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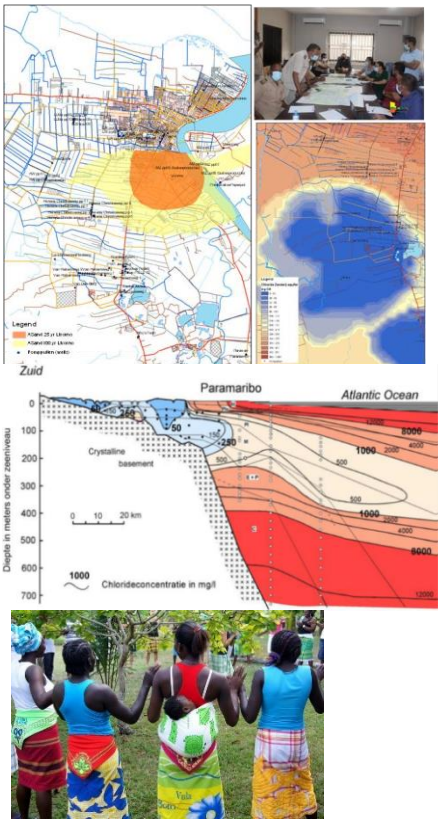
The United Nations Environment Programme (UNEP) on behalf of the Climate Technology Centre and Network (CTCN)

Social and Gender Analysis Report

26 NOVEMBER 2024



Consultancy services for

Enhance the resilience of Suriname´s water supply system by modelling drought risks and developing a roadmap of prioritized alternatives for aquifer recharge

Acronym: ***ARADIS***

Climate Technology Centre and Network (CTCN)

RFP Number: 3100006085
Biruk KIBRET

ILACO

In association with

Royal HaskoningDHV

ACACIAWATER

Project title: Enhance the resilience of Suriname´s water supply system by modelling drought risks and developing a roadmap of prioritized alternatives for aquifer recharge.
Aquifer Recharge Against Droughts in Suriname (ARADIS)
Project number: IS-471
Document: Gender Analysis Aquifer Recharge Against Droughts In Suriname
Client: CTCN/ Ministry of Spatial Planning and Environment (MROM)

Version	Status	Author(s)	Contribution(s):	Authorization	Date
1.0	Final	1. Nieuwendam J.	1. Wong Loi Sing R. 2. Koos G. 3. Lachman S.	Patandin R.	December 04, 2024

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1 Introduction

The groundwater in relevant parts of Suriname is slowly salinizing and therefore decreasing in quality. The amount of usable water for the population is also affected by drought caused by climate change. This corresponds to a global trend[1] and is the reason that this study is being carried out, where in this section the influence of reducing groundwater and the quality of that groundwater on gender roles is examined.
This report focuses on the role of water, especially aquifers, with regard to gender in Suriname. Since aquifers are mainly located in the coastal area of Suriname[2], the influence of water and the risks of (extreme) droughts regarding groundwater resources on social and gender roles in the coastal area is central in this report. This distinction is important because there is a big difference between the influence that water in general has on gender roles in the coastal region and gender roles in the hinterland. This difference in influence is related to the sources of water on which one depends. While in the hinterland, most people are not yet served with potable and piped water provided by a water utility company, and therefor are dependent on open sources of water such as creek-, river- and rainwater, in the coastal area almost all citizens have access to reliable and safe tap water in and/or around the house. In the hinterland mainly women, are individually responsible for the provision of water in the households, the gender roles are completely different in the coastal area. Women in the hinterland have to fetch, carry the water and are responsible for the hygiene in their family, while in the urbanized and rural coastal regions both men and women more or less equally fulfill this role, as it is much easier to organize water for the daily tasks in the households.

The report starts with the focus on the gender roles regarding water in the coastal region and then a short review on the differences in the rest of the country, i.e. the hinterland, as a comparison.

2 Coastal Region: Gender and Water

In the coastal area people are dependent on water supplied by the Surinamese Water Supply Company (SWM). The SWM uses groundwater that is present in large quantities and is stored by nature in aquifers that mainly occur in the coastal region. Although Suriname has large quantities of groundwater reserves that are stored in aquifers among other things and population demands have not increased drastically, the continuous and sustainable supply of sufficient potable water to the coastal region has proven challenging. This has an effect on the daily lives of men and women.

2.1 Role of Water in the Lives of Men

For the men and women living in the coastal districts of Suriname, water plays an incremental role in their everyday live. Men, on average, have their focus more on work rather than the household and are as a result to a lesser extent directly involved in the management of the household. However, because of the accustoming to a continuous supply of water provided by the SWM over the past years, a sudden disturbance in that supply (as was made mention of in June of this year) due to either technical issues experienced by SWM or as a result of extended periods of drought which can cause low supplies, usually leads to several implications for men.[3]

Some of these implications may include:

a. Disturbances in daily routine;

[1] 'Groundwater: Making the invisible visible', UN World Water Development Report 2022
[2] 'Grondwater zichtbaar maken op wereld waterdag', Stichting Waterforum Suriname
[3] 'Parmessar en Ramdien vragen aandacht voor drinkwatertekort in Paramaribo, Wanica en Commewijne', June 2024, Waterkant.net

b. Disturbances in economic forecasting: in instances of longer water scarcity, as experienced in Commewijne, Paramaribo and Wanica this year for longer than a week[4], men are forced to buy water at expensive prices from water supply companies to sustain the household for a short period of time, usually a week.

Over the years, as urbanization has increased in coastal areas, there has been growing demand for household and industrial water use. For instance, men working in industries that require significant water usage, such as food processing or chemical production, are directly affected by water scarcity. Droughts and insufficient water supply have disrupted production cycles, leading to economic losses and reduced employment opportunities. For example, rice farmers suffer major losses during drought because and the water level is too low for irrigation, the plants dry out, the harvest get lost and the financial implications are disastrous.

In 2021 and 2022, many areas in Nickerie were underwater due to too much precipitation. Now we are in a contradictory situation that we have been experiencing extreme drought for eight months." According to Minister Sewdien of LVV, he has not experienced such a drought in his entire life, which causes heavy evaporation of rice areas. The impact of this is particularly great, especially for rice cultivation and rice farmers who are in most cases males.[5]

Men in coastal areas also bear the responsibility of managing water supply for household consumption, The men traditionally have paid work to keep the family running with their income by paying the bills; also the water bill. However, in times of drought when the water supply of the SWM is impacted for an extended period of time the responsibility can become overwhelming, leading to stress and financial strain as they may need to purchase water at higher prices or invest in water storage systems.

In the next chapter an overview of the role of water in the lives of women will be provided.

2.2 Role of Water in the Lives of Women

For women in the coastal districts of Suriname, water plays a pivotal role in household management and small-scale economic activities. Women are often responsible for managing the use of available water for cooking, cleaning, maintaining hygiene standards, watering of vegetable gardens. Water scarcity poses a significant challenge to the efficient running of households, especially during droughts when children and elderly suffer more from the heat and lack of sufficient drinking water for regular refreshment.

Water scarcity has particularly harsh effects on female entrepreneurs who operate small businesses from home, such as catering services, warungs, pastry making etc. For instance, in Commewijne, providing a steady drinking water supply has proved to be a difficult task for years already, despite the establishment of a water production plant in Liberty, Commewijne in 2021. In October of this year, residents made mention of the ongoing water scarcity and have been forced to purchase water at expensive prices for a relatively small supply of water (SRD 800 for on and a half water tank which lasts about 3 days per household[6]). These shortages of drinking water impact female entrepreneurs, especially those who own sandwich shops, catering services, pastry making and warungs.

The insufficient water supply from aquifers, which are a key source of water for the country, exacerbates these issues. Suriname's reliance on groundwater has been strained, particularly in recent years, as the country has struggled to maintain the necessary recharge rates for its aquifers. The WaterForum Suriname states in their report titled "Capacity Building for Integrated Water Resource Management in Suriname, 2019" that particularly the advancing of brackish water towards the

[4] 'Lienga: 'SWM werkt aan lage waterduk in Paramaribo en Wanica', August 2024, Dagblad De West

[5] 'Minister Sewdien over wateroverlast en watergebrek', Gov.sr

[6] 'Ruim 13.000 bewoners in Commewijne ontberen nog steeds drinkwater', October 2024, Dagblad De West

extraction points has been and continues to be an issue worth paying attention to as in some area's (especially in Nickerie, the north of Paramaribo and in Commewijne) salt contents are already higher than the guideline value of 250 mg/l. Reports suggest that over-extraction and inadequate replenishment of aquifers are leading to a depletion of this critical resource. Solutions such as artificial aquifer recharge systems, improved rainwater harvesting, and more sustainable water management policies are being explored to mitigate these issues and ensure a stable water supply in the future.

Additionally in 2022, UN Water called upon governments to developing adequate and effective groundwater management and governance policies in order to address current and future water crises throughout the globe. "More and more water resources are being polluted, overexploited, and dried up by humans, sometimes with irreversible consequences. Making smarter use of the potential of still sparsely developed groundwater resources, and protecting them from pollution and overexploitation, is essential to meet the fundamental needs of an ever-increasing global population and to address the global climate and energy crises" says the Director-General of UNESCO, Audrey Azoulay. This has prompted discussions around implementing policies that promote aquifer recharge, such as constructing recharge basins and using treated wastewater to replenish groundwater levels. These measures are essential for ensuring long-term water security, particularly as the effects of climate change continue to intensify.

The Surinaamse Waterleiding Maatschappij (SWM) and the Algemeen Bureau voor de Statistiek (ABS) have both highlighted the increasing gap between water demand and supply, with household consumption rising by 15% between 2014 and 2024, and industrial water use increasing by 20% over the same period. These trends underscore the need for urgent reforms in water management to address the growing demand and secure water resources for future generations.

A way to reform water management is to work through a stakeholder working group, whose members are representative of all stakeholder groups. Therefor a desk stakeholder analyses is needed and a stakeholder mapping. The gender inclusiveness will automatically be taken into account. Not only through a balanced gender composition of the stakeholder members, but also through the representation of stakeholders who represent the interests of women. The next section will elaborate on the different stakeholders, the stakeholder analysis, and the stakeholder working group

2.3 Role of Water: Hinterland

Even though the concentration of this project concerns aquifer management and aquifers are mainly found in the coastal area, it is important for context to provide insight by way of below table into the role of water the interior from a gender conscious point of view.

Table 1 Role of water in the interior in the lives of men and women

Interior
Source: River water or rainwater capture
Men
Responsibilities:
1. Fishing: • Food provision for their families • Livelihood (fish to sell)
1. River transportation: • Boatsmen
2. Decision making around Water Resource Management
Women
1. Water collection for the household: • Cooking • Cleaning • Sanitation and hygiene *Women must carry water for long distances and period of time from the river to their hut resulting in strains to their health and well-being.
1. Use of rainwater for crops *Women rely on precipitation to naturally irrigate crops. When long periods of droughts occur, food security is threatened.

3 The Stakeholders

3.1 Stakeholder Analysis:

In order to develop a comprehensive and integrated MAR strategy, relevant stakeholders who have affiliations with, interests and experience in water supply must be identified. Having a clear understanding of these stakeholders can help secure support which can contribute to the efficiency and effectivity of the project. Additionally, conducting a stakeholder analysis can assist in securing ownership and resources.

For the benefit of this project three kinds of stakeholders were identified:

1. Stakeholders who affect the supply of water;
2. Stakeholders impacted by the lack of water supply;
3. Policymakers, Data-collection and Research, Knowledge Institutes.

1. Stakeholders affecting the Lack of Water Supply:
    - Water supply companies;
    - Industrial Sectors: industries that heavily consume or pollute water resources can worsen shortages. Practices such as inefficient water use or discharge of contaminants diminish the availability of clean water for other users;
    - Government Agencies: Inadequate infrastructure investment and poor maintenance by governmental bodies can lead to significant water losses through leaks and inefficiencies.
    - Bureaucratic challenges and lack of strategic planning further complicate water supply management.
    - Urban Developers: Rapid urbanization and poor land use planning can lead to over-extraction of groundwater and increased pollution, straining existing water resources and complicating access for local communities.
    - Agricultural Practices: Unsustainable farming techniques, such as over-irrigation and the use of harmful fertilizers, can deplete water supplies and degrade water quality, affecting both current and future availability.

    a) Examples of stakeholders affecting the Lack of Water Supply in Suriname are:
        - de Surinaamse Waterleiding Maatschappij;
        - Mining companies such as Newmont Suriname LLC, Zijin Mining (formerly
        - Rosebel Gold Mine) which make use of harmful chemicals such as cyanide and former mining companies such as Billiton Maatschappij and Suralco LLC;
        - de Surinaamse Bier Brouwerij (Part of the HEINEKEN Company)
        - Rudisa Beverages Agencies N.V.
        - Small-scale gold miners who make use of mercury
        - Ornamibo an open local waste disposal location which has been polluting the ground since the last quarter of the 20th century
        - exploiters of high-demand raw materials such as crushed stone and sand

2. Stakeholders impacted by the Lack of Water Supply are:
    - Water supply companies;
    - Local Communities: many rural and underserved urban populations face daily challenges due to inadequate water access, impacting their health, hygiene, and economic activities. These communities often rely on untreated sources, leading to waterborne diseases and reduced quality of life. It is noteworthy that worldwide the

issue of water supply has also spread to more established urban populations where households are forced to purchase water due to the insufficient supply.

- Agricultural Producers: Farmers depend on consistent water supply for irrigation. Insufficient water can lead to crop failures, reduced yields, and financial instability.
- Health Institutions: Hospitals and clinics are adversely affected by water shortages, which hinder their ability to maintain sanitation standards and provide adequate care.The lack of clean water exacerbates health crises, particularly in already vulnerable situations.
- Businesses/Organizations: Businesses that rely on water for production, such as food and beverage industries, suffer operational disruptions, which can lead to economic losses and reduced employment opportunities.

b) Examples of stakeholders impacted by the general lack of water supply in Suriname are:
   - de Surinaamse Waterleiding Maatschappij;
   - Dienst Water Voorziening;
   - Local communities in the districts of Commewijne, Para and Wanica;
   - Potential exporters of water;
   - Tourist organizations;
   - Shipping companies;
   - Fishing industry

3. Policy Makers are:
   - Government Officials: Local, regional, and national authorities play a crucial role in formulating policies and regulations that govern water supply. Their decisions on resource allocation, infrastructures development, and environmental protection directly impact water availability. Also, the bodies responsible for enforcing water quality standards and managing water resources must balance economic development with sustainable practices. Their effectiveness in monitoring and enforcing regulations is vital for preserving water resources and identifying new ones.
   - Environmental NGOs: These organizations advocate for sustainable water management practices and often engage with communities to raise awareness about water issues. They can influence policy through research, activism, and partnerships with government entities.
   - International Organizations: Agencies such as the UN provide funding and technical assistance for water projects. Their involvement can shape national policies and promote best practices in water management.

   c) Examples of Policy Makers in Suriname are, from the Government 7 Ministries:
      - Ministry of Natural Resources particularly SWM and DWV;
      - Ministry of Spatial Planning and Environment;
      - Ministry of Agriculture, Livestock and Fisheries;
      - Ministry of Land Policy and Forest Management;
      - Ministry of Public Works;
      - Ministry of Health;
      - Ministry of Finance and Planning

   Other major contributors to policy making are:
      - Het Water Platform;
      - Presidential Working Group;
      - Medical Mission;
      - Bureau for Public Health (BOG);

- National Coordination Centre for Disaster Management (NCCR)
- Anton de Kom University of Suriname (Waterforum Suriname)

In order for the SWG to be able to perform their duties accordingly, previous and updated data relating to water supply, water usage, climatological impacts, geological characteristics and the state of aquifers must be accessible. Below list on collectors of important data serves this purpose.
Collectors of data in Suriname are:

- Water supply companies (SWM en Dienst Watervoorziening)
- General Bureau of Statistics (ABS)
- Anton de Kom University of Suriname (Waterforum Suriname)
- Meteorological Services
- Geological Mining and Engineering Services (GMD)
- Staatsolie Maatschappij Suriname N.V.
- Old extractive companies (Billiton Maatschappij, Suralco LLC. Even though these companies no longer have active operations in Suriname, they should have an extensive data base that could serve the working group. Additionally, in line with their CSR (Corporate Social Responsibility), these companies still have outstanding environmental obligations e.g. rehabilitating the impacted areas.
- NGOs and international organizations who have influence on policy making and have experience as it relates to gender inclusivity.

3.2 Stakeholder Mapping

Although the stakeholder analysis has brought forward key partners necessary for developing a comprehensive MAR strategy, it is necessary to map the relationship these stakeholders have with the supply of water. To facilitate the stakeholder mapping use was made of a visual process in the form of a table. The stakeholders were analyzed based on their influence, their interest and their impact which will give vital insights for developing effective engagement strategies to improve participation in the SWG.

The following process was completed to develop the stakeholder map:

I. Three kinds of stakeholders were identified:
    1. Stakeholders contributing to the lack of water supply;
    2. Stakeholders suffering from the lack of water supply;
    3. Policymakers, Data-collection and Research, Knowledge Institutes.

II. Their influence and interests were assessed according to the stakeholder analysis

Table 2: Stakeholder Mapping7

Stakeholder			
A. Stakeholders affecting the Lack of Water Supply	**Influence**	**Interest**	**Impact**
1. Water Supply Companies	High	High	High
2. Industrial Sectors	High	Low	High
3. Government Agencies	High	Medium	High
4. Urban Developers	High	Low	High
5. Agricultural Practices	High	Low	High
B. Stakeholders impacted by the Lack of Water Supply:			
1. Water Supply Companies	High	High	High
2. Local Communities	Low	Medium	High
3. Agricultural Producers	Medium	High	High
4. Health Institutions	Medium	High	High
5. Businesses/Organizations	Medium	High	High
C. Policymakers, Data-collection/Research, Knowledge Institutes			
1. Government Officials	High	Medium	High
2. Environmental NGOs	High	High	High
3. International Organizations	High	High	High

[7] Stakeholder Mapping: When, Why, and How to Map Stakeholders, Patrick Grégoire, September, 2023

3.3 Stakeholders Working Group (SWG)

The Stakeholders Working Group (SWG) has been established based on the medium-high scores allocated for influence and impact. The SWG will actively contribute to the development and implementation of this ARADIS project. The main objective of the SWG is to ensure support, inclusivity and effective advocacy throughout the project. The working group members will contribute concretely by offering diverse perspectives in all decisions, also the gender perspective and so with these contributions, the SWG will ensure balanced and representative decision-making, which is essential for the success and involvement in the project.

3.4 Selection Method SWG

The selection of the candidates for the members to form the Stakeholders Working Group is based on the consideration to make good use of already available structure(s) in the water sector with more or less similar purposes and scopes, completed with additional relevant stakeholders such as grass roots organizations and entrepreneurs etc. This is efficient, and more convenient for the stakeholders already contributing in this/these structure(s) and/or institutes and will benefit the same working method used supplemented with stakeholders who were not yet involved. The already existing structure is the Water Platform structure. This platform is for policy support and is the responsibility of the director of the Water Directorate of the Ministry of Natural Resources. The director is the chairman of the water platform, which includes key stakeholders who have an interest in the water sector and play a role in it.

The selected members of the Stakeholders Working Group represent organizations from all three interest groups involved in water use. The stakeholders contributing to the lack of water supply are often also stakeholders suffering from the lack of water supply like the SWM, Water Bottling Companies, Fernandes Coca Cola Bottling, the Bierbrouwerij etc. So, they are also represented in the working group although they have little influence on drought and the changing climate and the drought sensitivity of aquifers. The biggest cause of the lack of water supply is the drought.
From the group ***Stakeholders impacted by the Lack of Water Supply***, the following have been invited to participate in the working group:

- **The SWM** because they are examples of major consumers. They withdraw water from the aquifers and therefore have a great interest in a constant supply of water.
  The SWM supplies water to most residents of the country and is therefore one of the largest and most important consumers. From the **SWM**, the deputy director of the planning department**, Mrs. Ashwien Hemai-Boedhoe**, has been delegated to sit on the SWG.
  The director of the SWM has agreed to be a part of the SWG.
- **The business community.** Businesses use the water for products they manufacture such as carbonated drinks, juices and bottled water. The Rudisa Holdingmaatschappij N.V. has been invited from this category because they have their own source, while other large companies such as Fernandes Group N.V. and the Surinaamse Brouwerij N.V. do not have their own water source but receive water for their business activities via the SWM. From **Rudisa Beverages NV, Vinood Kisoensingh and Shailindra Sewnath** have been delegated by the company to participate in the informative meeting. They are employees who are closely involved with the aquifer, the source, which still produces adequate supplies of water. Both gentlemen will attend on Friday for orientation and questions, and then it will be definitively determined who will take a seat on the SWG. The other person will then serve as backup.
- The **National Women's Movement, (Nationale Vrouwen Beweging, NVB)** is an NGO and represents women who keep a family running and are often small entrepreneurs. The NVB has also been invited to take a seat on the SWG. During droughts, it is the women who, as family caregivers, and as small entrepreneurs suffer from the lack of water, they have to obtain their water in other ways, for example through special delivery of water from the SWM. This water must be in stock, is much more expensive and of lower quality than the groundwater that is supplied directly through the pipes. From the NVB, **the chairwoman of the board, Mrs.**

Eline Graanoogst, has been delegated to take a seat on the SWG. She accepted the invitation but was unfortunately unable to attend the meeting.

From the stakeholders that come from the group of policy makers, these are those agencies and organizations that deal with policy, data collection and management. These are people with knowledge who can have influence through expertise, have been invited to participate in the working group:

- An invitation has been extended to **Ms. Gonda Asadang**, **the Director of the Water** Department at the Ministry of Natural Resources and ex-officio Chair of the Water Platform. She has agreed to participate; however, official approval from the Minister is still required, which is why she could not respond immediately. She is willing to serve on the SWG. A letter has been sent to the Minister, who has responded positively.
- Recognizing his many years of experience and expertise in SWM management within the water sector, and his current role as a **consultant** for SWM, **Mr. Alwin Linger** has been invited to join the SWG. He has responded positively and confirmed his willingness to participate.
- Given her extensive experience as **an environmental specialist**—including years as an environmental expert at Fernandes Bottling Company—and her membership in the Waterforum for the Environment, **Mrs. Gladys Sno** has been invited to join the SWG. She has already confirmed her participation via email.
- **Mr. Bhaggan** represents the **Ministry of Public Works** and is relevant to data collection **and the technologies** that will be applied. It concerns research institutes. He works at the Meteorological Services. He immediately responded positively.
- From the university of Suriname (**ADeK)** Professor **Max Huisden** who is a lecturer at the University of Environmental Sciences. In addition to being an environmental expert, he is also a microbiologist affiliated with the medical faculty and possesses a wide range of expertise. Furthermore, he is the chairman of the Water Platform and a prominent member of the Cabinet's Presidential Working Group on Water. He also responded positively and confirmed his willingness to participate.

3.5 Participants informative meeting

A participants informative meeting was held on the 15th of November at the Ministry of Spatial Planning & Environment. Some members attended the meeting in person, some virtually and some were represented by colleagues.

The participants of the meeting:

1. Ministry of Spatial Planning and Environment, Mr Narain was present - He is a policy officer.
2. Mrs. Samentha Kromoredjo is from the Ministry of ROM.
3. Ms. Ramona Biswane as an audience member from the SWM planning department - She attended virtually.
4. Mrs. Boedhoe of the SWM - She attended virtually.
5. Mr. Vinood Kisoensingh from Rudisa Holding N.V.
6. Mr. Shailindra Sewnath from Rudisa is responsible for the source itself. Can we provide logbook.
7. Mr. Shawn Sowirono represented Ms. Gonda Asadang of the Water Directorate
8. Mr. Alwin Linger from the Waterforum attended virtually.
9. Mrs. Gladys Sno from the Waterforum attended virtually.
10. Mr. Max Huisden from the University attended virtually.
11. Representatives of ILACO N.V. and the gender consultant were also present.
12. Mrs. Graanoogst from the NVB could not attend the meeting.

Although an equal gender ratio was taken into account when the working group was formed, all the shifts created an unequal gender representation at the meeting.

4 References

1. ‘Groundwater: Making the invisible visible’, UN World Water Development Report 2022
2. ‘Grondwater zichtbaar maken op wereld waterdag’, Stichting Waterforum Suriname
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11. ‘Suriname Water Resources Information System (SWRIS)’

5 Colophon

Client	:	The United Nations Environment Programme (UNEP) on behalf of the Climate Technology Centre and Network (CTCN)
Beneficiary	:	Government of the Republic of Suriname; Ministry of Spatial Planning and Environment
Project	:	Enhance the resilience of Suriname´s water supply system by modelling drought risks and developing a roadmap of prioritized alternatives for aquifer recharge.
Subject	:	Gender Analysis
File/ Code	:	IS-471
Acronym	:	ARADIS project
Author	:	J. Nieuwendam
Contributions	:	R. Wong Loi Sing, J. Groen, S. Lachman
Authorisation	:	R. Patandin
Date	:	04 December 2024