

SU-L1052

CONTRIBUTION TO CLIMATE CHANGE ACTIONS

1. Background – vulnerability and emissions

Impacts of climate change in Suriname are significant. Projections indicate that this phenomenon will affect over 40% of the nation's GDP and more than 80% of Paramaribo's population (Republic of Suriname, 2015). Climate change impacts on water in the agricultural sector include modifications in precipitation patterns and amount, increased evapotranspiration due to higher temperatures and changes in water availability for irrigation via modifications in river runoff and groundwater recharge (FAO, 2016). In fact, Suriname's Second National Communication (Republic of Suriname, 2016), reports that the decrease in agricultural productivity over the last decades has been linked to climatic events including changes in precipitation patterns; and, main vulnerable sub-sectors include rice production which – in conjunction with banana cultivation – is one of the major sources of greenhouse gas emissions (GHG) in the agricultural sector.

The relevance of climate change interventions is highlighted by the Government in planning documents: the National Development Plan 2017-2021 includes climate change adaptation and mitigation actions as a development pillar (Government of the Republic of Suriname, 2017), and the Intended Nationally Determined Contribution indicates Suriname's commitment to climate compatible development (Republic of Suriname, 2015).

2. Contribution

The operation's objective is to increase agricultural productivity in Suriname through investments in infrastructure and management of I&D systems, and by improving the quality of available agriculture statistics. For this purpose, the loan focuses in two components: (i) irrigation and drainage, and (ii) agricultural statistics and information. As supported by the literature, these components contribute to climate change actions.

Regarding the first component, the absence of appropriate irrigation and drainage infrastructure is one of the main threats to agricultural production as it increases the climate change vulnerability of the sector (Republic of Suriname, 2016). The use of irrigation will reduce vulnerability by decreasing dependence on rain-fed irrigation (CARIBSAVE, 2012). In fact, an important adaptation measure involves increasing the efficiency in irrigation through improvements in infrastructure and capacity building as well as an upgrade of irrigation and drainage systems (Republic of Suriname, 2016). In terms of GHG emissions, irrigation is highly intensive, accounting – for example – for over 20% of the on-farm energy use for crop production in the US, and increasing water use efficiency is hence an important mitigation action (Lal, 2004). For example, a single drainage of rice fields during the planting cycle may be an efficient method to reduce emissions in Suriname (Republic of Suriname, 2016).

Focusing on the second component, agricultural statistics and information are essential for the design, planning and implementation of climate actions. The availability of information is a key determinant for the successful implementation of climate change adaptation (Noble et al., 2015). Moreover, as highlighted by the IDB's Climate Change Sector Framework (BID, 2015), the design and implementation of climate change mitigation and adaptation actions requires sector specific information.

3. Activities that involve climate change actions

This project contributes to climate change adaptation and mitigation particularly by improving the efficiency of irrigation and drainage systems and generating information to assist planning and decision making. Specific activities include capacity building in irrigation and drainage, improved water management, water resource monitoring, integrated water resource management, and investments in new and existing irrigation and drainage infrastructure aimed at increasing efficiency in water use and drainage. The agricultural census will follow the methodology introduced in the World Programme for the Census in Agriculture (FAO, 2017), which, in addition to gathering key information for vulnerability and adaptation, collects specific data on GHG emissions and environmental impacts of agricultural practices (i.e. crop rotation, ploughing, etc.). Hence, as FAO (2017) indicates, the information collected by the census could contribute to effective planning of climate change mitigation and adaptation.

4. References

- BID. (2015). *Documento de Marco Sectorial de Cambio Climático*.
- CARIBSAVE. (2012). *The CARIBSAVE Climate Change Risk Atlas (CCCRA): Climate Change Risk Profile for Suriname*.
- FAO. (2016). *Climate-Smart Agriculture Sourcebook*.
- FAO. (2017). *World Programme for the Census of Agriculture* (Vol. 1). Retrieved from <http://www.fao.org/economic/ess/ess-wca/en/>
- Government of the Republic of Suriname. (2017). *Policy Development Plan 2017-2021: Part 1 Development Priorities of Suriname*.
- Lal, R. (2004). Carbon emission from farm operations. *Environment International*, 30(7), 981–990. <https://doi.org/10.1016/j.envint.2004.03.005>
- Noble, I. R., Huq, S., Anokhin, Y. A., Carmin, J., Goudou, D., Lansigan, F. P., ... Villamizar, A. (2015). Adaptation needs and options. In C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, ... W. L.L. (Eds.), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 833–868). Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press. <https://doi.org/10.1017/CBO9781107415379.019>
- Republic of Suriname. (2015). *Intended Nationally Determined Contribution (INDC)*, Suriname.
- Republic of Suriname. (2016). *Second National Communication to the United Nations Framework Convention on Climate Change*. Retrieved from <http://unfccc.int/resource/docs/natc/fjinc2.pdf>