Activity Appraisal Document ODA

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I REQUESTED DECISION CONCERNS

Explanation of the policy data can be found in the ODA Policy Data Guide.

For the highlighted subjects in table below the de __ gives further explanation.

Application number	4000004211
Short name application	Controlled drainage pilots in Egypt
Long name application	Controlled drainage, improved irrigation methods, and reuse of agricultural fresh drainage water in Egypt (CDIIR)
Description application	The proposed pilot project is to demonstrate controlled drainage, methods to improve sub-surface irrigation and reuse of fresh agricultural drainage water. The advantage of the proposed system is that the same infrastructure is used for draining the field and irrigating the crops. The system regulates the groundwater level such that it can be kept at the level, most suitable for each crop. This will increase the production. The water can also stay longer in the soil for a better uptake (absorption) of fertilizers by plants. This will reduce the costs for farmers and less nitrate will accumulate in the environment. Drained water can be brought back in the system and used again for irrigation. Another advantage of the project approach is that the pilots are directly at farm level and not at university compounds. This will link the method to leading farmers and existing projects. In total, 3 projects of 50 feddan (1 feddan = 0.4 hectare), in 3 different governorates will be part of the approach. *Objectives of the pilot are:* 1. Integration of the irrigation and drainage in one system at existing agricultural plots 2. Gather data to model and assess system performance, to communicate pilot results and knowledge, and to feed further research (input to programs such as NDP III and WFP) 3. Generate support for the system at MWRI and MALR and farmer(s)-groups 4. Identify economic incentives that foster farmers to make the shift to the new water-efficient drainage and irrigation practices. For this purpose, it is imperative that cost-benefit analyses are being carried out to validate the business potential for farmers. It is likely that combined drainage and irrigation leads to:

	i) higher agricultural yields, ii) yields of better quality, iii) more potential for shifts to cash crops, iv) an improved income model. 5. A validation of the business model of improved drainage and irrigation on the farmer level is aspired to open the door to private investments to reach scale. Farmers involvement in the pilot is essential for reaching their support of the improved business model. 6. Develop a feasible and scalable business model for controlled drainage and sub-irrigation fur further implementation or uptake by NDP III or another project/program (e.g. WFP) in the three specified regions in upper and lower Egypt, or even beyond. 7. Develop insight in the quality of irrigation and drainage water, the suitability to re-use and raising awareness.
List of most relevant abbreviations	CDIIR: Controlled Drainage and Improved Irrigation DRI: Drainage Research Center EC: Electric Conductivity EKN: Embassy of the Kingdom of the Netherlands EPADP: Egyptian Public Authority for Drainage Projects FNS: Food and Nutrition Security GERD: Grand Ethiopian Renaissance Dam GoE: Government of Egypt IATI: International Aid Transparency Initiative IFI: International Financial Institute ISO: International Organization for Standardization IWRM: Integrated Water Resources Management MACS: Multi Annual Country Strategy MALR: Ministry of Agriculture and Land Reclamation MWRI: Ministry of Water Resources and Irrigation NDP: National Drainage Project NWP: National Water Partnership NWRC: National Water Research Center NWRP: National Water Resources Management Plan RfP: Request for Proposal SWOT: Strengths, Weaknesses, Opportunities and Threats WFP: World Food Program WUA: Water Users Association
Budget holder	KAI
Date of receipt of application	26 August 2020
Number business partner	Not known yet / project will be tendered (internationally)
Implementing organisation(s)	Not known yet / project will be tendered (internationally)
Legal relationship	Contract
Commitment in foreign currency (if applicable)	N/A
Corporate rate	N/A

Commitment in euros	EUR 684.000		
Funds centre	1702U02030016 Water		
Activity start date	1 April 2021		
Activity end date	31 March 2023		
Contract start date	1 March 2021		
Contract end date	31 December 2023		
Aid modality	Other aid		
Donor role	Single donor		
Technical assistance	TA<10 Less than 10% of the activity budget		
Beneficiary's country/region	Egypt		
Countries within the region (if applicable)	N/A		
Allocation country information	N/A		
Location within the country (be as specific as possible)	Territory	**Name of location(s)**	3 pilot areas: one in Sharkia governorate, one in Beni Suef governorate and one in Luxor governorate
CRS Code	14010, 14040, 14015		
Policy marker weight is 'principal' (no minimum or maximum amount)	Water management and water security / Food Security		
Policy marker weight is 'significant' (no minimum or maximum amount)	Environment and climate adaptation		
Special pledges made by the Minister or State Secretary / and/ or special marks regarding sensitive information	Not Applicable		

II. APPRAISAL OF THE ACTIVITY

2.1 Contribution made by the activity to BZ policy objectives (policy relevance)

2.1.1 Description policy relevance

The Netherlands Multi-annual Country Strategy (MACS) 2019–2022 concerning EGYPT, which is in effect until 31 December 2022 sets the Dutch policy focus areas in Egypt. The policy document emphasizes the importance of cooperation with Egypt. It also highlights the difficulties and reforms that the economy of Egypt is going through, and stresses that Egypt is likely to be severely challenged by climate change and depletion of resources, already exposed to water stress and lack of arable land. The construction of the GERD in Ethiopia is an additional challenge and is expected to create uncertainties about the predictability of the Nile related to upstream projects and effects of climate change. Until 2010, Egypt had been a Dutch partner country for development cooperation for thirty years. After becoming a lower-middle-income country, development aid was phased out.

The Netherlands has remained active in Egypt in the areas of trade, (regional) security and human rights. Today, the bilateral lens has broadened to include among other, migration and climate change. As the Country Strategy notes, the cooperation with Egypt will focus on the following policy areas and long-term objectives:

1. Policy area: International legal order and human right
2. Policy area: Peace, security, stability and migration
3. Policy area: Sustainable economic development, trade and investment
4. Policy area: Sustainable development, food security, water and climate
5. Policy area: Social progress

In the Multi-annual Country Strategy, a link is made with the Sustainable Development Goals.

The proposed pilot study contributes to the main objective of the policy area for sustainable development, food security, water and climate of the MACS: ***Strengthened sustainable and inclusive agriculture and food security through improved water management and use of resources in a changing climate.***
Concerning the annual plan, the study is in line with:

- **Outcome 2**: Quality of knowledge innovation systems for FNS improved (qualitative).
  - Innovative FNS practices in Water and Food Security program are introduced (KAI)
  - Farmers adopted research results/ knowledge/new technologies (KAI, RVO)
- **Outcome 4**: Water efficiency in agriculture increased.
  - Water saving techniques supported in Water and Food Security program (KAI)

Of the water results framework, the project will contribute to:

- Outcome 1 Water resources management at country level, with indicator: water is used sustainably, ensuring the needs of all sectors and the environment through the number of people having enough water of good quality throughout the year.
  Output: projects for increased water security and safety implemented
  Indicator: number of people supported in projects for improved irrigation and drainage
- Outcome 3 *Efficient water use in agriculture*, with indicator: water efficiency in agriculture increased through change in crop yield per unit of water used over time (SDG 6.4.1).
  Output: projects which contribute to increased water efficiency implemented
  Indicator: number of 'ready-to-use' applications for farmers and policy officers are developed and distributed

The study is in line with the Egyptian policy for the water sector, as laid down in the Egyptian National Water Resources Plan (NWRP) and all criteria of Dutch Development Cooperation. The results will be an important link between water management and food security. The study has been endorsed by the High-Level Water Panel and is an important example of integration of activities of the High Level

Water Panel and the delegated Development Cooperation Program, as recommended during the October 2019, HLWP meeting.

Water management and water security / Food Security: the results of the pilot will contribute to a better water management through saving water, while the production is expected to increase. Introduction of improved irrigation systems is key for the Egyptian Ministry of Water and Irrigation as a measure to increase water security. This project will generate information on the possibilities to reuse (and save) water.

Egypt's main water resource is (and has always been) the Nile River, however, due to the construction of waterworks in upstream Nile Basin countries, control of this water source is becoming more and more in hands of the upstream countries. Together with the rapid population growth and expected increase of the water consumption, this will cause a decrease of the water security. Therefore, GoE has to look for alternative sources and/or decrease water demand.

Securing food production is not possible without water security. Agriculture is still (by far) the largest water consumer but claims of other economic sectors may increase, in the near future. Besides the increase of water use, water security is also threatened by water pollution and changing climate, which makes water availability less predictable.

Environment and climate adaptation: Several forms of pollution have an impact on the quality of irrigation water and the functioning of the existing drainage systems. Controlled drainage, improved irrigation methods and re-use of fresh drainage water will reduce the impact on the environment in general, and in particular on water quantity and quality, soil properties, crop quality, quantity, and human health. Climate change makes water availability less predictable and decreases water security. Saving water, however, will increase water security of farmers.

With regard to the environmental issues, the pilot will anticipate on the activities which are developed in the framework of the National Drainage Project (NDP) III respectively the project Kitchener Drain. Component III of NDP III includes (inter alia) necessary field investigations such as water and soil laboratory tests, implemented by Egyptian Public Authority for Drainage Projects (EPADP). The quality of irrigation water and the presence of garbage in the distribution channels are sometimes hurdles for well-functioning of the irrigation systems. Moreover, pollution of water will also be a threat for human and animal health, as contaminated irrigation water directly affects the crops and fish in the Nile. Solving the problem requires a multi-track and comprehensive program, which is beyond the scope of this pilot project. However, within the limited opportunities of budget and scale this project will gather data to contribute to awareness raising of the local communities and to feed programs such as NDP III.

2.1.2 Appraisal

No.	Criteria 2.1 Policy relevance	Indicators (score 0, 1, 2)	Score	EXPLANATION/ REFERENCES
2.1.1	The proposed intervention ties in with the operational objectives in the Explanatory Memorandum and the related policy memorandum (policy theory and **intervention logic**).	The proposed intervention ties in with both the main objective and the secondary objectives.	2	The intervention ties in with the NL policy objectives (general priorities, IWRM, Enabling environment). The awarded consortium will be requested to prepare

				a logical framework, including final indicators and means of verification.
2.1.2	The proposed intervention ties in with the ODA priorities	The proposed intervention ties in with more than one of the result areas of the BH&OS priorities.	2	
2.1.3	The proposed intervention ties in with the annual plan and the result chain of the MIB/MASP.	The proposed intervention ties in fully with the annual plan and the result chain of the MIB/MASP.	1	The proposed pilot study contributes to the main objective of the policy area for sustainable development, food security, water and climate of the **MACS**. Concerning the **annual plan**, the study is in line with: **Outcome 2**: Quality of knowledge innovation systems for FNS improved. - *Innovative FNS practices in Water and Food Security program are introduced (KAI)* - *Farmers adopted research results/ knowledge/new technologies (KAI, RVO)* **Outcome 4**: Water efficiency in agriculture increased. - *Water saving techniques supported in Water and Food Security program (KAI)*
2.1.4	The relevance of the proposed intervention to the crosscutting themes of women's rights and gender equality / climate / PSD / coherence and strengthening of civil society organisations	The proposed intervention is relevant to one of the crosscutting themes.	1	The intervention is specifically relevant to environment and climate adaptation.
Total score (maximum 8 out of 8 points)			6	

2.2 Problem analysis and lessons learned

2.2.1 Description

During a period of 35 years of cooperation between Egypt and The Netherlands, Dutch partners have supported design, implementation and operation of the field drainage systems, as well as the setup of monitoring programs and policy studies needed for the operation of the main drainage canals in the Nile Delta. This cooperation was very successful at both levels. Cost recovery of the installation of tile drains at farmers' fields appeared to be very good due to an increase in crop yields, while the Government of Egypt also has implemented a viable reuse of drainage water policy to supplement water availability for agriculture.

The current field drainage systems, however, require design modifications and more flexibility in operations to be able to cope with changed conditions. These are, inter alia:

- the anticipated effects of climate change (water scarcity and increased crop water demand),
- crop consolidation (providing a better alignment of drainage needs),
- deficit irrigation (affects design) and,
- the possibility to reversely use the lateral drains for sub-surface irrigation.

In addition to new or modified designs new rules of operation by the farmers are needed.

The proposed pilot project is to demonstrate controlled drainage, methods to improve sub-surface irrigation and reuse of fresh agricultural drainage water. The advantage of the proposed system is that the same infrastructure is used for draining the field and irrigating the crops. The system regulates the groundwater level such that it can be kept at the level, most suitable for each crop. This will increase the production. The water can also stay longer in the soil for a better uptake (absorption) of fertilizers by plants. This will reduce the costs for farmers and less nitrate will accumulate in the environment. Drained water can be brought back in the system and used again for irrigation. Another advantage of the project approach is that the pilots are directly at farm level and not at universities. This will link the method to leading farmers and existing projects.

Research organizations in Egypt already have some practical experience with the concept of controlled drainage, partly to meet specific crop requirements. Results of initial trials showed increased yields when raising the groundwater tables. However, the experiences have been shared with farmers to a limited extent. Trials were located at research fields. So far, farmers' networks were not really involved. Scientific data are scarce and do not fully cover research questions. These are not elaborated yet to substantiate a large-scale transition towards smarter irrigation and controlled drainage systems. First priority is to set up projects to gather evidence-based experiences, preferably as a result of participatory monitoring and research.

The multi-IFI funded National Drainage Project Phase III (NDP III) addresses the installation of new and the rehabilitation of existing field drainage systems, together with a large capacity development component for operation and maintenance and project management. This project needs to incorporate measures to address changed conditions, whereas the private sector will provide the new systems and the necessary technology for operation and maintenance. NDP III can be used as a vehicle for further upscaling the initiative of this pilot. Hence close cooperation on this with EPADP is essential.

The World Food Program facilitates strengthening of agricultural development in Upper Egypt. Part of the program is improvement of irrigation systems. The kind of interventions do fit very well with the objectives and approach of this initiative. Synergy could be found in linking with vibrant local networks, strong local leadership (ownership) and the combination with practical interventions on modern water management at farm level. EKN is supporting the WFP program through financing 2 projects to support smallholder farmers in 5 governorates in southern Egypt. Smallholder farmers are supported in consolidating land, improving water management, accessing to financial services, agricultural waste management, local water efficiency technologies and access to digital markets.

2.2.2 Appraisal

Nr.	Criteria 2.2 Contextanalyse	Indicators (score 0,1,2)	Score	EXPLANATION/ REFERENCES
2.2.1	The proposal is based on a contextual analysis, from which a logical problem definition and objective are generated.	The proposal is based on a analysis and results in a logical problem definition and objective.	2	
2.2.2	The proposal describes how the results of evaluations and/or studies feed into formulation of the proposal.	The proposal clearly sets out how results from evaluations and/or studies contributed to formulation of the proposal.	2	The proposed combined controlled drainage and sub-surface irrigation system has been tested, applied and evaluated in the Netherlands.
Total score (maximum 4 out of 4 points)			4	

2.3 Objectives (outcomes), results (outputs), activities and resources, based on the SMART principle

2.3.1 Description

Objectives (outcomes)
The proposed pilot project is to demonstrate controlled drainage, methods to improve sub-surface irrigation and reuse of fresh agricultural drainage water. It is proposed to implement the project at three, mid-scale (app. 21 ha, 50 feddan) pilot locations. These sizes meet the needs to collect data on operational costs and benefits, suitable for upscaling afterwards based on validated cost-benefit analyses. In this setup there is no direct need for crop consolidation.

Duration of the project is two years, to have the opportunity to monitor two crops per year. Although the project will be realized at a limited area, a larger group of farmers will be reached by organizing training sessions and demo days. In total, 3 projects of 50 feddan, in 3 different governorates will be part of the approach (one in Sharkia governorate, one in Beni Suef governorate and one in Luxor governorate). These governorate are selected because of the presence of the NDP III and WFP program, but final selection of the pilot areas will be done by EPADP. Lead persons in Sharkia and Beni Suef have already expressed their support and commitment at government level and at local community level. In Luxor, EPADP will select a pilot location, in close collaboration with WFP and the local government.

Objectives of the pilot are:

1. Integration of the irrigation and drainage in one system at existing agricultural plots
2. Gather data to model and assess system performance, to communicate pilot results and knowledge, and to feed further research (input to programs such as NDP III and WFP)
3. Generate support for the system at MWRI and MALR and farmer(s)-groups

4. Identify economic incentives that foster farmers to make the shift to the new water-efficient drainage and irrigation practices. For this purpose, it is imperative that cost-benefit analyses are being carried out to validate the business potential for farmers. It is likely that combined drainage and irrigation leads to:
   i) higher agricultural yields,
   ii) yields of better quality,
   iii) more potential for shifts to cash crops,
   iv) an improved income model.
5. A validation of the business model of improved drainage and irrigation on the farmer level is aspired to open the door to private investments to reach scale. Farmers involvement in the pilot is essential for reaching their support of the improved business model.
6. Develop a feasible and scalable business model for controlled drainage and sub-irrigation fur further implementation or uptake by NDP III or another project/program (e.g. WFP) in the three specified regions in upper and lower Egypt, or even beyond.
7. Develop insight in the quality of irrigation and drainage water, the suitability to re-use and raising awareness.

The objectives are in line with the Netherlands policy objectives:

NL Policy Objectives (general priorities):

A) Inclusiveness (gender, social, economic etc.) → social progress
B) Climate adaptation & resilience
C) Sustainability: durable, long-term impact → ensure SDGs are met
D) Ecosystems, biodiversity & environmental impact

Verifiable Indicators:
- Expectations for increase of income for farmers → *linked to NL policy obj.#A*
- Enhance capabilities of national level (EPADP and MALR) and local level stakeholders (governorates and famers) → *linked to NL policy obj.#A*
- Minimize/avoid environmental impacts → *linked to NL policy obj.#B&#C&#D*

Means of verification:
- Cost-Benefit Analysis and financial models for upscaling
- SWOT analysis on the environmental impact
- Manual on installation, management and maintenance of integrated drainage and irrigation systems
- Final report

NL Policy Objectives (4. enabling environment):

Capacity development
Policy advice
Education/knowledge/research
Social inclusion
Sustainability
Climate & Environment
Ecosystems and biodiversity
Innovation and technology
Transboundary/Water diplomacy

Verifiable Indicators:
- Number of organizations and individuals participating in the capacity building program
- Positive pilot results and accepted to be used for upscaling in the NDP III program
- Results of water and soil quality analyses, showing a positive effect on the environment
- Use of modelling tools to support decision making
- Contribute to negotiations with Nile Basin countries

Means of verification:
- Cost-Benefit Analysis and financial models for upscaling
- SWOT analysis on the environmental impact
- Manual on installation, management and maintenance of integrated drainage and irrigation systems

- Roadmap for upscaling of the concept of controlled drainage
- Final report

NL Policy objective (visibility):
Visibility of NL as the go-to development partner in the field of water management

Verifiable Indicators:
The GoE embraces the project as matching to its own sustainable development objectives.

Measurable indicators:
- Level of Involvement of EPADP and MALR in the project processes.
- Number of participants at training events and
- Number of visitors of the pilot sites
- Continued support from EPADP and MALR for project activities

Means of verification:
- Number of meetings with EPADP and MALR
- Minutes of meetings
- Progress reports
- Final report

Contribution to water results framework:

- Outcome 1: Water resources management at country level, with indicator: water is used sustainably, ensuring the needs of all sectors and the environment through the number of people having enough water of good quality throughout the year.
  Output: projects for increased water security and safety implemented
  Indicator: number of people supported in projects for improved irrigation and drainage
- Outcome 3: *Efficient water use in agriculture*, with indicator: water efficiency in agriculture increased through change in crop yield per unit of water used over time (SDG 6.4.1).
  Output: projects which contribute to increased water efficiency implemented
  Indicator: number of 'ready-to-use' applications for farmers and policy officers are developed and distributed

Activities and results (outputs)
The project comprises of the following components:

I. Project management, organization, reporting
II. System design, installation, operation and management
III. System operations and management
IV. Monitoring, data analysis, modelling and technical reporting
V. Communications, support and training
VI. Business model and upscaling

Component I: Project management, organization, reporting
EKN is looking for a consortium that is able to carry out the pilots on controlled drainage in Egypt. The consortium should consist of max. four partners, preferably private-sector partners from EU member states, having extensive practical experience in design, installing, and operating (climate adaptive) controlled drainage and sub-irrigation systems. At least one of the partners need to be experienced in analyzing and monitoring water quality parameters.
The consortium will start with an inception phase of two months and prepare a working plan, in close collaboration with the main stakeholders.
Details about the project management and organization of the consortium, such as division of tasks and responsibilities will be laid down in the project document of the awarded consortium.

Output 1: Inception report prepared, including final work plan and refined budget, if needed. Budget should be in line with final work plan. Important to note that total budget cannot be higher than the budget of the project proposal of the awarded consortium.
Output 2: Smooth project implementation and proper financial and narrative reporting.

Component II: System design, installation, operation and management

The consortium will prepare the design of the controlled drainage and install the system at the 3 pilot locations, indicated by EPADP. The consortium will be responsible for the operation and management of the 3 systems. In total, 3 projects of 50 feddan, in 3 different governorates will be part of the approach (one in Sharkia governorate, one in Beni Suef governorate and one in Luxor governorate).

Output 3: Demo plots at the three indicated locations made operational.
Output 4: Controlled drainage and irrigation systems designed, installed, operated and managed.
Output 5: In a technical report, the description of a feasible and scalable model of controlled drainage is presented.

Component III: Monitoring, data analysis, modelling and technical reporting

The consortium should develop a monitoring and research plan together with the local research partner(s):
For the preparatory research: information should be collected about situation of the plots (hydrology, systems installed, management practices, soil maps, data and information).
Assessment of the reference situation is part of this monitoring and research plan. It's recommended to apply modern information technology to collect data for training and awareness raising and for remote control of management operations.
Relevant data to be collected:

- Crop data (yield, quality, economic results) need to be collected for every crop (maximum of three crops per year).
- Water and soil data need to be collected as well (soil properties, EC, E-Coli and Salmonella, and nutrients (NO3, NH4), as indicators for water pollution and re-use opportunities)
- Quick testing methods, such as innovative DNA-technology, sensors and/or mobile applications are recommended to apply in the project, not only to immediately relate to current activities but also to showcase appropriate technology that could strengthen stakeholder involvement (raising awareness and training).

The inlet (irrigation) water as well as the outlet (drain water, collected in the manhole) needs to be monitored. Hence solid waste should be monitored in the system as well (visual monitoring).
The results will be interpreted and shared with stakeholders for purposes of awareness raising and training. Existing guidelines with regard to irrigation, reuse and food safety as developed by MALR will be used as input as well.

The project intends to comply to the principles of circular economy. Applications and modifications that contribute to recycling of natural resources will be encouraged. The project will quantify the environmental benefits and present this outcome in a SWOT analysis.

Local partners need to play a role in data collection, methods need to be agreed between consortium and local partners. Partners are responsible for proper instruction for taking samples etc.

Output 6: Data and information collected on the pilots. A database including project results (excel) prepared. The database will be accessible on-line (English).
Output 7: SWOT analysis on the environmental impact elaborated.
Output 8: Progress reports, one per crop rotation prepared.

Component VI: Communications, support and training

The project has the ambition to develop a scalable model that can be implemented at a large scale after the project. Special attention needs to be paid to the interaction between crucial partners and the involvement of local stakeholders. For instance:

- MWRI (in particular EPADP and DRI/NWRC) and MALR cooperate
- The relation with and involvement of Water Users Associations and farmers/farmer groups. The Consortium connects to all.
- An overview of the division of tasks between the government organizations is presented at the end of paragraph 2.3.1.

- Profile of participating farmers, considered lead farmer and respected among peers in the area, are willing to share information with colleagues and willing to collaborate and to accept some works in the fields. The consortium is responsible for the establishment of three farmers' groups (learning networks), for each plot one group (at least 10 participants).
- Monitoring and evaluation is carried out in a participatory multi-stakeholder setting.

The consortium is asked to propose a communication/learning model, to ensure the engagement of participating farmers and other relevant stakeholders:

- The intended target groups within the project need to be clearly described.
- What will be the communication strategy per target group (tools, method)?
- Special attention is needed for establishment and management of farmers' groups.
- The need for training and the local support base to be developed need to be clearly outlined. To do so it is important to have mutual trust between government and farmers.
- The consortium will offer specific training to staff of EPADP, MALR at national level and at the local level (governorate), in close coordination with the project management of NDP III.
- Participating farmers and their leaders will get specific training to be aware of the needs and impact of the trials.
- The consortium will provide instruction and training with regard to analyzing water quality to enable a local partner to carry out the monitoring work on a daily basis.
- Based on their needs, participating farmers and their leaders will get training how to organize themselves, which could finally lead to establishing a Collector Users' Association (as mentioned as one of the objectives of NDP III). However, the formal side is not part of the pilot.

Output 9: Local to regional to national support secured.

Output 10: Reports and flyers/comprehensive posters prepared.

Output 11: Guideline/manual with respect to installation, management, and maintenance of integrated controlled drainage and irrigation systems prepared.

Output 12: Farmers have better understanding of optimizing current drainage systems.

Output 13: Local experience and knowledge improved.

Component VII: Business model and upscaling

The project will deliver a proof of concept for investments in controlled drainage at farm level; a concept that needs to be economically feasible and scalable. To date, specific information with regard to the costs and benefits of the system in Egypt is scarce. In the early stage of the project, information needs to be collected as 'reference' for the pilot. Based on the information as collected within the pilot a more accurate business model will be developed and presented as result of the project. The consortium shall suggest financial mechanisms to foster adoption by individual farmers, taking into account various aspects such as costs of maintenance and potential to shift to cultivation of higher value crops. Research institutes of MWRI and MALR need to be involved in data collection and will also have a role to connect this pilot to previous research.

Output 14: Recommendations elaborated for further action with regard to optimizing irrigation (sub-irrigation, smart surface irrigation), including financial models for upscaling. Key figures are presented (water efficiency, increasing yields, cost and benefits)

Output 15: A decision support tool prepared to calculate the benefits of optimized drainage and sub-irrigation.

Output 16: A roadmap prepared for upscaling the concept of controlled drainage.

Main project deliverables

- Inception report to be submitted
- Operational demo projects at three sites
- Database project results (excel file)
- Progress reports, one per crop rotation
- Guideline/manual with respect to installation, management, and maintenance of integrated

- Controlled drainage and irrigation systems
- Recommendations for further action with regard to optimizing irrigation, including financial models for upscaling.
- Decision support tool to calculate the benefits of optimized drainage and sub-irrigation
- SWOT analysis on the environmental impact
- Concise final report

Defined roles of Egyptian public stakeholders:

EPADP:
- Selection of the most suitable location for pilot areas
- Extension services with regard to the drainage system and current irrigation practices
- Collecting data and detail information regarding water supply, water quality, drainage system and water use at the level of collectors and at plot level
- Coordination with other related programs such as NDP III and Kitchener Drain
- Adequate functioning of the water supply system at the pilot locations
- Appointing an internal focal point and appointing members project group respectively operational groups at pilot level

DRI/NWRC:
- Providing hydrological information of the local situation
- Selection of parameters needed to feed current models
- Analysis of data water system (water balance, water quality etc.)
- Water quality analysis, as reference for the innovative tests (as carried out by consortium)
- Contribution to cost-benefit analysis
- Training of water experts EPADP, MWRI and members of Water Users Associations
- Appointing an internal focal point and appointing members of project group, respectively operational groups, at pilot level

MALR:
- Focal point for participating farmers and communication, targeting other interested farmers
- Agricultural extension services to the farmers
- Collecting agricultural data (crops, economics etcetera) and providing information with regard to food safety in relation to the quality of irrigation water (existing guidelines)
- Coordination with other projects such as 'On Farm Irrigation' (recently completed) and World Food Program.
- Contribution to cost-benefit analysis
- Training staff MALR, farmers and leaders of farmers' groups
- Appointing an internal focal point and appointing members project group respectively operational groups at pilot level

Involvement of other local stakeholders
- First local contact for consortium: focal point for participating farmers and local staff Ministries involved
- Specification plus argumentation of which potential local (Egyptian) partners the consortium want to involve?
- Indication of the organizational structure for project execution?
- Local contractors need to be involved for installing the drainage, for supply of other related hardware (e.g. frame solar panels) and for maintenance. This must be clearly specified.

2.3.2 Appraisal

No.	Criteria 2.3	Explanation score (1 point per indicator)	Score	EXPLANATION/ REFERENCES

	Outcomes, outputs, activities and resources, based on the SMART principle			
2.3.1	The objectives at outcome level are clearly formulated, fall within the proposal's span of influence and are realistic. The outcomes follow logically from the problem formulated.	☑ The outcomes are specifically formulated. ☑ The objectives follow logically from the problem formulated. ☑ The objectives fall within the proposal's span of influence and are realistic (taking account of its duration and local circumstances). ☑ The objectives are acceptable to the target group and other stakeholders. ☑ The objectives formulated are realistic bearing in mind the scope of the activities and the capacity of the (local) organisation(s).	5	Additional appreciation gender indicator 3: The objectives include an explicit reference to women/ men, girls/ boys and gender equality. Please explain. Overall the program is not a gender principle program meaning it is not addressing gender issues as a primary result, however the gender aspect is partially realized as women are equally benefitting from water usage as men. Whenever any Interviews or focus groups will be conducted with normal users, women should be included.
2.3.2	Progress in achieving the outcomes can be determined objectively on the basis of measurable performance indicators.	☑ Relevant performance indicators have been formulated for each outcome. ☑ A baseline measurement and a measurable target (quantitative and/or qualitative) have been formulated for each performance indicator.	2	
2.3.3	The outputs formulated are concrete and fall within the proposal's span of control. The outputs follow logically from the outcomes formulated.	☑ There is a clear link between the outputs and the outcomes, i.e. the outputs can be expected to contribute to achievement of the outcomes.	2	Additional appreciation gender indicator 1:

		☑ The outputs formulated are realistic bearing in mind the scope of the activities and the capacity of the (local) organisation(s) .		For each outcome are relevant, gender specific performance indicators formulated. Please explain.
2.3.4	Progress in achieving the outputs can be determined objectively on the basis of measurable performance indicators.	☑ Relevant performance indicators have been formulated for each output.	1	
		☑ A baseline and a measurable target (quantitative and/or qualitative) have been formulated for each performance indicator.		Baseline information will be collected before starting the project, concerning water use (water productivity) and water quality. This will be done at farm level (water use / productivity and water quality under current traditional farming practices) to be compared to the same parameters after introduction of the controlled drainage systems. Additional appreciation gender indicator 1 and 2: For each output are relevant, gender specific performance indicators formulated; Baseline, targets and verification methods are put on to collect gender specific information. Please explain. Yes, based on the experience, we predict the pilot will be successful
2.3.5	When the activity ends, its envisaged outputs will have a lasting effect for the ultimate target group.	☑ The proposal contains a clear vision (with objectives) as to how the activities will be continued when the intervention comes to an end.	2	
		☑ The proposal contains suitable criteria against which progress in continuing the activities can be measured.		
2.3.6	At the end of the activity, the envisaged outputs will have a lasting effect on the local partners.	☑ The proposal contains a clear vision (with objectives) as to how the quality of the activities and/or the financial independence of the local partner will be enhanced.	2	Recommendations elaborated for further action with regard to optimizing irrigation (sub-irrigation, smart surface irrigation), including financial models for upscaling. Upscaling is planned to be taken up by NDP III and, eventually, WFP.

		☑ The proposal sets out suitable criteria against which progress in regard to institutional sustainability can be measured.		
Total score (maximum score 15 points)			14	

2.4 Cooperation, harmonisation and added value

Egypt is one of the twelve supported Netherlands Delta Countries under the Partners for Water Program. This Delta cooperation program with Egypt is executed through joint efforts of the Dutch Ministry of Foreign Affairs, the Ministry of Economic Affairs and climate policy, the Ministry of Infrastructure and Water Management, the Netherlands Enterprise Agency (RVO NL), the Advisory Panel Unit of the Egyptian Ministry of Water Resources and Irrigation (MWRI) and the Netherlands Water Partnership (NWP). This Delta cooperation is Instrumental in the High-level Water Panel representing the bilateral water cooperation between Egypt and the Netherlands.

Since 2017, the program *Partners voor Water* of the Netherlands Enterprise Agency (RVO NL), at the direct request of the Egyptian Ministry of Water Resources and Irrigation (MWRI), the Egyptian Public Authority for Drainage Projects (EPADP) and the National Water Research Center (Drainage Research Institute), facilitated several scoping missions on improved drainage. These led to the conclusion of realizing drainage system design revisions and operation respectively implementation of the modified systems.

An additional governance aspect is that improved irrigation at the farm level, including the knowledge dissemination to farmers, is the domain of the Ministry of Agriculture and Land Reclamation (MALR). Hence, this Ministry is also involved in launching and implementing concrete projects on controlled drainage, improved irrigation and re-use of agricultural drainage water. Activities of several distinguished departments of MALR such as extension services and agricultural research on improved irrigation (e.g. OFIDO project) play a crucial role in guiding farmers towards good practices including improved water management at the farm level. Therefore, joint forces will be needed from both MWRI and MALR.

Based on the previous work of RVO and on collaboration with RVO (Directorate International Programs, Department of International Development), the Embassy of the Kingdom of the Netherlands in Egypt set the task to use the previous mission results as input for developing and implementing a dedicated pilot on controlled drainage in three locations in Egypt, namely:

1) The governorate of Sharkia
2) The governorate Beni Suef
3) The governorate of Luxor, Upper Egypt.

Hence the Embassy will invite interested parties (through a European tender) to submit a proposal to design three demonstration systems at regular farms, based on the criteria as set in a Terms of Reference, prepared by RVO. Lead persons in Sharkia and Beni Suef have already expressed their support and commitment, at government level and at local community level. In Luxor, EPADP will select a pilot location in close collaboration with WFP, because WPF is currently implementing a program, funded by the Embassy, to support smallholder farmers in 5 governorates in southern Egypt. The introduction of controlled drainage technology will be complementary to the WFP activities.

The Embassy is looking for a consortium that is able to carry out the pilots on controlled drainage in Egypt. The consortium should consist of max. four partners, on one hand having extensive practical

experience on design, installing, and operating (climate adaptive) controlled drainage and sub-irrigation systems. On the other hand, at least one of the partners need to be experienced in analyzing and monitoring water quality parameters.

The proposed pilot will be financed through the delegated EKN water budget for water, but tender preparation and evaluation and project monitoring will be done in close cooperation with RVO and NWP.

The multi-IFI funded National Drainage Project Phase III (NDP III) addresses the installation of new and the rehabilitation of existing field drainage systems, together with a large capacity development component for operation and maintenance and project management. If the results of the pilot are positive, this project will incorporate the pilot results, whereas the private sector will provide the new systems and the necessary technology for operation and maintenance. NDP III can be used as a vehicle for further upscaling the initiative. Hence close cooperation on this with EPADP is essential. NDP III is involved in the discussions between RVO, EKN and EPADP about the selection of the pilot locations and the managing consultant of NDP III presented the controlled drainage technology at the Cairo Water Week 2020.

The World Food Program facilitates strengthening the agricultural development in Upper Egypt. Part of the program is improvement of irrigation systems. These kind of interventions fit well with the objectives and approach of this initiative. Synergy could be found in linking with vibrant local networks, strong local leadership (ownership) and the combination with practical interventions on modern water management at farm level.

III. IMPLEMENTING ORGANISATION

V. IMPLEMENTATION

5.1 Budget

Project ceiling will be Euro 684,000. Indicative budget breakdown is presented in 5.1.1, but final budget depends on proposal awarded consortium.

5.1.1 Breakdown of costs

The maximum budget for the pilot project is Euro 684.000. This is a ceiling and will be mentioned as maximum budget in the request for proposals. The final budget will be determined by the proposed budget of the awarded consortium. The financial proposal of the consortium should include all projects costs, overhead, imposed taxes and contingencies.

5.1.2 Financing

Total budget		***Euro 684,000***
Implementing organisation's and partners' own contribution	*Not Applicable*	
Firm commitments by other donors (itemise by donor)	*Not Applicable*	
Dutch contribution	*Euro 684,000*	
Still to be financed		***Euro 684,000***
Soft commitments by other donors		*Euro 0*
Uncovered balance		***Euro 684,000***

5.1.3 Budgetary risks

The consortium is asked to pay attention to risks and describe how they will deal with uncertainties and risks. The consortium is asked to pay attention to risks and describe how they will mitigate/ deal with uncertainties and risks (compensation guidelines EPADP).

5.1.4 Statement on the budget presented

The presented indicative budget does / does not satisfy the following requirements:

Budget is arithmetically correct	YES
Overheads are proportional to the outputs to be delivered NB: What is included? What is recharged? Are costs entered twice (e.g. as indirect costs and in the AKV)?	YES
Are the other amounts/rates in the budget acceptable in relation to the activity?	YES
Is the budget suitable as a management tool (linking of outputs – budget)	YES
Amended budget is condition for implementation	YES *

*** Specify the requirements the budget must satisfy and the date by which the budget must be amended.**

5.2 Prepayments

5.2.1 Earmarking of Dutch contribution

Not Applicable

5.2.2 Earmarking of other donors' contributions

Not Applicable

5.2.3 Prepayment / no prepayment

The prepayments decision tree assessment has been used, and the intervention is eligible for a 6 months prepayment.

5.2.4. Repayable grants, loans, participations and guarantees

Not Applicable

5.2.5 Accounting for prepayments

Clearance of payment will be calculated against financial report.

5.2.6 Payment schedule

Please note that the proposed payment schedule is indicative and may have to adjusted based on the proposal of the awarded consortium.

5.2.7 Size of first payment

Euro 270,000 (or 40% of total proposed budget of awarded consultant)

5.3 Monitoring

5.3.1 Narrative and financial reports

The performance assessment decision tree has been used:
It is assumed that the activity only requires narrative and financial reports, however implementing organization not known yet.

In the case of additional requirements: specify what conditions must be set (e.g. greater frequency, criteria relating to content, etc.). Also indicate if there is some other means of oversight of activity implementation (e.g. via Board of Donors).

5.3.2 Audit opinion

The audit certificate decision tree has been used:
It is assumed that the activity requires audit opinion at activity at end of the activity, however implementing organization not known yet. Depending on the contractor, either an audit opinion on the contract partner's annual report or on project level will be addressed in the contract.

Additional reports by the auditor:
If it is desirable for the audit opinion to be accompanied by an additional report on certain aspects, explain why (e.g. high-risk activity, poor management capacity on the part of the implementing organisation).
If the organisation itself also makes prepayments and reports on an accrual basis, the audit protocol (annex to decision) should require the external auditor to report on the effectiveness of the control exercised by the organisation on the making of prepayments.

5.3.3 IATI – International Aid Transparency Initiative

Implementing organization is not known yet. This will be taken up as requirement in tender document. The organisation will report in accordance with the IATI standard, as set out in the BZ publication guidelines.

5.3.4 Annual plans and other reports

5.3.5 Monitoring calendar

Report type	**Any specific requirements***	**Period**	**Submission by**
Annual plan		*April-December 2021* *January-December 2022* *January-March 2023*	***15-12-2020 and 15-12-2021 and 15-12-2022***
Financial and narrative report		*1 April 2021 to 31-December 2021* *January-December 2022* *January-March 2023*	***28-02-2022 and 28-02-2022 and 31 May 2023***

Final narrative report**	*Final report including findings of the project*	*April 2021-March 2023*	***31-05-2023***
Final financial report	*Financial report including financial narrative*	*April 2021-March 2023*	***31-05-2023***
Audit	*Audit opinion on activity* *To be confirmed*	*April 2021-March 2023*	***01-08-2023***

** Narrative/ narrative IATI: reports on the contributions by third parties (inputs), outputs, outcome, sustainability and the spending of the Dutch contribution in accordance with the latest approved budget. If a financial report (other than the A statement) is submitted separately, please insert a line.*

The organisation will report in accordance with the BZ publication guidelines on the IATI standard.

For more information about the narrative reports, please see 5.3.3.

*** See also the results given in section 5.3.1; if any additional criteria are desirable, insert them here.*

5.3.6 Evaluations

The decision tree evaluations has been used:
No evaluation is required