

**FINAL MDG-F JOINT PROGRAMME
NARRATIVE REPORT**

Participating UN Organization(s)	Sector(s)/Area(s)/Theme(s)
UNDP WHO FAO UNESCO	Environment and Climate Change thematic window and aligned with ‘ Enhancing Capacity to Adapt to Climate Change ’ priority area

Joint Programme Title	Joint Programme Number
Adaptation to Climate Change to Sustain Jordan’s MDG Achievements	00058096

Joint Programme Cost [Sharing - if applicable]	Joint Programme [Location]
[Fund Contribution): 4,000,000 USD Govt. Contribution: In Kind USD UNDP: 21,667 USD Other (SIWI): 105,000 USD TOTAL: 4,126,667 USD	Region (s): Jordan; and the Zarqa River Basin Governorate(s): Zarqa, Jerash, District(s)

Final Joint Programme Evaluation	Joint Programme Timeline
Final Evaluation Done Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Evaluation Report Attached Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Date of delivery of final report: 6 February 2013	Original start date <i>Feb. 6th, 2009</i> Final end date <i>(including agreed extended date)</i> 6 February 2013

Participating Implementing Line Ministries and/or other organisations (CSO, etc)
Ministry of Water and Irrigation (MWI), Ministry of Health (MOH), Ministry of Environment (MoEnv), Ministry of Agriculture (MOA), Ministry of International Cooperation and Planning (MOPIC), Water Authority of Jordan (WAI) and the Water Providers (utilities and companies)

Report Formatting Instructions:

- Number all sections and paragraphs as indicated below.
- Format the entire document using the following font: 12 point _ Times New Roman.

I. PURPOSE

- a. Provide a brief introduction on the socio economical context and the development problems addressed by the programme.

Jordan made strategic advances towards the achievement of the MDGs, but its achievements are compromised by crippling water scarcity and vulnerable to climate change, thus bringing about additional threats to health, food security, productivity, and human security. The UNDAF (2008-2012) addresses four key related challenges to sustain progress towards the achievement of the MDG's, which include: (i) water scarcity; (ii) drinking water supply security and quality; (iii) health, agriculture and food production vulnerability to climate change; and (iv) vulnerability of local biodiversity to climate change. The JP will supported the United Nations Country Team's (UNCT) efforts to achieve the UNDAF outcome of healthy and sustainable environment. This programme also helped Jordan governmental agencies in developing a national strategy to 1) Sustain access to improved water supply sources despite increased water scarcity induced by climate change; and 2) Strengthen adaptive capacity for health protection and food security to climate change under water scarcity conditions.

The ultimate goal of both outcomes is to protect human health against water scarcity induced by climate change. The first outcome involves securing an adequate and sustainable water supply for domestic use, including minimum water requirement for health. The second outcome targets attaining food security by the allocation of a safe alternative water supply for agriculture and through strengthening the adaptive capacity of agriculture and health sector to change in climate. The implementation plan for the two outcomes contributed towards the efficient utilization of the limited and diminishing water resources of Jordan.

The achievement of the programme outcomes will positively affect the economic, social, political, environmental and institutional context of Jordan. Providing access to a secure and sustainable minimum water supply and attaining food security for health protection of Jordanians despite the expected water scarcity problem which will be heightened by climate change will establish a stable social and economic system, thus reducing poverty and improve livelihood of local community in target areas. They will also yield political stability and attain environmental sustainability. Moreover, the institutional adaptive capacity for climate change will be strengthened.

- b. List joint programme outcomes and associated outputs as per the final approved version of the joint programme Document or last agreed revision.

Outcome 1: Sustained access to improved water supply sources despite increased water scarcity induced by climate change

- Output 1.1: National drinking water quality management system at central and periphery level is strengthened: The activities will concentrate on upgrading the national drinking water management systems, increasing the capacity of the national partner staff and improving the working environment for water quality monitoring system.
- Output 1.2: Sustainable and reliable supply of minimum water requirements for health protection is provided to all citizens. The activities under this output will include inventories to identify the minimum water requirements and the development of policy instruments for securing the supply of these requirements.

Outcome 2: Strengthened adaptive capacity for health protection and food security to climate change under water scarcity conditions

- Output 2.1: Rural sector adaptive capacity for climate variability and change is improved: The activities include: The risk assessment of climate change and water scarcity and identification of the adaptation measures to reduce climate change impacts on food (land and water) productivity and control of desertification. Improved agriculture productivity. In addition to public awareness campaigns and developing training manuals on climate change impacts on Agriculture for local community to promote these measures on the target areas.
- Output 2.2: National institutional and community capacity in integrated water resources management is improved: The activities will include development of awareness in available economic incentives to farmers and agricultural policy frameworks that support and realize carbon benefits in Good Agricultural Practices. The activities will also concentrate on the

capabilities of the local community institutions and the introduction of water resource management concepts into the school and University curriculum.

- Output 2.3: Adaptation measures, by health sector and other sectors, to protect health from climate change are institutionalized: Activities to achieve this output will focus on assessing the direct and indirect risks of climate change on health sector. Adaptation strategies will be developed and early warning system will be established to protect health from the negative effect of climate change.
- Output 2.4: Adaptation capacity of Zarqa River Basin to climate change is piloted and strengthened: The activities will include the assessment of direct and indirect effects of climate change on water availability and quality in Zarqa River Basin; identify opportunities and barriers to adaptation to climate change; review and deliver reform strategies for legal and institutional frameworks and national water policies and action plans; build local and national capacities for adaptation to climate change using participatory approach; and document and share knowledge generated from the Zarqa River Basin and establish linkages to regional and global experiences.

c. Explain the overall contribution of the joint programme to National Plan and Priorities

The ultimate goal of both outcomes is to protect human health against water scarcity induced by climate change. The first outcome involves securing an adequate and sustainable water supply for domestic use, including minimum water requirement for health. The second outcome targets attaining food security by the allocation of a safe alternative water supply for agriculture and through strengthening the adaptive capacity of agriculture and health sector to change in climate. The implementation plan for the two outcomes has contributed towards ensuring the efficient utilization of the limited and diminishing water resources of Jordan.

The achievement of the programme outcomes will on the long run positively affect the economic, social, political, environmental and institutional context of Jordan. Providing access to a secure and sustainable minimum water supply and attaining food security for health protection of Jordanians despite the expected water scarcity problem which will be heightened by climate change will establish a stable social and economic system, thus reducing poverty and improve livelihood of local communities. They will also yield political stability and attain environmental sustainability.

The institutional adaptive capacity for CC have been strengthened through developing the capacity of many stakeholders which in their turn will be catalysts for increased momentum in this area.

The JP was further designed to support Jordan in sustaining its MDGs (MDG1 food & nutrition), MDG4&5 (Child and maternal health), MDG6 (Vector disease-malaria) MDG7 (access to sufficient and safe water). “The UNDAF (2008-2012) addresses four key related challenges to sustain progress towards the achievements of the MDG.

The JP results and achievements will support United Nations Country Teams (UNCT) efforts to achieve the UNDAF outcome of healthy and sustainable environment.”

d. Describe and assess how the programme development partners have jointly contributed to achieve development results

The JP activities were designed in close consultation with concerned national stakeholders from Many ministries and government agencies such as, MWI, MoEnv, MOA, MoEd, MOH, NCARE, and WAJ, Local governments, local communities, NGOs, and CBOs. The implementation was carried out by them and the results and impacts were reported from them in terms of lessons learned and key success factors. Developed strategies, policies, and programmes are translated into action plans that are institutionalized.

II. ASSESSMENT OF JOINT PROGRAMME RESULTS

- a. Report on the key outcomes achieved and explain any variance in achieved versus planned results. The narrative should be results oriented to present results and illustrate impacts of the pilot at policy level)

Below is a List of Jordan Joint Programme Main Achievements

Expected Results	Key Planned Activities	Main Achievements
Outcome 1: Sustained access to improved water supply sources despite increased water scarcity induced by climate change		The JP completed the implementation of Water Safety Plans (WSPs) as a risk management approach to protect drinking water safety in 5 pilot areas. Additionally, the results of the minimum water requirements for health protection survey is soon to be made public and will provide some needed evidence for policy update related to water requirements.
Output 1.1: National drinking water quality management system at central and periphery level is strengthened	<ul style="list-style-type: none"> • Activity 1.1: Upgrade the national drinking water quality (DWQ) system for comprehensive national coverage • Activity 1.2: Develop and implement 5 demonstration water safety plans (3 urban & 2 rural). • Activity 1.3: Design and implement training programme on DWQ management system for all levels • Activity 1.4: Provide critical supplies and equipment for DWQ laboratory networks of the Ministry of Health 	<ul style="list-style-type: none"> • Current status of DWQ management systems and pertinent legislations has been assessed with stakeholders' consultation. DWQMS is completed and the final report submitted; • Water Safety Plans (WSP) implementation in 5 demonstration sites is completed; • Training of Trainers plan and training content have been designed for concerned parties on DWQMS and WSP management is completed and plans for institutionalization are ongoing with the concerned authorities; • Critical laboratory equipment have been procured and installed in MOH water testing labs to secure adequate readiness in the national counterpart responsible for the surveillance function within the new water quality management system; • The Drinking water operator and regulator are achieving a compliance percentage >99.0% Increased awareness of the national counterparts to adopt the preventative approach in the DWQ management and assure top management understanding and commitment. • National counterparts developed a road map for scale-up and sustainability. • The program developed the capacity and the utilization of collective knowledge in climate change related programmes.
Output 1.2: Sustainable and reliable supply of minimum water requirements for health protection is provided to all citizens	<ul style="list-style-type: none"> • Activity 1.5: Identify minimum household water security requirements for health protection • Activity 1.6: Develop national policy and issue legislative policy instruments on securing supply of minimum water requirements for health. 	<ul style="list-style-type: none"> • The report on the “<i>Minimum Households' Water Security Requirements for Health Protection</i>” is completed. It provides evidence on the minimum household water quantity to be supplied to ensure good health. • The results as well as the tools and methodologies used to conduct this survey will be disseminated nationally, regionally and globally; • The report includes recommendations for the development of policies related to drinking water safety and protection of health.
Outcome 2: Strengthened adaptive capacity for health protection and food security to climate change under water scarcity conditions		Capacity to adapt to climate change in the area of food security was strengthened through the identification and dissemination of climate resilient techniques (conservation agriculture) and the development of a more resilient and productive wheat variety. Demonstration of a model farm reusing treated wastewater should be completed in

Expected Results	Key Planned Activities	Main Achievements
		<p>Feb./March 2013 and used as training and demonstration center.</p> <p>Piloted interventions for showcasing, awareness campaigns targeting stakeholders at different levels, and training programmes have enhanced the capacities of local communities, youths, decision makers and professionals; including the establishment of the International Center for Water and Environmental Research at Al Balqa Applied University providing expertise and research in the area of climate change and its impact on health and food security under water scarcity conditions.</p> <p>Health vulnerability assessments and national adaptation strategy and plans of actions for health protection from climate change have been conducted in six critical areas: heat waves, nutrition, water and food-borne disease, vector-borne disease, occupational health, air-borne and respiratory disease. Capacities of MOH technical teams was developed and process was overseen by a MOH steering committee, which provided a good mechanism for MOH ownership of JP achievements and replication through the MOH system in Jordan.</p> <p>Capacity to adapt to climate change was strengthened in the Zarqa River Basin (ZRB), where extensive studies were conducted to assess and model climate change impacts on water quality and availability as well as identify adaptation measures addressing these impacts. Some of these measures were demonstrated in the ZRB and should be up-scaled nation wide in the medium term.</p>
<p>Output 2.1: Rural sector adaptive capacity for climate variability and change is improved as well as the urban-rural linkage in water resources management and allocation developed.</p>	<ul style="list-style-type: none"> • Activity 2.1: Assess the risks from climate change and water scarcity on food productivity. • Activity 2.2: Identify and screen adaptation measures to reduce climate change impacts on food productivity. • Activity 2.3: Identify and test adaptation options and improvements of crop / livestock for increased productivity in irrigating with treated wastewater. • Activity 2.4: Design and implement community awareness campaign, with focus on women farmers, on climate change adaptation measures. • Activity 2.5: Establish model farms using treated wastewater as adaptation to climate change for capacity building (jointly with WHO). 	<ul style="list-style-type: none"> • Risk assessment inventory on the impact of climate change on food security and crop productivity was conducted and the potential constraints (risks) were identified. • Mechanisms to overcome or alleviate the effect of these constraints were identified, tested and prioritized; • Climate change adaptation options and improvements of crop productivity were identified and tested. The selection of a more water resilient and higher productive variety of wheat was finalized by NCARE. This new variety (NCAREAJ.5191 is in the process to be registered at UPOV; The International Union for the Protection of New Varieties of Plants). 50T of seeds were produced and distributed to farmers. • Developed training manuals on climate change adaptation measures to increase food production; • Designed and executed national community awareness campaign; • Selecting site for the model farm using treated wastewater as adaptation to climate change. Prepared the terms of reference for the model farm (pilot intervention site). Started the selection process of national consultant/Agency to implement adaptation measures in the pilot intervention site. The Implementation of activities in the model farm was not conducted because of the delay of the Technical Unit at FAO headquarters to approve the activities. Their technical clearance for the model farm activity was sent only one day before the project completion date. • Conducted training workshops on risks and vulnerability of climate change in agriculture and food security; • Adaptation measures in agriculture were identified and some of these measures are already implemented by farmers (conservation agriculture practices).
<p>Output 2.2: National institutional and community capacity in</p>	<ul style="list-style-type: none"> • Activity 2.6: Design and implement a training programme in integrated water resources management for the Ministry 	<ul style="list-style-type: none"> • The International Center for Water and Environmental Research at Al Balqa Applied University was established and is now providing expertise and research in the area of climate change; including the preparation of environmental impact assessments.

Expected Results	Key Planned Activities	Main Achievements
<p>integrated water resources management is improved</p>	<p>of Water and Irrigation, national NGOs, and stakeholders.</p> <ul style="list-style-type: none"> • Activity 2.7: <ul style="list-style-type: none"> ○ A. Design and implement community-base research projects on climate change adaptation. ○ B. Improve database in integrated water resources management in arid and semi arid areas. • Activity 2.8: Develop water education and awareness programme focusing in curriculum, resources manuals, training of trainers and teacher-in-service training for the Ministry of Education with the close partnership of the Ministry of Water and Irrigation. • Activity 2.9: Design and establish one environmental and water resource centre for advocacy education and capacity building. • Activity 2.10: Develop a cooperative framework on the criteria for sustainable management of shared water resources including transboundary water resources. 	<ul style="list-style-type: none"> • Capacities of many stakeholders from different levels were enhanced through the implementation of training programmes on Environmental Impact Assessment, on ground water modeling, on urban water harvesting and on climate change modeling; • National extra curricula for the inclusion of climate change issues are completed and manuals for updating these curricula are being developed; • Research in the area of climate change was promoted and supported through funding several research proposals related to climate change impacts and scenarios in Jordan and by holding an International workshop on climate change assessment, adaptation and management and a Sub regional training workshop on transboundary water. • Experts from Gansu Research Institute for Water Conservancy in China held a training course on rainwater harvesting concepts for 18 water professionals from the MOWI and WAJ. • Two staff were selected for an extensive training course on advanced water harvesting methodologies in Gansu, China, funded by the Chinese Government; • Two staff from the Jordan meteorological department were sent for advance training in climate change modeling in the Abdus Salam International Center for Theoretical Physics (ICTP), Trieste • Research assessments conducted on the impact of climate change on the water quality of the Amman Zarqa Basin; the impact of climate change on treated water quality for different scenarios in Jordan; and potential sites for water harvesting in North-eastern Badia desert implemented • A training course on Water Evaluation and Planning (WEAP) led by experts from the Stockholm environment Institute was held in Amman for 20 specialists from the MoWI supporting the Ministry in its efforts of updating the National Water Master Plan (NWMP). • A water education/awareness campaign called H2oooh! was launched. A total of about 5,600 students (grade 8th and 9th) participated in the competition in Jordan and submitted storyboards in July 2012. The focus was on a better understanding of limited availability, sustainable use and conservation of water; cartoon video is ready and will be aired through national TV channel. • The capacity of selected staff from the Ministry of Water and Irrigation was developed through their participation at an advanced training course on transboundary water management held from 19 - 29 June 2012 at Oregon State University; • A national consultant was contracted to develop the water education manual in cooperation with Ministry of Education and MOWI.
<p>Output 2.3: Adaptation measures, by health sector and other sectors, to protect health from climate change are institutionalized</p>	<ul style="list-style-type: none"> • Activity 2.11: Conduct an assessment of direct and indirect risks to health from climate change • Activity 2.12: Screen and prioritize adaptation strategies, by the health sector and others to protect health from climate change. • Activity 2.13: Develop and implement adaptation strategies to protect health from the negative effects of heat waves. 	<ul style="list-style-type: none"> • The National Adaptation Strategy and Plan of Action to Protect Health from climate change is completed. It was developed under the MOH National Strategy Team; • A steering committee was formed to oversee the mainstreaming of climate change adaptation strategies within MOH; • 6 health areas were selected and climate change adaptation strategies were developed for each one: heat waves, nutrition, water and food-borne disease, vector-borne disease, occupational health, air-borne and respiratory disease.

Expected Results	Key Planned Activities	Main Achievements
	<ul style="list-style-type: none"> • Activity 2.14: Design adaptation projects to protect health from identified high-risk environmental conditions induced by climate change. • Activity 2.15: Establish a national early warning system to monitor and assess health impacts of climate change 	
<p>Output 2.4: Adaptation capacity of Zarqa River Basin to climate change is piloted and strengthened</p>	<ul style="list-style-type: none"> • Activity 2.16: Assess direct and indirect climate change risks to water availability and quality in Zarqa River Basin. • Activity 2.17: Assess opportunities and barriers to adaptation to climate change risks • Activity 2.18: Formulate appropriate legal and institutional strategies and the needed interventions (strategy implementation plan) for Zarqa River Basin • Activity 2.19: Review ongoing national water policies, strategies, and action plans relevant to climate change and IWRM. • Activity 2.20: Upgrade local and national capacities and capabilities to respond adequately to the needs and requirements for adaptation to climate change and IWRM using effective participatory approaches and tools. • Activity 2.21: Develop, document, share and disseminate knowledge and transfer technologies generated from Zarqa River basin on the local and national levels, and establish linkages to regional and global experiences 	<ul style="list-style-type: none"> • Direct and indirect impacts of climate change on the water quantity and quality in the Zarqa River Basin have been assessed; • Socio economical impacts of climate change on water resources assessed, assessment tool for prioritization of all possible adaptation to climate change interventions has been developed and tested; • Staff from the MOEv trained on tools and methodologies on these aspects for up-scaling into other areas of the country; • A programme on climate change adaptation was developed and submitted to the MoEnv. • Pilot interventions programme in one rural community with full community participation for domestic wastewater management and on farm practices has started to test the protection of groundwater resources. The selection of 20 sites was finalized and the work should start in Feb. 2013 and be completed by mid-March 2013. • Two scientific publications were printed - one on the identification of the climate change impacts on the water resources of the Zarqa river basin, another on the Micro and Micro socio economical impacts of climate change on the Zarqa River basin - and disseminated to about 100 organizations and stakeholders. Another 4 scientific publication related to the identification and prioritization of appropriate adaptation measures in the ZRB, development of a climate change adaptation programme for the ZRB, and identification of opportunities and barriers of climate change adaptation intervention in the ZRB will be disseminated to the 100 organizations and stakeholders by mid-March, 2013.

Following the review of the list of achievements presented in the table above, some key achievements emerged; they are:

Water Safety Plans (WSPs):

1. The JP supported the implementation of WSPs. They are a risk-based preventative approach to effectively protect drinking-water safety; they are recommended in the WHO Guidelines for Drinking-Water Quality (DWQ). It entails a comprehensive risk assessment and management system covering all steps in water supply - from catchment to consumer – to identify risks beforehand and develop risk management plans. The objective for water suppliers when adopting this approach is to ensure water quality compliance with national standards and minimize water quality related incidents. It replaces the current approach that is, generally, more reactive by responding to crises when they arise.

2. Using WSPs is a dynamic process that has positive impacts on the supply of water to consumers, which includes:

- a. It is a preventative planning process instead of relying on the consequences of risks after incidents happen;
- b. It encourages a deep understanding of the water system by the water suppliers through comprehensive descriptions and documentation on water supply systems and identification of risk areas and weak points in the water supply chain;
- c. It focuses the attention of water suppliers staff on areas in need for improvement;
- d. It establishes a collective sense of shared responsibility among MOH as the water quality regulator, Water Authority of Jordan (WAJ) and water companies as water suppliers by involving all staff ranging from senior management to on-site operators in defining common goals towards improving the water quality.

3. Under WHO leadership, the JP provided support to key stakeholders related to the distribution of drinking water in Jordan for the implementation of WSPs at 5 demonstration sites: Amman (Miyahuna), Aqaba, Balqa, Irbid (Yarmouk) and Karak. A multi-stakeholder committee selected these sites, which represent diverse water supply situations in Jordan but also a large percentage of water consumers in the Kingdom. The JP support included a comprehensive training programme to develop the capacity of staff for developing WSPs and provided technical support for the implementation of these WSPs when needed.

4. Key JP results in this area include: (i) 5 water suppliers, representing a large percentage of water users in Jordan which have implemented their own WSPs; (ii) key staff involved in drinking water quality management (suppliers, regulator (MOH) and WAJ) trained in the development and implementation of WSPs; (iii) formalized a permanent committee at Miyahuna (the largest water supplier in Jordan) chaired by the Water Quality Manager to coordinate the implementation of WSPs; (iv) A new WSP Division at WAJ with a staff of 10. The objectives of this Division are to audit WSPs, develop small projects to expand the use of WSPs, protect drinking water from pollutants (manage data on pollutants), and provide licensing for drinking water operations; (v) MOH created (Minister Order) in 2012 a new committee on water quality surveillance chaired by the Minister of MOH; (vi) Miyahuna is in the process to issue a policy statement that will include the WSP approach; the company's Board is reviewing the current draft;

Generating Evidence on the Minimum water requirements for health:

Under WHO leadership, the JP supported the “*Minimum Households' Water Security Requirements for Health Protection*” study, which resulted in the identification of the minimum water requirements for protecting the health of Jordanians. The results of the national population assessment on minimum water requirements for health protection is soon to be made public and will provide the scientific evidence for updating national policies on water service targets and tariff structure.

Drought tolerant Cereal cultivar and Conservation Agriculture:

5. By partnering with NCARE, the JP supported their existing programme on “*Surveying, Collecting, and Breeding Utilization of Climate Resilient Baladi Wheat (Durum Wheat) for Sustainable Production under Climate Change*”. With this support, NCARE was able to collect durum wheat material from 3 different ecosystems in Jordan (North, Middle and South) and conduct various measurements for each type of material, including the study of the genetic of this material. Results were published in the *International Journal of Agriculture and Biology* in an article titled “*Exploring Genetic Diversity in Jordanian Wheat Landraces Collected from Different Agro-ecological Regions using Random Amplified Polymorphic DNA Analysis*” (Vol. 13, No. 2, 2011).

6. Using this knowledge base on durum wheat the JP supported further research to develop a local breeding programme to improve durum wheat productivity in Jordan with the objectives of generating higher income for rural women, enhancing food security and overall improving the rural sector adaptive capacity to climate variability. The results so far have been the identification of one durum wheat landrace called “*NCAREAJ.5191*” which had been submitted to UPOV (International Union for the Protection of New Varieties of Plants), an intergovernmental organization with headquarters in Geneva (Switzerland) to be registered as a new variety of durum wheat for Jordan. This new durum wheat landrace is more resilient to drought with an early flowering and early maturity for a shorter growing season, yet with a higher productivity in both grains and plant to use as fodder. The full research cycle will be completed with 2 more additional growing seasons, following the NCARE research protocol. Initial adoption test by farmers were conducted with the production and dissemination by NCARE stations of about 50 tonnes of this new seed. Initial findings indicate that farmers highly appreciate this new variety; particularly women who are using it for cooking and baking and due to high demand the price on markets is 2-3 times higher than traditional wheat (1JD vs. 0.35 JD).

7. The JP also supported the development of practices for conservation agriculture. It included 3 principles: (i) plant with minimal work on soil, such as no tillage; (ii) better manage the residuals, leaving straw in the soil; and (iii) practice crop rotation including the use of legumes. As for the above work that supported an existing research programme, the JP did the same in this area. Initial work had been done with the support of a previous FAO project. The research consisted of implementing these principles in the three main agriculture regions of Jordan. In each region, seven (7) demonstration plots were identified for a total of 64.5 ha (7 X 3 = 21 plots). All plots were divided into two parts: 50% of the plot using conventional practices and 50% of the plot using the principles of conservation agriculture. The results are so far significant with a yield increase of 35% over the conventional practices and a saving of about \$180 per hectare. Through these demonstration sites, local farmers indicated a strong interest in these new techniques.

8. As a result of this work, NCARE has now integrated climate change into their research programmes on most crops. The ministry of agriculture is also revising its *National Strategy of Agriculture* for the period 2013-2020 and conservation agriculture will be introduced in the strategy with a focus on resilience to climate change. Additionally, the conservation agriculture findings were also integrated in the *IFAD-GEF Sustainable Land Management* project, which started in 2008 with a budget of \$6.3M.

Adaptation Strategies in Six Key Health Sectors:

9. In supporting the development of “*adaptation measures, by health sector and other sectors, to protect health from climate change*” (output 2.3), the JP supported the MOH to develop their capacity in addressing the impacts of climate change on health. Through a good participative process, the JP resources were used effectively to develop critical adaptation measures in the health sector; including the use of MOH resources when possible, in order to “stretch” these resources as far as possible. A steering committee was formed to oversee the work supported by the JP and also to mainstream the findings within MOH. The Director of Primary Health Care at MOH chaired this committee. A team was then identified within MOH to carry on with the programme and with the support of the JP Team.

10. The JP support started with brainstorming sessions on climate change impact and the need to adapt. As the understanding of the impacts of climate change on public health got better, the six most important climate-sensitive health issues were identified: heat waves, nutrition, water and foodborne disease, vector-borne disease, occupational health, airborne and respiratory disease. The support of the JP resulted in the development of one climate change adaptation strategy for each of these climate-sensitive health areas (6). The Minister of Health officially launched these strategies in November 2012 in the context of the implementation of the World Health Assembly Resolution of May 2008 and of the WHO Regional Committee Resolution of October 2008 on protecting health from climate change. These strategies are consolidated into one document titled “*National Health Adaptation Strategy and Plans of Action to Protect Health from Climate Change*”.. Findings will also be incorporated into the *National Health Strategy* that is being revised under the leadership of MOH for the period 2013-2018 as well as into the *National Climate Change Policy* that is also under development for the period 2013-2015 under the leadership of the ministry of environment.

11. Finally as part of developing these 6 climate change adaptation strategies, each team identified 4 projects to address climate change impacts in their respective health areas (6) for a total of 24 projects. These projects are varied in objective, size and reach but they are all critical projects to address the most pressing needs in adapting to climate change. They include a nutrition surveillance system, a national awareness strategy on nutrition and climate change, a real-time surveillance and evaluation system for heat waves, the establishment

of an occupational surveillance system, raise awareness of the public on adaptation measures against ultraviolet rays, the assessment and mapping of areas which have potential effect on respiratory diseases through production of pollen or other allergens, etc. These 24 projects constitute mostly the up-scaling approach of the JP findings in this area. The MOH is fully committed in implementing these 24 projects that were identified by “insiders” with the support of the JP. It is also important to note that the Directors of the respective health units related to these 6 climate-sensitive health areas headed the 6 teams that collaborated in the implementation of these activities. This has resulted in a strong ownership of these results by these teams and by extension by MOH.

Assessment of Climate Change Impacts on Water Availability and Quality in the ZRB:

12. The result framework of the JP included a focus on piloting/demonstrating climate change adaptation measures in the ZRB; particularly addressing the risks to water quality and availability in the area. Within the context of the well-known water scarcity situation in Jordan, one area of great interest by the government and donors is the management of wastewater and the risks of contamination of groundwater by wastewater and agricultural run-offs. The government of Jordan has been debating these issues over the last few years. There is a lot of interest in moving the legislation and policy frameworks toward the decentralization of sanitation, which is under the responsibility of MWI. In order to provide factual information on these subjects, the JP provided support to conduct some assessments and studies to accumulate knowledge in this area and identify potential climate change adaptation options. It included the “*Assessment of Direct and Indirect Impacts of Climate Change Scenarios on Water Availability and Quality in the ZRB*”. It was an extensive study that included the analyses of scenarios using models such as the General Circulation Model (GCM) and the Soil and Water Assessment Tools (SWAT) as a hydrological model to assess the impact of climate change on surface water and groundwater quality and quantity. This study provided an extensive knowledge base; however, it was also recognized that it was a first step to address the lack of data availability in this area and that more analysis is needed in the medium and long-term.

13. Another study was the “*Assessment of the Impact of Sanitation Management and Farming Practices on Groundwater Resources in the village of Al-Kfair*”. The main objective of this assessment was to model the hydrological processes and assess the impact of land management practices on water quality and quantity.

14. Based on these analyses and modeling - including the modeling to predict pollution due to wastewater seeping into groundwater - the JP has also been supporting the identification and the demonstration of small-scale wastewater treatment systems in the ZRB. It includes the implementation of 8 sites/systems (septic + sand filter systems) and it should be built in February 2013. This pilot will provide valuable data to the Water and Environment Research and Study Center (WERSC) at the University of Jordan, which developed the initial model to predict pollution due to wastewater seeping into groundwater. The model will be tested and refined and will become a tool to inform decision-makers on the risks involved with the re-use of treated wastewater in agriculture field. Despite the end of the JP, this work will continue thereafter under the leadership of WERSC.

Training Material on Climate Change and Water Management:

15. The UNESCO lead component of the JP was well aligned with its global IHP (International Hydrological Programme) programme, including its UNESCO network of training centers. This network includes 2 categories of centers: category 1 includes UNESCO centers such as the Institute for Water Education (IHE) in the Netherlands, and category 2 includes partner institutes, which are proposed by Parties, evaluated and endorsed by the UNESCO conference. Under output 2.2, the JP was to provide capacity development, research, and technical support in the water sciences related fields implemented through the established Jordan IHP National Committee mechanism established by the Ministry of Water and Irrigation.

16. In order to provide this support, the JP had access to UNESCO’s extensive body of knowledge and expertise in the water management area that exists under its IHP programme. The Water and Environment Resource Centre at Al-Balqa Applied University was a strategic partners responsible for the delivery of UNESCO Water Sciences programme. Finally, the targeted beneficiaries included water experts, academics, post-graduate students, students, local community and personnel of the Ministry of Water and Irrigation.

17. The JP developed and supported numerous training programmes, including training needs assessments using the above resources. It included various topics such as flood risk assessment, groundwater modeling, climate change modeling, transboundary water resources management, urban water harvesting, etc. These training programmes were delivered in Jordan and, in some cases, outside of Jordan. Through the IHP committee chaired by the Minister of MOWI, formed in 1992 and which comprises 17 members, numerous training programmes were implemented for the MOWI and WAJ staff. This training was supported in the context of the implementation of the “*Water for Life*” strategy. On the request of MOWI, it included the training on using WEAP (Water Evaluation and Planning), a tool to manage water supply and demand that was

approved by MOWI in 2011.

As a result, these programmes now constitute an extensive body of knowledge that could be re-used by national partners. Additionally, the Water and Environment Resource Centre at Al-Balqa Applied University was established and now provides expertise and research in the areas of water management and climate change. It was also noted that the capacity developed through this training was used for the development of the soon-to-be finalized *Climate Change Adaptation Policy*. Finally, under this output, a case study was also compiled by UNESCO and a summary was published in the most recent World Water Development Report (WWDR4) “*Managing Water under Uncertainty and Risk*” published in 2012.

- b. In what way do you feel that the capacities developed during the implementation of the joint programme have contributed to the achievement of the outcomes?

Competency and knowledge was gained in addressing the adverse impacts of climate change on water resources, food security, and health. Moreover, training, and technical support was provided to the teams when needed especially upon introduction of new concepts in drinking water quality management and throughout the health strategy development process, downscaling modeling of climate change impacts for professionals from the MWI and Meteorological department, developing tools for prioritization the appropriate adaptation interventions, Involving the local communities and governments in natural resources management, and the piloting of many pilot interventions (water safety plans with WAJ and the MOH and Groundwater protection programmes at Al Kfair community in Jerash government with the MoEnv, MWI, and the local municipality) has all lead to the creation of a wide understanding and knowledge in the area of CC adaptation that have been used through out the JP life and will stay in the country and the region towards deepening the impact os the JP and in sustaining its results and outcomes.

- c. Report on how outputs have contributed to the achievement of the outcomes based on performance indicators and explain any variance in actual versus planned contributions of these outputs. Highlight any institutional and/ or behavioural changes, including capacity development, amongst beneficiaries/right holders.

Even Though outputs were lead by different implementing partners and UN agencies, decisions were taken at the PMC in order to keep the work harmonized and avoid duplication of efforts. The same coordination was happening at the JP team level and the senior management of each implementing partner. For examples the impact of CC on food security, health, environment and water resources were all carried out for each output after careful revision of the TOR for each activity by the JP team to insure complementarities. Thus results of all outputs were leading to a comprehensive result achieving the anticipated outcome.

At some instances, the design of the project was modified to ensure government’s engagement and ownership of the work output, internalization of the adaptation processes within the overall work process of management system at the implementing institutions and partners, and ensure sustainability of the processes within the existing programs of the line ministries of the GoJ. As a result, the GoJ perception of adaptation to climate change has changed to include such activities in to their existing work programs. Moreover, stakeholders were engaged throughout the process paving the way for ownership and carrying of responsibility for their identified role in protecting the public health from climate change impacts.

- d. Who are and how have the primary beneficiaries/right holders been engaged in the joint programme implementation? Please disaggregate by relevant category as appropriate for your specific joint programme (e.g. gender, age, etc)

The JP has six main national partners: Ministry of Planning and International Cooperation (MOPIC), Ministry of Health (MOH), Ministry of Water and Irrigation (MOWI), Ministry of Agriculture (MOA), Ministry of Education (MOEd) and Ministry of Environment (MOEv). In addition, two other key stakeholders play a critical role in implementing some JP activities: IUCN - an international NGO – played a major role in implementing JP activities in the ZRB (output 2.4) and Mihayuna a water supply company, which played a key role in demonstrating the benefits of using WSPs as a risk management tool to ensure quality drinking water supply to consumers. All these stakeholders actively participated in the implementation of the JP and developed a good ownership of the programme and of its achievements.

Other stakeholders were the local communities, academia, research centers, and NGOs. These were key to the success of the pilot interventions of the both the groundwater protection programme and the WSPs.

- Academia and research centers were involved in researching the WSP and water quality issues, groundwater modeling, adaptation prioritization tools, decentralized wastewater management options, and on farm best Management practices.
 - Local communities and government were trained on different aspects of the piloting schemes.
 - NGOs were involved in training many of the beneficiaries and stake holders on management, operation, and maintaining some intervention tools and practices when needed and warranted.
- e. Describe and assess how the joint programme and its development partners have addressed issues of social, cultural, political and economic inequalities during the implementation phase of the programme:
- a. To what extent and in which capacities have socially excluded populations been involved throughout this programme?

The JP had many activities related to the improvement of drinking water supplies and management of domestic waste water at rural communities. Since the most vulnerable groups affected by cc are the poor whether in the urban areas or in the rural communities, the JP has impacted the life of both groups positively. WSPs and the determination of the minimum household water requirement are tools that will insure that water is delivered to the household at appropriate quantities and qualities. Managing domestic wastewater at one rural community is also helping the people to better manage their wastewater and reuse the treated effluent in growing animal fodders to save water and create another opportunity for income generation. At the later activity the women Association in the rural community has taken the forefront for advocating for the project and conducting the awareness and training campaigns towards a successful implementation of the project.

In another activity the JP supported the development of a local breeding programme to improve durum wheat productivity in Jordan with the objectives of generating higher income for rural women, enhancing food security and overall improving the rural sector adaptive capacity to climate variability. The results so far have been the identification of one durum wheat landrace that is more resilient to drought with an early flowering and early maturity for a shorter growing season, yet with a higher productivity in both grains and plant to use as fodder. Initial adoption test by farmers were conducted with the production and dissemination of about 50 tonnes of this new seed. Initial findings indicate that farmers highly appreciate this new variety; particularly women who are using it for cooking and baking and due to high demand the price on markets is 2-3 times higher than traditional wheat.

- e. Describe the extent of the contribution of the joint programme to the following categories of results:
- a. Paris Declaration Principles

The GOJ ownership of the JP is enhanced through having the PMC chaired by the SG of the MWI and members from all implementing partners. The NSC was co chaired by the Jordan MOPIC SG. In addition Government leadership of the JP was achieved through involving the focal committee and Task force in all activities of the JP, the JP activities are harmonized with other projects and initiative in the country to avoid duplication. The JP has also pushed for the involvement of NGO's and CBO's in the management of the JP through having one NGO in the PMC, implementation of activities such as having women associations in local communities involved in awareness campaigns, and partnering with one regional NGO to carry out activities related to social marketing awareness campaigns. The JP adopted result based management approach, and focused on enhancing the sense of accountability towards the development results.

- b. Delivering as One

The JP was aligned with the third expected outcome of the 2008-2012 UNDAF, which was “*Sustainable management of natural resources and the environment*”; and particularly its two related expected outputs: “*National institutional and community capacities strengthened for more sustainable*

management of water resources” and “Environmental policies aligned to global conventions and national implementation capacities enhanced”. The planning document took into consideration climate change adaptation in its programming framework.

The JP is also well aligned with the new UNDAF 2013-2017. Lessons learned from the JP were incorporated into the new planning framework for the years to come. For instance, when the UNDAF states that it will “support an integrated approach to water management to address the serious shortages of water for all purposes in Jordan”, it is a continuation of the work initiated with the support of the JP such as the implementation of Water Safety Plans (WSPs) as a new risk-based preventative approach to most effectively protect drinking-water safety encompassing all steps in water supply from catchment to consumers.

III. GOOD PRACTICES AND LESSONS LEARNED

- There is a need to better align management and implementation modalities among UN agencies when they are involved into a joint programme under the “One UN” concept for an effective implementation. The differences between sets of rules and procedures from UN agencies are exacerbated when working together. It makes the management and the implementation of these joint programmes more difficult. Moreover, a better harmonization of implementation and management/administration rules and procedures cannot be done at the country level; it needs to be done at the UN agency headquarter level.
 - It is imperative for such JPs a need to define an inception phase at start up to review the design elements, engage stakeholders. Any changes to the programme strategy, management arrangements, monitoring framework and participation of stakeholders should be documented in an inception report, which should be endorsed by the management committee overseeing the development of the programme/project.
 - An early involvement of Stakeholders leads to good national ownership of achievements/results. It also contributes to a more effective implementation and a better potential for long-term impact and sustainability.
 - This type of programme/project needs to focus more on the enabling environment. The right policies, legislation and institutions are part of the critical success factor for any such intervention; particularly for the long-term impact and the sustainability of achievements.
 - Procedures to develop such programmes/projects need to include stronger guidelines to address/identify sustainability measures at the design stage as well as a strategy on how capacities will be developed with a focus on the enabling environment as part of a holistic approach to develop the required capacities and to produce the desired change.
- a. Report on any innovative development approaches as a result of joint programme implementation

The products from the work of the JP are being institutionalized, sustained and integrated within national development in many ways. One example is that related to work lead by the MOH, WAJ, and WHO where the following was achieved:

- a. Adjustment to the existing work of MOH and WAJ concerned departments in view of the results.
- b. Results are being integrated into the revised MOH and National Health Strategies now under preparation and the management practices as related to water quality and quantity.
- c. The National Climate Change Policy team is using the products as feed to develop the health section of the Climate Change Policy in Jordan.
- d. The results are being used as the source for the health chapter in Jordan’s Third National Communication Report to the UNFCCC.

Another innovative example is the piloting of a groundwater protection programme through applying best management practices for domestic wastewater management and farming practices at Al Kfair, a rural community in the Jerash governorate within the Zarqa River Basin. The local community and government were fully integrated in the design and implementation of the programme to insure its sustainability.

- b. Indicate key constraints including delays (if any) during programme implementation

Initially there was some delay in the coordination with government institutions due to lack of understanding of the complexity of the management arrangements of the JP such as the host ministry and the role of the implementing agencies. These difficulties have gradually been resolved in part due to better involvement of government institutions in the JP activities.

The JP original design did not take into consideration that some of the activities could have been implemented jointly rather than carrying out similar activities with different focus areas for each component. One example is the pilot interventions activity.

The design of piloting interventions for WHO, UNDP, and FAO required intensive and iterative consultation among the implementing agencies and partners. Agreeing on the selected sites that satisfy the required criteria (adaptation measures, farms, communities, and safe handling of treated wastewater). The necessity to attain sustainability of the JP outcomes particularly in relation to the some pilot site selection has also consumed a considerable time.

Delays for many of the JP activities were inevitable because of: 1) programme experienced start-up delay of at least six months for mobilization before actual implementation 2) unforeseen delays due to changes within the leadership of ministries such as the Ministry of Health which has resulted in the delay of signing agreements for the activities start up.

In addition there was a delay in receiving the authorization for the budget revision of the UNESCO's component from the Project Management Committee and the National Steering committee; the revision was approved at the end of May, 2011 resulting in a three-month delay to start the implementation of the project.

The delay in getting technical approval from the FAO Lead Technical Unit at FAO headquarters to conduct the model farm activities has caused a delay in establishing these model farms.

Main Mitigations taken to overcome constraints

The CTAs are now meeting at the JP office more frequently. The JP CTAs are present in the JP office two days per week to coordinate and discuss different activities of the JP.

Regarding coordination with the government, members of the PMC, including those representing the government, are now fully informed of the roles and responsibilities of each other, and this ensures that the scope for conflict and/or duplication of efforts is not likely to occur in the future.

Joint budget and joint advocacy plan developed in collaboration with the UN agencies has strengthened the concept of Joint Programming. The development of this plan has enabled the different partners to acknowledge the significance of acting as one.

The JP team has updated its work plans and developed an improvement plan that accelerated the implementation process while maintaining quality of deliverables. This was achieved by accelerating the implementation of some activities, combining some activities of many outputs into one consultation, and sharing some activities between two consultants. An updated M&E plan was updated especially as related to the indicators list.

c. Describe and assess how the monitoring and evaluation function has contributed to the:

The JP was monitored and progress was reported according to the MDG-F monitoring procedures. Progress made by the JP was reported semi-annually to the MDG-F Secretariat, using the given template.

The measurement of the progress of the JP includes the monitoring of a set of performance indicators.

They form the Performance Monitoring Framework (PMF) for the programme, including their related baseline, means of verification, methods of data collection and responsibility centers. For each outcome, indicators were identified to measure the progress made over time towards the respective expected outcome. At the design

stage of the programme, the PMF included a total of 29 indicators; including baseline information. Following the MTE, this PMF was reviewed and updated. The revised PMF includes a set of 20 indicators that are presented in The new set of indicators was a big improvement over the initial set of 29 indicators that were in the JP document. The new indicators are generally more focus on measuring the achievements toward the expected results as opposed to measuring if a particular activity was completed or not. As a result, the monitoring information generated with this new set of indicators provided a better “picture” about the progress of the joint programme toward achieving its stated strategy.

Overall, the monitoring process was improved following the review of the monitoring indicators. The new set of monitoring indicators should have been enough to monitor the JP. However, the reality is that in addition to this set of indicators the monitoring template provided by the MDG-F Secretariat includes a rather long list of other indicators to report on.

The PMC and the NSC were following up with the JP team on the M and E process. The M and E department of MOPIC were involved in reviewing the achievements of the JP through having direct meeting with the officials responsible for the M and E of different aid projects.

Other forms of Monitoring were those that are internal to the implementing partners and the participating UN agencies which were used to monitor progress of activities related to the output lead by these agencies. This was easier to follow up since the focus would be on a limited number of indicators related to well streamed focus of the output.

Having officials from different implementing partners agencies in the PMC, NSC, Task Forces, and focal entities has increased the understanding of officials of the different M and E systems used and led to more efficient follow up on alleviating obstacles and constraints that were facing the JP.

d. Describe and asses how the communication and advocacy functions have contributed to the:

The overall objective of the Advocacy and Communication plan is to accelerate progress on the MDGs by raising awareness, strengthening broad-based support and action and increasing citizen engagement in MDG related policy and practice as related to the possible impact of Climate Change on water resources, health and food security.

The specific objectives of the Plan are:

- Increase awareness and support for the JP and its relation to the MDG achievements in Jordan at the policy and general public level
- Strengthen JP role for increased MDG achievements and citizen engagement in MDG-F and MDG processes; and
- Improve accountability and transparency towards all partners.

Implementing the Advocacy and Communication plan has established alliances with media, national actors including UN, private sector, civil society, government, citizen groups/networks, local governments and civil society groups in support of the MDGs, developed and strengthen the MDG-F identity as a trusted partner, and strengthened transparency and accountability to citizens in JP target areas.

The target audience of this C and A strategy included government, water supply companies, development zones, Legislation Bureau, local government, the Parliament, civil society, local municipalities, farmers, water users, NGOs, academia and research centers, private sector, donors, and media. The main elements of the Advocacy and Communication plan were: workshops, seminars, focus group meetings, media campaigns, publications, and field visits.

e. Please report on scalability of the joint programme and/or any of its components

Groundwater protection programme

The development of the ground water protection programme through implementing the piloting for the *assessment of the Impact of Sanitation Management and Farming Practices on Groundwater Resources in the village of Al-Kfair* (this included the implementation of 20 sites/systems (septic + sand filter systems) provides

valuable data to the Water and Environment Research and Study Center (WERSC) at the University of Jordan, which developed the initial model to predict pollution due to wastewater seeping into groundwater. The model will be tested and refined and will become a tool to inform decision-makers on the risks involved with the re-use of treated wastewater in agriculture field.

The results of the pilot will be upscaled and replicated in many other locations with conditions similar to Al Kfair to help protect the Groundwater.

Another upscaling exercise is anticipated to be carried out WERSC using the vast accumulated knowledge through the piloting programme..

Water safety plan

The JP supported implementation of WSPs at 5 demonstration sites: Amman (Miyahuna), Aqaba, Balqa, Irbid (Yarmouk) and Karak have resulted in: (i) 5 water suppliers, representing a large percentage of water users in Jordan which have implemented their own WSPs; (ii) key staff involved in drinking water quality management (suppliers, regulator (MOH) and WAJ) trained in the development and implementation of WSPs; (iii) formalized a permanent committee at Miyahuna (the largest water supplier in Jordan) chaired by the Water Quality Manager to coordinate the implementation of WSPs; (iv) A new WSP Division at WAJ with a staff of 10. The creation of this division aims at developing small projects to expand the use of WSPs, protect drinking water from pollutants (manage data on pollutants), and provide licensing for drinking water operations; (v) MOH created in 2012 a new committee on water quality surveillance chaired by the Minister of MOH; (vi) Miyahuna is in the process to issue a policy statement that will include the WSP approach; the company's Board is reviewing the current draft. These are major steps towards upscaling the use of WSP throughout the country.

IV. FINANCIAL STATUS OF THE JOINT PROGRAMME

UN Agency	Approved Budget	Budget Transferred	Budget disbursed and Committed as of Feb., 28th	Budget Remaining
UNDP	873,333	873,333	873,333	0
FAO	827,667	827,667	607,544	220,123
UNESCO	699,000	699,000	693120.83	5879
WHO	1,600,000	1,600,000	1,600,000	0
Total	4,000,000	4,000,000	3,773,998	226002

- c. Explain any outstanding balance or variances with the original budget

The Remaining budget was mostly in the FAO led output. Most of this budget was devoted to the establishment of model farms for piloting climate change adaptation measures. The delay in getting technical approval from the FAO Lead Technical Unit at FAO headquarters to conduct the model farm activities has caused a delay in establishing these model farms.

V. OTHER COMMENTS AND/OR ADDITIONAL INFORMATION

VI. CERTIFICATION ON OPERATIONAL CLOSURE OF THE PROJECT

By signing, Participating United Nations Organizations (PUNO) certify that the project has been operationally completed.

PUNO	NAME	TITLE	SIGNATURE	DATE

VII. ANNEXES

1. List of all document/studies produced by the joint programme (on a CD)
2. List all communication products created by the joint programme
3. Minutes of the final review meeting of the Programme Management Committee and National Steering Committee
4. Final Evaluation Report
5. M&E framework with update final values of indicators

ANNEX 1

Documents / Studies produced by the JP

- Report on Review and assessment of the current national drinking water quality management system and suggested needed upgrade
- Analysis of Training Needs Assessment and the Design of the Needed Training Programs and Modules for Drinking Water Quality Management System in Jordan at All Levels
- Review evidence on minimum household water security requirements for health protection
- 12 training packages for the different components of the water safety plans.
- Assessment of impact of climate change on health.
- Updated National health strategy as related to climate change impacts on health.
- Executive summary for decision and policy makers for the direct and indirect impacts of climate change on water resources on the Zarqa river basin.
- Climate change impacts on water resources on the Zarqa river basin.
- Socio economical impacts of climate change on water resources on the Zarqa river basin
- Identification of adaptation measures and intervention in the ZRB report.
- Assessment of barriers and opportunities to CC adaptation report.
- Assessment of water sector strategies and policies as related to IWRM and Climate change report.
- A manual for the identification of adaptation interventions, Barriers and opportunities analysis, and adaptation programme development to adopted for future use in other areas.
- Executive summary for decision and policy makers on identification and prioritization of adaptation intervention
- Identification and screening adaptation measures to reduce climate change impacts on food productivity report.
- Assessment of the risks from climate change and water scarcity on food productivity
- Training manual for farmers on impact of CC on agriculture and food security for farmers
- Research report on Assessment of Climate Change impact on the water quality of Amman Zarqa Basin.
- Research report on Assessment of treated water quality under different climate change Scenarios in Jordan
- Research report on Assessment of Water Harvesting in North-eastern Badia of Jordan
- Water educational manual
- Water conservation Cartoon video

ANNEX 2

List all communication products created by the joint programme

- JP brochure
- JP folders
- JP working Notebook A4 size
- JP working student note book (spiral)
- Information sheet on the impacts of CC on Water resources (Arabic and English)
- Information sheet on the impacts of CC on food security(Arabic and English)
- Information sheet on water safety plans(Arabic and English)
- Information sheet on the impacts health(Arabic and English)
- Information sheet on Capacity Development programmes of the JP(Arabic and English)
- News letters
- Press releases
- Web site articles