State of Palestine

Environment Quality Authority (EQA)

Climate Technology Centre & Network (CTCN)

"Technology Road Map for the Implementation of Climate Action Plans in Palestine"

Gender responsive capacity development programme

Version 1

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Deloitte Tohmatsu Financial Advisory LLC

Eco Consult

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Acronyms

EE	Energy Efficiency
EQA	Environment Quality Authority
ESCO	Energy Service Company
GCF	Green Climate Fund
GHG	Greenhouse Gas
INCR	Initial National Communication Report
IPP	Independent Power Producer
JSC	Joint Services Council
LGU	Local Government Unit
MNE	Ministry of National Economy
MOA	Ministry of Agriculture
MOH	Ministry of Health
MOLG	Ministry of Local Government
MOPWH	Ministry of Public Works and Housing
MOT	Ministry of Transport
NAP	National Adaptation Plan
NGO	Non-Government Organization
PEA	Palestinian Engineers Association
PENRA	Palestinian Energy and Natural Recourse Authority
PERC	Palestinian Electricity Regulatory Council
PETL	Palestinian Electricity Transmission Company Ltd.
PV	Photovoltaic
PWA	Palestinian Water Authority
UNFCCC	United Nations Framework Convention on Climate Change
WSRC	Water Sector Regulatory Council

1. Introduction

The State of Palestine is vulnerable to the impacts of climate change with severe implications for its economy. Impacts significant to the region include decreased precipitation, significant warming, more frequent extreme weather events, and rise in sea level. These could lead to greater water scarcity, decreased agricultural productivity, and water saline intrusion.

The Palestinian Government is committed to addressing these climate change vulnerabilities while at the same time, achieving its national development and policy objectives. This is reflected in its submissions to the United Nations Framework Convention on Climate Change (UNFCCC) namely, Initial National Communication Report (INCR), National Adaptation Plan (NAP) and Nationally Determined Contribution (NDC).

To achieve sustainable economic development while contributing to the reduction of greenhouse gas (GHG) emissions, it is important to prioritize various adaptation and mitigation measures through the development and diffusion of climate friendly technologies. Relevant technologies and the actions required for their introduction have been identified as part of the Technology Implementation Roadmap.

In order to further operationalize the roadmap, it is important to identify the capacity gaps for its implementation. This report builds on and supplements the assessment of gaps and capacity building actions identified as part of the roadmap. It includes a detailed capacity gap assessment, as well as a detailed capacity development programme and gender responsive actions.

2. Capacity Development Approach

The technology roadmap implementation plan enumerates actions and activities for the implementation of prioritized technologies in Palestine to address its vulnerability to the impacts of climate change and achieve its national development goals through a low-carbon development path. It is evident that the development of capacities of all key stakeholders involved in implementation, from government institutions to the general public, will remain critical to sustain progress to achieve development goals.

Capacity development in general context normally refer to delivery of capacity building activities that would, among others, educate a stakeholder to do something new or do something better, create new institutions or strengthen existing ones, and provide trainings to develop skillsets. For Palestine, the assessment of capacities and gaps in all sectors covered for the technology roadmap indicate that the general concept of capacity development applies to the Palestinian context.

The gender responsive capacity development programme proposes to take an approach wherein individuals, organizations and societies obtain, strengthen and maintain capabilities that will bring about transformational change that is sustained over time. This means that capacity development for the technology roadmap should achieve to go beyond the conventional approach to capacity development, and make sure that capacity building activities for implementation incorporate transformational aspects that would empower individuals, leaders, organizations and societies, including women and marginalized groups. For example, the provision of technical capacity building for specific sector related technologies will involve trainings on technical and technological aspects. To incorporate transformation, the trainings should ensure that trainees are empowered which would allow them to train others and be able to address future training needs. The gender responsive capacity development programme aims to go beyond performing specific tasks and incorporate changes in mindsets and attitudes of stakeholders.

For the capacity development approach to be gender-responsive, the following must be considered where regarding institutional or individual capacity building across all sectors.

Table 1: Gender-responsive Approach to Capacity Building

Capacity Building Action	Gender Intervention	Justification
Institutional / Policy and Regulations	Build capacity of relevant institutions on conducting gender analyses and improved data collection. Conduct in-depth gender analyses of the target sectors. Integrate findings into policies and regulations. Aim for at least 20 percent representation of women in all related committees, meetings and capacity building activities. Targets should be increased as programs progress and scale up. Build the capacity of female staff in relevant entities to grow into decision-making roles through providing mentorship or job shadowing opportunities.	Gender analysis and integration ensures that the needs and expectations of both women and men, and their subgroups (youth, disabled, refugees etc), are met. Including women in decision-making roles ensures that policies and regulations serve the needs of both women and men.
Human Resources/All	Aim for at least 20 percent representation of women in	Providing women, youth

Capacity Building	all capacity building activities. Targets should be increased as programs progress and scale up. Support internships, on the job training or job shadowing programs to increase the technical knowledge of women and other groups. Employ specific outreach mechanisms, such as working with universities, civil society, female-owned enterprises, women's cooperatives and associations and relevant ministerial bodies to encourage women, youth and persons with disabilities to join capacity building activities, including internships. Identify women-owned or women-led businesses to receive capacity building support	and persons with disabilities with capacity building will not only allow them to install, use and maintain different technologies, but will provide them with vital income generation skills and therefore increased resilience to climate change.
Access to Finance	Include a gender perspective in training offered to financial sources. Set targets for the access to green finance for women and female-owned or led businesses. Identify income generation/access to finance opportunities for persons with disabilities. Develop and implement tailored products and services to meet financial needs of women entrepreneurs and female heads of household. Identify women-owned businesses as project vendors to supply technologies and/or services where possible.	Designing financing schemes with a gender perspective ensures that women and other groups overcome common barriers to accessing finance.
Awareness Raising	Ensure that communications strategies target key users and influencers such as women and youth. Behavior change messages and means of communication -social media, radio, TV, home visits - should be specially crafted for the different targeted groups. Persons with certain disabilities such as the seeing or hearing-impaired require accommodations in messaging, as do those with literacy issues, including elderly women. Notes: Care must be taken that messaging does not reinforce gender stereotypes.	Women and youth generally act as behavior change influencers among their immediate families, neighborhoods and communities.

	Care must be taken not to advocate for the increase of the domestic/unpaid burden on women (through the promotion of solid waste management practices at the household level for example).	

3. Energy sector

A number of actions and activities are planned under the implementation plan. Actions planned include grid upgrading, the dissemination of solar rooftop PVs, the development of larger scale solar PV and other renewable energy technologies, the dissemination of solar water heating technologies and the deployment of energy efficient technologies.

Capacity building activities have been explicitly proposed as part of the implementation plan in order to operationalize these activities. They include the following:

Table 2: Capacity Building Activities in the Energy Sector

Actions	Capacity building actions identified
Action 1.1 – capacity building and awareness raising for grid upgrading	• Institutional capacity building • Technical capacity building • Awareness raising
Action 1.4 – overall capacity building and awareness raising	• Institutional capacity building • Technical capacity building • Capacity building for solar PV developers • Capacity building for solar water heater system designers, manufacturers and testing facilities • Capacity building for financing sources • Awareness raising

Other actions require significant technology and knowledge transfers, such as the development of a feasibility study for grid upgrade and policy development.

3.1 Capacity needs and gaps in the energy sector

In order to complete the assessment conducted as part of previous outputs and detail the gender responsive capacity development programme for the energy sector, an assessment related to capacity needs and gaps has been conducted by the sector stakeholders, based on a capacity assessment questionnaire. The questionnaire completed by the stakeholders is provided in annex. The main capacity needs and gaps identified pertaining to the energy sector are detailed in Table 3.

Table 3: Capacity Needs and Gaps in the Energy Sector

Type of gap		Detailed information
Common gaps		
Institutional / policy and regulations		1. Lack of specialized directorate related to climate change within the energy sector 2. Specific roles for each entities are not sufficiently detailed
Access to finance		3. Lack of knowledge related to climate finance and to accessing the GCF
Technology related gaps		
National Grid Assessment and Electricity Grid Upgrade	*Institutional / policy and regulations*	1. Lack of efficient technical communications with the power suppliers 2. Lack of transmission and distribution codes
	Human Resources	1. Lack of human qualified resources in this field in order to conduct the grid assessment and the upgrade itself
	Infrastructure and related	1. Weak available network infrastructure 2. Lack of the dedicated software

	software	
Various application of solar PV technologies	*Institutional / policy and regulations*	1. Lack of third party quality assurance 2. Lack of adopted specifications 3. Lack of master grid study in order to determine the optimum solutions and capacity 4. Lack of knowledge related to the existing types and the diversity of PV technologies available in the world 5. Lack of database and related data concerning the installed capacity and market readiness and performance 6. Lack of appropriate incentives and guarantees
	Human Resources	7. Lack of qualified engineers for installation and commissioning.
	Infrastructure and related software	8. There are no testing facilities in the fields of renewable energy
Energy efficiency	*Institutional / policy and regulations*	1. Lack of related regulations and / or mandatory implementation of EE code and Green Building code 2. Lack of Energy Efficiency labelling 3. Lack of ESCO's 4. Lack of experience and awareness 5. Lack of database and related data for the existing technologies
	Human Resources	6. Lack of experience in the private sector to promote the EE solutions 7. Lack of energy management experience and certified engineers
	Infrastructure and related software	8. There are no testing facilities in the fields of energy efficiency
Solar water heating technologies	*Institutional / policy and regulations*	1. Lack of regulations 2. Lack of technical specifications 3. Lack of knowledge and experience related to the advanced applicable technologies 4. Lack of database related to installed equipment and performance
	Infrastructure and related software	5. Lack of testing labs 6. Lack of some of solar water heating components and of other related advanced technologies

3.2 Capacity development programme

To address the gaps identified and operationalize the implementation plan, the following detailed capacity development programme is proposed for the energy sector (Table 4).

Table 4: Energy Sector Capacity Development Programme

Type of trainings		Details	Relation with the implementation plan	Objectives	Participants	Method
Common trainings						
Institutional / policy and regulations		1. Training in better defining roles and responsibilities within the sector	1.1.1, 1.4.1	Define roles and responsibilities to support decision making	PENRA, PETL, PERC, MOPWH and PEA	Workshop and technical assistance (organizational analysis)
Access to finance		2. Access to climate finance, including GCF 3. Development of public / private financing schemes	1.4.1, 1.4.4, 1.5.2	Improving access to finance for the public and private sector	PENRA, financing institutions (local banks and others)	Workshop and technical assistance for the development of financial schemes
Trainings related to a specific technology						
National Grid Assessment and Electricity Grid Upgrade	*Institutional / policy and regulations*	1. Grid code preparation	1.1.1	Preparing the enabling environment for private sector engagement	PENRA, PETL, PERC, potential utilities and IPPs	Workshop, on the job training
	Human Resources	2. Training for local engineers in assessing and upgrading the grid	1.1.2, 1.2.1	Supporting the sustainability of the grid assessment and upgrading, supporting communications with power suppliers	PENRA, PETL, PERC	Workshop, training in another country
	Infrastructure and related software	3. Grid study conducting 4. Software utilization	1.1.2, 1.2.1, 1.3.1	Assessing the grid and understanding how to use the relevant software	PENRA, PETL, PERC	Workshop, on the job training

Various application of solar PV technologies	*Institutional / policy and regulations*	1. Preparation of the enabling environment specific to the technology	1.5.1, 1.5.2	Support the develop of regulations and incentives for solar PV technologies	PENRA	Workshop, on the job training
	Human Resources	2. Installation training 3. Quality performance control 4. Knowledge development in new PV technologies	1.4.2, 1.4.3(a)	Support the installation of PV systems in Palestine Support the development of third party quality control systems Improve understanding of new PV technologies to facilitate their introduction	Private sector developers, PENRA, third party quality control organizations	Workshop, training in another country
	Infrastructure and related software	5. Operation of testing facilities	1.4.2	Support the development of third party quality control systems	PENRA	Workshop, on the job training
Energy efficiency	*Institutional / policy and regulations*	1. Preparing mandatory regulations 2. Improving the labelling system 3. Understanding ESCOs and the environment required for their development	1.4.2, 1.5.1, 1.5.2	Supporting the development of the enabling environment for energy efficiency	PENRA, MOPWH, potential ESCOs	Workshop, on the job training
	Human Resources	4. Capacity building for the local engineers in energy management and required certifications	1.4.2	Develop local capacities for energy management and assessment Improve knowledge	PENRA, MOPWH, potential ESCOs, private developers and other local engineers	Workshop, technical assistance for the development of a

		5. Development of a technology database related to energy efficiency		and access to knowledge for local human resources		technology database
	Infrastructure and related software	6. Operation of testing facilities	1.4.2	Support the development of third party quality control systems	PENRA, MOPWH	Workshop, on the job training
Solar water heating technologies	*Institutional / policy and regulations*	1. Preparation of the enabling environment specific to the technology	1.4.2, 1.5.1, 1.5.2	Support the develop of regulations and incentives for solar water heating technologies	PENRA, MOPWH	Workshop, on the job training
	Human Resources	2. Solar cooling technologies and other knowledge sharing 3. Installation training	1.4.2, 1.4.3(b)	Improve knowledge and access to knowledge for local human resources Support the installation of solar water heating systems in Palestine	PENRA, MOPWH, private developers and other local engineers	Workshop, training in another country
	Infrastructure and related software	4. Operation of testing facilities	1.4.2	Support the development of third party quality control systems	PENRA, MOPWH	Workshop, on the job training

This capacity development programme will be completed by awareness raising campaigns, aimed at private developers, individual Palestinians (households) and large companies. This will be done by disseminating information regarding benefits of investing in these prioritized technologies, benefiting not only their own economic and financial conditions, as well as their contribution to the sustainable development of the country.

4. Agriculture sector

A number of actions and activities are planned under the implementation plan. Actions planned include the development of the enabling environment for private sector engagement in climate smart agriculture, the dissemination of conservation agriculture practices, the dissemination of efficient irrigation, solar pumps, climate-smart water management, water harvesting, alternative cropping technologies, as well as the introduction of climate resilient seeds and technologies for soil and crop monitoring and management.

Capacity building activities have been explicitly proposed as part of the implementation plan in order to operationalize these activities. They include the following:

Table 5: Capacity Building Activities in the Agriculture Sector

Actions	Capacity building actions identified
Action 2.1 – Overall capacity building and awareness raising	• Institutional capacity building • Technical capacity building • Awareness raising
Action 2.2 – Development of the enabling environment for private sector engagement in climate-smart agriculture	• Capacity building to the private sector and service providers related to irrigation diagnostic and design

Other actions require significant technology and knowledge transfers, such as the introduction of climate resilient seeds and of technologies for soil and crop monitoring.

4.1 Capacity needs and gaps in the agriculture sector

In order to complete the assessment conducted as part of previous outputs and detail the gender responsive capacity development programme for the agriculture sector, an assessment related to capacity needs and gaps has been conducted by the sector stakeholders, based on a capacity assessment questionnaire. The questionnaire completed by the stakeholders is provided in annex. The main capacity needs and gaps identified pertaining to the agriculture sector are detailed in Table 6.

Table 6: Capacity Needs and Gaps in the Agriculture Sector

Type of gap		Detailed information
Common gaps		
Institutional / policy and regulations		1. Roles and responsibilities are well defined but need to be enforced
Access to finance		2. Lack of knowledge related to establishing financing schemes for smallholders
Technology related gaps		
Climate smart agriculture	*Institutional / policy and regulations*	1. Lack of understanding of the technology, which also impacts policy development
	Infrastructure and related software	2. Lack of pilot and demonstration sites
Efficient irrigation	*Infrastructure and related software*	1. Lack of pilot and demonstration sites

	Access to finance	2. High cost of the technology, which is not covered by financial schemes
Conservation agriculture	*Institutional / policy and regulations Human Resources*	1. Lack of understanding of the technology, which also impacts policy development
	Infrastructure and related software	2. Lack of pilot and demonstration sites
Resilient animal fodder	*Institutional / policy and regulations*	1. Lack of understanding of the technology, which also impacts policy development
	Infrastructure and related software	2. Lack of pilot and demonstration sites
Water harvesting	*Infrastructure and related software*	1. Lack of pilot and demonstration sites
	Access to finance	2. High cost of the technology, which is not covered by financial schemes

4.2 Capacity development programme

To address the gaps identified and operationalize the implementation plan, the following detailed capacity development programme is proposed for the agriculture sector (Table 7).

Table 7: Agriculture Sector Capacity Development Programme

Type of trainings	Details	Relation with the implementation plan	Objectives	Participants	Method
Common trainings					
Institutional / policy and regulations	1. Raising awareness about roles and responsibilities within the sector	2.1.1, 2.1.2, 2.1.3	Raise awareness about roles and responsibilities to support decision making and avoid conflicting responsibilities	MOA, PWA	Workshop
Access to finance	2. Access to climate finance, including GCF 3. Development of financing schemes for smallholders 4. Development of public / private partnerships for large scale and advanced projects (silos)	2.1.1, 2.1.2, 2.2.6	Improving access to finance for the public and private sector	MOA, PWA, financing institutions (local banks and others)	Workshop and technical assistance for the development of financial schemes
Infrastructure and related software	5. Diffusing climate smart technologies by developing pilot sites / demonstration sites, including in efficient irrigation	2.3.1, 2.4.1, 2.4.2, 2.4.3, 2.6.1, 2.7.1, 2.9.1, 2.10.1	Improve understanding of climate smart technologies by developing pilot sites	MOA, PWA, farmers' organizations	Demonstration sites, on the job training

Climate smart agriculture	*Institutional / policy and regulations*	1. Raising technical capacities and knowledge related to climate smart agriculture in relation to policy development	2.1.1, 2.1.2, 2.2.1	Preparing the enabling environment for public sector activities and private sector engagement	MOA, PWA	Workshop, on the job training
	Human resources	2. Capacity development related to research and technology transfer for climate resilient species	2.5.1	Support human resource development in Palestine for continuous research related to identifying and introducing relevant species	MOA, Universities	On the job training
Efficient irrigation	*Institutional / policy and regulations*	1. Preparation of the enabling environment specific to the technology	2.2.2, 2.2.4	Support guideline development for the development of irrigation systems	MOA	Workshop, on the job training
	Human Resources	2. Knowledge development and capacity building in efficient irrigation systems	2.2.4	Improve understanding of efficient irrigation technologies to facilitate their introduction	Private sector developers, smallholders, farmers associations	Workshop, demonstration farming
Conservation Agriculture	*Institutional / policy and regulations*	1. Preparation of the enabling environment specific to the technology	2.2.1,	Support guideline development for the practice of conservation agriculture	MOA	Workshop, on the job training
	Human Resources	2. Knowledge development and capacity building in conservation agriculture practices	2.3.1	Improve understanding of conservation agriculture technologies to facilitate their introduction	Private sector developers, smallholders, farmers associations	Workshop, demonstration farming

Resilient animal fodder	*Human Resources*	1. Capacity development related to research and technology transfer for resilient fodder	2.5.2	Support human resource development in Palestine for continuous research related to identifying and introducing relevant technologies for resilient fodder	MOA, Universities	On the job training
Water harvesting	*Institutional / policy and regulations*	1. Preparation of the enabling environment specific to the technology	2.2.3, 2.4.3	Support the mapping for water harvesting and dissemination of efficient water management techniques	MOA	Workshop, on the job training

This capacity development programme will be completed by awareness raising campaigns, mainly aimed at smallholder farmers, as well as larger private developers. This will be done by disseminating information regarding benefits of investing in these prioritized technologies, benefiting not only their own economic and financial conditions, as well as their contribution to the sustainable development of the country.

5. Water and wastewater sector

A number of actions and activities are planned under the implementation plan. Actions planned include the development of the enabling environment for rainwater harvesting and small-scale wastewater collection and treatment plant, actions related to their dissemination, technology transfer of relevant water resources monitoring technology applicable for Palestine and development of large-scale facilities related to rainwater harvesting, water monitoring technologies and wastewater collection and treatment plants.

Capacity building activities have been explicitly proposed as part of the implementation plan in order to operationalize these activities. They include the following:

Table 8: Capacity Building Activities in the Water and Wastewater Sector

Actions	Capacity building actions identified
Action 3.1 – Overall capacity building and awareness raising	• Institutional capacity building • Technical capacity building • Awareness raising

Other actions require significant technology and knowledge transfers, such as the introduction of relevant water resources monitoring technology applicable for Palestine.

5.1 Capacity needs and gaps in the water and wastewater sector

In order to complete the assessment conducted as part of previous outputs and detail the gender responsive capacity development programme for the water and wastewater sector, an assessment related to capacity needs and gaps has been conducted by the sector stakeholders, based on a capacity assessment questionnaire. The questionnaire completed by the stakeholders is provided in annex. The main capacity needs and gaps identified pertaining to the water and wastewater sector are detailed in Table 9.

Table 9: Capacity Needs and Gaps in the Water and Wastewater Sector

Type of gap		Detailed information
Common gaps		
Institutional / policy and regulations		1. Specific roles for each entities are not sufficiently detailed and may overlap, which also leads to lack of clarity about the leading organization for cross-sectoral issues 2. Lack of specialized directorate related to climate change in related organizations, except PWA
Human Resources		3. Lack of expertise related to climate change modelling (availability of water, forecasts, etc.)
Access to finance		4. Lack of knowledge related to climate finance and to accessing the GCF
Technology related gaps		
Rainwater harvesting	*Human Resources*	1. Lack of trained staff for the installation of facilities 2. Lack of understanding / expertise of the private sector related to the technology
Water resources monitoring technologies	*Human Resources*	1. Lack of trained staff for the identification of the technology, the installation of facilities and their operation 2. Lack of partnerships and cooperation with NGOs and Universities related to using the technology
	Access to	3. The technology is expensive and requires significant budget to be

	finance	installed
Wastewater collection and treatment plants and advanced wastewater treatment technologies	*Institutional / policy and regulations*	1. There is a lack of schemes in order to reuse wastewater
	Human Resources	2. There is a lack of trained staff in order to install and operate the systems 3. There is a lack of maintenance services available for the technology
Desalination	*Human Resources*	1. Lack of trained staff related to the installation, operation and maintenance of the technology
	Access to finance	2. The technology is expensive and requires significant budget to be installed

5.2 Capacity development programme

To address the gaps identified and operationalize the implementation plan, the following detailed capacity development programme is proposed for the water and wastewater sector (Table 10).

Table 10: Water and Wastewater Sector Capacity Development Programme

Type of trainings	Details	Relation with the implementation plan	Objectives	Participants	Method
Common trainings					
Institutional / policy and regulations	1. Training in better defining roles and responsibilities within the sector 2. Support in establishing standards related to operation and maintenance 3. Support to the mapping of locations for rainwater harvesting and small-scale wastewater collection and treatment plants	3.1.1, 3.1.2, 3.2.2	Define roles and responsibilities to support decision making Encourage regular maintenance for all technologies	PWA, MOA, WSRC, MOLG, EQA, MOH	Workshop, on the job training
Human resources	4. Training related to climate change modelling	3.1.1, 3.1.2	Support the identification of trends in climate change and their impact on water availability, in order to support the diffusion of technologies	PWA, EQA	Workshop, knowledge sharing (training in a foreign country), on the job training
Access to finance	5. Access to climate finance, including GCF 6. Development of business models for local financing institutions 7. Development of	3.1.3	Improving access to finance for the public and private sector	PWA, MOA, private sector, financing institutions	Workshop, on the job training

		public / private financing schemes				
Trainings related to a specific technology						
Rainwater harvesting	*Institutional / policy and regulations*	1. Support in establishing standards related to operation and maintenance 2. Training related to regulations in water usage	3.2.1	Preparing the enabling environment for private sector engagement	PWA, MOA, WSRC	Workshop, on the job training
	Human Resources	3. Installation training 4. Knowledge development in water harvesting technologies (public and private sector)	3.3.1	Support the installation of rainwater harvesting systems in Palestine	PWA, private sector, financing institutions	Workshop, knowledge sharing (training in a foreign country), on the job training
Water resources monitoring technologies	*Institutional / policy and regulations*	1. Developing a specific policy for the implementation of water resources monitoring	3.2.1, 3.4.1, 3.4.2	Support the development of the enabling environment for the introduction of the technology	PWA, WSRC, MOH	On the job training
	Human Resources	2. Capacity development related to research and technology transfer for water resources monitoring 3. Development of trainings in collaboration with universities and NGOs related to using the technology	3.2.1, 3.4.1, 3.4.2	Support human resource development in Palestine for continuous research related to identifying and introducing relevant technologies Support the development of sustainable training schemes for water	PWA, NGOs, Universities	On the job training, pilot

				resources monitoring technologies in Palestine		
	Access to finance	4. Development of a specific project / concept and related to document to access development / climate finance	3.1.3	Support the implementation of the technology in Palestine by developing the required project documents	PWA	Workshop, On the job training
Wastewater collection and treatment plants and advanced wastewater treatment technologies	*Institutional / policy and regulations*	1. Development of policies and specific schemes supporting the reuse of wastewater	3.2.1	Supporting the development of the enabling environment for the reuse of wastewater	PWA, MOLG, WSRC	On the job training
	Human Resources	2. Development of services related to operation and maintenance 3. Technical trainings for staffs related to operation of the technology	3.3.2	Develop local capacities for operation and maintenance, both in the public and private sector	PWA, MOLG	On the job training, training of trainers, pilot
Desalination	*Human Resources*	1. Technical trainings for staffs related to installing, operating and maintaining the technology	3.2.1	Improve knowledge and access to knowledge for local human resources	PWA, PENRA	On the job training,
	Access to finance	2. Development of a specific project / concept and related to document to access development / climate finance	3.1.3, 3.5.4	Support the implementation of the technology in Palestine by developing the required project documents	PWA	Workshop, On the job training

This capacity development programme will be completed by awareness raising campaigns, mainly aimed at households, smallholder farmers, as well as larger private developers. This will be done by disseminating information regarding benefits of investing in these prioritized technologies, benefiting not only their own economic and financial conditions, as well as their contribution to the sustainable development of the country.

6. Transport sector

A number of actions and activities are planned under the implementation plan. Actions planned include the development of the enabling environment for the development of modal shift and the upgrade of the existing fleet, as well as the inspection of vehicles. Advanced vehicles will also be deployed for modal shift related actions and infrastructure will be developed for the upgrade of the fleet.

Capacity building activities have been explicitly proposed as part of the implementation plan in order to operationalize these activities. They include the following:

Table 11: Capacity Building Activities in the Transport Sector

Actions	Capacity building actions identified
Action 4.1 – Overall capacity building and awareness raising	• Institutional capacity building (modal shift) • Institutional capacity building (upgrade of existing vehicle fleet) • Capacity building for financing sources • Capacity and skills building for taxi drivers • Awareness raising (modal shift) • Awareness raising (upgrade of existing vehicle fleet)

Other actions require significant technology and knowledge transfers, such as the introduction of social nets and policy development.

6.1 Capacity needs and gaps in the transport sector

In order to complete the assessment conducted as part of previous outputs and detail the gender responsive capacity development programme for the transport sector, an assessment related to capacity needs and gaps has been conducted by the sector stakeholders, based on a capacity assessment questionnaire. The questionnaire completed by the stakeholders is provided in annex. The main capacity needs and gaps identified pertaining to the transport sector are detailed in Table 12.

Table 12: Capacity Needs and Gaps in the Transport Sector

Type of gap		Detailed information
Common gaps		
Access to finance		1. The introduction of both technologies require significant budget and financial resources, for which it is important to have knowledge of climate finance and business models
Technology related gaps		
Modal shift	*Institutional / policy and regulations*	1. Lack of related detailed regulations
	Human Resources	2. Significant social impact on drivers which needs to be addressed
Upgrade of the existing vehicle fleet	*Institutional / policy and regulations*	1. Lack of related detailed regulations

6.2 Capacity development programme

To address the gaps identified and operationalize the implementation plan, the following detailed capacity development programme is proposed for the transport sector (Table 13).

Table 13: Transport Sector Capacity Development Programme

Type of trainings		Details	Relation with the implementation plan	Objectives	Participants	Method
Common trainings						
Institutional / policy and regulations		1. Raising awareness about roles and responsibilities within the sector	4.1.1(a), 4.1.1(b)	Raise awareness about roles and responsibilities to support decision making and avoid conflicting responsibilities	MOT, MOPWH, MOLG, PENRA	Workshop
Access to finance		2. Access to climate finance, including GCF 3. Development of business models for local financing institutions 4. Development of public / private financing schemes	4.1.2, 4.1.3	Improving access to finance for the public and private sector	MOT, private sector, financing institutions	Workshop, on the job training
Trainings related to a specific technology						
Modal shift	*Institutional / policy and regulations*	1. Developing policies for modal shift, including social nets 2. Designing incentives to support the transition of taxi drivers and encourage end-users to use bus transportation	4.2.1, 4.2.2	Supporting current taxi drivers in transitioning to employment in other areas Support the development of a intercity network by fostering the demand	MOT, private sector	Workshop, on the job training, knowledge sharing, stakeholder engagement
	Human Resources	3. Development of a vocational skill development programme 4. Development of a	4.1.3	Support the transition of taxi drivers to other occupations Support the	MOT, private sector	Workshop, on the job training, stakeholder engagement

		capacity building programme aimed at bus drivers and bus companies		development of bus companies		
Upgrade of the existing fleet	*Institutional / policy and regulations*	1. Developing a specific policy for the upgrade of the fleet	4.2.3	Support the development of the enabling environment for the introduction of the technology	MOT, private sector	Workshop, on the job training, stakeholder engagement

This capacity development programme will be completed by awareness raising campaigns, mainly aimed at households, taxi drivers and taxi unions. This will be done by disseminating information regarding benefits of investing in these prioritized technologies, benefiting not only their own economic and financial conditions, as well as their contribution to the sustainable development of the country.

In the case of taxi drivers, it will be crucial to emphasize the opportunities offered by transitioning to bus driving or a related occupation. Awareness campaigns will therefore be closely related to the training programmes offered by Palestine, as well as the social nets proposed as part of the transition. It will be extremely important to not only use indirect methods of raising awareness, such as television, radio and social media, but also to directly engage the private sector in discussions. This will also not only improve awareness, but also provide feedback on potential components for vocational training programmes.

7. Solid waste sector

A number of actions and activities are planned under the implementation plan. Actions planned include the development of the enabling environment for solid waste management, including sorting, composting and recycling, as well as the dissemination of related technologies.

Capacity building activities have been explicitly proposed as part of the implementation plan in order to operationalize these activities. They include the following:

Table 14: Capacity Building Activities in the Solid Waste Sector

Actions	Capacity building actions identified
Action 5.1 – Overall capacity building and awareness raising	• Institutional capacity building • Technical capacity building • Capacity building for private sector • Capacity building for financing sources • Awareness raising

Other actions require significant technology and knowledge transfers, such as policy development and the introduction of incentives.

7.1 Capacity needs and gaps in the solid waste sector

In order to complete the assessment conducted as part of previous outputs and detail the gender responsive capacity development programme for the solid waste sector, an assessment related to capacity needs and gaps has been conducted by the sector stakeholders, based on a capacity assessment questionnaire. The questionnaire completed by the stakeholders is provided in annex. The main capacity needs and gaps identified pertaining to the solid waste sector are detailed in Table 15.

Table 15: Capacity Needs and Gaps in the Solid Waste Sector

Type of gap		Detailed information
Common gaps		
Institutional / policy and regulations		2. Roles and responsibilities need to be identified more clearly in the national framework 3. Awareness needs to be raised in relation with roles and responsibilities in order to avoid overlapping and duplication
Access to finance		4. The introduction of both technologies require significant budget and financial resources, for which it is important to have knowledge of climate finance and business models 5. Lack of understanding the solid waste sector and of its opportunities for the private sector, lack of understanding of the risks and derisking options 6. Lack of Public Private Partnership scheme
Technology related gaps		
Waste Sorting	*Institutional / policy and regulations*	1. Lack of related detailed policies and regulations 2. Lack of incentives to promote waste sorting
	Human Resources	3. Lack of technical understanding of the private sector related to waste sorting technologies 4. Lack of understanding of the markets and of business models for waste sorting in the private sector

	Access to market	5. Lack of market opportunities / marketing for sorted material
Composting	*Institutional / policy and regulations*	1. Lack of related detailed policies and regulations 2. Lack of incentives to promote composting
	Human Resources	3. Lack of technical expertise in installing and operating composting stations 4. Lack of awareness related to the importance and potential of waste composting 5. Lack of knowledge related to waste composting standards and on ow to achieve them
	Access to market	6. Lack of market opportunities / marketing for compost
	Access to finance	7. Lack of financial schemes and incentives available to develop composting stations
Recycling	*Institutional / policy and regulations*	1. Lack of related detailed policies and regulations 2. Lack of incentives to promote recycling
	Human Resources	3. Lack of awareness related to the importance and potential of recycling 4. Lack of understanding related to the technology and the recycling material available to develop viable business plan
	Access to market	5. Lack of market opportunities / marketing for recycled material
	Access to finance	6. Lack of financial schemes and incentives available to develop the recycling industry

7.2 Capacity development programme

To address the gaps identified and operationalize the implementation plan, the following detailed capacity development programme is proposed for the solid waste sector (Table 16).

Table 16: Solid Waste Sector Capacity Development Programme

Type of trainings		Details	Relation with the implementation plan	Objectives	Participants	Method
Common trainings						
Institutional / policy and regulations		1. Training in better defining roles and responsibilities within the sector and in raising awareness concerning roles and responsibilities	5.1.1	Raise awareness about roles and responsibilities to support decision making and avoid conflicting responsibilities	MOLG, relevant Ministries, JSCs, LGUs	Workshop
Access to finance		2. Access to climate finance, including GCF 3. Development of business models for local financing institutions and the private sector 4. Development of public / private financing schemes	5.1.3, 5.1.4	Improving access to finance for the public and private sector	MOLG, relevant Ministries, JSCs, LGUs, private sector, financing institutions	Workshop, on the job training
Trainings related to a specific technology						
Waste Sorting	*Institutional / policy and regulations*	1. Developing policies and regulations for waste sorting 2. Develop incentives related to waste sorting, in relation with the policies and regulations developed	5.2.1	Support the development of the enabling environment for the development of waste sorting in Palestine	MOLG, relevant Ministries, JSCs, LGUs	Workshop, on the job training, knowledge sharing, stakeholder engagement
	Human Resources	3. Development of technical trainings related to the technologies available for waste	5.1.2, 5.1.3	Support private sector participation in waste sorting technologies	Private sector, financing institutions	Workshop, on the job training, knowledge sharing,

		sorting and to the potential business models available				stakeholder engagement
	Access to market	4. Development of incentives, in relation with policies and regulations, to support the use of sorted material	5.1.3, 5.1.5	Support the development of a market for sorted material	MOLG, private sector	Workshop, on the job training, knowledge sharing, stakeholder engagement
Composting	*Institutional / policy and regulations*	1. Developing detailed policies and regulations for waste sorting, supplementing the regulations currently available 2. Develop incentives related to composting, in relation with the policies and regulations developed	5.2.1	Support the development of the enabling environment for the development of composting in Palestine	MOLG, relevant Ministries, JSCs, LGUs	Workshop, on the job training, knowledge sharing, stakeholder engagement
	Human Resources	3. Development of expertise and knowledge for local engineers in order to install and operate composting stations, in direct relation with achieving composting standards	5.1.2, 5.1.3	Support in achieving the installation and operation of composting stations meeting quality standards set by regulations	Private sector, financing institutions	Workshop, on the job training and pilot
	Access to market	4. Development of incentives, in relation with policies and regulations, to	5.1.3, 5.1.5	Support the development of a market for compost	MOLG, private sector	Workshop, on the job training, knowledge

		support the use of compost				sharing, stakeholder engagement
Recycling	*Institutional / policy and regulations*	1. Developing detailed policies and regulations for recycling 2. Develop incentives related to recycling, in relation with the policies and regulations developed	5.2.1	Support the development of the enabling environment for the development of recycling in Palestine	MOLG, relevant Ministries, JSCs, LGUs	Workshop, on the job training, knowledge sharing, stakeholder engagement
	Human Resources	3. Development of expertise and knowledge related to technologies available for recycling and viable business plans	5.1.2, 5.1.3	Support in achieving the installation and operation of recycling stations meeting private sector criteria	Private sector, financing institutions	Workshop, on the job training and pilot
	Access to market	4. Development of incentives, in relation with policies and regulations, to support the use of recycled material	5.1.3, 5.1.5	Support the development of a market for recycled material	MOLG, private sector	Workshop, on the job training, knowledge sharing, stakeholder engagement

This capacity development programme will be completed by awareness raising campaigns, mainly aimed at households and companies involved in solid waste management. This will be done by disseminating information regarding benefits of investing in these prioritized technologies, benefiting not only their own economic and financial conditions, as well as their contribution to the sustainable development of the country.

It will be crucial to emphasize the opportunities offered by waste sorting, composting and recycling, in order to ensure that the technologies are adopted by households and the private sector. It is expected that awareness will be key in developing the markets for sorted waste, compost and recycled material.

8. Other technologies

Other technologies under the technology roadmap are the provision of beach nourishment, reclamation and beach drift rehabilitation and development of water, food and sanitation monitoring and safety systems using high technology related to health.

8.1 Provision of beach nourishment, reclamation and beach drift rehabilitation

A number of actions and activities are planned under the implementation plan. Actions planned include policy development, mapping of the shoreline and deployment of coastal erosion management technology.

Capacity building activities have been explicitly proposed as part of the implementation plan in order to operationalize these activities. They include the following:

Table 17: Capacity Building Activities under Beach Nourishment, Reclamation and Beach Drift Rehabilitation

Actions	Capacity building actions identified
Action 6.1.1 – Overall capacity building and awareness raising	• Institutional capacity building • Technical capacity building • Awareness raising

Other actions require significant technology and knowledge transfers, such as policy development.

8.1.1 Capacity needs and gaps for the deployment of beach nourishment, reclamation and beach drift rehabilitation

In order to complete the assessment conducted as part of previous outputs and detail the gender responsive capacity development programme for the deployment of beach nourishment, reclamation and beach drift rehabilitation, an assessment related to capacity needs and gaps has been conducted by the sector stakeholders, based on a capacity assessment questionnaire. The questionnaire completed by the stakeholders is provided in annex. The main capacity needs and gaps identified pertaining to the technology are detailed in Table 18.

Table 18: Capacity Needs and Gaps under Beach Nourishment, Reclamation and Beach Drift Rehabilitation

Type of gap	Detailed information
Institutional / policy and regulations	1. Roles and responsibilities are not clearly defined and there is no clear mandate for the technology 2. Lack of national policies to answer to climate change impact on coastal and marine ecosystems
Human Resources	3. Limited knowledge and capacity related to climate change impact on coastal areas and slow onset events, including risk modelling and vulnerability assessment 4. Lack of knowledge in adaptation planning 5. Lack of personnel for monitoring 6. Lack of trained professional and of researchers in this field in Palestine
Access to finance	7. Lack of knowledge related to climate finance and to accessing the GCF and other climate finance sources

8.1.2 Capacity development programme

To address the gaps identified and operationalize the implementation plan, the following detailed capacity development programme is proposed for the deployment of beach nourishment, reclamation and beach drift rehabilitation ().

Table 19: Capacity Development Programme for Beach Nourishment, Reclamation and Beach Drift Rehabilitation

Type of trainings	Details	Relation with the implementation plan	Objectives	Participants	Method
Institutional / policy and regulations	1. Defining roles and responsibilities, including for the main responsible organization 2. Developing a specific policy supporting actions related to climate change impact on coastal and marine ecosystems	6.1.1.1	Improve leadership concerning the technology, raise awareness about roles and responsibilities to support decision making and avoid conflicting responsibilities Improve the governance of the actions related to coastal and marine ecosystems	MOPWH, EQA, MOLG, LGUs	Workshop, on the job training
Human Resources	3. Development of trainings related to climate change impacts on coastal areas 4. Development of trainings related to slow onset events in Palestine 5. Development of capacities related to climate change modelling, risk modelling and vulnerability assessment 6. Development of related research capacities	6.1.1.2	Improve understanding of the impact of climate change on costal areas and support the identification of relevant technologies for Palestine for beach nourishment and reclamation Support the sustainability of capacity development by developing researchers' capacities	MOPWH, EQA, MOLG, LGUs, Universities	Workshop, on the job training, training of trainers

	7. Mapping of shoreline				
Access to finance	8. Access to climate finance, including GCF 9. Development of financing schemes involving the private sector	6.1.3.1	Improving access to finance for the public and private sector	MOPWH, EQA	Workshop, on the job training

This capacity development programme will be completed by awareness raising campaigns, mainly aimed at households and the private sector to support beach nourishment. This will be done by disseminating information regarding benefits of investing in these prioritized technologies, benefiting not only their own economic and financial conditions, as well as their contribution to the sustainable development of the country.

8.2 Water, food and sanitation monitoring and safety systems using high technology related to health

A number of actions and activities are planned under the implementation plan. Actions planned focus on the deployment of the technology.

Capacity building activities have been explicitly proposed as part of the implementation plan in order to operationalize these activities. They include the following:

Table 20: Capacity Building Activities under Water, Food and Sanitation Monitoring

Actions	Capacity building actions identified
Action 6.2.1 – Overall capacity building and awareness raising	• Institutional capacity building • Technical capacity building • Awareness raising

8.2.1 Capacity needs and gaps for the deployment of water, food and sanitation monitoring and safety systems using high technology related to health

In order to complete the assessment conducted as part of previous outputs and detail the gender responsive capacity development programme for the deployment of water, food and sanitation monitoring and safety systems using high technology related to health, an assessment related to capacity needs and gaps has been conducted by the sector stakeholders, based on a capacity assessment questionnaire. The questionnaire completed by the stakeholders is provided in annex. The main capacity needs and gaps identified pertaining to the technology are detailed in Table 21.

Table 21: Capacity Needs and Gaps under Water, Food and Sanitation Monitoring

Type of gap	Detailed information
Institutional / policy and regulations	1. Lack of regulations related to monitoring and testing for water, wastewater and food 2. Lack of specifications for wastewater reuse and other safety levels
Human Resources	3. Limited knowledge on the impact of climate change on health and other safety related issues 4. Lack of skilled personnel related to the technology, including engineers 5. Lack of trained professional and of researchers in this field in Palestine
Infrastructure and related software	6. Lack of testing laboratories and equipment

8.2.2 Capacity development programme

To address the gaps identified and operationalize the implementation plan, the following detailed capacity development programme is proposed for the deployment of water, wood and sanitation monitoring and

safety systems using high technology related to health (Table 22).

Table 22: Capacity Development Programme for Water, Food and Sanitation Monitoring

Type of trainings	Details	Relation with the implementation plan	Objectives	Participants	Method
Institutional / policy and regulations	1. Developing regulations related to monitoring and testing for water, wastewater and food 2. Developing specifications for wastewater reuse and other safety components	6.2.1.1	Improve the governance of monitoring systems and the efficiency of monitoring	MOH, MNE, EQA, MOA, PWA	Workshop, on the job training
Human Resources	3. Development of trainings related to climate change impacts on health and other safety related issues 4. Development of capacities related to climate change modelling, risk modelling and vulnerability assessment 5. Development of related capacities in operation of the technology 6. Development of related research capacities	6.2.1.2	Improve understanding of the impact of climate change on health and other safety related issues and support the identification of relevant technologies for Palestine Support the sustainability of capacity development by developing researchers' capacities	MOH, MNE, EQA, MOA, PWA	Workshop, on the job training, training of trainers

Infrastructure and related software	7. Operation of testing facilities	6.2.1.2	Support the development of quality control systems	MOH, Universities	Workshop, on the job training
Access to finance	8. Access to climate finance, including GCF 9. Development of incentives for the private sector	6.2.2.1	Improving access to finance for the public and private sector	MOPWH, EQA	Workshop, on the job training

This capacity development programme will be completed by awareness raising campaigns, mainly aimed at households in order to raise awareness of the risks to health related to climate change. These will focus on how the technologies and investments address those and how can households support addressing the threats. This will be done by disseminating information regarding benefits of investing in these prioritized technologies, benefiting not only their own economic and financial conditions, as well as their contribution to the sustainable development of the country.