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Rijksdienst voor Ondernemend Nederland
Att. Mrs. Ylva Veldhuis
Prinses Beatrixlaan 2
2595 AL Den Haag

Datum: 8 november 2022

Referentie: DRR222BR01

Onderwerp: Scoping Report Recife 2022 - draft

Dear Mrs. Veldhuis,

On 12 October of this year you have requested for a scoping analysis in relation to a request that the Netherlands' Embassy in Brazil has received from the Mayor of the city of Recife, dated 27 July 2022. Recife has suffered considerable damage and a number of casualties caused by extreme weather, notably heavy rainfall, in May of 2022.

The purpose of the scoping is: (i) to provide RVO with an analysis of the request in its context with other initiatives, and to do so in dialogue with key stakeholders; (ii) to provide RVO with a recommendation whether or not to field a DRR team, also considering potential follow up.

Activities performed include the analysis of documents provided by RVO as well as from public sources; interviews with key stakeholders, and writing this brief report. Stakeholders consulted include the Netherlands' Embassy in Brasília and four representatives from the Municipality of Recife.

Context[i]

Recife is a coastal city in the northeast region of Brazil with a population of approx. 4 million people. It has an average altitude of four meters above sea level. It is surrounded by hills ranging in height from 60 to 80 meters that in the past used to be covered by Atlantic rainforest. Around 70% of the city is located in hill areas. One third of the city's population resides here. Recife is also intersected by three river basins, that of Capibaribe, Beberibe and Tejipió.

Due to its low-lying physical characteristics, 45.7% of the coastline of Recife is in a high vulnerability zone. This means that the region will be quickly affected by changes in sea level. Moreover, the frequency of rainfall and other extreme weather events appear to be increasing. These are the two major threats to the city related to climate change: (i) sea level rise leading to flooding of low-lying municipal areas, and (ii) increased rainfall and extreme weather leading to floods and landslides.

Sea level rise

The Metropolitan Center of Recife figures as one of the most vulnerable regions to a rise in sea level along the Brazilian coast, due to its physical characteristics and to various problems related to flooding and coastal erosion. It has been reported that the IPCC marks Recife as the 16th most vulnerable city in the world. Already in 2010, a scientific paper[ii] on the vulnerability of Recife analyzed the potential flood zones. The results indicated that for a 0.5 m rise in sea level, some 40 km^2 of the area of the municipality would be flooded.

Excessive rainfall and extreme weather

The excessive rainfall in combination with the physical characteristics of the terrain, including deforestation and erosion of sloping areas, lead to a situation where the runoff cannot be accommodated by the drainage system, that has not been designed to manage such large volumes of water. The result is flooding in the lowlands of the city and landslides on the hillsides. City planning in the last two decades has not given sufficient attention to these climate change impacts.

Recife's Proactive Approach and Ongoing Initiatives

The city takes an active role in relation to the challenges that it faces, as evidenced by active networking and participation in the international discourse on climate change and its impacts. Key initiatives relevant to this scoping are listed below.

Local Climate Action Plan

Recife was the first Brazilian state capital to acknowledge a state of global climate emergency and draw up a risk analysis and adaptation strategies plan. This "Local Climate Action Plan" for Recife was published in 2020[iii]. It shows the history of the city's fight against climate change since 2014 (publication of the Municipal Sustainability and Climate Change Policy), and has a risk map and vulnerability analysis. It is a very concrete action plan with quantified targets - and how to achieve them - for energy, sanitation, mobility and city resilience, these being the four key areas in which the city can itself take substantial responsibility.

ICLEI – KfW Urban Infrastructure Insurance Facility

In March 2022 Recife was selected to be the first city in Latin America to participate in a project to create insurance against climate disasters[iv]. This ProUrbano – Urban Infrastructure Insurance Facility (UIIF) project is financed by the German Development Bank KfW, and implemented by ICLEI[v].

Recife will be able to receive technical and financial support to access urban insurance coverage against increasing risks caused by extreme weather events, through the development of tailor-made insurance products. Over the course of one year, the city will enter into a dialogue with insurers, financial institutions, organizations and government departments, in order to facilitate the assessment of the city's exposure to natural disaster risks and the understanding of relevant legal, political and financial conditions, as well as existing gaps in disaster risk financing.

UNDRR Resilience Node

Also in March 2022 Recife was recognized as a Resilience Node by the Global Coordinating Committee of the Building Resilient Cities 2030 initiative of UNDRR: MCR 2030[vi], of which ICLEI is part. Resilience Nodes are cities that demonstrate political and technical commitment on taking action to address climate disaster risks, becoming more inclusive, safer and more sustainable. In

addition to Recife, also Medellín and Campinas were recognized as Resilience Nodes in South America. The network mostly provides training to enhance resilience, and shares information.

IADB Project Urban Resilience and Requalification Program in areas of socio-environmental vulnerability - ProMorar Recife

ProMorar is a project financed by the Inter-American Development Bank with a total project budget of 325 million USD of which 65 million USD is from the Brazilian national budget[vii]. Board approval is expected by January 2023. The project focuses on the mitigation of the impacts of excessive rainfall: flooding and landslides in the most vulnerable areas of the city. It's main components include: construction of drainage infrastructure, construction of infrastructure to prevent landslides, resettlement of endangered communities, and institutional support[viii].

Analysis

The scoping analysis found the following key points:

a. Recife is very active on climate change, as evidenced from the information provided with this assignment (answers from Recife to questions from Embassy), the locally developed Local Action Plan PLAC, a number of active municipal staff and political attention to the subject. Also, the city takes a proactive role in networking for further access to information and sources of finance.

b. Two key impact areas of climate change emerged from the scoping: flooding and landslides due to excessive rainfall, and the potential inundation of large areas within the municipality due to sea level rise.

c. The impacts of excessive rainfall were widely reported in the media this year. At the same time, the subject is being covered by a substantial investment by IADB and the Brazilian Government in the ProMorar project, scheduled to be approved in January of 2023, and with considerable investment in infrastructure to mitigate the impact of excessive weather in parts of the city.

d. Whereas sea level rise is a significant threat to the city, its exact impacts in space and time are not clear. In the limited context of this scoping analysis no studies were found that start to quantify the future impact of sea level rise on the city.

e. The participation of Recife in the ProUrbano facility financed by KfW and operated by ICLEI has the potential to further investigate various areas of climate change impact with the objective to create insurance. This could be relevant for future investments and potential follow up to a DRR mission and report. However, this needs further investigation.

f. The topic of sea level rise and its impact on Recife is the subject of a recently established cooperation between the Municipality and the Federal University of Pernambuco in Recife, notably the Department of Oceanography. This local anchoring of the subject has the potential to be synergetic with a possible DRR mission.

Recommendations

i. Mission justification and focus

Considering that sea level rise is likely to have a devastating impact on the city of Recife, and considering the proactive stance of the Municipality, the existence of a number of relevant initiatives that support the city and that have the potential to accommodate the outcomes of the DRR mission and follow them up, it is concluded that a DRR mission can potentially make a substantial contribution to the efforts of Recife to get to grips with the future impacts of sea level rise on the city.

Considering that the impacts of excessive weather events are being covered by the IADB project, it is recommended to focus the DRR mission on the impacts of sea level rise, notably on the drainage system, in line with the request from the Mayor of Recife.

ii. DRR Mission: outline and phasing

In order to provide Recife with a high level analysis of the future impacts of sea level rise, a phased approach is recommended, as follows:

- Preparation phase, focused on gathering further information related to the study topic, in particular data sets that allow for quantitative analysis with a rapid assessment tool, such as a Digital Elevation Model, and other relevant data,
- Scoping mission of one week to Recife, focused on working directly with the Municipality and potentially with other partners such as the Oceanography Department of the University of Pernambuco, to assess the institutional landscape, to delineate the study area and to decide on the specific sub-topics to be studied; the mission will also focus on identifying and mobilizing follow up to the DRR report and its outcomes; if useful in that context, meetings in the capital Brasília or in São Paulo may be part of the mission program (e.g. with KfW)
- Reporting phase, focused on preparing a rapid assessment tool, using the acquired data sets and the other results of the mission to prepare a high level quantitative assessment of the impacts of sea level rise on the drainage of the city,
- Delivery phase, focused on presenting and discussing the report, and the projected impacts of sea level rise, with the Municipality and potentially with follow up partners. A mission to Recife to this effect may be useful to realize a workshop that aims to achieve impact of the report in the Municipality and mobilize follow up; the delivery phase may be followed by a period of monitoring and/or process support to Recife in order to achieve concrete follow up to the DRR project.

The report should also provide clear directions for follow up studies.

iii. Mission team

The mission team could consist of the following members:

1) Team leader with expertise in urban water infrastructure, climate change adaptation and institutional development
2) Senior urban drainage expert
3) Urban drainage and flood modelling expert
4) Expert in sea level rise
5) Junior expert in disaster risk management

Important notes:

- The modelling expert does not need to be part of the mission to Recife. The senior drainage expert can provide sufficient input to the modelling work and the preparation of the rapid assessment tool. This will enhance the efficiency of the input. In fact the viability of preparing such a rapid assessment tool will most likely only be confirmed during the mission. For that reason the input of the modelling expert may be a matter of decision making in the course of the process.
- The expert in sea level rise could potentially be a staff member of the Oceanography of the University in Recife.
- It is recommended to consult the Netherlands' Commission on Environmental Assessment early on in the preparation phase, to jointly analyze the potential contribution of Strategic Environmental Assessment as an instrument to support a renewed focus of the city planning of Recife to accommodate future sea level rise. If that joint analysis has a positive outcome, an NCEA staff member could be added to the mission team.
- All team members that take part in the mission should be fluent in Portuguese.
- Participation of a staff member of the Netherlands' Embassy in Brasília in (part of) the mission would be beneficial in connection to potential contacts with other finance partners (e.g. KfW).

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[i] https://climatetracker.org/climate-refugees-in-recife-raining-days/
[ii] Vulnerability and impacts related to the rising sea level in the Metropolitan Center of Recife, Northeast Brazil; Costa, Mallman, Pontes, Araujo; Pan-American Journal of Aquatic Sciences · October 2010
[iii] https://www.citiesoftomorrow.eu/sites/default/files/documents/30-plac-recife-final-ingles_0.pdf
[iv] https://americadosul.iclei.org/recife-is-the-first-city-in-latin-america-chosen-to-create-insurance-against-climate-disasters/
[v] ICLEI – Local Governments for Sustainability is a global network of more than 2500 local and regional governments committed to sustainable urban development
[vi] https://mcr2030.undrr.org/
[vii] https://www.iadb.org/en/project/BR-L1609
[viii] https://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=EZSHARE-1689546820-19