



Session of the Agricultural Public Development Banks (agriPDBs) working group on the theme: "What tools for financing adaptation to climate change?"

Technical note | 24/05/2023

Introduction

During the February 15-16, 2023 workshop, we reviewed the concepts of financing climate change adaptation by BPDA.

The purpose of this session is to discuss concrete steps for agriPDBs that seek to incorporate a climate finance approach, to increase the resilience of food-producing systems, livestock, and agro-industrial investments.

At the February workshop, the agriPDBs presented a number of examples, which we will organize into an answer to the question of how to act if agriPDBs want to adopt or improve their climate strategies.

Several agriPDBs have stated (i) there is no single tool for funding adaptation (ii) but a sequence of process changes, (iii) the incorporation of risk analysis concepts and criteria, and (iv) taking into consideration the double materiality of risks.

This note will therefore be divided into 4 parts to describe the different stages of building a climate strategy within a BPDA.

I. Where to start?

Taxonomies and eligibility criteria, catalogues of eligible technologies

A taxonomy is a classification system that identifies and categorizes economic activities depending on how they contribute to fighting climate change. It can assist in guiding green investments and promoting sustainable investment.

The key characteristics of a climate finance taxonomy are its ability to establish clear and transparent criteria for classifying economic activities according to their contribution to the fight against climate change. These criteria may include considerations such as greenhouse gas emissions, energy efficiency, use of renewable energy sources, sustainable management of natural resources, and resilience to the impacts of climate change.

The role of a taxonomy in climate finance is to help investors and lenders identify economic activities that have a positive impact on the environment and to finance them effectively. By classifying projects according to their contribution to the fight against climate change, a taxonomy can help investors make more informed investment decisions. It can also encourage the creation of green financial products that meet the specific needs of investors and lenders.

To structure and specify a taxonomy for a bank, here are the main steps to follow:

SESSION OF THE AGRICULTURAL PUBLIC DEVELOPMENT BANKS (AGRIPDBS) WORKING GROUP ON THE THEME: "WHAT TOOLS FOR FINANCING ADAPTATION TO CLIMATE CHANGE?".

Technical note | 24/05/2023

- **Define the selection criteria:** To create an effective taxonomy, it is important to clearly define the selection criteria that will classify projects eligible for climate finance. Criteria can be based on environmental performance indicators, green technologies, sustainable agricultural practices, or other similar measures.
- **Establish lists of eligible activities:** Once the selection criteria have been defined, it is necessary to determine the activities eligible for climate finance based on these criteria. This list must be clearly specified and updated regularly to include new technologies and sustainable practices.
- **Define reporting requirements** to ensure transparency and accountability of funded projects.
- **Developing measurement and evaluation tools:** To measure the environmental impact of funded projects, it is necessary to develop measurement and evaluation tools adapted to the taxonomy. Measurement tools may include environmental performance indicators, methods for calculating greenhouse gas emission reductions, or other similar measures.
- **Establish an audit committee:** To ensure that funded projects meet the taxonomy criteria, it is important to establish an independent audit committee. This committee must examine the proposed projects and give an opinion on their eligibility for climate finance.

In addition to structuring and specifying a taxonomy for the bank, it is also important to build a catalogue of technologies eligible for climate finance. This catalogue may include technologies in the fields of renewable energy, energy efficiency, waste management, sustainable agriculture, clean transport and green construction, among others.

The catalogue can also specify eligibility criteria for each technology, such as reduced greenhouse gas emission levels, positive environmental impacts, economic viability and the ability to withstand the effects of climate change.

In addition, the catalogue may include examples of bank-financed projects using these technologies, to provide concrete references to potential clients and to facilitate their understanding of how technologies can be implemented in their own projects.

Building a catalogue of eligible technologies can help banks better target their climate investments and encourage customers to adopt cleaner, more sustainable technologies. It can also strengthen banks' transparency and accountability in climate finance, providing a clear reference for internal and external stakeholders.

Climate finance strategy

The taxonomy, criteria for eligibility, the catalogue, and objectives of the agriPDBs must be included in the bank's policy document or strategy so that these tools become part of its credit operations and are approved.

The preparation and formulation of the strategy involves a process of internal reflection in order to identify the opportunities represented by the adoption of a sustainable financing strategy but also the aspects that BPDA should strengthen and the financial and competence challenges within the bank. It is recommended to mobilize external expertise that will help the management teams of the bank to build a

SESSION OF THE AGRICULTURAL PUBLIC DEVELOPMENT BANKS (AGRIPDBS) WORKING GROUP ON THE THEME: "WHAT TOOLS FOR FINANCING ADAPTATION TO CLIMATE CHANGE?"

Technical note | 24/05/2023

strategy that is in line with the sustainable financing policies of donors and aligned with public policies in terms of the fight against climate change.

A climate finance strategy for an agricultural development bank should include:

- **Objectives:** The strategy should define the bank's climate finance objectives for the agricultural sector, such as reducing greenhouse gas emissions, adapting to climate change and promoting sustainable agricultural practices, based on quantified targets (financial volumes in an indicative schedule).
- **Scope:** The strategy should specify the agricultural sectors and activities that are eligible for climate finance, as well as the types of projects that will be supported, such as water management projects, agroforestry, reduction of greenhouse gas emissions, etc. Priorities can be defined to illustrate the action plan. We can start with the easiest activities (development of the existing, certified channels, organized partnerships)
- **Eligibility criteria:** The strategy should also define eligibility criteria for projects, companies and technologies that can benefit from climate finance. These criteria may include requirements for energy efficiency, reduction of greenhouse gas emissions, adaptation to climate change, etc.
- **Financing modalities:** The strategy should specify financing modalities for eligible projects, such as loans, grants, guarantees, etc. It should also specify interest rates, repayment terms and collateral requirements.
- **Integration into internal credit management procedures:** climate finance is identified with the possible addition of specific procedures in the appraisal of files and the bank's information system, to ensure accountability, especially if they benefit from additional incentive resources.
- **Monitoring and evaluation:** The strategy should include monitoring and evaluation mechanisms to measure the impact of funded projects on climate and the environment. These mechanisms may include performance indicators, regular evaluations and progress reports.

In addition, the strategy should also include the construction of a catalogue of technologies eligible for climate finance (see previous paragraph), as well as partnerships with other institutions to mobilize additional resources and strengthen cooperation on climate finance.

For the sustainable finance strategy to remain current with changes in public policy, agriPDBs need to review and modify it annually, just as they do other strategies and policies. Additionally, new elements should be included to ensure that climate change impacts are being incorporated and tools for managing and accessing climate risk are being developed.

2. Risk Management

The key issue that emerged during the session on adaptation financing on 15 and 16 February 2023 was the dual materiality that banks must analyse in their financing decisions.

In risk management, dual materiality is an approach that takes into account both the financial and non-financial risks to which a development bank is exposed, as well as its potential impact on environmental and social sustainability. This means that the development bank must consider traditional risks such as credit and market risks, as well as environmental and social risks such as climate change, natural disasters, violations of human rights, or air and water pollution.

Moreover, dual materiality also implies considering the impact of the development bank on its environment (environmental and social sustainability). Beyond simple risk management (SGRES - E&S risk management system), it will be a matter of measuring impacts in order to steer investments that have positive impacts (reducing brown assets and increasing green assets).

The banks have an interest in investing now in the development of these procedures because the regulators are gradually putting in place binding standards (reporting, evaluation, monitoring, measurement, etc.) which if not anticipated, may put banks in trouble if they have not prepared. Moreover, the most advanced banks can access advantageous resources (national subsidised funds, incentives of large climate funds, etc.).

E&S Risk Management System (ESRMS)

The Environmental and Social Risk Management Tool (ESRM) is a key tool used by agriPDBs to assess the environmental and social risks of the projects they fund. This approach helps to manage the risks associated with both the activities of the development bank itself and the projects it finances.

ESRM begins by identifying the potential environmental and social risks associated with a given project. Identified risks may include impacts on biodiversity, air and water quality, local communities, human rights, safety and health of workers, among others. ESRM will also verify that all environmental and social laws and standards are being followed by the Borrower and that the lending activity does not fall into a category of the exclusion list.

Once the risks have been identified, the development bank will work with the borrower to develop a risk management plan. This plan will include mitigation measures to reduce negative impacts, as well as contingency plans to address emergency situations.

The ESRM is an ongoing process, which involves regular supervision of the project to ensure that mitigation measures are properly implemented and that environmental and social risks are managed effectively. If necessary, adjustments to the risk management plan can be made to ensure that risks are adequately managed.

Thermal mapping (Heat map)

Thermal mapping tools have become increasingly effective in assessing the climate **risks to which bank-funded projects may be exposed.**

SESSION OF THE AGRICULTURAL PUBLIC DEVELOPMENT BANKS (AGRIPDBS) WORKING GROUP ON THE THEME: "WHAT TOOLS FOR FINANCING ADAPTATION TO CLIMATE CHANGE?".

Technical note | 24/05/2023

Thermal maps are graphical representations of climate risks based on geospatial data. They make it possible to visualize the geographical areas most exposed to climate risks such as extreme temperatures, droughts, floods, landslides, etc.

These maps can be generated using historical data, future climate models, vulnerability data and other relevant information. Thermal maps are often used to identify geographical areas and sectors of activity most exposed to climate risks in order to identify projects most vulnerable to the impacts of climate change.

Banks can also use thermal maps to assess the climate risks of existing or future projects and to develop appropriate adaptation plans. Thermal maps can also help banks communicate climate risks to stakeholders and raise awareness of the importance of climate change adaptation.

Banks must now take climate risks into account. To assess these risks, they can use different tools based on climate and vulnerability models:

Analysis of climate scenarios: this analysis makes it possible to project the impacts of climate change on the geographical areas and sectors of activity targeted by the projects. It also provides an understanding of future climate risks to which projects may be exposed.

Vulnerability mapping

A vulnerability map is a tool to identify geographical areas and sectors of activity that are most vulnerable to the impacts of climate change. Here is a description of how a vulnerability card is built and its role in bank investment decisions. Construction involves several steps :

- **Data collection on current and future climatic conditions:** precipitation, temperature, wind, heat and cold waves, floods, droughts, storms, etc.
- **These data are then processed** to identify the geographical areas and sectors of activity most vulnerable to the impacts of climate change
- **A vulnerability map can be created to view this information** clearly and concisely. Vulnerability maps can be presented in the form of graphs, tables or geographical maps based on sensitivity and exposure to climate impacts
- **Modelling of future climate scenarios.**

The role of the vulnerability card in bank investment decisions is crucial. It provides a better understanding of the risks associated with projects in specific geographic areas and identifies the adaptation measures required to ensure the long-term sustainability of projects.

Vulnerability maps can also help banks communicate climate risks to stakeholders and raise awareness of the importance of climate change adaptation. Ultimately, building a vulnerability map can help banks make informed project financing decisions and ensure the long-term sustainability of their investments in the face of climate challenges.

SESSION OF THE AGRICULTURAL PUBLIC DEVELOPMENT BANKS (AGRIPDBS) WORKING GROUP ON THE THEME: "WHAT TOOLS FOR FINANCING ADAPTATION TO CLIMATE CHANGE?"

Technical note | 24/05/2023

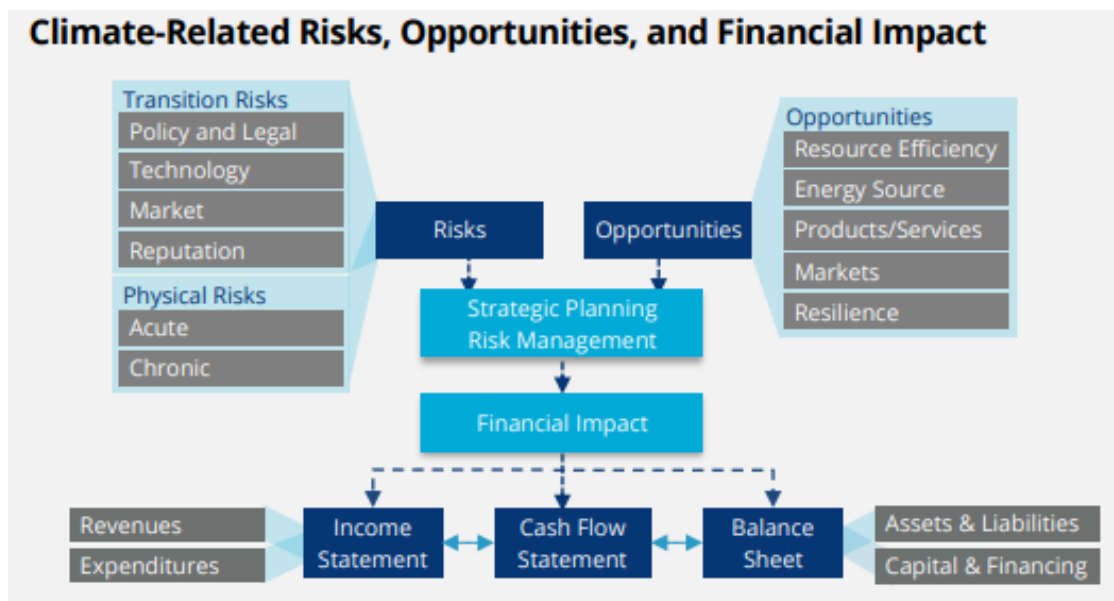
Task Force on Climate-related Financial Disclosures (TCFD)

The TCFD¹ is an initiative launched in 2015 by the G20 Financial Stability Board (FSB) to encourage companies to disclose financial risks related to climate change in their financial reports. In 2017, the TCFD published a voluntary disclosure framework to help companies communicate financial information related to climate change risks and opportunities in a transparent and consistent manner. This framework includes recommendations on disclosure of physical and transition risks, opportunities, stress-test scenarios and key performance indicators in four main categories:

- Corporate governance on climate change
- Climate-related physical and transition risks
- Climate-related opportunities, including opportunities for sustainable economic growth
- Climate-related Key Performance Indicators (KPIs)

The TCFD also recommends that banks take climate change risks into account in their decision-making process, using climate risk models and assessing potential impacts on their businesses and clients.

Climate change transition risks in the banking sector are assessed by examining how banks manage their exposure to climate change risks and transition to a low-carbon economy. Transition risks may include disruptions in supply chains, stricter carbon emissions regulations, changes in consumer demand for more sustainable products, and changing technologies.



Source: TCFD 2017

¹ <https://www.tcfhub.org/>

3. Specific tools for climate finance

In a banking context, assessing climate risks for financing the agricultural sector is crucial to ensure the viability of investments and enable sustainable growth. Climate risk prediction and assessment, particularly water and heat stress, can be achieved using a combination of tools and data sources. Some of the best tools include:

- **Climate models and projections:** Global and regional climate models provide valuable information on future climate scenarios, including temperature and precipitation models. The Intergovernmental Panel on Climate Change (IPCC²) regularly publishes climate projections that can be used to assess potential impacts on agriculture.
- **Geospatial data:** Satellite imagery can help monitor and predict water and thermal stress in agricultural areas. Tools such as the Normalized Difference Vegetation Index (NDVI) and the³ Evaporative Stress Index (ESI) can provide near real-time information on crop health and water stress.⁴) can provide near real-time information on crop health and water stress
- **Climate Indices:** These indices are statistical measures that assess average and extreme weather conditions in a given region. For example, the Thermal Stress Index (THI⁵) is used to measure heat stress in livestock. Climate indices can be obtained from climate research centres, such as the European Centre for Medium-Term Weather Forecasts (ECMWF⁶). By using these indices, banks (or insurance companies) can better understand the risks and potential losses associated with specific weather events.
- **Crop and crop simulation models** that can help estimate the impact of water and heat stress on crop yield. These models use weather, soil and crop data to simulate crop growth and development, allowing banks to make more informed financing decisions. Some of these models incorporate economic results that will help in the financing decision (recommendations for financing or not the investments analysed).
- **Drought monitoring systems:** Tools such as the U.S. Drought Monitor and Prediction System (GIDMaPS⁷) can provide valuable information on the occurrence and severity of droughts. Banks can use these tools to assess the drought risks faced by agricultural borrowers and make more informed lending decisions.
- **Data analysis and machine learning:** Advanced data analysis and machine learning techniques can be used to combine and analyse large data sets, such as climate projections, remote sensing data and historical agricultural performance data. These tools can help banks identify models and

² <https://www.ipcc.ch/>

³ https://earthobservatory.nasa.gov/features/MeasuringVegetation/measuring_vegetation_2.php

⁴ <https://ntrs.nasa.gov/api/citations/20180000608/downloads/20180000608.pdf>

⁵ <https://www.weather.gov/ama/heatindex>

⁶ <https://www.ecmwf.int/>

⁷ <https://drought.eng.uci.edu/>

SESSION OF THE AGRICULTURAL PUBLIC DEVELOPMENT BANKS (AGRIPDBS) WORKING GROUP ON THE THEME: "WHAT TOOLS FOR FINANCING ADAPTATION TO CLIMATE CHANGE?"

Technical note | 24/05/2023

relationships between climate variables and agricultural outcomes, allowing more accurate predictions of climate risks.

Several tools can be used to predict and assess climate risks in agriculture. One of them, **AgroMetShell**, is a software⁸ toolkit for assessing the impact of climatic conditions on crops, analyse climate risks and make regional crop forecasts using statistical approaches and crop modelling. It enables integrated analysis of ground data and low-resolution satellite information under a common interface. **Another tool is the FAO-MOSAICC** (Modeling System for Agricultural Impacts of Climate Change), which is an integrated system of models for assessing agricultural impact at the national level. It includes a crop growth model to simulate future crop yields.

Another tool⁹ that is relevant to mention and the “**Adaptation, Biodiversity and Carbon Mapping Tool - ABC-Map**” developed by FAO and IFAD with the support of AFD and the German Government (BMEL)

ABC-Map has been designed with the specific aim of holistic assessment of the environmental impacts of national policies, plans and investments in the AFOLU (Agriculture, Forestry and Other Land Use) sector, the environmental impacts of policies, national plans and investments in the AFOLU sector. ABC-Map helps to develop synergies and trade-offs between climate, biodiversity and land restoration actions and land restoration actions. ABC-Map consists of three distinct sections: adaptation, biodiversity and carbon, which can also be used separately¹⁰.

While these tools can provide valuable insights into the potential impact of climate-related risks on loan portfolios and help banks make informed financing decisions, Banks may face some challenges when using these tools:

- **Data quality:** The accuracy and completeness of the data used in these tools can affect the reliability of the analysis. Banks may need to invest in data collection, cleaning and validation to ensure the quality of the data used in these tools.
- **Technical expertise:** Some of these tools require specialized technical expertise to operate and interpret the results. Banks may need to invest in training or hire experts with the necessary skills to use these tools effectively.
- **Cost:** The cost of using these tools can be significant, especially for small banks. Banks may have to balance the cost of using these tools with the potential benefits they offer.
- **Regulatory requirements:** Regulatory requirements for climate risk reporting and disclosure are evolving, and banks need to keep abreast of the latest requirements to ensure compliance.

⁸ <https://www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/category/details/en/c/1026347/>

⁹ <https://climatescreeningtools.worldbank.org/useful-resources/agriculture>

¹⁰ https://abc-map.org/documents/ABC-Map_Guidelines.pdf

SESSION OF THE AGRICULTURAL PUBLIC DEVELOPMENT BANKS (AGRIPDBS) WORKING GROUP ON THE THEME: "WHAT TOOLS FOR FINANCING ADAPTATION TO CLIMATE CHANGE?"

Technical note | 24/05/2023

- **Lack of standardization:** There is currently no standard approach for the use of these tools, which can lead to inconsistencies in analysis and make it difficult to compare results between banks or sectors.

4. What skills are needed to implement the tools

As mentioned above as a limiting factor for the adoption and use of state-of-the-art tools for climate risk assessment, technical expertise is essential within banks.

This technical expertise requires skills that are not part of the business lines of the development bank as we currently know it. AgriPDBs must integrate key competencies to address climate challenges:

- **Climate Risk Assessment Skills:** AgriPDBs must be able to identify potential climate risks associated with the development projects it funds and develop plans to address them.
- **Climate finance expertise:** AgriPDBs need to be able to understand climate finance mechanisms and structure sustainable financial projects for climate-related projects.
- **Technical Competencies:** AgriPDBs need technical competencies to assess the technical feasibility of climate-related projects and to develop appropriate implementation plans.
- **Market analysis skills:** AgriPDBs must be able to analyse climate-related market trends and identify opportunities to finance sustainable projects.
- **Stakeholder engagement skills:** AgriPDBs must be able to work closely with key stakeholders, including local governments and communities, to ensure that climate-related projects meet local needs and benefit the community.
- **Communication and advocacy skills:** AgriPDBs must be able to effectively communicate the benefits of climate-related projects and advocate for climate action with governments, partners and stakeholders.
- It is also important to strengthen AgriPDBs' **IT teams** to improve the capacity of IT systems and enable them to integrate risk management and forecasting tools into their banking management systems, but also to build and manage geospatial monitoring systems.

To ensure sustainable and resilient investments in the face of climate change, AgriPDBs must have strong and diversified skills to respond to climate challenges as well as strengthened IT teams to integrate risk management tools and in their banking management systems.