 months of non-payment for electricity services.

1.3 Recommendations

Building on the achievements to date, the review indicates that the following list of activity areas would provide appropriate economic development to the Palestinian Territories. The discussion in section 5.2 of this report elaborates the specific recommendations. The recommended areas of continued support are in three specific areas.

Major infrastructure investments include: development of the 161/33 kV substations; support construction of a planned 200MW power plant in the northern West Bank and a planned 100MW power plant in the southern West Bank; installation of control systems for power distribution; and renewable energy generation systems.

Rehabilitation and customer relations include: continued rehabilitation of the distribution network; continued support for the installation of prepaid meters; awareness raising at the consumer level; and energy efficiency improvements.

Capacity building and institutional strengthening activities include: support to the PMU; support for institutional strengthening of the utilities; continued support to the institutional framework; and consider broader support to the non-electricity energy sector as a whole.

2 PROJECT OVERVIEW

2.1 Introduction

The Palestinian Energy Sector Assistance Phase V has been formulated as an integrated programme addressing outcomes that are very significant to the continued development of the electricity sector in Palestine.

With a goal “to reduce the fiscal burden of the electricity sector on PA’s budgetary resources through lower deductions from clearance revenues for arrears owed to the Israeli Electricity Company (IEC), (i.e. reducing the net lending) and meeting the requirement of supply until 2020”, an agreement was made between the Norwegian Ministry of Foreign Affairs (MFA) and the Palestinian Authority (PA) dated 28 September 2008. In a co-financing agreement dated 5 February 2009, the Swedish International Development Cooperation Agency agreed to channel additional resources through the Norwegian MFA to the Palestinian project.

According to the agreement between the PA and the MFA, the main objectives are: i) remedying current system deficiencies; ii) improving service delivery and public accountability; iii) laying the legal, institutional, economic and financial, and technical basis for efficient system development; and iv) finalizing the necessary infrastructure to meet the growth of demand up to 2020.

The programme was initially planned to be executed during a three year time frame spanning the years 2008 through 2010; however, no-cost extensions were granted and the programme is now scheduled for completion by the end of 2013. This End Review will assess to which extent the purpose has been achieved by focusing on the progress to date and the effectiveness of the programme activities.

2.1.1 *Description of the Palestinian Electricity Supply System*

All the bulk supply of electricity to Palestine comes from the Israel Electric Corporation (IEC) through 225 medium voltage connection points (22 and 33 kV) to the West Bank and 9 connection points in Gaza. In addition a 33 kV line to the West Bank with a capacity of 17 MW originates in Jordan and a 22 kV (20 MW) connection enters Gaza from Egypt. A 140 MW heavy fuel and gas fired power plant generates electricity in Gaza, though it is only partially functional.

Construction of four new substations 161/33 kV is planned in Nablus (3x45 MVA), Jenin (3x45 MVA), Hebron (2x45 MVA) and in Ramallah (4x45 MVA). PEA has entered into a turn-key contract with IEC (cost 44.5 million Euro for the construction of the substations. The completion time is 34 months after signature of contract (February, 2012) for the first three substations and 50 months for Ramallah.

The new substations will reduce the connection points by approximately 60 %; that is, it is planned to have only about 100 connection points in the near term. Another 5 substations are foreseen to be constructed which will reduce the connection points further. It is also planned to construct a 200MW gas fired power station in the north and a 100MW gas fired power station in south of the West Bank as Independent Power Producers (IPPs). The peak load of the West Bank is presently around 800 MW and is anticipated to double within the next 10 years.

The electricity consumption in the West Bank in 2012 was 2,960 GWh and approximately 1,492 GWh for Gaza. The technical and non-technical losses for the four utilities at the West Bank is between 20 and 27 %, but varies considerably more for the village and municipal electricity supply units. In Gaza the collection

rate is very low but is expected to increase with the installation of up to 10,000 prepayment meters during Phase V. [32]

Gaza represents one third of the electricity consumption in Palestine, but accounts for 55 % of the non-payment of electricity invoices from the IEC.

2.1.2 *Institutional and Legal Framework*

The Palestinian Authority (PA) created the Palestinian Energy Authority (PEA) in 1995. The PEA is also known as the Palestinian Energy and Natural Resources Authority (PENRA). The Letter of Sector Policy of 1997 elaborated the proposed structure of the electricity sub-sector. This included the need for the Palestinian Electricity Regulatory Council (PERC) that was formally decreed in February 2010. The Letter also called for the establishment of the Palestinian Energy Transmission Company Limited (PETL) and the formal establishment of this entity is currently under discussion in the Cabinet of Ministers.

The first Palestinian electricity distribution utility, JDECO, was established in 1927. This was followed by Gaza Electricity Distribution Company (GEDCO), Hebron Electric Power Company (HEPCO), Southern Electricity Distribution Company (SELCO), and finally Northern Electricity Distribution Company (NEDCO) was formally established in 2008. In addition, there are approximately 470 municipalities and village councils that distribute electricity. These are being rationalized into the five Palestinian distribution utilities.

2.2 **Purpose of the Review**

The Norwegian Ministry of Foreign Affairs (MFA) has been supporting the Palestinian Energy Authority (PEA) since its establishment following the Oslo Accords in 1993. The current project is Phase V of the assistance programme.

Specifically, the evaluation will:

- I. determine the extent of completion of the programme;
- II. determine if the PEA has fulfilled its obligations under the agreement; and
- III. ascertain if the project has enhanced the capacity of the PEA.

The scope of the review as defined in the Terms of Reference (TOR) will cover all three technical programme components focusing on the Norwegian / Swedish supported activities and the Northern area of Palestine. Component 3 (institutional) shall, inter alia, include evaluation of the transfer of electricity distribution activities from the municipalities to the public utilities and assess the resulting professional and efficiency aspects.

2.3 **Methodology**

Three preparatory meetings were held at the NORAD offices in Oslo. Mr. Andrew Yager (Team Leader, NORPLAN) met with Mr. Svein Kroken and Mr. Erlend Nordby on 9 July 2013 to review the project proposal and discuss project planning. A second meeting was held on 2 August with Ms. Tale Kvalvaag (NORAD) to obtain specific comments to the project in view of her experience as resident officer responsible for the project during more than 3 years in Palestine. A third meeting with NORAD officials was held on 12 August 2013 to discuss issues regarding the field visit to Palestine. Mr. Andrew Yager, Mr. Steinar Grongstad and Mr. Piyush Sainju from NORPLAN along with Mr. Svein Kroken (NORAD) and Mr. Terje Thodesen from Ministry of Foreign Affairs participated in this meeting.

A review of pertinent documents was undertaken at the NORPLAN offices in Oslo and NORPLAN established contact with project partners to arrange the field mission to Palestine. The review team spent two weeks travelling to selected project implementation areas conducting interviews with Palestinian stakeholders and investigating the technical and financial aspects of the project.

Meetings with the following international partners took place in Jerusalem: The Norwegian Representative Office (NRO); the Consulate General of Sweden; the European Commission Energy Unit; the Italian Development Cooperation Unit; and the World Bank.

In addition, meetings were arranged with the Project Monitoring Unit (PMU) at the Palestinian Energy Authority (PEA) and Palestinian stakeholders. The names of people consulted and the list of meetings held is presented in Appendices 3 & 4 respectively.

During the field visit, the review team visited the key areas of the programme on the West Bank – The Northern Electricity Distribution Company (NEDCO) in Nablus and the Tulkarm warehouse to carry out site inspections and stakeholder interviews.

The NORPLAN field mission team consisted of: Messrs. Andrew Yager, Steinar Grongstad, and Piyush Sainju. Mr. Svein Kroken from NORAD joined the mission during the first week in Palestine.

The Terms of Reference for the End Review is in Appendix 1.

3 DESIGN OF THE PROJECT

3.1 Technical design

Three components of high priority are addressed in Phase V. These components are integrated into a coherent totality forming the programme.

Component 1: Transmission Development.

This component concerns the design and construction of 4 high voltage substations, the establishment of a national control centre (NCC) to be operated by PETL and the establishment of Supervisory Control and Data Acquisition (SCADA) systems for the distribution utilities. This component is underway, but delayed in negotiations with the Israel Electric Corporation.

Component 2: Distribution Rehabilitation & Development.

This component is focused on upgrading the distribution network, strengthening the utilities, and electrifying the small number of un-electrified communities.

Component 3: Institutional support and Capacity Building.

This component addresses the need for institutional reform in the electricity subsector, promotes the use of renewable energy and energy efficiency measures, and builds capacity within the PEA.

3.2 Implementation design

Project implementation is undertaken by the Programme Monitoring Unit (PMU) within the PEA. The PMU was established under Phase IV and continued throughout Phase V with direct Norwegian budget support.

There are three inter-linked projects at the PEA that are executed by the PMU. These are:

- Assistance to the Energy Sector, Phase V (Norway/Sweden)
- Electric Utility Management Project (World Bank)
- Electricity Network Upgrading Project (European Union)

During the review mission, the review team worked closely with the PMU and observed that the Unit effectively managed the co-financing and coordination of this multi-stakeholder group. This is evidenced in the reporting and consultative process. The PMU prepares progress reports and makes them available to all the project financiers. In addition, regular consultations are held with each donor and in group donor meetings where required.

3.3 Monitoring and evaluation design

The PEA has overall responsibility for progress reporting and cost monitoring towards the financiers. Consequently, the PMU prepares semi-annual reports on behalf of the PEA.

The PMU reports form the basis of annual meetings between Norwegian and Swedish governments and the PEA.

As per the Agreement between MFA and PEA, an end review would be undertaken towards the completion of the programme. This document is the end review.

4 PROJECT ASSESSMENT

The review team assessed performance in terms of the OECD criteria of relevance, effectiveness, efficiency, sustainability and impact, as relevant for the individual work-streams. Institutional and risk management are also addressed. The performance assessment will also include evaluation of budgetary issues with reference to Appendix 2.

4.1 Relevance of the Project

4.1.1 Relevance to the Palestinian Energy Sector

The Palestinian energy sector has been suffering from low revenue collection for many years. This has put an immense burden on the financial position of the Palestinian Authority. Hence, the Phase V programme has been designed with an overarching goal of the Norwegian/Swedish support to the Palestinian energy sector “to reduce the fiscal burden of the electricity sector on PA’s budgetary resources through lowering deductions from clearance revenues for arrears owed to IEC (i.e. reducing the net lending) and meeting the requirement of supply until 2020”. Norway has aligned its support on specific sub-components of the Palestinian Energy Sector Development Programme that address the operational aspects of infrastructure investments, rehabilitation of distribution networks, institutional reform and capacity building. The table below indicates the impact of each project component on net lending.

Table 1 Relevance of Project Activities on Net Lending

Components	Program Activities	Expected Impact	Assessment
Component 1	Transmission Development		
Sub Component 1.1	Development of four new bulk supply 161/33 kV sub-stations in West Bank	Direct	Shall contribute by eliminating 60% of the existing 225 connection points to 4 high voltage connection points with IEC thus improving financial and technical control of the Palestinian power supply.
Sub Component 1.2	Installation of NCC/SCADA in the West Bank and Gaza		
Component 2	Distribution Development and Rehabilitation		
Sub Component 2.1	Development of northern distribution system	Indirect	Shall contribute by reducing connection points and improve system technical losses
Sub Component 2.2	Development of southern distribution system	Indirect	Shall contribute by reducing connection points and improve system technical losses
Sub Component 2.3	Reconfiguration of JDECO distribution system	Indirect	Shall contribute by reducing system technical losses
Sub Component 2.4	Rehabilitation and extension of dist. system for all distribution utilities	Direct	Shall contribute by reducing system technical losses
Sub Component 2.5	Assistance to the utilities in the operation and maintenance of the networks	Indirect	
Sub Component 2.6	Installation of prepaid meters and	Direct	Shall contribute by improving the collection performance of the utilities,

	automatic meter reading in West Bank and Gaza		refugee camps
Component 2.7	Rural Electrification	None	
Component 3	Institutional Reform and Capacity Building		
Sub Component 3.1	Establishment of PERC and implementation of sector regulations	Indirect	Shall contribute by setting unified and subsidized tariff rates and introducing regulations against non-payers
Sub Component 3.2	Establishment of PETL	Indirect	Centralizing the management of power supply
Sub Component 3.3	Promoting the development and utilization of renewable energy resources	Direct	Shall contribute by reducing the import and diversifying the sources
Sub Component 3.4	Institutional and Capacity Building of the utilities	Direct	Shall contribute by providing financial controls
Sub Component 3.5	Engineering Consultancy services	None	

The specific activities undertaken within these sub-components are contributing to securing a sufficient level of energy supply for meeting local energy consumption requirements while addressing comprehensive sustainable development needs. This is consistent with the vision of the Palestinian National Authority Energy Sector Strategy to provide an integrated national energy supply system. Hence the Norwegian/Swedish support is contributing to the development of a more fiscally sound and autonomous PNA capable of delivering higher quality electricity services to the population.

The principal beneficiaries of the project activities are the electric power utilities (NEDCO, SELCO, HEPCO, JDECO and GEDCO) and the energy consumers on the West Bank and in Gaza.

4.1.2 *Relevance to the Electric Utilities*

In most cases the Palestinian utilities and municipalities do not have control over the electricity supply through the distribution lines that are served from the various connection points (225 points in West Bank and 9 in Gaza with additional 30 direct private connection points). MV distribution lines are to a large degree overloaded. The fragmented electricity organisational structures of villages and municipalities as well as imposed restrictions on system development have led to increase in technical losses, unreliable and substandard quality of supply. In addition, collection rates vary considerably from area to area and are generally low while also payment for bulk power supplied does not materialize, with consequences on the PA budget (i.e. contributing to net lending). All the programme components are consequently essential to improve the performance of the sector, although not sufficient in the short term to remedy the status.

Restructuring of the sector by integration of the village and municipal structures are in progress by establishment of the utilities. The restructuring implies diversion of the cash flow from the municipalities and villages to the distribution utility, which is met by resistance as this cash flow is partly used in the municipalities for other services and infrastructure improvements. According to the restructuring under PERC, the financial compensation formula prescribes that a sum equal to 10% of the IEC bill is payable by the government to the municipality for the next 3 years from the date of merger. The forthcoming decree on establishment of the transmission company PETL is expected to further improve the restructuring issue in order to control/reduce the presently increasing net lending.

Although the on-going network rehabilitation and upgrading and the installation of prepayment meters should be reducing the losses it is difficult to identify this in the statistics of the utilities. For instance in 2011, the losses for NEDCO reduced from 22% in 2010 to 19% in 2011 [30] while it increases in 2012 to 21% again [17]. A similar conclusion is reached for HEPCO (21-22 %) and for JDECO (27-28-25 %).

It must be emphasized that the network upgrading may not have the substantial impact on the losses at this stage, but is to a large degree preparation to utilize the new substations efficiently. Only at the stage when the 161 kV substations are operational will the full effect on the losses be detected.

Variations in losses from month to month and year to year may also reflect that villages and municipalities are continuously joining the utilities with their status of network and variable loss level [33]. SELCO is an exception where variation can be attributed to the departure and later return (2013) to SELCO by the city Dora.

The Government and the Representatives of the refugee camps entered recently into an agreement regarding installation of prepayment meters in the refugee camps. The installation starts in 2013 and will be completed in 2015. It is expected that the non-technical losses would reduce gradually as a substantial part of the losses originate from un-metered and illegal electricity connections in the camps.

The small variations may imply that the improvements in technical and non-technical losses are counteracted by an increasing tendency in illegal connections. This may induce a conclusion that the control of customer connections possibly should be strengthened and monitored by statistics on improper connections. Actually, the utilities realize the problem and installation of meters on the distribution transformers with remote reading (GPS) is an on-going activity.

4.1.3 *Relevance to the Consumers*

In the PETL business development plan [29], PricewaterhouseCoopers (PwC) forecasts that the bulk power price to the Electricity Distribution Companies (DisCos) will be lower than the average bulk power selling price from IEC as PETL increases in capacity and gaining economies of scale. The consumer benefits through the end user tariff.

The new substations and upgrading of the distribution systems will enhance the quality of the supply through the improved voltage stability, increased capacity of supply and reduced number of outages.

Efforts to meter all consumers and minimising the theft of power will likely reduce the consumers sentiments towards unfairness and counteract increase in non-technical losses. Establishment of the utilities and introduction of a unified tariff are expected to have a similar positive effect.

4.1.4 *Compliance with Palestinian Energy Sector Strategy and Policy*

The Programme under review was designed more than five years ago. Nonetheless, the programme activities respond to the strategic objectives of the current Energy Sector Strategy, which addresses:

- I. Energy security and meeting the demand
- II. Energy availability to the consumers in sufficient quantities and within acceptable international, technical and environmental standards
- III. Effective and efficient institutions working in the Energy Sector
- IV. Increasing the economic efficiency of the Energy Sector

4.2 Effectiveness of Project Activities

4.2.1 Assess project completion with respect to the Project Document

Transmission Component

Delay in signing the Turnkey Contract with IEC meant that there are no activities or progress achieved previously in the implementation of this sub-component.

However, during the period of Phase V, PEA has finalized the negotiations of the Turnkey Contract with IEC for the construction of the four 161/33 kV substations. The turnkey contract between PEA and IEC was signed in April 2012. PEA made the down payment to IEC in May 2012 which represents 15% of the contract price of Jenin, Nablus, Hebron and Ramallah substations.

All substations shall be completed within 34 months from the contract signature, except for Ramallah substation which shall be finalized within 50 months from the contract signature as time is needed for the rezoning of the land and to obtain permits from the Israeli Authorities.

Refer to the next table for information on the substations:

Table 2 Information on High Voltage Substations

Substation	Capacity	Effective date	Estimated commissioning
Jenin	135 MVA	May 9, 2012	Dec, 2014
Nablus	135 MVA	Aug 15, 2012	Feb, 2015
Hebron	90 MVA	Aug 15, 2012	Feb, 2015
Ramallah	180 MVA	TBD	June 2016

PEA has started the preparation of the permanent ancillary services for three of the high voltage substations (i.e. the permanent access road, the electricity supply, water supply and telephony).

No activities were carried out in NCC/SCADA system as this task is dependent on the construction of high voltage substations. The European Investment Bank (EIB) will contract an international consultant for revising the bidding documents of the NCC/SCADA and it is expected to be completed in 2013.

Distribution Development and Rehabilitation

In the distribution component, major progress is observed in the rehabilitation components (sub component 2.4). The rehabilitation projects financed by EC & additional rehabilitation projects financed by Norway/Sweden, assistance to NEDCO financed by Norway/Sweden and rehabilitation of medium voltage substation projects have been totally completed. The other components in rehabilitation projects are in the implementation phase. The task of tendering and procurement has been finalised during the programme period.

There is no major progress in construction under sub component 2.1 and 2.2 (development of northern distribution system and southern distribution system). Due to the financial crisis, Spain decided to cancel the financing for the component 2.1. The PA immediately approached Italy to finance this project sending a formal request in October 2012. The development of the Northern & Southern distribution systems was split into two stages. The first stage is financed by Norway with a cost of 3 MUSD to procure the electricity materials where the supply contract will be signed soon. The second stage will be financed by Italy through a soft loan with a cost of 17.3 MEURO. The cost of the implementation (around 7 MUSD) will be covered from the coming project (Phase VI). On the other hand, PEA and Norway/Sweden agreed to re-allocate 4 MUSD of the available

funds for the cost of civil works and installation to be used in an ancillary service on the high voltage substations and for rehabilitation projects.

Meanwhile, the component 2.2 was not financed, and hence there were no activities in the Southern distribution system during Phase V.

Under prepaid meter installation component (sub component 2.5), 60,000 split pre-paid meters, 154,000 single and 15,600 three phase meters were procured [41]. Out of those, 40 split pre-paid meters, 53,707 single and 2,849 three phase meters have already been installed in JDECO, NEDCO, HEPCO, SELCO and GEDCO service areas. The installation of the remaining meters is planned to be completed in 2015 hence PEA will transfer reporting of this component to Phase VI.

In the Rural Electrification subcomponent, 50 villages and small communities are electrified and there are still some villages and small communities in northern West Bank to be electrified. These remaining villages are planned to be electrified under Phase VI.

Institutional Reform and Capacity Building

In subcomponent 3.1, PERC was established in February 2010 with financial assistance of the World Bank. PERC, after its establishment issued a unified tariff regulation and has granted distribution licenses to JDECO and NEDCO. PEA started the commercial agreement negotiations with IEC to replace the existing bilateral contracts between each city/village with IEC and it will continue the sector reform and will carry it to Phase VI/EUMPII for reporting purposes.

The PETL was formally established on October 1, 2013 in accordance with the project subcomponent 3.2.

In subcomponent 3.3, the major activities were: the completion of the Energy Efficiency Action Plan (NEEAP) which has been approved by the Cabinet of Ministers, the completion of a market survey regarding Energy Efficient Goods and Existing Testing Laboratories in Palestine, conducting more than 34 comprehensive audits in different sectors (Industrial, Public, service, and household), and conducting a comprehensive EE awareness campaign. The EE project initiated the implementation of a pilot project in the health sector where a revolving fund mechanism will be created. PEA initiated the Palestinian Solar Initiative (PSI) which has been approved by the Cabinet of Ministers and also completed the assessment for the different renewable sources in Palestine. PEA issued the Renewable Energy Strategy 2012-2020 which has been approved by the Cabinet of Ministers.

Under the subcomponent 3.4, main achievement was the startup operation of NEDCO in July 2010. Two major municipalities Nablus and Jenin have joined NEDCO and there are many other small governorates being merged to it amassing total consumer of nearly 95,000 at present to its coverage.

NEDCO staff has started using mobile billing from 2012 and also the two way communication equipment financed by Norway/Sweden. PEA provided the utilities with more than 50 utility vehicles.

Under the subcomponent 3.5, the strategic planning unit assisted PEA in the follow up of the implementation of the energy national strategy, in the negotiations of the commercial agreement with IEC and in restructuring the Energy Sector. This was finished in mid-2012.

4.2.2 Assess project completion with respect to the Project Budget

To quantify the project completion (as explained in section 4.2.1), the allocated budget and expenditure (end of 2012) is compared. It indicates that nearly 32% of the project budget has been utilised (as compared to revised budget) which roughly suggests 1/3 of

the project activities are accomplished. This figure however is relatively better for Norway/Sweden contribution where nearly 70% of the allocated budget has been utilised.

A major delay due to impediments is observed in transmission component (component 1) where only 12.5% of the budget could be utilised. For component 2: development and rehabilitation of distribution network especially the withdrawal of Spain has had substantial impact and till now only 42.4% of the revised budget has been spent. For component 3, the programme subcomponent budget is underspent (48.4%) with the main impact from the delay of the high voltage substations (supervision consultant).

But, in totality, the programme budget has been underutilised even after the extension of the program period to 2013 from 2010. The remaining tasks and budget should be transferred to Phase VI.

Table 3 Comparison of Program Budget with Expenditure (end of 2012)

						PROJECT COMPLETION		
	Budget (USD)			Expenditure (USD)		TOTAL		Nor/Swe
	Original	Revised	Nor/Swe	Total	Nor/Swe	compared to Original budget	compared to Revised budget	compared to Original budget
Transmission component	56,00	73,60	0,40	9,10	0,08	16,3 %	12,4 %	21,0 %
Distribution Development and Rehab.	124,20	94,60	14,90	40,16	11,54	32,3 %	42,4 %	77,5 %
Institutional reform and capacity building	16,60	19,25	6,10	9,31	2,91	56,1 %	48,4 %	47,8 %
Programme monitoring unit	2,70	1,45	1,30	1,18	1,18	43,6 %	81,3 %	90,6 %
Total	199,50	188,90	22,70	59,75	15,72	29,9 %	31,6 %	69,2 %

4.2.3 Evaluation of achievement of goal to reduce fiscal burden

The term net lending is used to characterize the deduction against the debt owed to the Israel Electric Corporation (IEC) for non-payment of electricity by Palestinian consumers. The PA Treasury lends this amount to Palestinian entities including electricity distribution companies, municipalities and village councils with expectation of repayment.

Based on information available from project documents and obtained in interviews during the mission, the review team was able to ascertain that net lending is made up of technical, institutional, commercial, cultural and geopolitical components. The technical, institutional and commercial aspects are relatively straight forward and are addressed in this review. However, the cultural and geopolitical issues are more difficult to assess and are not within the scope of the study. Hence, there is some discontinuity between the key technical and financial performance indicators and the net lending indicator addressed in the annual progress reports and summarized in Appendix 6. This discrepancy is also seen in the lack of relationship between net lending and debt owed to IEC by the PA.

The payment of the electricity bill to IEC continues to be a major challenge. [17, 42] The net lending continues to accelerate with Gaza (GEDCO) and Jerusalem (JEDCO) being the single biggest contributors with numerous municipalities and villages adding to the net lending. The Gaza share in the total net lending is 54 %. The debt of JEDCO amounts to 708 MNIS, which increased by 165 MNIS in 2012.

This worsens the Palestinian government's financial position. The monthly clearance revenues payable to PA by Israel is in the range of 450 MNIS while the present monthly deductions related to electricity is around 60-70 MNIS. Other sectors involved in net lending are Water with around 15 MNIS, Health with 15 MNIS and Sewage with 3 MNIS.

PEA recently received the details of the billed amounts from the IEC for the period of 45 months (September 2009-May 2013). The total billed amount for that period was NIS 4.3 billion¹ out of which the deduction made through clearance revenues was NIS 2.78 billion, an average of NIS 61.7 million per month [42].

As seen in Figure 1, during 2009-2011, the Palestinian Authority observed a sustained improvement in net lending. Major reduction in net lending was achieved in this period with reduction of nearly 34% as compared to the amount in 2008. In 2008, net lending was 825 MNIS which reduced to 550 MNIS in 2011. But, the figure drastically changed in year 2012 because of various reasons like increase in purchase price, measures taken by the Israeli authorities and weakened economic situation in Palestine.

The net lending has significantly increased towards the end of 2011 from an average of 45 MNIS per month in 2010 to 60-65 MNIS per month in 2011 and 2012 except an extraordinary high deduction close to the monthly clearance revenue (450 MNIS) made in the last quarter of 2012.

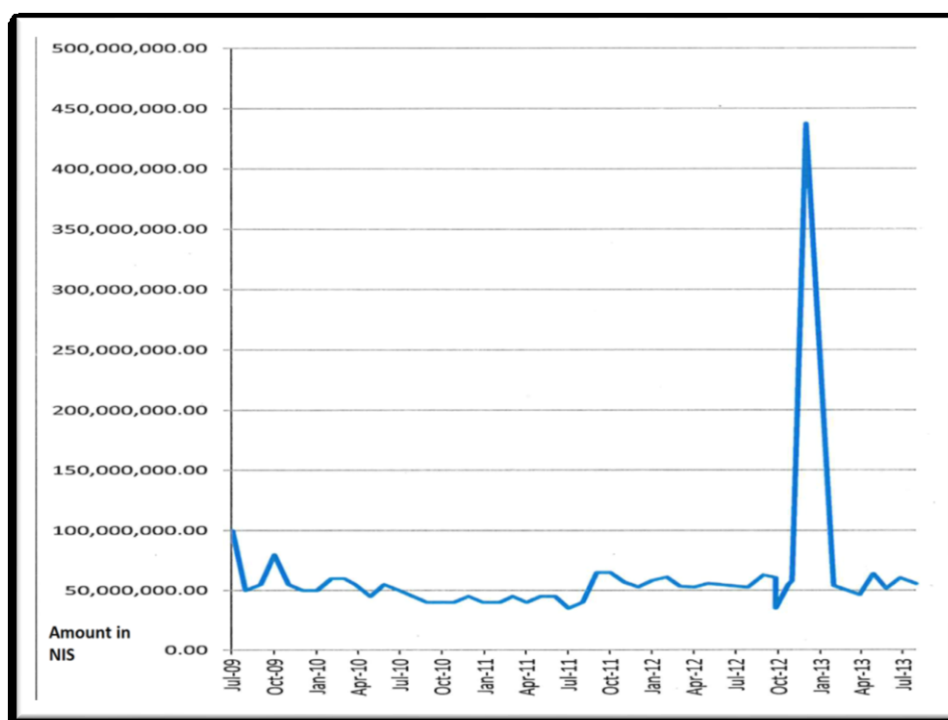


Figure 1 Net Lending during 2009 to 2013

In September 2013, the debt of the Palestinian Authority to the IEC reached an all-time high of 978 million NIS. Despite extensive efforts by the IEC, it has encountered difficulties collecting the debt from the PA. This situation, in which the PA does not repay its electricity debt, yet continues to consume electricity normally, places a heavy financial burden on the IEC, which effectively subsidizes electricity consumption in the PA. This is an important issue that is dealt with on a

¹ 1 USD= 3.56 NIS

regular basis by the Palestinian and Israeli Ministries of Finance. Figure 2 indicates the accumulated debt owed to IEC during the period July 2012 to August 2013. It is instructive to note the lack of a direct relationship between net lending and debt, despite the relatively constant electricity consumption.

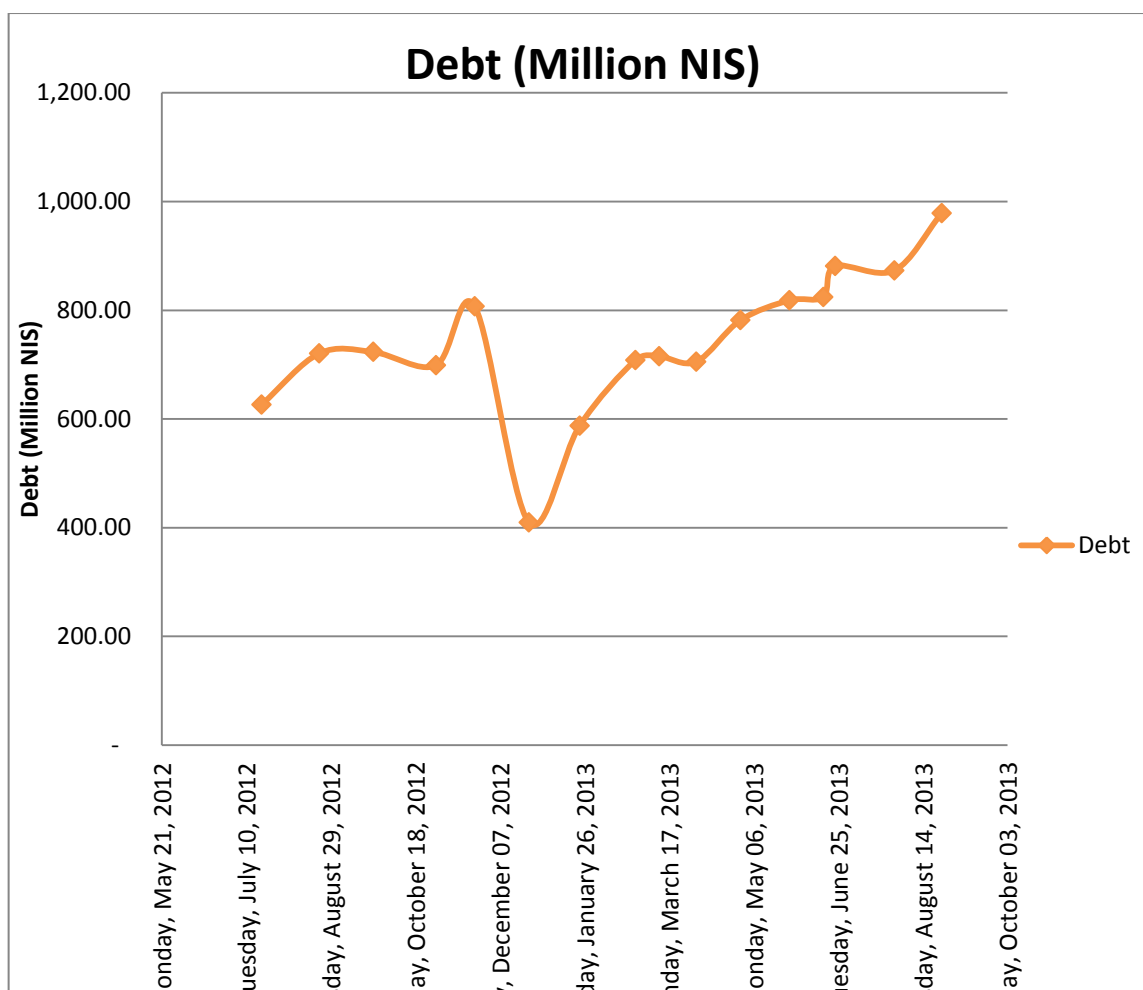


Figure 2 Accumulated Debt owed to IEC during July 2012 to August 2013

4.2.4 Assessment of indicators, means of verification

The main performance indicators for a quantitative assessment of the programme are detailed in the progress report for 2012 as follows: [1, 17]

- Improved collection performance

Collection performance has generally been improved in most of the utilities except in SELCO. SELCO had a setback of withdrawal of Dora city in 2012. But, the city has re-joined SELCO in 2013.

JDECO, HEPCO and GEDCO have all made a good improvement in collection performance from year 2007. JDECO, has a collection performance of nearly 96% in 2012, the highest among the utilities. GEDCO surprisingly, has made their biggest improvement among all the utilities, improvement of 113% from its baseline figure. Still, it has very low collection performance of 68%.

- Lower technical/non-technical losses

Only JDECO managed to improve/lower the technical/non-technical losses, rest of the utilities have not made any improvement as compared to their respective baseline figures. SELCO, again has the worst figure. The reason for it has already been described previously.

- Reduction in accounts payable on electricity purchase

Although the collection performance has slightly improved, the accounts payable to utilities has not improved. Figures for utilities like SELCO, HEPCO and GEDCO are unacceptable (35-55 months) and threaten the cash flow situation. Accounts payable are not too bad in JDECO and NEDCO (3-4 months).

None of the utilities have managed to improve essentially from their baseline status.

- Increase in the number of consumers

JDECO, HEPCO, GEDCO have managed to add new consumers to their utility and are also fairly successful in meeting their targets.

SELCO is relatively slow in getting new consumers connected to their network.

NEDCO is expected to be joined by a steady stream of municipalities and villages during the next months. Tubas municipality with 30,000 consumers might be a potential merging company to NEDCO.

The programme indicators reflect that the activities carried out so far hasn't made a significant impact on the electricity sector. But, the review team is not critical about it as we understand that key activities like high voltage substation, distribution network development couldn't materialise in time. Only 25% (56,596 pcs.) of the supplied pre-paid meter were installed. There are still 53,265 meters available in the warehouse of the utilities to be installed [41]. Successful implementation of those activities in future will improve utility indicators.

The detailed information on performance indicators is tabulated in Appendix 6.

4.2.5 *Rehabilitation of distribution network and connectivity to households*

In the West Bank, under the finance of EC and Norway, altogether 10 contracts were awarded for the rehabilitation works with total value of MUSD 24.37. There were a total of 235 rehabilitation projects finalised in 2009 & 2010 and an additional 90 projects were finalised in different areas of the West Bank in 2011. In year 2012, PEA distributed more equipment to rehabilitate 14 projects.

With total value of USD 24.37 million, 323.5 km of medium voltage cables, 283.5 km of low voltage cables, 279 km of medium voltage overhead lines and 650 km of ABC bundled cables were extended in the period since 2009. Based on our experience of similar rehabilitation projects and rule of thumb costing, we estimate that these projects could cost on the order of 32 to 38 million USD today. Hence, the work performed in Palestine appears to have been good value for money.

Households from 350 localities/villages from Hebron, Jenin, Nablus, Qalqiya, Salfit, Tubas, Tulkarm, Bethlehem, Jerusalem, and Ramallah have directly benefited from the project with reliable and safe power supply.

Table 4 Overview of Distribution Rehabilitation Work

Description	Unit	EC	Norway						Total
		Cont. 1	Cont. 2	Cont. 4	Cont. 5	Cont. 7	Cont. 9	Cont. 10	
Contract Value	MUSD	10.28	1.22	0.28	0.45	0.17	2.71	1.63	24.37²
Start Date		2009	2010	2011	2011	2011	2012	2012	
Finish Date		2011	2011	2011	2012	2012	2013	ongoing	
MV Cables	Km	159				13.5	25	126	323.5
LV Cables	Km	23		8.5			252		283.5
MV Overhead Line conductors	Km	131			17		6	125	279.0
ABC bundled cables	Km	418	120	2			110		650.0

4.2.6 Rehabilitation management and administrative routines

The Programme Monitoring Unit (PMU) maintains complete records of procurement and distribution of materials to the utilities and municipalities from the Tulkarm Warehouse. These material disbursements are based on a needs assessment reviewed and approved by the PMU. The PMU monitors material flows, follows up on installation of procured materials and conducts site visits of the installations, often with a representative of the NRO.

A Manual of Financial, Administrative and Internal Control Policies was prepared during the Electric Utility Management Project (EUMP) in May 2008, just prior to the Norwegian/Swedish supported programme. This manual is used in the Phase V programme and provides guidance for effective implementation, including procurement management and administrative routines.

Furthermore, the Limited Organizational Review of PEA with Emphasis on Administrative Systems and Governance Structure completed by NORPLAN in September 2012, confirmed that robust procedures are in place and are being followed by the PMU in the conduct of the work.

4.2.7 Uncompleted Activities

Transmission component

The transmission component was delayed mainly because of delay in contract signing between the IEC and PA. The turnkey contract was finally signed with IEC on 27 February 2012 and now the four substations are expected to be ready for operation by 2014 and 2015.

Delay in the construction of substation directly affected all the work in-connection to SCADA installation as these activities are inter-related.

² EC Contract 2 and Norwegian Contract 1, 3, 6 and 8 (not mentioned in above table) has contract value of 7.63 MUSD

Distribution development and Rehabilitation

No activities were performed in southern distribution development as it was not financed. On the other hand, after the cancellation of the available finance for this project from the Spanish Government, Palestinian Ministry of Finance (MOF) approached the Italian Government to finance the northern distribution system development project. PEA now has modified the tender documents to include the equipment needed for the main distribution feeders of both systems the Northern system & the Southern system and it will be financed by Italy and the activities will be started in Phase VI.

The installation of the meters is planned to be completed in 2015, therefore PEA will extend this project to Phase VI/EUMPII. Under metering activity, the installation of the split meters is lagging. Only 40 meters were installed in JDECO. But, the Palestinian government and the representative of the refugee camps have entered into agreement on deployment of those meters in the camps.

4.2.8 *Electricity loss management*

Industrial energy audit, building energy audit, workshop and result dissemination, awareness material and training were conducted to contribute to the development of energy efficiency, renewable energy and environmental protection in key economic sectors of the Palestinian economy. PEA (PENRA) began the project on Promotion of Energy Efficiency and Renewable Energy in strategic sectors and on the other hand, PA cabinet approved national energy efficiency action plan (NEEPA) with target saving of 43 GWh for the period 2012-2014 and 384 GWh totally within 2020. Meanwhile, the technical/non-technical losses for five utilities are available which indicates no improvement, in fact the losses have increased from 2007 to 2012 (ref. Annex 6). The losses in meters, transformers and conductors are impossible to estimate from the available documentation for the project under review. Determination of these losses would require a technical analysis beyond the scope of this study.

4.3 Efficiency

4.3.1 *Cost benefit assessment of project outcomes*

161/33 kV Substations and network rehabilitation

The works with the substations are in progress and contract is entered into with IEC to construct the substations. Ancillary services and SCADA installations under the Norwegian/Swedish budget contributions will only take effect when the substations are commissioned and in operation. The substations will impact on losses and provide opportunity to manage system load. In addition the establishment of PETL, reduction of the import points from 225 to about 100 and the possibility to establish a Power Purchase Agreement (PPA) between IEC and PETL contain possibilities to reduce bulk power costs to the utilities and improve the efficiency of the distribution system. The above possible efficiency improvements can be realised only when the substations are commissioned and in operation.

Utilities' performance

NEDCO started operating in July 2010 with license granted in 2011 (the six Northern governates). The utility has presently 460 employees and 91 000 subscribers, mainly in the two governates of Jenin and Nablus. The present annual increase of subscribers is 35- 40 000 depending on how many villages and municipalities join the company.

Table 5 NEDCO Performance

Year	Purchase			Sale			Energy loss	Accounts payable	Collection
	GWh	MUSD	USD/kWh	GWh	MUSD	USD/kWh	%	months	%
2011	418	40.3	0.096	337	47.5	0.141	19.4	2.8	90
2012	474	61.6	0.13	390	64.5	0.165	17.5	4.0	92

Sources: NEDCO: 2013, pwc 2012³

Both the losses and the collection show that the efficiency of NEDCO is improving although the accounts payable appear to be increasing which has impact on the cash-flow in the company. The energy loss decrease and increase in collection which may be attributed to a combination of the installation of pre-payment meters, the rehabilitation of the network as well as good work from the utility, has partly compensated for the large increase in the purchase price from IEC with impact from 2012 (35 %).

For the other utilities the development of efficiencies are not so clear. The electricity losses in HEPCO is slightly above NEDCO's, but has increased from 20 % in 2010 to 22 % in 2011 and 2012. The losses in JEDCO is essentially higher, varying between 27 and 28 % for the period 2010 – 2012 which may indicate an aging network, eventually also a bigger problem with illegal connections. On the other side JEDCO has the a better collection rate than the other utilities with a stable 94 %, while HEPCO has a substantial potential with a collection performance around 70 %, but improving to 80 % at the end of the period 2010-2012. HEPCO has also an accounts payable of between 35-40 months, which must be very challenging to the utility's cash flow. SELCO is not commented specially due to the lack of data and the fact that Dora city left SELCO but has recently re-joined the utility.

As a general assessment of the status today it may be concluded that there are positive trends in the utilities. The continuous transfer of assets from the village and municipal systems to the utilities will contribute to a more efficient electricity subsector in the future.

Prepayment meters

Due to the late start the effect of the installation of the prepayment meters will only manifest itself fully after the installation is completed in 2015. The collection rate in the utilities shows already positive tendencies. The installation of the single- and three-phase meters is progressing with 21 000 installed in NEDCO, and expects to add another 25 000 within 2014. There are also installed 137 street lighting meters in Nablus and Jenin. However, the installation of the split meters in the refugee camps which represent at present a major source of loss, is seeing an approaching start. Reduced months payable, improved collection, and reduced losses is expected to be more apparent in the next months.

The pre-paid meters component directly reduces net lending by increasing the revenue collected by the utilities. The transmission component, notably the high voltage substations, offers the greatest potential for reducing net lending. These substations will provide a significant degree of autonomy to the PEA and the utilities and hence greater responsibility to collect the electricity revenues. In addition, the construction of generation capacity in the West Bank and the connection to the 161/33 kV substations will hence have a direct impact on reducing net lending.

³ Other reports have varying loss figures up to 22%

4.3.2 *Cost of damages to project activities*

There were no damages to project activities. However, the project did incur costs to repair damaged equipment in Gaza due to the unrest in 2009.

4.4 **Sustainability of Project Outcomes**

4.4.1 *Assessment of political impact*

By pulling all of these elements together, the team will look to provide a final assessment on the expected sustainability of the various categories of benefits – technical installations, institutional and policy reforms, end-user benefits and financial benefits to PEA.

4.4.2 *Response to conflicts*

During its field work, the review team assessed the impact of the Israeli Palestinian conflict on the project activities.

One main overarching observation is that, in public forums, Israel points to the project as an example of good cooperation between the two sides. This is particularly relevant when considering the electricity supply network across the border from Israel into the Palestinian territories. Despite delays in the construction of the high-voltage sub-stations and the establishment of PETL, these transmission impacts are not conflict related.

However, there are several instances of conflict related impacts in the distribution sub-components of the project.

1. One example is the delay of obtaining material for rehabilitation projects because delays caused by Israel to obtain VAT exemptions.
2. There have been instances of Israel cutting distribution lines due to lack of license by the Palestinian distributor.
3. There are also examples of IEC denying access to small land areas because these are areas where Israel may want to occupy.

The project sub-components dealing with pre-paid metering are not impacted by the Israeli Palestinian conflict.

4.4.3 *Women empowerment and gender equality*

The project does not have any particular focus on gender. Nonetheless, there are several women in senior positions within the electricity subsector.

It is noted by the review team that a Study on Poverty and Social Impacts of Electricity Prepaid Meters conducted by Alpha International in 2013 did not discuss gender in the report recommendations. Furthermore, the survey results do not make any particular reference to gender.

4.4.4 *Assessment of environmental issues*

The rehabilitation of the network encompasses issues related to safety and danger to property or humans due to distance, touching hazards or substandard installations. This has implied removal and cabling of MV overhead lines, LV voltage lines with insulated overhead or underground cables and upgrading of 33/11 kV substations. The upgrading of conductor dimensions done simultaneously provides also reduction of faults, risk of overload and reduced losses resulting in improved quality of supply. The team visited sites in Nablus where appropriate upgrading of MV lines and Al Karakoun substation had taken place with financial support from the Swedish and Norwegian Governments. Also an

apartment estate with new prepayment meters appropriately installed was visited in Nablus.

The planning of the four 161/33 kV substations included the preparation of Environment and Social Management Plans (ESMP) and Resettlement Actions Plans (RAP) in accordance with the Resettlement Policy Framework prepared by PEA in 2008 and the World Bank guidelines for each of the substations.

4.4.5 *Private sector participation*

The private sector participation in electricity supply is relatively small at the moment and is basically allocated to civil and electrical contractors providing equipment and installation services to consumers. Palestinian civil contractors will also be engaged by IEC during the construction of the 161/33 kV substations.

In order to diversify the access to electricity and to reduce dependency on import, Palestine intends to establish as IPPs two 200 MW gas-fired power plants, one in Jenin near the contracted 161/33 kV substation and one in the Southern West Bank (Hebron). Private investors are showing their interest and there is already progress in pre-contract negotiations with the potential Israeli gas supplier.

There are also under consideration to invite private participation in the field of renewable energy, in particular small scale solar installations. Feed-in tariffs are not yet in place.

4.5 **Impact of Project Activities**

4.5.1 *Outcomes and results of sub-components*

Also it is expected to review and discuss with the PEA and utilities if there exist any opportunities to improve the efficiency of the procedures and routines of the warehouse at Tulkarm.

As the transmission installations are expected to be commissioned in December 2014, it is too early to assess improvements, but the utilities may be able to define their expectancies regarding losses and voltages.

Underground distribution (e.g. Nablus) improves safety for consumers and workers. Reliability is improved.

Al-Karakoon substation improved reliability and worker safety, and reduce losses due to improved control features

4.5.2 *Impacts on consumers*

Economic impact

Tariff rate used to vary according to the municipalities and companies in the past. There were no transparent tariff methodologies while determining the tariff rates. The consequence is that the tariff rate used to be higher and expensive. However, with the establishment of PERC, specific tariff rate has been formulated for different types of consumers. Special consideration for the low income community groups is provided. The government has also provided additional financial support leading to the significant reduction in all tariffs.

Such transparent and reduced tariff rate (as compared to the varied and higher tariff rate before) has certainly made a positive economic impact to all the electricity consumers connected to the utilities.

The previous tariff rate for residential consumer was about 1 NIS per kWh whereas it is now 0.45 to 0.58 NIS per kWh depending on MV or LV connection and type of consumer.

Moreover, the analysis from PERC, PCBS, PwC reveals [29] that the electricity consumption per capita (kWh) has increased by 6.8% during the programme period (2008-2012). In 2008, the consumption per capita was 1122 kWh whereas in 2012 it is 1198 kWh. And it is predicted to rise in the future. Such rise in electricity consumption clearly indicates a positive impact on the economy of the consumers.

4.6 Institutional Development

4.6.1 *Institutional and capacity development of PEA / PMU*

Significant reform of the Palestinian energy sector began in 1995 with the creation of the Palestinian Energy Authority as the sole agency responsible for energy sector development. The initial mandate of the PEA was to provide all Palestinian citizens with reliable electricity supplies thereby contributing to the development of the energy sector and the economy as a whole. Despite connection rates in excess of 99% of the population, the PEA faces challenges to improve the reliability of its service, cost recovery and public accountability. To remedy the situation, the PEA undertakes capacity development activities and initiates reforms to the institutional structure of the energy sector. These activities are being coordinated within the Palestinian Energy Sector Assistance Phase V, some of which are supported by the Norwegian/Swedish funding and some by other co-funding partners.

The Nordic funding is provided to cover the costs of the Programme Monitoring Unit (PMU), and portions of the costs of the three programme components, i.e. transmission, distribution and institutional reform. The Programme Document does not contain specific criteria upon which to measure the performance of the PEA; basically, there is no baseline upon which to “assess how the institutional and capacity development of the PEA has been improved”. Nonetheless, the review team was able to observe that the PMU is an effective organization in the overall operation of the Palestinian electricity sector. This observation was confirmed through consultations with the development partners including the World Bank, the European Commission, the Italian Representation Office and the Norwegian Representation Office.

The PMU organizational chart indicates a well-structured organization with the necessary personnel to manage the programme activities. The PMU placement within the PEA with direct contact to the Minister and PEA Chairman assures relevance of the programme within the energy sector.

Specific capacity building of key personnel on project management, and financial management and procurement with respect to World Bank procedures has ensured a high level of competence within the PMU.

4.6.2 *Regulatory function and creation of PERC*

The Palestinian Electricity Regulatory Council (PERC) was established in February 2010 with assistance of the World Bank including budget support of USD 1.2m. It was the intention that PERC be set up as an autonomous body with a principal objective to monitor all electricity sector activities while ensuring availability of service with appropriate prices while preserving the environment and taking the interests of electricity consumers and electricity generation, transmission and distribution companies into consideration.

PERC is a member of the Association of Mediterranean Regulators for Electricity and Gas (MedReg) and appears to function as a respected authority in the Palestinian energy sector. They utilise internationally recognized methodologies for tariff setting; they issue licenses, encourage competition and distribute information to all stakeholders to ensure transparency and enable informed decisions regarding electricity use.

PERC should obtain its revenue through utility licensing fees and leave the commercial activities to the utilities. However, this situation is complicated because license revenues

are in fact collected by the Ministry of Finance; and PERC does not have access to MOF resources. Hence PERC is reliant on donor support. While the Regulator appears to function with the justice and openness expected, it will be important to rectify the institutional structure to ensure transparency and the conduct of best practices as the electricity sector matures.

4.6.3 *Policy making at PEA*

The PEA is the main policy making body of the PA dealing with electricity. In addition, it provides overall electricity sector coordination and system development.

According to the Electricity Law, the PEA is tasked with drafting the general rules and policies related to energy and presenting them to the Council of Ministers for approval. PEA also coordinates electricity interconnections, issues public safety rules, and develops compliance requirements for environmental conditions.

PEA also works with the Institute of Standards and Metrology on seeking approval for electricity sector standards, collaborates with PERC on licensing and tariff setting.

4.6.4 *Establishment of PETL*

The Palestinian Electricity Transmission Company Limited (PETL) was formally established in line with the Electricity Law No. (13) and will become the sole electricity transmission company in the West Bank and Gaza.

4.6.5 *Establishment of NEDCO*

The establishment of the Northern Electricity Distribution Company (NEDCO) in 2008 brought the total number of distribution companies in the West Bank and Gaza to five companies. NEDCO currently supplies the governates of Nablus and Jenin and distributes electricity to 23 other municipalities and villages. NEDCO's concession area comprises also the governates of Tubas, Tulkarm, Qalqilya and Salfeit. It is expected that a steady stream of municipalities and villages will join NEDCO during the next months, especially when the new substation is commissioned. Tubas Electricity Distribution Company (TEDCO) with 30,000 consumer is a larger utility in NEDCO's concession areas which has not yet joined. It may therefore be that the loss indicator shows temporary variations and possible negative development during the coming period. NEDCO has more than 148,000 consumers and distributes 474 GWh/year at present.

4.6.6 *Tariff setting guidelines*

The Palestinian Electricity Regulatory Council (PERC) has developed a tariff methodology based on cost of services. The tariffs and connection fees to the various consumer groups (residential, commercial, industrial etc.) was subject to cabinet decision in 2011. The tariff setting model adopted a residential tariff to provide support for low-income community groups.

From table 5, there may be seen that the increase in electricity purchase price is reflected in the 2011 and 2012 average selling prices. However, the margin to NEDCO is reduced which is alarming in view of the challenges the utility is facing. Continued efforts to reduce technical and non-technical losses as well as improvement of the collection rate are consequently important.

4.6.7 *Pre-paid metering*

The installation of the prepayment meters is progressing very well after an extensive period of tendering (two unsuccessful tendering rounds in 2009 and 2010 with contracts signed July and August 2011 after a third tendering) and a period of on-site meter tests. The meter installation is expected to be finalised in 2015.

The ordered meters are 60,000 split meters (for the refugee camps), 154,000 standard single meters and 15,600 three-phase meters. The meters have arrived to the warehouse at Tulkarm and are being deployed to the utilities according to agreements between PEA and the utilities and the progress of the installation in each utility. In June 2013 it was reported that 56,556 single phase and three phase meters were installed by the West Bank utilities. During the visit to the warehouse 11th September 2013 the team observed the stores of meters and the on-going deployment of meters to the utilities. At the visit to NEDCO 12th September, the review team learned that more than 21,000 meters were installed in its concession area and with an expected total of 25,000 installed in 2013. The three teams of technicians install approximately 1,000 meters a month.

The installation of the split meters are lagging. The Palestinian Government and the Representatives of the refugee camps have entered into an agreement on deployment of the split meters in the camps, but the implementation has not yet started partly due to the extraordinary circumstances characterizing the camps. Only 40 split meters are installed in JDECO while further technician training are awaiting due to the complexity of the hardware and software. A workshop on the issue is expected to take in October to initiate the installations.

4.7 Risk Management

4.7.1 PEA Fulfilment of Obligations

The obligations of the PEA are stated in Article IV of the Agreement signed on 28 September 2008. The review mission made the following findings.

1. The PEA has taken overall responsibility for the planning, implementation, reporting and monitoring of the Programme. The Minister and PEA Chairman, Dr. Omar Kittaneh, appears to be fully engaged in the activities. The PMU has routines in place to effectively monitor activities of Palestinian partners, including procurement and financial management.
2. The PMU provides consolidated reports of all donor inputs to the project. The Ministry of Finance coordinates the donor financing.
3. The PMU also provides regular reporting according to the Programme Document.
4. Financial reports are conveyed to the Finance officer at the NRO.
5. The programme implementation is monitored through annual meetings. In addition, there is clearly open communication between the PEA and the NRO to deal with unforeseen issues on an as required basis.
6. The PEA seeks exemptions with the assistance of the NRO.
7. The PEA also obtains necessary permits, also with the assistance of the NRO when applicable.
8. The review team was granted access to all facilities and understand that this has been the case for representatives of the NRO.

4.7.2 IEC fulfilment of obligations

There are no obligations of the IEC under the Agreement. However, the IEC is a contractor for the construction of the high voltage substations. In addition, IEC delivers electricity to the Palestinian Territories.

4.7.3 Delays and Cost overruns

There have been significant delays in the delivery of the four high voltage substations under Sub-component 1.1 of the project. The principal reason is the time needed for

negotiations between the EIB and the IEC. While not a cost overrun, there is an accompanying budget increase from USD 48m to USD 63m. In parallel with the substation negotiations, there is an additional benefit arising from discussions to connect the Jenin 161/33/22 kV substation to be able to supply power to an IEC substation north of Jenin after the first gas-fired 200 MW Palestinian power generation unit is built.

Associated with the delay of the substations, the installation of the NCC/SCADA under Subcomponent 1.2 is also delayed. The Norwegian budget of USD 3m is being reallocated to other activities and a new budget item for the SCADA will be programmed into an eventual Phase VI proposal.

The withdrawal of the Government of Spain from programme support has caused delay in the Development of the Northern Distribution System under Subcomponent 2.1. Nonetheless, the Government of Italy has offered to support these activities and the work is continuing in line with the original budget.

With reference to section 4.6.7, the need for 3 rounds of tendering caused a delay in the meter installation activities.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The goal of this current phase is to improve the financial viability of the Palestinian energy sector through targeted support that creates conditions that increase the payment of invoices from the Israel Electric Corporation (IEC), the principal supplier of electricity in both the West Bank and Gaza. The current situation is that the Israeli Government withholds clearance revenues owed to the Palestinian Authority equivalent to the amount of non-payment of electricity, placing a fiscal burden on the Palestinian Ministry of Finance.

During the review mission, the PMU met with IEC to obtain detailed accounts of the electricity invoices during the past 4 years. The data indicate that total electricity invoices during the 45 month period from 9/2009 through 5/2013 was 4.3 billion NIS, or about 100 MNIS per month. Net lending for electricity services during this same period averaged about 62 MNIS per month. By contrast, the clearance revenues during this period averaged 450 to 500 MNIS per month. Hence the net lending for electricity is about 13% of clearance revenues. Net lending for other services (water, health, and sewage) adds another 33 MNIS per month; hence total net lending is on the order of 20% of clearance revenues.

Despite the good efforts of the project to increase the collection of electricity invoices, there are a number of factors that cause the non-payment. These include the general economic downturn, energy price increases, delays in payment of civil servant wages, deterioration in consumer behaviour, and increased electricity theft. The World Bank is presently undertaking a comprehensive study to determine the relative significance of the main factors contributing to non-payment. The outcomes of this study will provide important input for the design of future assistance to the electricity subsector.

Nonetheless, the review indicates that positive results are being achieved that benefit the Palestinian population. The PEA has begun a consultative process with its development partners to design follow-up activities. The review team recommends that the current project be extended into 2014 to allow sufficient time to ensure an orderly transition into an eventual Phase VI.

According to the assessments undertaken during the review, there are many relevant activities in the project design that have contributed tangible positive results within the Palestinian electricity subsector. Some activities have a direct impact on reducing direct lending, while others indirectly impact the net lending.

The creation of the Northern Distribution Utility (NEDCO) was particularly relevant in the establishment of a more robust electricity supply system to provide reliable electricity supply within its service area. The utilities have potential to reduce net lending by assuming greater responsibility as local energy providers.

The prepayment meters also contribute to net lending reduction by increasing the rate of collection of electricity invoices.

Even though there are delays in the high voltage substations and accompanying SCADA systems, these investments will have important impact on reducing net lending.

Continued capacity building and institutional reforms are essential in enabling greater autonomy and responsibility for energy supply with the Palestinian Territories.

The review team concludes the following with respect to key programme objectives, as indicated in the TOR for the End Review.

Objective 1: Remedy current system deficiencies

This objective was achieved by the rehabilitation of existing distribution networks and the extension of electricity services to previously underserved communities in the West Bank, particularly in the northern region.

The programme contributed directly to the establishment of the Palestinian Electricity Regulatory Council (PERC). The PERC subsequently developed a series of consumer tariffs that promote commercial viability. In addition, government subsidies are provided to cover delivery of electricity to the poorer segment of the population. These activities contributed to the financial viability of the electricity subsector.

Objective 2: Improve service delivery and public accountability

The establishment of the Palestinian Electricity Transmission Company Limited (PETL) will enable a harmonized transmission system between generation and distribution companies. This will improve accountability by providing Palestinian ownership and operation of the electricity network. The establishment of NEDCO is also improving delivery of electricity services. By transferring more autonomy to the Palestinian distribution companies (DISCOS), there is less reliance on the IEC and greater accountability within the Palestinian institutional framework for electricity service delivery.

Objective 3: Lay the legal, institutional, economic, financial and technical basis for efficient system development

The strengthening of the institutional framework including PERC, PETL, NEDCO and the increased engagement of PEA in policy making contributed to establishing a solid basis for efficient system development. There is still a need, however, to improve the independence of the electricity regulator which is too closely connected to the PEA.

The planning and development of generation capacity in the West Bank will require private sector investment and the preparation of a contracting framework to integrate independent power producers (IPPs) in the electricity service delivery system.

Objective 4: Finalize the necessary infrastructure to meet the growth of demand up to 2020

The installation of prepaid meters is an important infrastructure enhancement that improves the collection rate for electricity service invoicing. The network rehabilitation projects are also a significant benefit to the communities. Despite the delay in the construction of the high voltage substations, these projects are going ahead and the first one is planned to be commissioned before the end of 2014.

5.2 Recommendations

Following from the assessment, the review team makes the following recommendations for completing Phase V and for the formulation of an eventual Phase VI.

5.2.1 Phase V Completion

1. At the last annual meeting, the parties agreed to extend the project through the end of 2013. During the review mission, the PMU indicated that certain items planned for completion during 2013 (i.a. installation of prepaid meters, distribution network rehabilitation) would need more time. The PMU would request a further no cost extension through mid-2014.
2. The PMU is planning to prepare a Solar/Wind Atlas to help identify sites for renewable energy projects. This can be supported by a portion of the unutilized Norwegian funding and can be supported under subcomponent 3.3 of the current agreement.

3. As part of the development of NEDCO, a study can be prepared to assess the impact of municipalities joining the utility. This is especially important because the PA does not provide budget support for many local services.
4. The World Bank is undertaking an Assessment and Action Plan to address the non-payment of electricity. The results of this study, to be completed during the first half of 2014, will provide essential input to the design of an eventual Phase VI. This body of work will provide important insights into the net lending discussions.
5. It will be beneficial to ensure a seamless transition from Phase V to Phase VI so as to maintain the momentum and positive contributions being made by the PEA/PMU.

5.2.2 Phase VI Design Considerations

6. In order to attain greater economic independence, it is essential for Palestinians to gain control over their own generation, transmission and distribution of electricity in both the West Bank and Gaza. The first step is to complete the construction of the high voltage substations (161/33kV) that were planned under Phase V.
7. It is necessary to counteract the tendency of increased non-technical losses including illegal connections through intensified awareness campaigns to gain more fundamental understanding among the population that unpaid bills and theft of electricity will impair the utilities' ability to pay the IEC bill and reduce the financial ability to continue network strengthening and maintenance. Non-payment is not hurting IEC, but first and foremost PA and its budgetary capacity to solve other tasks in the Palestinian society.
8. Pre-paid meters can be manipulated. Therefore, it should also be considered to intensify the local inspection of customer installations as an additional activity to the on-going installation of metering at the distribution transformers. Such awareness dissemination possibly backed up by printed material is especially important in connection with the progress of introducing split pre-payment meters in the refugee camps.
9. Associated with the high voltage substations is the installation of the National Control Centre Supervisory Control and Data Acquisition NCC/SCADA to monitor and control transmission and distribution systems in both Gaza and the West Bank. These were programmed for Phase V and should be moved into Phase VI.
10. The Northern Electricity Distribution Company (NEDCO) was formally established under Phase V. This is the last of the five utilities planned in the Letter of Sector Policy of 1997. As these utilities are becoming mature business ventures, it will be important to instigate and maintain audited accounts of their operations.
11. The Phase V support was built around infrastructure and technical interventions, institutional reform (creation of PERC and PETL) and capacity building. While these activities can have an impact on net lending, they do not directly address the root causes of non-payment for electricity services. The World Bank Assessment and Action Plan referenced in sub-section 5.2.1 will provide insight into these causes. This will enable a more structured fiscal approach to addressing the net lending problem. Subsequent support for net lending reduction may also target the Ministry of Finance in addition to the PEA.
12. The pre-paid electricity meters have had a positive impact on increasing collection revenues within the Palestinian communities. This component should be continued in the next phase.
13. The Solar/Wind Atlas will enable the design and construction of solar and wind powered electricity generation stations. These can be modular and vary from small/household scale installations to large grid connected power plants. The PEA

already has a renewable energy strategy. Note that the Palestinian Solar Initiative envisages renewable energy capacity to reach 25 MW by 2016 and reach 130 MW by 2020, thereby meeting 10% of demand. Renewable energy installations can contribute significantly to energy security and economic independence and can be a cornerstone of future energy sector development.

14. The construction of two gas fired power stations in the West Bank will provide locally produced power by Independent Power Producers (IPPs). The connection of the Palestinian power grid through the Jenin substation will enable interconnection to an Israeli substation 15kms north of Jenin and contribute to economic independence.
15. The advent of a gas connection from the Mediterranean to the West Bank through Israel will require institutional strengthening of the PEA to deal with the gas subsector. Norway has significant expertise to offer in this area.
16. It is important to continue the energy efficiency work by considering street lighting and green labelling.
17. The development of income generating activities within the Palestinian society is important for improving the ability to pay for services. This is particularly relevant in the agriculture and manufacturing sectors.
18. The review mission notes the significant positive contributions of the PMU in the successful implementation of the programme and considers continued support to be an effective use of Norwegian funds.

APPENDIX 1 TERMS OF REFERENCE

TERMS OF REFERENCE (10/04/13)

End Review of the “Palestinian Energy Sector Assistance Phase V”

1. Background

The Norwegian Ministry of Foreign Affairs (MFA) has been supporting the Palestinian Energy Authority (PEA) since its establishment after the Oslo Accords in 1993. This has been done through a set of agreements and the review in question is to focus on the current Agreement, entitled “Palestinian Energy Sector Assistance Phase V”⁴. The previous phase from 2004 till 2008 was evaluated by Nordic Consulting Group in June 2008.

The goal for the current phase, Phase V, is “to reduce the fiscal burden of the electricity sector on PA’s budgetary resources through lower deductions from clearance revenues for arrears owed to the Israeli Electricity Company (IEC, i.e. reducing the net lending) and meeting the requirement of supply until 2020”.

The objectives for the programme are the following according to the Agreement:

1. Remediating current system deficiencies;
2. Improving service delivery and public accountability;
3. Laying the legal, institutional, economic and financial and technical basis for efficient system development; and
4. Finalizing the necessary infrastructure to meet the growth of demand up to 2020.

The Agreement furthermore states that the overall programme outputs are the following:

1. Rehabilitating existing networks and services and extend services to currently underserved communities; an output for objective 1.
2. To separate the “policy” and “regulatory” functions from the “commercial functions” of power sector enterprises; an output for objective 3.
3. To refocus and reorganize the PEA to be the main policy making body for the sector; an output for objective 3.
4. To encourage maximum private sector participation in sector operations and development, particularly in generation and distribution, thus minimizing the need for government financial support, an output for objective 3.
5. To consolidate transmission networks, systems and functions in a new transmission company, an output for objectives 2 and 3.
6. To establish three⁵ new autonomous and commercially oriented regional distribution utilities (one in Gaza and two in the West Bank) by consolidating the existing electricity departments of municipalities and village councils; an output for objectives 2 and 3.

⁴ The programme also goes under the title “Electric Utility Management Project” (EUMP).

⁵ Apparently, two of these utilities were already established when the programme was initiated and the review should therefore only cover the establishment of Northern Electricity Distribution Company (NEDCO).

7. To increase the operating/technical efficiency of the distribution utility companies through energy end-use efficiency, energy conservations and better load management; an output for objective 2.
8. To develop pragmatic tariff setting guidelines that will permit full cost recovery and promote the commercial viability of sector enterprises while at the same time providing for “lifeline” rates for needy consumers; an output for objective 1.
9. The installation of the prepaid meters and the development of the distribution system and the construction of the substations, an output for objective 4.

It should be noted that during the course of the programme, the Norwegian/Swedish contribution has reallocated some of its funds to also cover other areas within the sector programme.

Main indicators were developed, covering both the overall program and the intermediate outcomes. The indicators, as well their baseline and target, have undergone some revision during the course of the programme.

2. Project administration

Funds are budgeted for the three components: transmission development, distribution development and rehabilitation, as well as institutional reform and capacity building. The agreed amount for this phase is NOK 105 000 000, which at the initiation of the programme constituted approximately 9% of the overall budget for the sector programme.

Norway and Sweden signed a co-financing agreement for this phase, where Sida contributes with SEK 30 000 000. The bilateral agreement was signed in September 2008 and has been extended through 2013, while the Swedish co-financing agreement was valid from February 2009 through December 2011.

Other donors such as the World Bank, the European Commission and Agence Francaise de Developpement (AFD) have also been active in the Palestinian electricity sector and made significant contributions towards the programme.

This end review is undertaken towards the completion of the programme, as per the Agreement. The PEA has submitted periodic progress reports throughout the implementation of the programme.

3. Main purpose of the review

In accordance with the Agreement, the main purpose of the end review is to assess to which extent the purpose is being/has been achieved, focusing on progress to date and the effectiveness of the programme. The impacts of “Phase V” shall also be included to the extent feasible.

The more specific objectives are as follows:

1. To determine the extent of completion of the programme.
2. To determine if the PEA has fulfilled the obligations of the Agreement.
3. To ascertain if the project has enhanced the capacity of the PEA.

The findings and conclusions of the end review shall feed into the preparations for the next phase of the electricity programme. Lessons learned from Phase V, useful for the next phase, shall therefore be given particular attention in the report. A joint donor appraisal for the next Phase will be conducted during the fall of 2013.

4. Scope of the review

The Phase V review shall cover all three components of the programme, but the scope of this review will be confined to the Norwegian/Swedish supported sub-components of Phase V. For some of the sub-components, other donors may also have made financial contributions, but the assessments shall cover these sub-components in their entirety.

The scope shall thus include but not be limited to the following issues:

Relevance

- Assess the relevance of the Norwegian/Swedish support to the Palestinian energy sector and for the beneficiaries.
- Assess to what extent the implementation of the programme is in compliance with Palestinian energy sector strategy and policy.

Effectiveness

- Assess if the project has been completed as per the project document and specifically evaluate to which extent the program goal “to reduce the fiscal burden” has been reached.
- Assess the programmes’ indicators, their means of verification and fulfillment of these.
- Assess the extent of the rehabilitation of distribution lines and connectivity to the households.
- Determine if the structures rehabilitated have been adequately incorporated in the regular management and administrative routines and how these are accounted for.
- If there are uncompleted activities, identify the reasons for not completing these. What are the main factors causing deviations or delays, and how has the PEA dealt with these?
- Has end user efficiency, including “non-technical” losses, been improved?

Efficiency

- Assess the cost-benefits when it comes to the overall and specific project outcomes.
- Determine the total cost of the damages, if any, that has been destroyed after construction or rehabilitation.

Sustainability

- Analyze if and how the political context has influenced the sustainability of the programme.
- Assess to what extent the project has been conflict sensitive.
- Assess the contributions the project has made towards women empowerment and gender equality.
- Assess the environmental issues associated with the output and outcome of the programme.
- Assess the development of private sector’s participation in power generation.

Impact

- Assess the outcome and results of the Norwegian/Swedish supported sub-components within the main components and towards the overall goal of the programme.
- Assess if the provision of electricity has improved the economic, social and cultural aspects of the customers and explain how.

Institutional development

- Assess how any institutional and capacity development of the PEA has been improved and how the programme has helped the PEA meet their normal obligations towards the consumers/beneficiaries.
- Have “policy” and “regulatory” functions been separated from the “commercial functions” of power sector enterprises

- Is PEA now the main policy making body of the sector?
- Has a new transmission company been set up?
- Have the new autonomous and commercially oriented regional distribution utility been set up?
- Have pragmatic tariff setting guidelines been developed? (ref. item 8 above)
- To what extent have prepaid meters been installed?

Risk Management

- Assess to which extent PEA has fulfilled the obligations of the Agreement.
- Has IEC fulfilled their obligations?
- Have delays and/or cost overrun occurred? If so, have mitigation initiatives been followed?

5. Methodology

The consultant shall apply internationally recognized evaluation standards for the assignment.

The assignment should build on the following data sources:

1. Review of the documentation presented by PEA and other documents available at the Norwegian Representative Office.
2. Interviews with selected PEA staff, as well as staff at the Tulkarm warehouse and the distribution companies.
3. Interviews with other donors, including Sweden, World Bank, EC and AFD.
4. Field visits to the areas of project implementation to assess the outputs and outcomes and also to speak to the beneficiaries and agencies at the ground level.

Relevant background documents include:

- Project document/application
- "Agreement between the Norwegian Ministry of Foreign Affairs and the Palestinian Authority regarding development cooperation concerning Palestinian Energy Sector Assistance Phase V"
- Appraisal of Phase V
- "Review of the Norwegian and Swedish support to the energy sector in the Palestinian Territories 2004 – 2008"
- "Limited Organisational Review of PEA, with Emphasis on Administrative Systems and Governance Structure" (NORPLAN, 2012)

6. Composition of Review Team

The end review shall be carried out by an independent team of consultants with the following qualifications:

- institutional reform and development,
- electrical engineering, preferably with background from electrification programs in developing countries,
- quantitative and qualitative evaluation methods, and
- knowledge of the local context in the Middle East.

The consultants should be fluent in English and Norwegian/Swedish.

The total amount of person-weeks is estimated at 10-12 weeks.

7. Timing and duration

It is expected that the duration of the assignment would be two months, from preparation to submission of final report, stating late July

The review team may need to spend about two weeks, preferably week 34 and 35, in Palestine. This will include the meetings, field visits and a debriefing of PEA and the donors. Another three weeks may be spent on writing the report and revising it based on comments from stakeholders, including Norad and the Norwegian Representative Office. It is suggested to finalize the end review before end of September.

Norad and the Norwegian Representative Office will consider participating as observers in this mission, at least part-time.

8. Reporting

The report shall be written in English.

The format of the report could be decided by the team. The report shall cover the programme's results in relation to purpose and objectives, analysis of major findings, possible risks and conclusion. A set of recommendations for the coming phase should be included. The report should be maximum 20 pages, in addition relevant annexes and an executive summary of 2 pages shall be added.

The draft report should be made available to Norad not later than 2 weeks after completion of the mission and the final report within 2 weeks of the receipt of comments from the stakeholders.

APPENDIX 2 BUDGET AND EXPENDITURE

SN	Description	BUDGET, MUSD					EXPENDITURE, MUSD			
		TOTAL	BREAKDOWN				TOTAL	BREAKDOWN		
		Budget	Norway/ Sweden	other donor	MOF	Utilities	Expenditure	Norway/ Sweden	other donor	MOF
1	Component 1: Transmission Development									
1.1.	Development of new 4 bulk 161/33/22kV supply substations in West Bank	73,2		63	10,2		9,02		7,76	1,25
1.2.	Ancillary services for the 4 substations	0,3	0,3				0,00	0,00		
1.3.	installation of NCC/SCADA in the West Bank and Gaza	0,1	0,1				0,08	0,08		
	Total, Component 1	73,6	0,4	63	10,2	0	9,10	0,08	7,76	1,25
2.	Component 2: Distribution Development & Rehabilitation									
2.1.	Development of the Northern Distribution System	24	0	24						
2.2.	Development of the Southern Distribution System									
2.3.	Reconfiguration of JDECO Distribution System	3,3		3		0,3	3,01		3,01	
2.4.	Rehabilitation & extension of the Dist. System for all the distribution systems	42,8	9,8	15	12	6	23,80	8,06	15,74	
	Replacement of damages in GEDCO*	4,5	1	3,5						
2.5.	Installation of Prepaid meters and automatic meter reading in West Bank pilot project	14,8	3,1	9,1	2,6		8,04	2,26	5,78	
							0,43	0,43		
2.6.	Rural Electrification	5,2	1		4,2			0,78		4,09
	Total, Component 2	94,6	14,9	54,6	18,8	6,3	40,16	11,54	24,52	4,09
3.	Component 3: Institutional Reform & Capacity Building									
3.1.	Establishment of PERC and Implementation of sector regulations	1,2		1,2			0,44		0,44	
3.2.	Establishment of Palestinian Transmission company (PETL)	1,2		1,2			0,00			
3.3.	Promoting the development & utilization of renewable energy resources	3,25	0,65	2,6			0,78		0,78	
3.4.	Institutional and capacity building of the utilities incl. creation of NEDCO	9,8	4,8	5			7,41	2,42	4,98	
3.5.	Engineering consultancy services						0,20		0,20	
	Development of legal framework	0,25		0,25						
	Strategic Planning Unit	0,05	0,05	0			0,01	0,01		
	Substation Supervision consultant	2,8		2,8						
	Prepaid meters consultant	0,7	0,6	0,1			0,48	0,48		
	Total Component 3	19,25	6,1	13,15			9,31	2,91	6,40	
4.	Program Monitoring Unit	1,45	1,3	0,15			1,18	1,18		
	Total, Proposed Program (USD)	188,9	22,7	130,9	29	6,3	59,75	15,72	38,68	5,35
	*Note: Expenditure incurred in this component is incorporated in rehabilitation activity									

APPENDIX 3 PERSONS MET DURING THE MISSION

NAME OF ORGANISATION	NAME OF PERSON	POSITION
Representation Office of Norway to the Palestinian Authority	Stein Torgersbråten	Minister Counselor
	Stian Nordengen Christensen	Counselor
	Emad Abdallah	Financial and Administrative Advisor
Consulate General of Sweden	Lisa Hellström	Consul, Development Cooperation
Palestinian Energy Authority	Dr. Omar Kittaneh	Chairman, Minister
	Dr. Abdel-kareem Abdeen	Deputy Minister
	Mohannad Aqel	Director, PMU
	Reem Karzon	General Director of Finance
	Fuad Amleh	Director, Planning
	Isam Abu Za'rour	Manager for Administrative Affairs
	Mohammed Mobayyed	Director, Energy Efficiency Unit
	Basel Abdaljawwad	Transmission Component Director
	Murad Hamed	Distribution Manager
	Yousef Almasre	Warehouse Manager
	Mohamed Awad	Warehouse Keeper
	Maen Rashed	Manager for Technical Affairs
	Asma Yasin	Operational Manager
State of Palestine	Laila Sbaih-Eghreib	Acting Director General of International Relations & Projects, Ministry of Finance
Palestinian Electricity Regulatory Council	Zafer Milhem	Chief Executive Officer
	Emad Khader	Chairman
Northern Electricity Distribution Company	Salam S. Zagha	General Director
	Ibrahim Zaidan	Technical Director
PricewaterhouseCoopers	Jamal Abughosh	Former Director of PMU
Office of the European Union Representative	Johannes van der Ploeg	Project Manager, Infrastructure
	Sophie Collette	Programme Manager, Water & Sanitation
	Shereen Abu-Eid	Task Manager
The World Bank	Simon Stolp	Senior Energy Specialist
	Roger Coma-Cunill	Energy Specialist
Italian Development Cooperation	Fulvio Capurso	Head of the Economic Development Unit

APPENDIX 4 NORPLAN PROGRAMME IN PALESTINE

Sunday 8 September 2013

Travel from Gardermoen via Tel Aviv to East Jerusalem

Monday 9 September

- 09:30 Briefing at NRO
- 14:00 Italian Representation Office
- 15:00 Office of the European Union Representative
- 17:00 Transfer to Ramallah

Tuesday 10 September

- 9:00 Briefing at PEA and all day Meetings with PMU

Wednesday 11 September

- 8:00 Visit Tulkarm Warehouse and visit Tulkarm Electricity Department

Thursday 12 September

- 8:00 Visit NEDCO in Nablus and Al-Karakoun Substation

Friday 13 September

- All day report writing

Saturday 14 September

- All day report writing

Sunday 15 September

- 9:00 Meetings at PMU and report writing

Monday 16 September

- 9:00 Meeting with PEA Chairman and report writing

Tuesday 17 September

- 8:30 Meetings at PERC and with PMU General Director for Finance

Wednesday 18 September

- 8:30 Meetings at Ministry of Finance and with PMU staff

Thursday 19 September

- 9:00 Debriefing at PEA
- 10:00 Meetings with the World Bank
- 15:00 Transfer to East Jerusalem

Friday 20 September

- 10:00 Debriefing at NRO
- 11:30 Transfer to Tel Aviv and return to Gardermoen

APPENDIX 5 DOCUMENTS REVIEWED

1. *Agreement between the Norwegian Ministry of Foreign Affairs and the Palestinian Authority regarding development cooperation concerning Palestinian Energy Sector Assistance Phase V, 25 September 2008*
2. *Co-financing agreement between the Norwegian Ministry of Foreign Affairs and Swedish International Development Co-operation Agency regarding assistance to the Energy Sector in the Palestinian Territory Phase V, 05 February 2009*
3. *Addendum No.1 to Agreement between the Norwegian Ministry of Foreign Affairs and the Palestinian Authority regarding development cooperation concerning Palestinian Energy Sector Assistance Phase V, 10 February 2009*
4. *Minutes for the Annual Meeting between Palestinian Energy Authority and the Consulate General of Sweden and the Representative Office of Norway, 16 November 2011*
5. *Minutes for the Annual Meeting between Palestinian Energy Authority and the Consulate General of Sweden and the Representative Office of Norway, 24 November 2010*
6. *Minutes for the Annual Meeting between Palestinian Energy Authority and the Consulate General of Sweden and the Representative Office of Norway, 1 December 2009*
7. *Minutes for the Annual Meeting between Palestinian Palestine Energy Authority and the Representative Office of Norway, 3 December 2012*
8. *Appraisal of energy sector assistance programme phase V in the Palestine territories, final report, 05 June 2008*
9. *Review of the Norwegian and Swedish support to the energy sector in the Palestinian territories 2004-2008, final report, 05 June 2008*
10. *Program Document 2008-2010 Palestine Energy Sector Assistance Phase V final, 30 August 2008*
11. *Limited organizational review of Palestine energy authority with emphasis on administrative systems and governance structure, Final Report, September 2012*
12. *Progress report first half of 2010 (report 3) associated with budget and work plan for year 2011, Palestinian Energy Authority*
13. *Progress report first half of 2010 (report 4) associated with budget and work plan for year 2011, Palestinian Energy Authority*
14. *Progress report first half of 2011 (report 5) associated with budget and work plan for year 2012, Palestinian Energy Authority*
15. *Progress report of 2011 (report 6) associated with budget and work plan for year 2012, Palestinian Energy Authority*
16. *Progress report first half of 2012 (report 7) associated with budget and work plan for year 2013, Palestinian Energy Authority*
17. *Progress report 2012 associated with revised budget and work plan for year 2013, Palestinian Energy Authority, May 2013*
18. *Palestinian National Authority, Energy Sector Strategy, 2013-2011*
19. *Memorandum of Understanding (MoU) between the PEA and the Jerusalem District Electricity Company for the prepaid meters project*

20. *Overall strategy for Renewable Energy in Palestine*
21. *The Palestine National Energy Efficiency Action Plan*
22. *Manual of Financial, Administrative and Internal control policies*
23. *Electric Utility management project, Mid-term Review, December 8-14 2011*
24. *West Bank and Gaza, Energy sector review, May 2007*
25. *WBG-Energy Mission Management Letter, December 2011*
26. *WBG-EUMP Management Letter, November 2011*
27. *WBG-EUMP-Aidememoire, October 2010*
28. *Distribution development for the Northern and Southern of West Bank, Palestinian Energy Authority, December 2012*
29. *PETL Business development plan (Draft), Price waterhouse Coopers, August 2013*
30. *KPIs Verification Report (Draft), Electricity Distribution Companies, Price waterhouse Coopers, November 2012*
31. *Ramallah Substation and Distribution System, Environment and Social Management Plan, Palestinian Electricity Authority, April 2013*
32. *Project Monitoring and Final Report (Draft), Prepaid Metering Project, Palestinian Energy Authority, May 2013*
33. *NEDCO Performance and Challenges (2011-2013)*
34. *Concept Note (Draft), Assistance to the Electricity Sector, Phase VI, Electricity Utility Management Project II*
35. *Palestinian National Authority, Energy Sector Strategy (2013-2011)*
36. *Study on Poverty and Social Impacts of Electricity Prepaid Meters, Alpha International for Research, Polling and Informatics, February 2013*
37. *Letter of Sector Policy, Palestine National Authority*
38. *Sector aspiration and strategy: Power (Draft), Office of the Quartet Representative, June 2013*
39. *Paving the way for the Mediterranean Solar Plan, Country report Palestine, Consortium MVV decon/ENEA/RTE-I/Sonelgaz/Terna*
40. *Palestinian Electricity Regulatory Council, Annual Report 2011*
41. *PEA memo, Prepaid meters project, June 2013*
42. *PMU memo, Summary about the net lending in electricity sector, September 2013*

APPENDIX 6 PROGRAMME KEY PERFORMANCE INDICATORS

	TARGETS SET						ACHIVEMENT/PROGRESS		
	As per the agreement		Revised targets PEA		Targeted Improvement in %		Actual Achievements		
	Baseline	Target (at the end of program)	Baseline	Target (at the end of	As per the agreement	As per the revised target	at the end of 2012	Improvement in %	
1	Net lending on account of the power sector, MUSD	240	120	232	140	50 %	40 %	275	-19 %
2	Technical/non technical losses								
	JEDCO	19,8	18	27,2	27	9 %	1 %	26	4 %
	SELCO	19,7	18	23	20	9 %	13 %	41	-78 %
	HEPCO	17,5	12,5	20	21	29 %	-5 %	21	-5 %
	GEDCO	24	18	30	25	25 %	17 %	30	0 %
	NEDCO	12,2	11		22	10 %		22	
3	Collection performance								
	JEDCO	0,91	0,98	0,91	0,96	8 %	5 %	0,96	5 %
	SELCO	0,41	1,12	0,57	0,82	173 %	44 %	0,53	-7 %
	HEPCO	0,6	1,09	0,62	0,78	82 %	26 %	0,78	26 %
	GEDCO	0,24	1,53	0,32	0,54	538 %	69 %	0,68	113 %
	NEDCO	0,42	1,17		0,85	179 %		0,9	6 %
4	Accounts payable IEC months								
	JEDCO	2,6	1	2,6	3,5	62 %	TARGET SET ARE NOT PROGRESSIVE	3,5	
	SELCO	25	8	30,5	46	68 %		55	
	HEPCO	28,6	11	29	43	62 %		40	
	GEDCO	40	12,00	39	4	70 %			
	NEDCO	45,8	25	1,3	4	45 %		4	
5	Number of consumers								
	JEDCO	182657	190054	182657	222077	4 %	22 %	215374	18 %
	SELCO	15000	30000	14790	30000	100 %	103 %	12600	-15 %
	HEPCO	30420	33241	30300	36433	9 %	20 %	35031	16 %
	GEDCO	154163	169274	154163	180453	10 %	17 %	179717	17 %
	NEDCO	50648	58148		144000	15 %		93564	-35 %
6	Four substation are functional							Turn key contract signed	
7	Development and reconfiguration of distribution system							Ancillary work in progress	
								Partially completed	
8	Prepaid meters	3000	245000					Supplied 229600, 109861 deployed and installed 56596	

APPENDIX 7 OVERVIEW MAP OF THE PROGRAMME AREA

