Ministry of Foreign Affairs

Activity: Desalination Capacity Building (25-0000493)

Id	25-0000493
Date	01-05-2025
SAP application number	

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Key data

Activity basics

Type	Standard
Short name	Desalination Capacity Building
Contract party	IHE Delft Institute for Water Education (30022390)
ODA	Yes
Amount EUR	99928
Start date	01-04-2025
End date	31-12-2027
Full name	Capacity Building in desalination for Yemen's Water Sector
Summary	IHE Delft is providing capacity building in desalination to the Ministry of Water and Environment (MoWE) in Aden. This initiative is a follow up of the roadmap for desalination in Aden, which was developed by a delegation of the Yemeni Minister of MoWE & his team that visited IHE Delft in October 2024. The roadmap is key part of Aden's efforts to address water scarcity through the development of seawater desalination. IHE Delft, leveraging its expertise in this domain and experience in the Middle East region, is partnering with the Saudi Water Authority (SWA) to provide support to Yemeni water professionals in Aden, helping them to develop and improve their skills in seawater quality monitoring at training facilities provided by the Saudi Water Authority. IHE Delft will shortly sign an MoU with SWA for further collaboration as a consequence of this activity (but not as part of this activity).

Activity details

Date of receipt of proposal	27-03-2025
Proposal’s reference number	letter office of the Rector 27/03/25
Budget holder	Ambassade Sana'a (8251SAA)
Limit access	No
Related activity	RVO organised visit MoWE (SHIRAKA)

Accounting data

SAP application number	
Funds center	SAA YE Integ water managem contribution (1702U02030011)

Policy data

Aid modality	Project support
Technical assistance	100% of the activity budget
Beneficiary location	Country
Country	Yemen
Location type	Province
Specific location	Aden
CRS code	14081 Education and training in water supply and sanitation
Policy Keywords	
Refugees & host communities	No
Team Europe Initiative	No
Policy Markers	
Biodiversity	Not targeted
Climate change: adaptation	Significant
Climate change: mitigation	Not targeted
Desertification	Not targeted
Equality between men & women	Significant
Drinking water and sanitation	Principal
Integrated water management	Significant
Explain your choices	The Aden Governorate is facing extreme water shortages. Water is now supplied from other governorates (Lahej & Abyan) which causes competition with local populations who are themselves in need of the scarce water supplies and risks for conflict. Desalination is therefore one of the most viable solutions for drinking water for the growing population of Aden. Drinking water is principal and IWRM significant because of the competition in water use (agriculture versus drinking water). Gender equality is significant. For the capacity building in desalination both women and men within MoWE will be targeted. Climate change adaptation is significant. Yemen is significantly suffering of climate change (warming of Indian Ocean), causing water shortages and infrastructural damages. Desalination is one of the solutions to adapt against climate change. The choice of desalination technique will be determined following climate pattern. Capacity building is needed for MoWE to make choices.

Policy Appraisal

Policy relevance

- **What policy objectives, as set out in the annual plan, policy notes etc., will this activity contribute to?**

The proposed project will support Yemen and in specific the Aden Governorate in setting up a roadmap for desalination in order to provide (drinking) water to the water cycle. Aden has no groundwater sources and is, with a rapidly grown population, solely dependent of water from other governorates creating (tribal) security issues and competition between water use (domestic in Aden versus agricultural) as the populations in these areas are in need of these (scarce) water resources.
The project is in line with the Letter of 20 February 2025 from the Minister for Foreign Trade and Development to the House of Representatives on International Development "Doing what's good for the Netherlands" and the Multi-Annual Country Strategy of EKN in Yemen as well as the annual plan. The project will be implemented by IHE Delft.

1. In the policy letter of February 2025 from the new Minister for Foreign Trade and Development the focus is on "Doing what is good for the Netherlands" and on "Doing what the Netherlands does best". The use of Dutch expertise in the water sector, in this case from the prestigious IHE Delft, and the introduction of innovation and technology, in this case in the field of desalination and water quality, is fully in line with the policy letter. The Dutch interest of investment in our own security is principal in this activity. Without new options (desalination) for combating the water shortages, the population will have no (economic) means of existence, which will create conflicts, internal and external migration.
   The project aligns with the Multi-Annual Country Strategy. The specific alignment
   is with the policy area of sustainable development, food security and water, with the main objectives: Water is used sustainably and equitably, ensuring the needs of all sectors and the environment and specific alignment with the policy area of water security, with the following objective: Water-relevant institutions are strengthened, including through (Dutch) innovation.
2. The project is fully in line with the UN Sustainable Development Goal SDG 1 (No Poverty), SDG 5 (Gender Equality), SDG 6 (Clean Water and Sanitation) and SDG 16 (Peace, justice and strong institutions). The project contributes to SDG 6 on clean water and sanitation The project also contributes to SDG 16: Improvement in water management through efficient and responsible use of data and strengthening the capacity of institutions, will contribute to reduce and prevent water-related conflicts and promote cooperative water governance. The projects contribute to decreasing violence and strengthening institutions.

Rationale

- **What issue/problem will be addressed by the activity**

  Aden is facing a severe water crisis that is enhanced by the conflict (a substantial part of water and sanitation infrastructure was targeted during conflict), rapid growing population (the exact amount is unknown but estimated 1,5 mln higher than in 2010). Aden itself has no groundwater reserves and the water is coming from the Tuban Delta (Lahej). This supply is not sustainable because the growing populations there need the water (risk for large conflicts) as well as the fact that the wells (Upper Tuban Wellfield, Maghras Naji Wellfield, Bir Nasser Wellfield and Bir Ahmed Wellfield) are drying up or becoming too saline.
  There new options have to be explored and applied. One of the most viable options for Aden and the coastal areas is desalination (although costly). It will add the needed water to the water cycle. The Netherlands is instrumental in setting up the enabling environment for this process. The preparation of a strategic plan, a roadmap for desalination in Aden, has been supported by the Netherlands and started by a G2G mission to the Netherlands of the Minister of Water and Environment and his team (RVO/SHIRAKA/Hague Academy) in November 2024 accompanied by HOS (Wierda) en ASI Water (Ohler). It included a visit to IHE Delft prepared by Professor Maria Kennedy, specialist in the field of desalination. One of the conclusions of the visit is that MoWE needs a lot of (technical) capacity in the field of desalination in order to make the (correct) investment decisions.
  Proofesoor Maria Kennedy also participated in a webinar organised by ASI Water in February 2025. During this webinar the KSA Ambassador announced contribution of the first desalination plant in Aden as well as collaboration with IHE Delft. An MoU bewteen IHE Delft and Saudi Water Authority is expected.

- **Why does the activity help to address the issue/problem?**
  For ODA activities over EUR 250.000, please explain the Theory of Change

The desalination roadmap for Aden aims to address Yemen's water crisis by developing seawater desalination infrastructure. The plan targets a daily production of 160,000 cubic meters by 2035, starting with a 25,000 cubic meter plant for the industrial sector. Future phases will expand capacity to meet residential and municipal needs, addressing technical, financial, and institutional challenges along the way. The roadmap emphasizes the importance of building water professionals' capacity in desalination,

crucial for the long-term operation and maintenance of the plants. Key to this is seawater quality monitoring, which ensures efficient operation, prevents scaling and fouling, and reduces operational costs. Regular monitoring also helps maintain system sustainability by ensuring safe water delivery and brine disposal while minimizing environmental impact and costly repairs.
IHE Delft, with expertise in this field and experience in the region, in collaboration with the Saudi Water Authority (SWA), aims to offer support to Yemeni water professionals to enhance their capacity in seawater quality monitoring. This capacity building will be twofold:

1. A 1-week hands-on training on seawater quality monitoring (to be held in the Kingdom of Saudi Arabia)
2. Guidance of a seawater monitoring program for 1 year

The prestige and expertise of IHE Delft in the field is worldwide acknowledged. IHE Delft is also building capacity in Jordan in the field of desalination.

Contextual analysis

- **Who is/are the target group(s) and why**?
  The main target group is the Ministry of Water and Environment, the Minister and his team and the local water cooperation who are jointly preparing the roadmap for desalination for Aden. Some of the employees (male and female) will be trained in KSA and the Ministry will receive capacity building from IHE Delft.
- **Who are the other main stakeholders?**
  The whole population of Aden could be seen as stakeholders. From the Water User Committees to the water consumers. Safe and sufficient water is in their (health and economic) interest in one of the harshest climates of Yemen.
- **To what extent have stakeholders been involved in formulating the proposal?**
  This exercise forms part of setting the roadmap for desalination in Aden. The Minister and his team developed the roadmap in November 2024 in Den Haag during a Shiraka financed visit to the Netherlands. One of the contributors to the program was Professor Maria Kennedy who could assess the needs (in capacity) of the stakeholders during the visit. The MoWE clearly stated their challenges and their knowledge gaps.
- **Is the intervention aimed at a specific geographical location, and if so, why?**

The intervention is aimed for Aden Governorate. The MoWE is setting up a roadmap for desalination in the Aden Governorate because Aden is a 1) waterless city and 2) fast growing city with approximately 2,5 mln. inhabitants (including many IDP's)
The intervention will also influence on the long term the governorates around Aden where the water in now coming from in an unsustainable situation. This will create (tribal) conflicts. Desalination will add water to the water cycle of Aden without putting the burden on the populations of the governorates around.

Implementation plan:

	SN	Item description	Timeline	Remarks
Training preparation and implementation	1	Training venue selection	within 1-2 months after the signing of the contract	As of now we plan to conduct the training in collaboration with SWA, probably at their training facilities in Al Jubail. In the worst-case scenario, we can also conduct the training in Aqaba, Jordan.
	2	Selection of training participants	within 3 months after the contract signed	In collaboration with Dutch Embassy Yemen, and water authority in Aden, Yemen
	3	Order equipment	within 3 months after the contract signed	There is a delivery time of 90 days; the equipment will be sent directly to Aden and Saudi Arabia. The one in Saudi Arabia will be used to for training purposes. .
	4	Travel arrangement of the participants	Within 1 months after the selection of the participants	In collaboration with Participants and SWA
	5	Training coordination and preparation	Immediately after the signing of the contract	Including the preparation of a practical handbook for the participants
	6	Implementation of the 1-week practical training	November - December 2025	In coordination with participants and SWA staff.
Water quality monitoring in Aden	7	Assembly of the equipment	November - December 2025	Participants will assemble the set-up in Aden upon return. IHE Delft and SWA will support online.
	8	Testing of equipment	November - December 2026	online support from IHE Delft
	9	Start of water quality monitoring	01/01/2026 - December 2026	IHE delft with online guidance

Additional remarks (if applicable)

Results

Water

3.4 Capacity building and technology transfer (policy for knowledge)

Learning questions
What have we learned from this activity for Capacity Building?
Measurements: sea water quality monitoring which is essential for long-term operation and maintenance of desalination plants and reduces operational costs.

Indicators
3.4. What has been achieved by this activity on capacity building and technology transfer?
Measurements: At least 4 participants will be trained on seawater quality monitoring in KSA and guidance of a seawater quality monitoring programme for 1 year.

Monitoring and evaluation

Monitoring

- Specify what reporting information is required for this activity, based on the activity analysis decision tree (see Help).

This activity will be monitored using reports. The grant agreement will include a reporting requirement for a final narrative and financial report. As the total value is below EUR 100k, no additional monitoring tools are required.

Finance

Budget breakdown

- Include an overview of the activity budget, including overhead costs.
- Is the budget arithmetically correct? **YES.**
- Are the amounts/rates in the budget acceptable? **YES.**
- Briefly explain the structure of the budget. **Please find below.**
- Are overheads proportional to outputs? **No overhead is included.**
- Is implementation conditional on the budget being amended in an inception phase? **NO.**

As explained by IHE in MINBUZA-2025.1217387, the staff rates applied in this project are based on the standard NUFFIC rates and do not include a profit margin. The reates are the same as those used for OKP projects and the Water and Development Programme funded by the Dutch Ministry of Foreign Affairs.
The budget can be found in MINBUZA-2025.711961:

Annex A: Budget breakdown for A 1-Week Hands-On Training in Seawater Quality Monitoring

Description	No of days	Rate	Total cost , €
Prepration and coordintation			
Maria	3	1227	3681
Nirajan	6	1041	6246
Implementation			
Nirajan Dhakal	8	1041	8328
Ticket	1	900	900
Hotel	8	120	960
DSA	8	114	912
Visa	1	90	90
Cost for participants			
Ticket	4	800	3200
Hotel	4x 7	120	3360
Lunch and dinner	LS		2500
Visa	4	80	320
Equipment			
MFI-UF test			
Pumps	2	6500	13000
Pressure sensors	2	1000	2000
10 kda Membranes	70	190	13300
Filter holders			400
Computer	1		1000
Others	LS		2000
SDI test			
mobile kit	2	6000	12000
0.45 um filter	70	100	7000
Equipmnet Shipping cost	LS		2000
Total cost			**83197**

Annex B: Budget breakdown for guidance to seawater monitoring programme for 1 year

For data validation, we propose that water samples with be measured in Aden, Yemen and by the SWA (KSA) and the data comapred and discussed. Additionally, we propose frequent visit to the SWA to learn and share the data and well as regular online meetings between all 3 parties (IHE, SWA and Aden, Yemen).

We (IHE and the SWA) propose to support the Yemeni team with their seawater quality monitoring campaign for at least 1 year. The budget plan for this support is as below;

SN	Item	No (days)	Rate	Total cost, €
	Follow up seawater monitoring programme for 1 year			
	Maria	6	1227	7362
	Nirajan	9	1041	9369
	Total			**16731**

Earmarking

3. Is the Dutch contribution to the programme earmarked (i.e. reserved for a specific purpose)? If so, specify the reasons why.

This subsidy will work towards the activities as specified in the proposal. No additional earmark is required.

Prepayments

- Based on the prepayment decision tree (see Help), do the payments need to be entered as prepayments and why? In the case of a lump sum, assess this against the applicable criteria and give the reasons for your choice.
- What is the maximum percentage that can be paid as prepayment, and why?
- Which are the reporting obligations on the basis of which prepayments can be closed?

95% prepayment of up to 12 months.