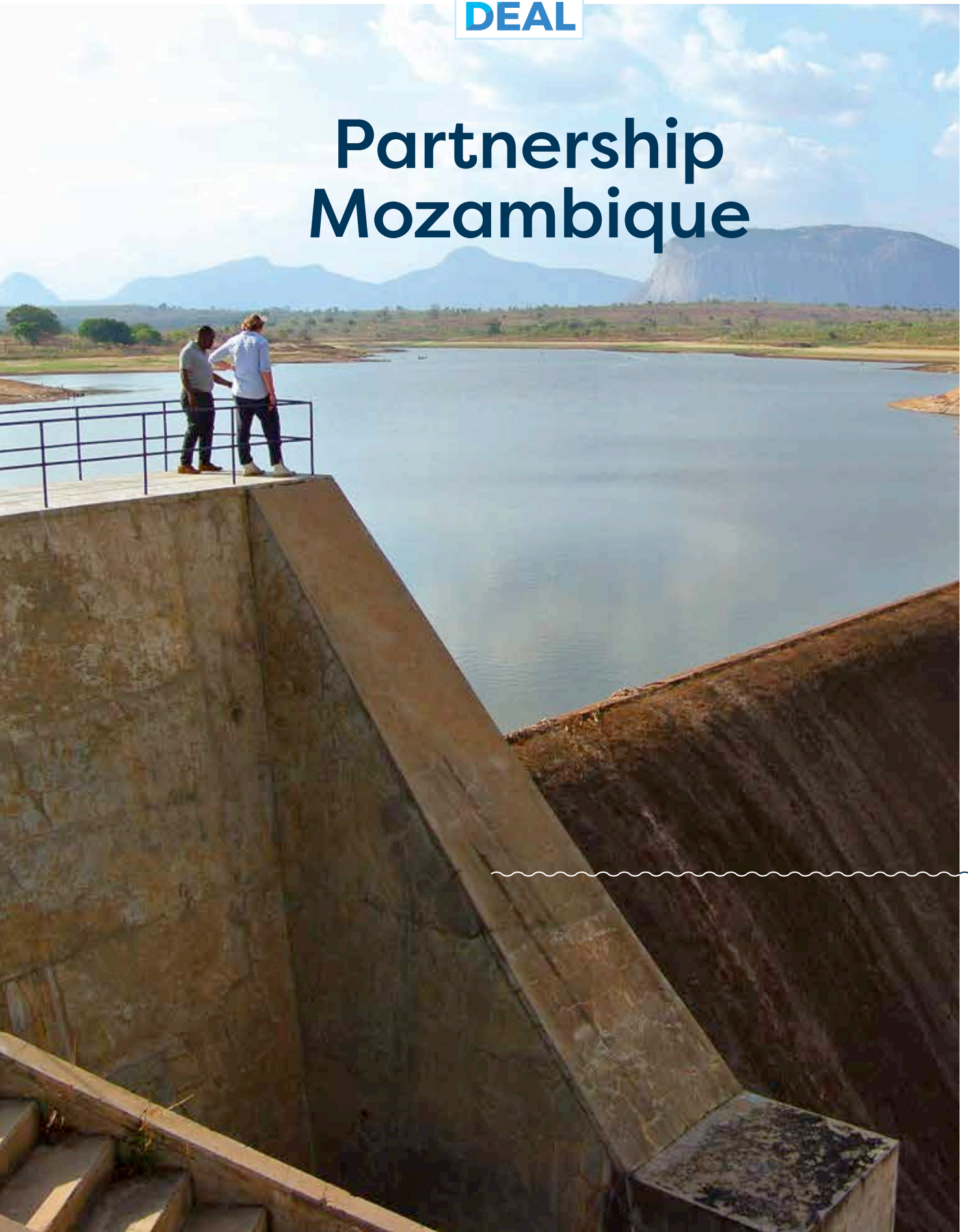




# Partnership Mozambique







 DUTCH WATER  
AUTHORITIES

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For more information on the Blue Deal,  
please send an email to  
[bluedealmazambique@gmail.com](mailto:bluedealmazambique@gmail.com)  
or visit [www.dutchwaterauthorities.com](http://www.dutchwaterauthorities.com)

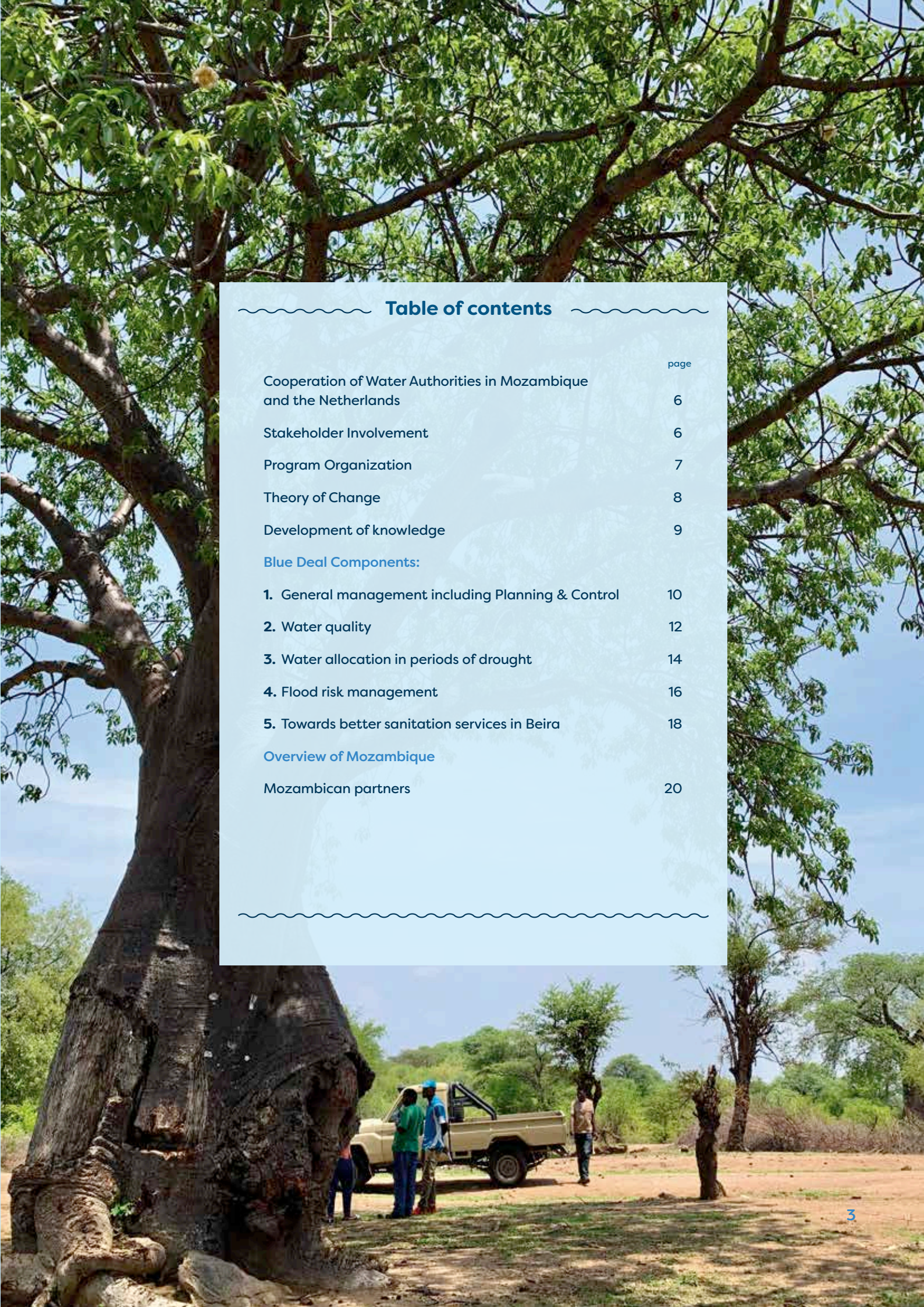
Office in The Netherlands:  
Fryslânplein 3  
8914 BZ Leeuwarden  
[bluedealmazambique@gmail.com](mailto:bluedealmazambique@gmail.com)

Office in Mozambique:  
Direccao Nacional de Aguas  
85 R. Nganganhane Maputo  
[bluedealmazambique@gmail.com](mailto:bluedealmazambique@gmail.com)

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## Table of contents

	page
Cooperation of Water Authorities in Mozambique and the Netherlands	6
Stakeholder Involvement	6
Program Organization	7
Theory of Change	8
Development of knowledge	9
<b>Blue Deal Components:</b>	
1. General management including Planning & Control	10
2. Water quality	12
3. Water allocation in periods of drought	14
4. Flood risk management	16
5. Towards better sanitation services in Beira	18
<b>Overview of Mozambique</b>	
Mozambican partners	20



## Blue Deal - Partnership Mozambique

The Blue Deal program Mozambique is a partnership between Mozambican and Dutch water management authorities implemented in cooperation with knowledge institutes, consultancy firms, non-governmental organisations and international donors.

### Mozambican Partners

**DNGRH**, National Directorate for Water Resources Management,  
**DNAAS**, National Directorate for Water Supply and Sanitation,  
**ARA-Norte**, Regional Water Authority,  
**ARA-Centro Norte**, Regional Water Authority,  
**ARA-Zambeze**, Regional Water Authority,  
**ARA-Centro**, Regional Water Authority,  
**ARA-Sul**, Regional Water Authority,  
**SASB Municipality of Beira**, department of sanitation and water management,

### Partners Dutch Water Authority

**Wetterskip Fryslân**  
**Waterschap de Dommel**,  
**Waterschap Hunze en Aa's**,  
**Waterschap Rijn en IJssel**,  
**Waterschap Vallei en Veluwe**  
**Waterschap Vechtstromen**  
**NWB Fund**  
**Ministry of Foreign Affairs**  
**Ministry of Infrastructure and Water Management**

### Cooperating Partners

**Augas de Galicia**, Spain  
**iCarto**, Spain  
**Dunea**, The Netherlands  
**Technical University Delft**, The Netherlands  
**Embassy of the Kingdom of the Netherlands**

### Cooperating Partners in Mozambique

**FACE NGO**, Beira  
**UCM, Faculty of Health Beira**  
**Christian Council Mozambique NGO**

## Messages of the general directors



**Mr. Oeds Bijlsma**

General Director Wetterskip Fryslân. Chair of the board of water professionals, Dutch Union of Water authorities

“The Blue Deal partnership builds on solidarity between the Dutch and the Mozambican Water Resources Managers.”

My experience is that for effective improvements in operational Water Resources Management it is necessary to build on long term cooperation between dedicated Mozambican and Dutch Water management organizations and to create a learning and knowledge sharing environment. This program includes both components and I am convinced it will show tangible results in flood risk management, water allocation, water quality management and sanitation in Mozambique. It will enrich the professional performance of the Mozambican and the Dutch professionals involved, and contribute to improvement of living conditions of Mozambican citizens by improved water resources management and sanitation. Therefore I am very glad that we can contribute to this valuable program.



**Mr. Messias Macie**

National Director of Water Resources Management  
Ministry of Public Works, Housing and Water Resources

“The socio-economic development of Mozambique as a whole will certainly benefit from better operational management”

Mozambique's water sector has benefited from important institutional reforms. At the same time this increases the need to train and capacitate its organizations. This partnership under the Blue Deal will lead to a more comprehensive technical capacity in operational processes. Additionally it will create a team of qualified Mozambican instructors that will train ARA staff, in order to facilitate the further development of young professionals. Furthermore, Blue Deal communication activities lead to more visibility of the results and successes in our water sector. We embrace this opportunity to share the achieved progress in recent years in the context of the National Water Resources Plan. The socio-economic development of Mozambique as a whole will certainly benefit from better operational management with regard to water quality and water quantity.



# Cooperation of Water Authorities in Mozambique and the Netherlands

## Improved water resources management

Integrated Water Resources Management (IWRM) is a worldwide challenge. This surely applies for the relatively young Mozambican Regional Water Authorities and Mozambican municipalities. Cooperation on an operational level between Dutch and Mozambican Water Authorities already started in 2000 with small-scale projects aiming to improve water allocation, flood risk management, water quality management and sanitation.

## Blue Deal program

In 2019 the Dutch Blue Deal partnership started. The objective of this program is to improve operational water resources management by developing partnerships between countries

and the Dutch Water Authorities (DWA). All ongoing activities of individual Dutch Water Authorities have been transferred into this new program. The program has a time perspective until 2030 with its first phase in the period 2019-2022. The program includes the cooperation between DWA and the Mozambican ARA's under supervision of DNGRH and the Cooperation between DWA and the Municipality of Beira under supervision of DNAAS. The program develops best practices in the selected fields of water management at the level of an individual partner combined with exchange of skills and knowledge with the other partners. The final objective is that people living and working in the river water catchments will benefit from improved water management practices.

## Funding

The most important source for the Blue Deal partnership is the input delivered by experts from the partnering Mozambican organizations and DWA. Extra funding is obtained from individual partners and from co-funding by the Dutch Ministry of Foreign Affairs and the Dutch Ministry of Infrastructure and Water Management.

## Cooperation with other agencies

The Blue Deal program Mozambique will promote any promising cooperation with other Mozambican, Dutch and international agencies in Water Resources management.

## Stakeholder Involvement

Regional Water Authorities are increasingly engaged in multi-stakeholder processes where decisions about the use of water resources affect the interests of organizations, businesses and individuals. An example are the decisions on water allocation rules for aquifers which are exploited for irrigation, industry and drinking water supply. These rules must guarantee sustainable extraction rates. Another one is the enforcement of water protection zones in densely populated urban areas with a high demand for new buildings. First of all, these complex issues require an interdisciplinary approach based on water system analysis, economics, law and public administration. Secondly, organizational processes should guarantee sufficient stakeholder involvement and insight into the trade-off between social and economic objectives.

“Involvement of all stakeholders is essential for water resources management.”

Edgar Chongo,  
General director ARA-Sul

# Program Organization

The program for the first phase 2019-2022 has been approved by the partners and formalized with Memoranda of Understanding (MoU's). Program activities related to the ARA's include the components (1) General management, (2) Water Quality, (3) Water Allocation and (4) Flood Risk management. Activities in Beira include (5) sanitation and drainage at the municipal level.

Two program committees, one for the program with the ARA's and one for the program with Beira, will prepare and guide yearly implementation plans. They submit the plan to the Dutch Steering Committee for approval. The program committees and the Steering Committee meet twice a year. In September to discuss the plan for the next year and in March to discuss and conclude the report about the activities in the previous year.

For each component one of the Mozambican partners will have a leading role. For components 1, 2, 3, 4 and 5 this are respectively ARA-Centro-Norte, ARA-Zambeze, ARA-Sul (in cooperation with ARA-Norte), ARA-Centro and Beira. Every component has a Mozambican and a Dutch focal person for optimal coordination. The overall coordination is the task of DNGRH (ARA activities) and the resident DWA program manager (all activities, including Beira).

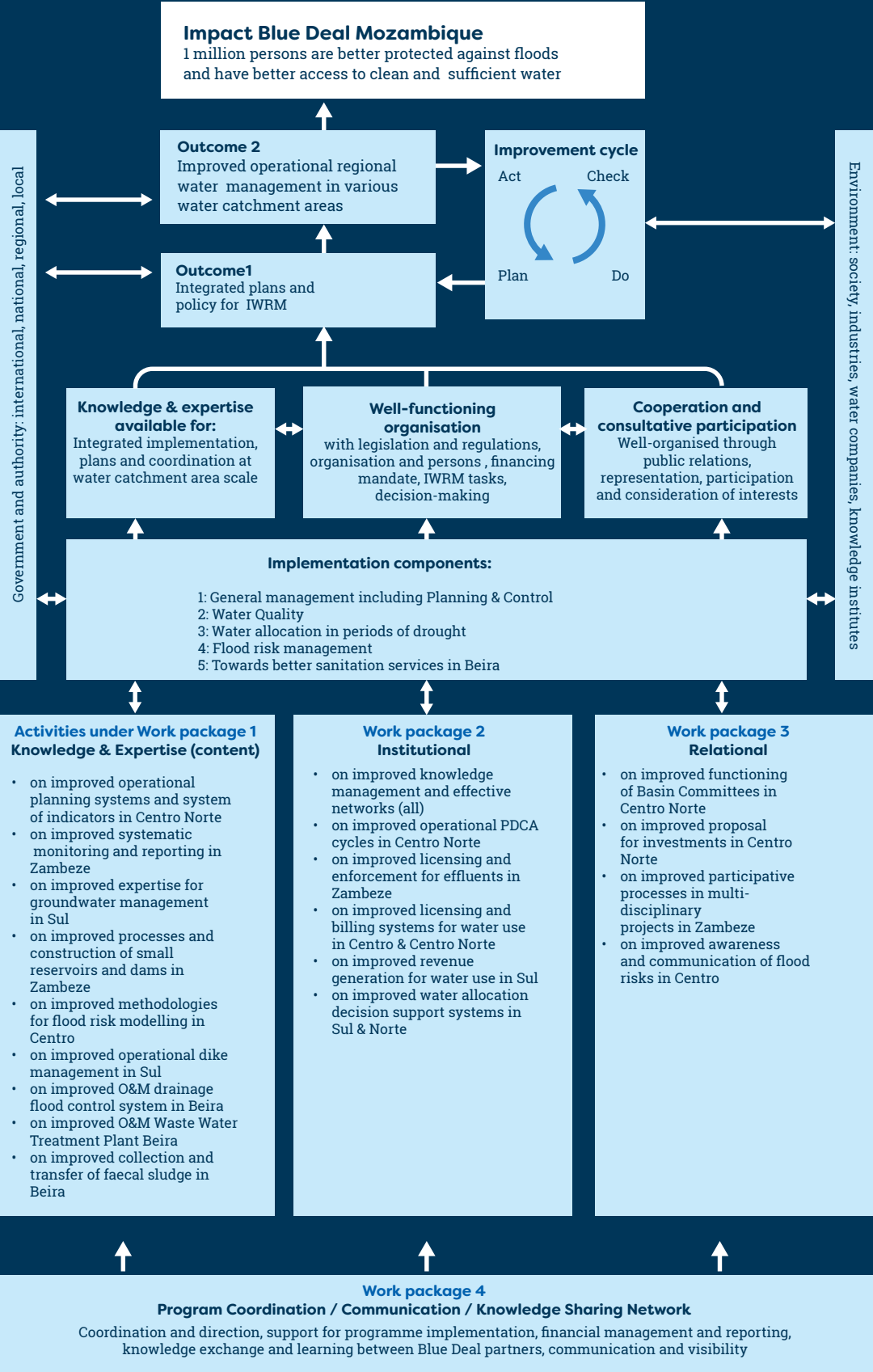
For the Blue Deal program which is implemented in 16 countries, one single Theory of Change is defined. The Theory of Change has two outcomes. 1. Improved operational regional water management. 2. Integrated plans and policies for Water Resources Management. This Theory of Change is indicated in the next pages. Outcomes and activities of the Blue Deal Mozambique program fit within this framework.



Program committee meeting DNGRH and ARA's



# Theory of Change



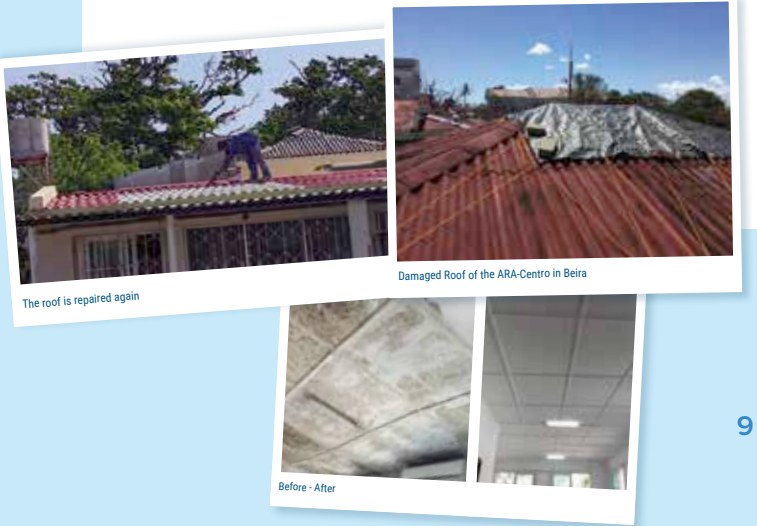
## Development of knowledge

The program foresees to set up a system for development and transfer of knowledge. The build-up of knowledge will be a result of a joint effort of DWA and Mozambican sector institutions, the latter having also the lead role in the dissemination of this expertise.

ARA's will specialize in specific technical areas that coincide with the Blue Deal components. Subsequently the involved technicians will be equipped with practical didactical skills. In this way a "learning community" is formed wherein ARA staff become a knowledge resource and trainer for each other. An important activity will be the organization of joint training sessions that are carried out by the forerunner technicians with specific expertise. Moreover, a yearly thematic event will stimulate the exchange of know-how between the practitioners of the sector and its institutions. This approach stimulates also the harmonization of work processes and improved skills of the five ARA's.

## Solidarity between Dutch and Mozambican Water Authorities

The Blue Deal project intends to start a Flood Risk unit at ARA-Centro in Beira. In this Flood Risk Unit staff will be trained to use hydrological models for better prediction of time and level of floods. However, in March 2019 the Cyclone Idai caused a lot of damage to the office of ARA-Centro. So before we could start this Flood Risk unit, the DWA collected money to help ARA-Centro to repair the damage. Due to this quick action of the Blue Deal Dutch partners, ARA-Centro managed to repair the roof and the damage inside the office before the next rainy season, that started in December 2019.







# 1. General management including Planning & Control

Adequate functioning of an ARA starts with competent management and sufficient finances. If these aspects are guaranteed, an ARA can direct its attention to its main tasks: water quality management, water allocation and flood risk management. The general management component has 3 principal objectives.

## 1 Development of an operational management plan, including a Plan-Do-Check-Act (PDCA) cycle

Organizing the main tasks of an ARA requires a realistic planning of the annual activities and related budgets. Also, it is necessary to have adequate information on realized expenditures for the different tasks. This information is an indispensable condition for the improvement of financial performance. In yearly budgets income and expenditures need to match. In 2019 we have started at ARA-Centro-Norte to work on budgeting the planned activities for the next years. Management teams will be trained to discuss intermediate progress and results during the year. Based on this information they are able to adjust activities and to stay in line with available budgets.

## 2 Development of management indicators

The activities start at ARA-Centro Norte, but will be developed for all ARA's in cooperation with DNGRH. Indicators are needed to optimize work processes and the functioning of an ARA. By means of interviews the most important indicators will be selected. This will be aligned with monitoring progress in the other components of the Blue Deal program. Ultimately a set of indicators will be built which also enable a transparent comparison of performances of the different ARA's.



“Continuous improvement of the planning and control cycle is essential for the ARA's.”

Carlitos Omar  
Director ACN

## 3 Pilot on improved planning for investments

At ARA-Centro-Norte we work on improving the process to make realistic proposals for investments. This is needed to have a mutual understanding of necessary investments in the water sector for both the Mozambican water authorities and the international donor community.





# 2. Water quality

ARA's do have dedicated tasks in water quality management of the rivers and ground-water systems. Monitoring and reporting is one of these tasks as well as an advisory role in licensing of (waste water) discharges and participation in multidisciplinary project to improve the water quality. The Blue Deal program works on those three fields.

## 1 Water quality monitoring

Water quality monitoring is the basis for good water quality management. Monitoring provides the information that permits rational decisions to be made on

- identifying problems related to water pollution;
- formulating plans for improvement and setting of priorities;
- developing and implementing water quality management programs;
- evaluating the effectiveness of management actions.

All ARA's have expressed the need for training in water quality monitoring and reporting, because in general knowledge on water quality is still relatively low. Moreover, DNGRH has launched the initiative to publish a national water quality bulletin in which regional results are aggregated to a national level. In November 2019 a workshop for technical staff of all the 5 ARA's and DNGRH was held at ARA-Zambeze with the focus on main elements of water quality and monitoring. In 2020 the staff of the ARA's with less knowledge and experience will be trained on the job by the trainers of ARA-Zambeze, supported by a DWA specialist. In 2021 the other ARA's will be visited by the trainers. Further support will provide assurance that the monitoring will be systematically carried out and the collected data will be (more) reliable.

## 2 Licensing & Enforcement wastewater discharges

The advisory role in licensing discharge of waste water effluent is one of the tasks of the ARA's but hardly implemented yet. Under the Blue Deal program ARA-Zambeze, ARA-Centro and ARA-Sul have started to develop this advisory role in regional pilots and by harmonization of procedures. Further training and the development of a guideline are felt necessary by the management of the ARA's and DNGRH. At the start of the Blue Deal program a workshop will be organized and training on the job will start in the regional pilots: Revúbuë basin (ARA-Zambeze), Pungwe basin (ARA-Centro), Infulene basin (ARA-Sul). It is foreseen that in phase 2 of the Blue Deal more basins will be included

“With a growing population and increasing economic development, good water quality becomes more and more important.”

Custodio Vicente  
Director ARA-Zambeze



## 3 Multidisciplinary projects with a participative approach

In the water sector, an effective cooperation with other regional authorities, the private sector and the community is of increasing importance. Related activities will be based on experiences in the the Nhartanda valley, funded by the Dutch Water Innovation Fund VIA Water. Here, it is tried to develop sustainable land use options that guarantee protection of groundwater. In this valley the main groundwater extraction field for drinking water supply to the city of Tete is situated. In the valley there is a complex set of threats for pollution caused by open sewers, house construction, cattle farming, waste disposal and excavation of clay. In a multidisciplinary project, options will be analysed for a better protection of the wells. Solutions relate to spatial planning, communication, technical solutions and legal action. Training and support will be given for implementing effective working processes in multidisciplinary projects.





# 3. Water allocation in periods of drought

Regulation of the use of natural water resources is one of the main tasks of the ARA's. It includes both surface- and groundwater systems. Elements of this task are: It includes also investing in more knowledge of the water resources systems, developing policies for abstraction, licensing, billing, communication and law enforcement in case of illegal use of water. Within this component we have three main objectives.

## 1 Improved process of licensing and billing

One of the main sources of income for the ARA's are the revenues for the use of water from groundwater and surface water systems. Adequate billing, based upon cost-recovery, is crucial to generate structural income for the ARA's and to work towards financial sustainability. The process of licensing and billing and its support with efficient instruments is in development. It will require improved internal procedures in the different departments of the ARA's and renewed improved software to facilitate the processes. ARA-Sul is leading on this component. We work closely together with Icarto, a Spanish consultancy firm, which has developed software to facilitate the licensing and billing processes. Within the program, ARA-Centro and ARA-Centro-Norte will implement the system.

## 2 Improved water allocation

For a sound management of water allocation processes, several aspects need to be in place. The first aspect is a thorough understanding of the behavior of the groundwater and surface water systems, in particular in dry periods. How much water is available in periods of drought and under normal climatic conditions and how is this affected by climate change? The second aspect is how to use this knowledge for the design of water allocation plans. This holds in particular for catchments under 'stress', where the demand for water is higher than its availability. The third aspect is how to communicate with stakeholders (water users from agriculture, drinking water, ecological protection sites and industries, in particular during dry periods with temporary restrictions in supply. For this component ARA-Sul and ARA-Norte are the leading partners.

In the program groundwater models will be further developed to elaborate strategic management plans for the groundwater systems of the Maputo Aquifer and for the Palma region. For the surface water systems, the hydrological model WEAP will be further developed. This will start in southern Mozambique for the Umbeluzi and Incomati catchments (ARA-Sul). Later this will also be done for the basin of the Montepuez (ARA-Norte).

"Licensing is necessary for a fair distribution of the available water to all water users."

Eurico Saize  
Director ARA-Norte

## 3 Improvement and innovation of the selection, construction and maintenance of small water reservoirs

The demand of water is increasing in Mozambique. The open water evaporation of the reservoirs is extremely high. There is a need for pilots on innovated systems of dam and reservoir constructions.

ARA's do have a task in stimulating rehabilitating and constructing small community based reservoirs and represas (dams). There is political attention to stimulate this and generally spoken there is a willingness to invest by larger donors. ARA's are seen as the entity for (guiding) construction. After construction they hand over the small reservoirs to the local population. ARA-Zambeze has carried out some internal evaluation and encountered a problem on three levels: site selection, design process and the proper maintenance and operation by local communities. ARA's requested for assistance to improve these processes.



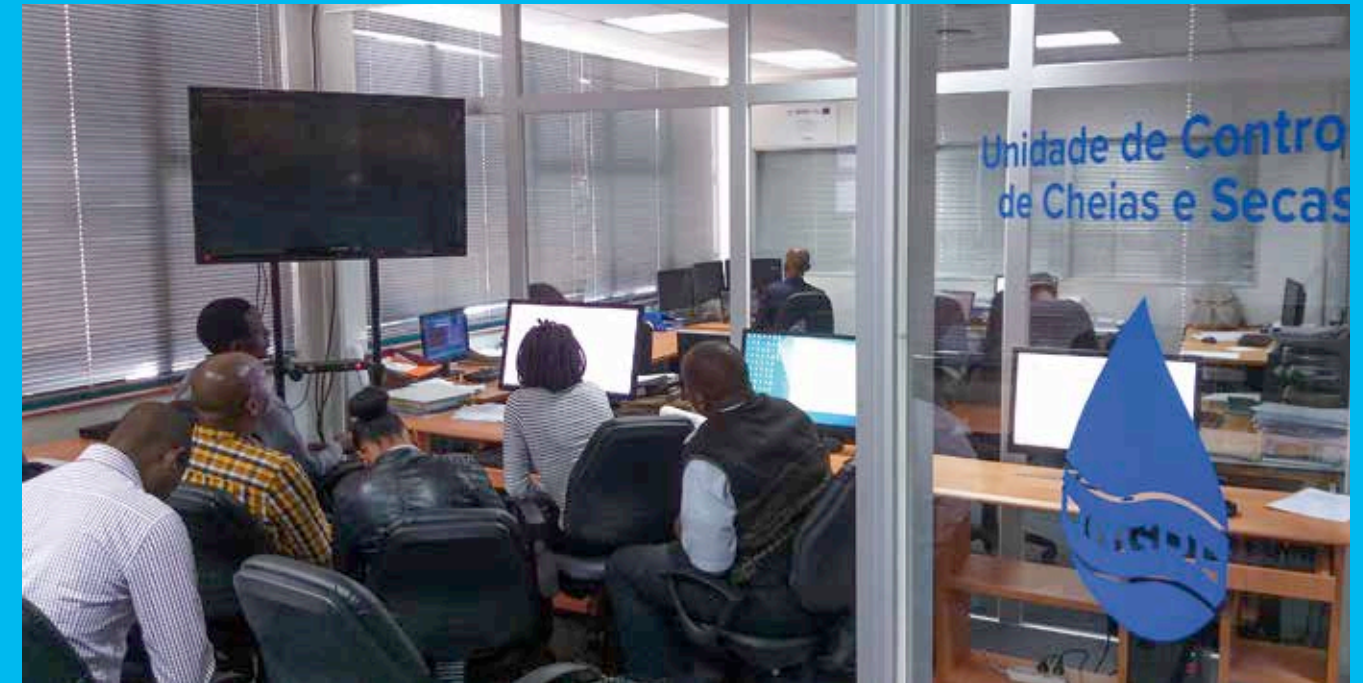




# 4. Flood risk management

Floods as a result of extreme rainfall are common in the Mozambican river plains. Managing floods and reducing their risks are main tasks of the ARA's. The Blue Deal program contributes in 3 fields:

**1** With input of the experience of ARA-Centro, the skills and capacity for the simulation and forecasting of floods will be increased and regional flood risk units will be installed. This implies a further development of knowledge of the hydrological processes in river basins and modelling of its behavior, inclusive the use of satellite data. The Punguè catchment is selected as pilot area. This activity is closely harmonized with the activities of the National Flood Risk Unit at DNGRH. Training of other ARA's will be organized in collaboration with training for flood risk management at the national level.



“Spatial planning in river Basins requires a good cooperation with all stakeholders and different government organizations.”

Cacilda Machave  
Director ARA-Centro

**2** A second aspect is the communication on flood events and their risks. This asks for a strong cooperation with organizations in Mozambique responsible for spatial planning, like municipalities and provinces. Also INCG, the national authority for the management of calamities, will be involved. Also for this communication component, the Punguè catchment will act as pilot area. Important tools for discussions on actions on flood risk reduction are flood risk maps and a step wise approach for the selection of appropriate measures, including quantification of economic and social aspects.

**3** The government of Mozambique approved in 2019 on the regulation for dike management. This regulation clarifies the tasks of DNGRH and the ARA's in dike management for pre-studies, design, maintenance and juridical control. It is foreseen that in 2020 a manual for dike management will be approved by the Mozambican government. The Blue Deal support the implementation of sustainable dike management in pilot systems in the Limpopo and at Ilha de Josina Machel. The results from the pilot basis will be used as lessons for other basins in Mozambique.





# 5. Towards better sanitation services in Beira

In the second largest city of the country, the Municipality of Beira faces serious difficulties with water management and sanitation. The city centre and the surrounding, densely populated suburbs are situated in a low-lying area and experience regular inundations.

In the Blue Deal Program we will work on 3 (sub-)components for Beira:



## 1 Improved operation of the drainage system

In 2018, the first phase of rehabilitation of the drainage system was completed. The Serviço Autónomo de Saneamento de Beira (SASB) is responsible for its daily operation and management. Objectives in the first phase of the program are:

- improved manuals for daily operation,
- introduction of asset-management principles, including financial planning,
- better forecasting of rainfall events, and
- effective solid waste management.

The latter is important because frequently drainage channels are blocked by uncontrolled random disposal of solid waste.

## 2 Improved operation of the waste water treatment plant

SASB is responsible for the waste water treatment plant in Beira. It was built in 2012 and after 4-years guidance by a private company, SASB is fully in charge of its operation. The Blue Deal activities in the period 2019-2022 focus on (1) improved effectiveness of the water treatment processes, (2) inventory and analysis of quick wins by small investments in both the treatment units and the sewerage system.

“In a recent interview, the Mayor of Beira, Daviz Simango told the journalists: “Our vision is to improve, every day and every moment, the services of SASB for basic sanitation and provide these to our citizens.”

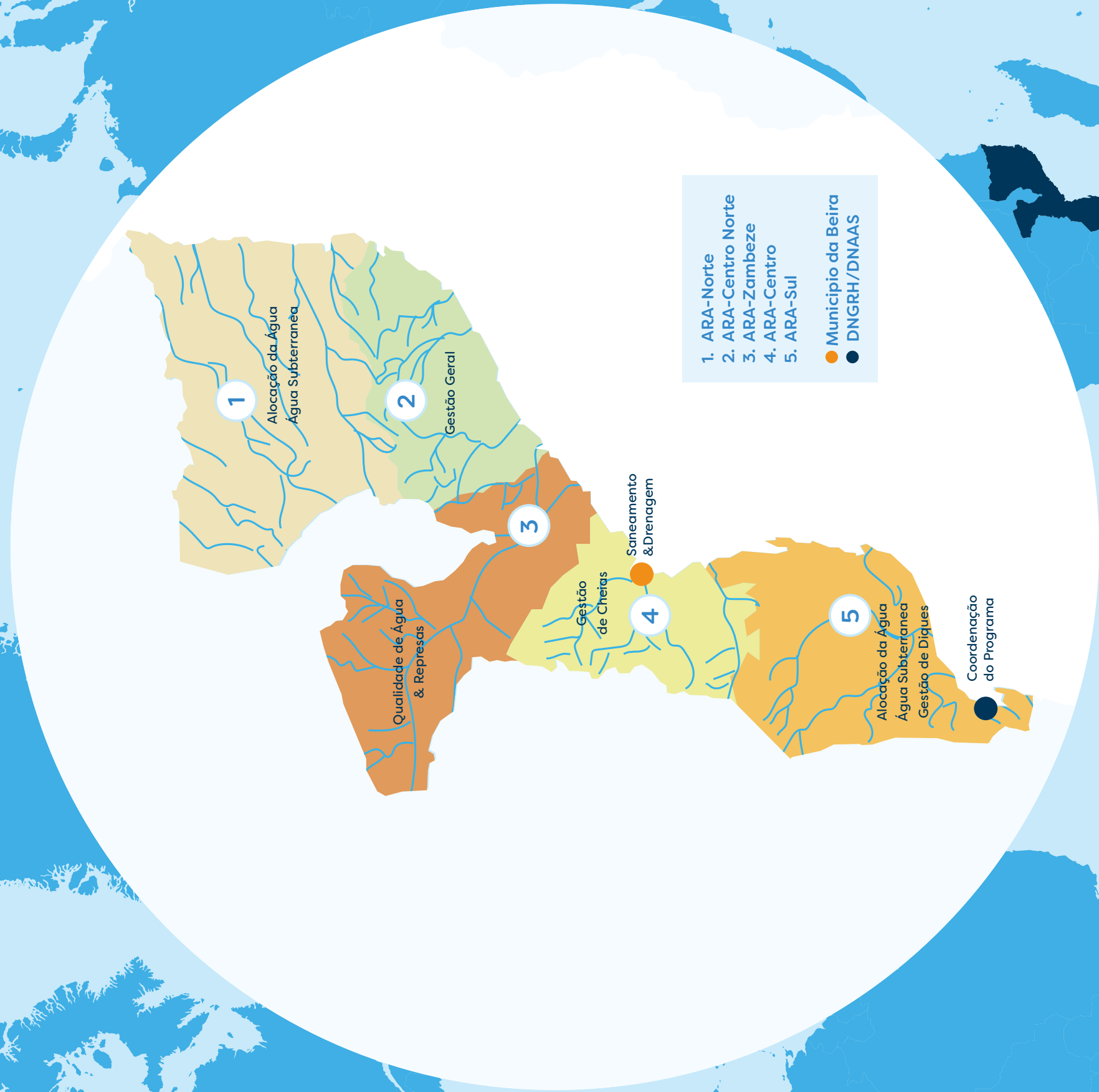
## 3 Management of the transfer station for fecal sludge

At present, the municipality of Beira is not be able to connect all citizens (ca. 600.000) to a sewerage system.

Probably this situation will exist for some more decades. Therefore, as part of the Frisian Urban Sanitation project in Beira (FUSP 2014-2018), SASB has invested in a pilot transfer station for fecal sludge. The objectives in the first phase of our Blue Deal activities are (1) to gain first experiences with operation and maintenance of the transfer station including financial sustainability, (2) to promote investments in improved sanitation at the household level and (3) to train small private enterprises to use simple and safe equipment for emptying latrine pits. These activities will be realized in close cooperation with local NGO's and the Faculty of Health of the University of Beira (UCM).



# Blue Deal Activities



# Actividades do Blue Deal