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# A CONCEPTUAL FRAMEWORK FOR **THE CLASSIFICATION OF GOVERNMENT SPENDING ON CLIMATE CHANGE**

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# ACRONYMS AND ABBREVIATIONS

<b>CEA</b>	Classification of environmental activities	<b>IMF</b>	International Monetary Fund
<b>CEPA</b>	Classification of environmental protection activities	<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>COFOG</b>	Classification of the functions of government	<b>ISIC</b>	International Standard Industrial Classification
<b>CPC</b>	Central product classification	<b>EMCOFOG</b>	Extended matrix of the classification of functions of government
<b>CRAs</b>	Climate-relevant activities	<b>NAS</b>	National accounts system
<b>ECLAC</b>	Economic Commission for Latin America and the Caribbean	<b>NDCs</b>	Nationally determined contributions
<b>EPEA</b>	Environmental protection expenditure accounts	<b>NEC</b>	Not elsewhere classified
<b>EU</b>	European Union	<b>NPISH</b>	Nonprofit institutions serving households
<b>Eurostat</b>	Statistical Office of the European Union	<b>OECD</b>	Organization for Economic Cooperation and Development
<b>FAO</b>	Food and Agriculture Organization of the United Nations	<b>PER</b>	Public expenditure review
<b>FDES</b>	Framework for the Development of Environmental Statistics	<b>SEEA</b>	System of Environmental and Economic Accounts
<b>GDP</b>	Gross domestic product	<b>UNDP</b>	United Nations Development Program
<b>GFCF</b>	Gross fixed capital formation	<b>UNEP</b>	United Nations Environment Program
<b>GFSM</b>	Government Finance Statistics Manual	<b>UNSD</b>	United Nations Statistical Division
<b>GIP</b>	Gross internal product	<b>WWF</b>	World Wide Fund for Nature

## DEFINITIONS

**Climate-relevant activities (CRAs):** These include actions, processes, services or the creation of products that, in virtue of the nature of the final products, or of the type of processes or services they generate, have an effect on climate change.

**Adaptation:** Covers the range actions or activities that are carried out as part of the process of adjusting to the real or projected climate and its effects, to either moderate damages or take advantage of beneficial opportunities. In natural systems, this involves the process of adjusting to the real climate and its effects; human intervention can facilitate adjustment to the projected climate. In the case of hydrometeorological events, adaptation to climate change is about managing the risk of disasters insofar as this is designed to reduce vulnerability or to improve resilience in response to observed or expected changes in the climate and its variability.

**Climate change:** Variation in the state of the climate, identifiable (for example, via statistical tests) in the variations in average values and/or in the variability of its properties, which persist over long periods, generally decades or even longer (IPCC, 2014a).

**Economic classification of expenditure:** This type of classification identifies the types of expenditures incurred according to the economic process carried out.

**Functional classification of expenditure:** Provides information about the purpose that prompted the expenditure.

**Outlay:** Sum of expenditures and net investment in non-financial assets.

**Economic flows:** Movements that reflect the creation, transformation, exchange, transfer or the extinction of economic value; they imply changes in the volume, composition or value of assets and liabilities, and in the net wealth of an institutional unit.

**Expenditure:** Decrease in net wealth as a result of a transaction.

**Greenhouse gases (GHG):** Natural or anthropogenic gaseous components of the atmosphere, which absorb and emit radiation in certain wavelengths of the radiation spectrum emitted by the Earth's surface, by the atmosphere itself and by clouds. Water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>) and ozone (O<sub>3</sub>) are the major GHGs in the Earth's atmosphere. Furthermore, a certain number of GHGs in the atmosphere are entirely anthropogenic, such as halocarbons or other substances that contain chlorine and bromine, which are included in the Montreal Protocol. On top of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>, the Kyoto Protocol includes sulfur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) (IPCC, 2014a).

**Principal:** Natural person, agent or institution with the autonomy and decision-making capacity to declare an intention to carry out an economic activity.

**Mitigation:** Activity that helps to stabilize the concentration of GHGs in the atmosphere, at levels that limit the dangerous anthropogenic disruption of the climate system, by promoting initiatives to reduce or limit or sequester GHG emissions.

**Recovery:** In a context of disaster risk management, this refers to reestablishing or improving of the means of life and health, as well as the goods, systems and economic, physical, social, cultural and environmental activities of a community or society affected by a disaster, according to the principles of sustainable development and to “build back better”, with the aim of avoiding or reducing the future risk of disasters (United Nations, 2016).

**Transfer:** Transaction by which one institutional unit supplies to another a good, a service or an asset without receiving any good, service or asset in return as a direct compensation.

**Institutional unit:** Economic entity with the capacity to possess assets, contract liabilities and carry out economic activities and transactions with other entities in its own right.

## PRESENTATION

**T**he countries of Latin America and the Caribbean (LAC) have made a series of national and international commitments to tackle climate change. The most conspicuous are expressed through the nationally determined contributions (NDC) presented at the Conference of Parties, celebrated in 2015 in Paris (COP21) and most recently updated in 2021 by COP26, as well as in the Sustainable Development Goals (SDGs) that comprise Agenda 2030.

Government participation in any economy is substantial: it represents, on average, a 20 percent share in developing countries and 40 percent in developed countries (Izquierdo, Pessino, and Vuletin, 2018). Therefore, if the goals of the Paris Agreement are to be achieved, there must be consistency between government spending and public climate policies. Countries need to know how public expenditure contributes positively and negatively to these efforts or, in other words, they must first be able to identify the expenditures that have an impact on climate change and thereafter evaluate the efficiency, effectiveness and equity of such spending.

At present, however, no methodology has been agreed at the international level for identifying and evaluating climate-relevant expenditures. Furthermore, the possibility of conducting a periodic classification of expenditure is limited by the countries' internal restrictions with respect to their own systems of public expenditure administration and classification, as well as by the growing demand for information for sustainable development.

This paper proposes a conceptual framework that can provide methodological guidance for any LAC countries seeking to identify and classify government climate expenditure. It is mainly addressed to professionals at finance ministries, as well as ministries of the environment and international agencies that finance development in the region.

The proposed methodology is inspired by, and harmonized with, the National Accounts System (NAS) (United Nations, 2008) and, above all, with the Government Finance Statistics Manual (GFSM) (IMF, 2014), both internationally recognized statistical standards, as well as with the habitual practices of budget agencies in the region. Likewise, contributions on this theme have also been considered from the Joint Methodology for Tracking Climate Finance of the multilateral development banks (MDB)<sup>1</sup> and the methodology of the Climate Public Expenditure and Institutional Review (CPEIR) (UNDP, 2016).

Specifically, the proposal consists of anchoring the classification of climate expenditures to the current structure of the GFSM classification of the functions of government (COFOG) system, using a double-entry functional classification matrix, in which a primary purpose and a secondary purpose are considered. Once these expenses have been identified and denominated as climate-relevant expenditures, they can be analyzed by developing

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<sup>1</sup> See <https://www.eib.org/attachments/press/1257-joint-report-on-mdbs-climate-finance-2019.pdf>.

a satellite account approach. Climate-relevant expenditures are defined more precisely below but, in general, they refer to all expenditures whose main purpose is climate action or, although they may have other main purposes, involve activities that, by their technical nature, have an impact on climate change. To these ends, a full set of proposed definitions and classifications will be required, alongside an accounting framework, all of which are presented below.

It is hoped that this conceptual framework is useful for countries and can help to create indicators that support the implementation of efficient and effective climate policies, which will undoubtedly be one of the main challenges faced by the LAC region throughout the rest of the century.

## ACKNOWLEDGEMENTS

**T**his Conceptual Framework for the Classification of Government Spending on Climate Change reflects many years of work. During the process of its elaboration, interviews were held with experts and diverse consultation workshops organized with budget managers from the finance ministries of Latin American and the Caribbean countries, as well as other government ministries and agencies. The programmatic structures of Argentina, Barbados, Colombia, Costa Rica, the Dominican Republic, Jamaica, Mexico and Peru were all studied in detail. The existing accounting frameworks and their classification systems all had to be analyzed in depth, which gave rise to a prior publication entitled *Climate Change Public Budget Tagging: Connections across Financial and Environmental Classifications Systems* (Pizarro et al., 2021). The methodology was piloted in Costa Rica, the Dominican Republic and Jamaica, and both Costa Rica and the Dominican Republic already have functional public expenditure classifications that include climate change.

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INTRODUCTION

**AIM AND STRUCTURE  
OF THE PUBLICATION**

The aim of this paper is to provide a conceptual framework and methodological guidance for the region's countries seeking to identify, classify and evaluate public climate expenditure. The proposed methodology is based on contributions provided by the Joint Methodology for Tracking Climate Finance of the multilateral development banks (MDB)<sup>2</sup> and the methodology of the Climate Public Expenditure and Institutional Review (CPEIR) (UNDP, 2016),<sup>3</sup> although, in contrast to these, it is coherent and consistent with the Environmental Accounts Systems (United Nations, 2008) and, above all, with the Government Finance Statistics Manual (GFSM) (IMF, 2014), both internationally-recognized statistical standards, as well as with the habitual practices of budget agencies in the region.

In this way, it is possible not only to connect budget information with investment expenditures and project funding but, moreover, to integrate them with the statistical systems currently in force and thereby considerably boost the analytical power of the classification methodology. For this purpose, this conceptual framework exclusively presents a climate expenditures classification system with associated indicators and recommendations for gathering data. Although it fills a void, it is not a complete methodology for

evaluating the impact of public climate expenditure (nor should it be understood as such), which means that this classification system should be used as an input designed to implement the common impact evaluation methodologies (Pizarro et al., 2021).

The conceptual framework is mainly intended for civil servants of finance and environment ministries throughout Latin America and the Caribbean (LAC) region, to support them in classifying and evaluating public climate expenditures, and also for the international agencies that finance development.

The publication is structured into four chapters, plus this introduction and a series of methodological annexes that will enable countries to construct their own classification systems. **Chapter 1** presents a synthesis of the methodological approach. **Chapters 2 and 3** constitute the main body of the conceptual framework: herein are presented the conceptual methodology and recommendations for gathering data, respectively. Finally, **Chapter 4** proposes a structure for presenting information and indicators for results evaluation. The **Annexes** contain methodological details, lists of potential climate actions, and a reference to the relevant statistical frameworks, as well as operational guides.

## Thoughts on Climate Spending

Climate change affects the economy and human wellbeing through its effect on the environment. This is seen in direct impacts, for example, by the destruction of physical or environmental assets, but the main impacts are indirect and gradual, and are associated with the deterioration of multiple ecosystem services.

For this reason, countries must address the effects of climate change by implementing diverse responses and policies. In general terms, there are two types of responses to the climate question. The first includes *ex ante* types of policies, aimed at attenuating climate change or its impacts, among which mitigation, adaptation and risk management are worth mentioning. The

<sup>2</sup> See <https://www.eib.org/attachments/press/1257-joint-report-on-mdb-climate-finance-2019.pdf>.

<sup>3</sup> More details are available at <https://ndcpartnership.org/toolbox/methodological-guidebook-climate-public-expenditure-and-institutional-review>.

second involves responses of the *ex post* type, to address the impacts that have already occurred, and these include responding to emergencies and restoring physical or environmental assets damaged or lost due to extreme weather events (IPCC, 2014a; IPCC, 2014b; IPCC, 2012).

These responses have a correlation in public expenditures in that, as well as influencing public climate management, they can also affect fiscal sustainability. This means that identifying and classifying expenditures associated with climate actions not only constitute a problem for effective environmental policymaking, but that they are also crucial elements for fiscal management sustainability.

Climate spending belongs in a category of cross-cutting expenditure, as does expenditure on poverty and gender, but due to the growing demand of international agencies for countries to evaluate their own efforts in climate activities, as well as the need for countries to assess the contingent liabilities associated with climate impacts, both direct expenditures and cross-cutting expenditures must be identified and classified—that is, those that will be defined as being climate-relevant.

Public climate expenditure can be defined as the spending that responds to climate change or its impacts through actions such as mitigation or adaptation or, in other words, as the spending whose main purpose, or ultimate cause, is to respond to climate change. However, there are also other expenditures that, while not primarily concerned with addressing this phenomenon, do generate impacts on climate management because of the technical nature of the activities that they implement. These may be considered as secondary climate expenditures, or as having indirect effects on climate policy.

The above reflects the fundamental methodological dilemma of the question in relation to climate action undertaken by the State, given that government actions or expenditures whose primary objective is not climate change mitigation or adaptation, such as investing in new energies or public transport, may possibly have a greater impact than policies specifically designed with mitigation or adaptation as their main purpose (for example, a system for monitoring emissions).

Finally, there is a third group of expenditures that are intended to address the consequences of catastrophic events and/or slow onset events associated with the variability of the climate and its impacts. These are expenditures whose main purpose is to address the physical effects or impacts of extreme weather events after they have occurred. The main purpose of these expenditures is not climate action, in the sense of mitigating climate change, but in responding to emergencies or the restoration of physical or environmental assets. Nonetheless, policymakers must be able to identify them, since they constitute the highest fiscal cost related with the climate question and, due to their magnitude and, above all, to their variability, they present an enormous challenge for long-term fiscal sustainability.

Ultimately, given that all human activity is affected by the climate and that public expenditure can have a direct or an indirect impact on climate change, it is not easy to define precisely what constitutes climate spending. This represents the main methodological problem associated with classifying and tagging climate expenditures. Taking the statistical classification systems currently available as a point of departure, these expenditures will be defined more precisely in the two following chapters.

**Table 1.** Types of Response to Climate Change

	<b>Public responses to climate change to mitigate impacts (<i>ex ante</i> a climate event)</b>	<b>Public responses to the impacts of climate change (<i>ex post</i> a climate event)</b>
<b>Specific type of responses</b>	Mitigation, adaptation and disaster risk management.	Recovery (resilience) and repair of physical and environmental assets damaged as a consequence of extreme weather impacts.  Emergency management.

**Box 1.** Definition of Public Responses to Climate Change

<b>MITIGATION</b>
An activity that helps to stabilize the concentration of greenhouse gases (GHG) in the atmosphere at levels that would avoid dangerous anthropogenic disturbance of the climate system, by promoting initiatives to reduce, limit or sequester GHG emissions.
<b>ADAPTATION</b>
This includes the actions or activities that initiate the process of adjusting to the real or projected climate and its effects, to either moderate the damages or exploit beneficial opportunities. In natural systems, human intervention can facilitate adjustment to the projected climate. In the case of hydrometeorological events, adapting to climate change corresponds to disaster risk management insofar as it is directed towards reducing vulnerability or improving resilience in response to the observed or expected changes in the climate and its variability.
<b>CLIMATE DISASTER RISK MANAGEMENT</b>
Processes to design, apply and evaluate strategies, policies and measures aimed at raising awareness of the risks of disasters, reducing risk and providing financial protection against the risk of disasters. Promoting continuous improvement in the preparation, response and recovery practices deployed in the event of disasters, with the explicit aim of enhancing human safety, wellbeing, quality of life, resilience and sustainable development.
<b>EMERGENCY MANAGEMENT</b>
Organization and supervision of resources and responsibilities for managing all aspects of emergencies, particularly preparation, response and restoration. Emergency management includes plans, structures and agreements that commit the efforts of government and voluntary and private entities, in a coordinated and integrated fashion, to respond to all the needs arising from an emergency. The concept of emergency management is also known as “disaster management”.
<b>RECOVERY</b>
The process of reestablishing acceptable and sustainable living conditions through the restoration, repair or reconstruction of any infrastructure, goods and services destroyed, interrupted or deteriorated in the affected area, as well as reactivating or encouraging the affected community’s economic and social development under lower-risk conditions than those existing before the disaster struck.
<b>RESILIENT RECOVERY</b>
Total or additional restoration of infrastructure and/or goods and services destroyed in such a way as to set the conditions to ensure future resilience to climate change.

Source: Authors’ elaboration, based on IPCC (2014a and b); IPCC (2012); Lacambra et al. (2015).

## Evaluation of Government Climate Actions and Current Statistical Frameworks

All public policy responses imply different options and, therefore, signify economic costs. Hence, authorities have an interest in identifying not only the most effective response but also the most efficient instrument for achieving their objectives. In consequence, the final purpose of identifying climate-relevant expenditures is to evaluate the impact of the policy responses and the efficiency of such instruments.

The central question is whether or not the government policy response has fulfilled its objectives, whether the instrument has achieved mitigation, has boosted adaptive capacity or has responded effectively to climate emergencies. This requires a clear evaluation of the change in the state of the environment and of changes in the drivers and pressures on the climate following implementation of a specific policy instrument.

It is worth mentioning that decision-makers are not interested in classifying or identifying climate expenditure for academic reasons, and only partially for comparison with other countries. The fundamental reason underpinning their task is associated with perfecting climate policy and efficiency of public expenditure. A classification system must therefore be developed that facilitates analytical exercises that aim to respond to questions such as these: whether the measures set out in a decarbonization plan are cost-efficient or, more specifically, whether the construction of a power station using renewable energy was effective in achieving mitigation and is more efficient than a carbon tax, or how the costs of adaptation initiatives compare with

the costs of physical impacts caused by extreme weather events.

For the authorities, therefore, identifying climate expenditures is an intermediate objective; the final objective is to assess public climate management in all its different dimensions and to project the future fiscal risks. This means matching the expenditures with the different policy responses and their instruments, and connecting them with the impacts, drivers and pressures associated with climate change.<sup>4</sup> An expenditure identification and classification methodology must therefore be able to trace the impact of the policy instruments in other variables of interest, and this is only possible by connecting with the already-existing statistical classification systems.

Unfortunately, the methodologies proposed up until now have failed to clearly and directly connect with the statistical systems currently in force and, accordingly, do not offer a more complete analysis of climate management.<sup>5</sup> In contrast, the methodological proposal presented here is built on the basis of integration with existing classification systems, given that these provide policymakers with the means to evaluate implementation of the policy responses to climate change based on easy access to information from different policy ambits. In this way, the analysis, evaluation and formulation of public climate and fiscal policies can be supported.

A classification methodology is a standardized procedure for systematizing statistical categories of interest that should include, at the very least, a statistical standard and a data-gathering methodology or an estimation procedure. A statistical standard exhaustively conceptualizes

<sup>4</sup> See Pizarro et al. (2021) for a discussion of this issue.

<sup>5</sup> For a detailed analysis of the methodologies employed to identify and classify climate change expenditures, see World Bank (2021).



and standardizes what needs to be identified (what it is) and how it relates to other variables of interest (how it is classified) and, moreover, it establishes a framework for ordering information (an accounting structure). For its part, a data-gathering methodology provides practical recommendations for capturing or estimating the data of interest, considering the institutional reality from which the information is captured. It is essential to clearly distinguish between these two methodological aspects, as it is often the case that in many methodological proposals the data-gathering procedure is confused with the conceptual framework of what needs to be identified and evaluated.

Although LAC countries employ statistical information organization and classification systems with different levels of development and specificity, they all do so by following the international statistical standards for economic, environmental and fiscal information. The structure is based on the NAS, which forms the basis of the System of Environmental and Economic Accounts (SEEA) (United Nations, 2012), but, more especially, of the Government Finance Statistics Manual (GFSM) (IMF, 2014).

These systems not only organize information coherently, allowing for the generation of indicators, but they also provide an analytical framework that enables access to the information systems that facilitate the connection between different public policy areas. In this way, they provide the benchmark for any long-term proposal for identifying and evaluating climate spending. Furthermore, they limit the costs of gathering and analyzing statistical information, given that the different demands for public information converge in a common statistical framework.

This methodological proposal is sustained by the accounting frameworks and classification systems currently in use in the region and, at the same time, is based on the institutional realities of the countries and their capacity to implement a methodology in practical terms. In the following pages, based on the elements introduced above, a conceptual framework and a methodological guide will be developed, which takes the existing statistical frameworks as a reference.



CHAPTER 1.  
**METHODOLOGICAL  
APPROACH**

**A** classification methodology is a standardized procedure for identifying and classifying data of interest. In effect, this includes, at the very least, a conceptual methodology—the definition of categories of interest—and a data-gathering methodology—that is, a procedure for capturing or estimating the statistical units of interest.

Although LAC countries have implemented systems for organizing and classifying statistical information with different levels of development and specificity, all are guided by international statistical standards of economic, environmental and fiscal information, particularly the Government Finance Statistics Manual (GFSM) (IMF, 2014) and the National Accounts System (NAS) (United Nations, 2008). This helps to order the information, but also serves as an analytical framework. It therefore constitutes the benchmark for any long-term proposal whose objective is to identify and evaluate climate-relevant expenditure.

Moreover, a methodology consistent with these systems can reduce the costs of collecting and analyzing statistical information, given that, in this way, the different demands of information for economic environmental policies converge in a common statistical framework. Accordingly,

these accounts frameworks or statistical standards constitute the base of the methodology herein developed (see Box 1.1).

In effect, the methodological approach is based on expanding the current public expenditure classification systems through a double-entry matrix for classifying expenditures pertaining to government functions and climate-relevant activities (CRAs). This enables the classification of expenditures whose main purpose is to address climate questions, as well as identifying other expenditures whose primary purpose is not to tackle climate change but that, nonetheless, have a substantial positive or negative impact on it, due to the activities that they develop.

Likewise, the current classification systems, particularly the logic of the GFSM and the classification of government functions (COFOG) are maintained as the basis of the system of classification via an extended matrix and connected to the System of Environmental and Economic Accounts (SEEA) through the definition of assets and the net worth equation, which is dealt with in greater detail in Annex 1. From the perspective of this methodology, the key element is the COFOG.

### Box 1.1. Benchmark Statistical Framework and Classification Systems

1. The National Accounts System (NAS) (United Nations, 2008) is the macroeconomic accounts system providing public policy guidance, from which the main economic indicators, such as gross domestic product (GDP), emerge.
2. The System of Environmental and Economic Accounts (SEEA) (United Nations, 2012) is a system of second-generation satellite accounts that include the environmental variable. This system incorporates a register of natural productive capital (environmental assets) and their change over time, which thereby broadens the approach of the NAS central framework.
3. Environmental Protection Expenditure Accounts (EPEA) are the environmental accounts of the SEEA that record, in monetary terms, the transactions of institutional units that can be considered as environmental. In effect, they include both capital and current expenditure intended to protect the environment (Eurostat, 2017; United Nations, 2012). These accounts are harmonized with the SEEA, and they quantify the resources that a country allocates to environmental protection.
4. Government Finance Statistics Manual (GFSM): the Government Finance Accounts System is the preferred accounts system for structuring such finances, which provide the main analytical tables for fiscal accounting (IMF, 2014).

Source: Authors' elaboration, based on current statistical systems.

## Classification of the Functions of Government

Public sector financial classification systems categorize revenue and expense items in accordance with certain criteria, whose arrangement is based on the shared or differentiated aspects of governmental operations. As far as government management is concerned, the main classifications used, in the framework of public sector statistics, are institutional classification and economic classification (see Box 1.2); however, as these fail to evaluate government management, a further classification has been developed based on the functions of government.

To support policymaking and evaluate the results of public sector spending, governments also classify their expenditures based on their function, for which purpose they employ the COFOG (Eurostat, 2011; IMF, 2014). This is a functional classification system that presents public expenditure according to the services that public institutions offer to the community. In effect, it responds to the question of why a transaction is made, or

a good or service acquired or provided, and its logic is based on the primary purpose or ultimate cause behind the expenditure. In the context of government disbursements, classifying each function depends on the motivation or intention of policymakers or principals when making a transaction.<sup>6</sup> Consequently, classification is inevitably related with a declaration of intent.<sup>7</sup>

The COFOG is a fundamental instrument for decision-making and evaluating political management, which helps to analyze expenditure trends in certain functions. The units of classification are, in principle, individual transactions. The functional classification currently in use was developed by the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD), based on what they consider to be the foremost and most important functions of government. It therefore serves as an analytical framework for assessing how governments respond, by spending, to citizen demands.

<sup>6</sup> The term “principal” is used here to refer, in general, to whoever assumes the responsibility for the spending decision, whether a national or subnational government, a line ministry or any other relevant authority.

<sup>7</sup> The criterion of primary purpose is also important for compiling economic-environmental accounts through the System of Environmental and Economic Accounts (SEEA), but in this case the criterion of primary purpose is associated with an activity. In turn, an activity's purpose is related to the product it generates. For example, an activity that produces a filter to reduce air pollution would be classed as an environmental activity. Although it may be difficult to define precisely the function of the activity, it is inevitably linked to the product it produces. In the case of functions of government, however, the function is independent of the activity and is explicitly associated with the decision-maker's intention.

**Box 1.2. Types of Public Expenditure Classifications**

<b>INSTITUTIONAL</b>
Institutional classification orders government transactions in accordance with the organizational structure of the public sector and reflects the institutions and areas to which credits are allocated, which are responsible for providing budget resources, and which ones will execute these resources.
<b>GEOGRAPHIC</b>
Geographic classification establishes the spatial distribution of the economic and financial transactions made by public institutions, taking the political division of the country as the basic unit of classification. This is especially relevant for countries with a political-administrative structure organized on a federal or state model.
<b>BY OBJECT OF EXPENDITURE</b>
Classification by object of expenditure is conceptualized as a systematic and homogeneous ordering of goods and services, transfers and variations in assets and liabilities that the public sector applies in the development of its activities.
<b>ECONOMIC</b>
Economic classification of expenditure helps to identify the economic nature of the transactions made by the public sector, with the purpose of evaluating the impact and repercussions of fiscal actions. In this sense, economic expenditure may be employed for current or capital purposes, or for financial applications. Economic classification of expenditure is designed following the basic NAS structure, with the aim of enabling integration of public sector information. This facilitates analysis and study of the effects of the public sector within the broader context of the economy.
<b>FUNCTIONAL</b>
Functional classification presents government spending according to the services offered by public institutions to the community. It answers the question of why a transaction is made, or a good or service acquired or provided, and its logic is based on the primary purpose or ultimate cause of the expenditure. The classification of the functions of government (COFOG) was developed for this purpose (Eurostat, 2011; IMF, 2014).

Source: IMF (2014).

Ultimately, the COFOG of public expenditure provides information about the purpose for which the expenditure is made, in accordance with different categories considered analytically relevant. Specifically, the COFOG is structured into ten divisions, which, in turn, are broken down into functions and thereafter into subfunctions. The divisions identify the general government objectives, whereas the functions

and subfunctions define the means by which these objectives are achieved. These are presented in Table 1.1 (IMF, 2014). However, while there is a division that corresponds to environmental protection, the current COFOG is inadequate when it comes to classifying climate-relevant expenditures. It suffers, in effect, from two problems, which are discussed below.

**Table 1.1.** Classification of the Functions of Government

Division	Groups
<b>General public services</b>	Legislative and executive organs; financial and fiscal affairs; external affairs; civil service; basic research, public debt transactions and transfers between different levels of government.
<b>National defense activities and services</b>	Military defense; civil defense; foreign military aid, R&D in military services and other defense-related categories.
<b>Public order and safety</b>	Policing and citizen protection services; fire services; administration of justice; prisons, applied research for public order and security and public order and security activities NEC.
<b>Promotion and regulation of economic development</b>	Promotion and regulation of general economic development; agricultural production; forestry, hunting and fishing; fuel production and distribution; energy generation and distribution; non-energy mining; industry and construction; transport services; communication services; financial sector services; services in other economic activities, research for service production or provision and others not specified.
<b>Environmental protection</b>	Waste disposal; sewage disposal; pollution abatement; protection of biological biodiversity and the landscape, R&D related with protecting the environment and environmental protection NEC.
<b>Housing and community amenities</b>	Regulation of housing and community amenities; construction and provision of housing and complementary services; research in housing; land uses; community amenities; aqueducts and sewers, urban development and housing and community amenities NEC.
<b>Health</b>	Production or procurement of medical products and equipment; health services procurement or provision; promotion, coordination and regulation of health services, health research and health activities NEC.
<b>Recreation, sport, culture and communication</b>	Recreation and sport; culture; broadcasting; research in recreation, sports, culture and broadcasting; recreation, sport, culture and communication activities NEC.
<b>Education</b>	Procurement and provision of preschool, primary and middle-school education; higher education; vocational training; non-educational services not defined by level; complementary services, education research and educational activities and services NEC.
<b>Social protection</b>	Care for the disabled and people with physical and mental limitations; care for the elderly, family, childhood, adolescence and youth; unemployment protection and provision; ethnic groups; socially-vulnerable or excluded populations NEC; disaster prevention and reaction; fire services; family subsidies; pensions; severance pay, research in social protection and social protection activities NEC.

Source: IMF (2014). NEC: not elsewhere classified.

## Limitations of the Classification of the Functions of Government System

All of the region's countries employ functional classification systems for government spending that conform to the COFOG or, at least, inspired by the same logic, that is, a conceptualization of

the functions on the basis of their primary purpose. Nonetheless, the COFOG presents two problems as a classification system for climate change.

### Problem No. 1. The classification of the functions of government system is limited or outdated

The COFOG has not been updated and, consequently, fails to account for the new and multiple functions that governments now fulfill, which include climate change-related problems.<sup>8</sup> Although there is a division oriented to government environmental functions, this is insufficient to identify all the expenditures considered relevant with respect to the environment, and does not explicitly account for all the functions related with climate management (see Box 1.3).

To understand how the COFOG functions, consider a transfer the government makes to fund tree-planting activities. According to the International Standard Industrial Classification (ISIC),<sup>9</sup> this transfer would come under the heading "silviculture and other forestry activities" defined by the Code 210. The government could, for an exclusively economic purpose, make the transfer to execute some form of silvicultural activity; consequently, this expenditure must be classified in Division No. 4 of the COFOG, which would coincide with the ISIC classification of the activity.

If, however, the government makes the same transfer to execute the same activity and plant the same trees, but with the purpose of limiting environmental degradation, then this would constitute an environmental expenditure and

would, therefore, be classified in Division No. 5 of the COFOG. In other words, disbursements made to fund exactly the same activity can be classified in different functions, depending on the primary purpose or the ultimate cause of the government's policies. The system of classifying on the basis of the COFOG takes these purposes into account and permits government expenditures to be tagged in accordance with the intention or motivation behind each one.

If, however, the transfer is made with the purpose of mitigating or adapting to climate change, it should not be considered an environmental transfer but, rather, a climate-relevant expenditure. If this is the case, it is unclear where the disbursement should be recorded. One possibility is to include it in Division No. 5, under the subfunction of pollution abatement, Subfunction 5.3 (see Box 1.3). A further possibility would be to create a new Division (No. 11) for climate-relevant expenditures. Nonetheless, both solutions are problematic: the former is inflexible when it comes to accounting for the full range of expenditures associated with climate change, whereas the latter means intervening in a classification system that has long been standardized and agreed with international organizations.

The recommended option is to maintain climate-relevant expenditures as part of Division

<sup>8</sup> Given the importance of Agenda 2030 and the evaluation of public management in this area, reorganizing the divisions of the classification of the functions of government (COFOG) on the basis of the 17 Sustainable Development Goals (ODS) would seem to be a logical step.

<sup>9</sup> The International Standard Industrial Classification (ISIC) is a reference classification of economic activities used at the international level.

No. 5, but separately, by creating two further subdivisions: 5.1. environment and 5.2. climate change.<sup>10</sup> Moreover, an expenditure can only have one primary function, which obliges the government to decide on how to evaluate spending effectiveness.

In the event that the environment subfunction is chosen, the current subdivisions would be

maintained, whereas for climate change a new system of classification is proposed, coherent with the COFOG and consistent with the concerns of decision-makers with regard to climate change. This is presented in greater detail in the next chapter.

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<sup>10</sup> This reclassification could also be “virtual”, that is, it could merely tag the expenditures and reclassify them using the satellite account without altering the current structure of the COFOG. In other words, it would only be reclassified as a primary purpose expenditure when information is presented on climate-relevant expenditures.

**Box 1.3.** Division No. 5 of the Classification of the Functions of Government: Environmental Functions

Although Division No. 5 of the COFOG, regarding environmental protection, is based on the classification of environmental protection activities (CEPA), they are not identical. The table below shows the differences. The activities related with climate change mitigation are identified in Division No. 1 of the CEPA or COFOG 5.3, whereas those concerning adaptation are dispersed throughout all the government functions. The subfunction COFOG 5.3 is insufficient for considering all government mitigation actions.

Comparison between environmental protection expenditure accounts and classification systems				
Environmental protection expenditure accounts		COFOG	SEEA (CEPA, 2000)	ISIC
Waste management	Collection and transport	5.1 Waste management	3. Waste management	381; 382; 39; 8129
	Treatment and disposal			
	Other activities			
Sewage management	Treatment and sewage	5.2 Sewage management	2. Sewage management	37
	Rainwater			
	Other activities			
Pollution control	Air and climate protection	5.3 Pollution reduction	1. Air and climate protection	39
	Water and soil protection		4. Protection and remediation of soil, groundwater and surface water	39
	Noise and vibration abatement		5. Noise and vibration abatement	4329; 7120
	Protection against radiation		7. Protection against radiation	3812; 3822
	Other activities			
Protection of biodiversity and landscapes	Protection of landscapes and habitats	5.4 Protection of biodiversity and landscapes	6. Protection of biodiversity and landscapes	9104
	Species protection			
	Restoration of species and landscapes			
Research and development		5.5 R&D related to environmental protection	8. R&D related to environmental protection	72
Environmental protection expenditures NEC	General administration	5.6 Environmental protection NEC	9. Environmental protection NEC	8412; 9499
	Education, training and awareness-raising			
	Other activities			

Source: Authors' elaboration, based on the classifications. NEC: not elsewhere classified.

## Problem No. 2. The classification of the functions of government does not envision multiple purposes or impacts

The second problem of the COFOG is that it does not recognize that expenditures related to functions of government can have more than one purpose or, more importantly, that the activities associated with such expenditures can have secondary impacts or externalities that are relevant when it comes to adequately evaluating public policies. The problem of the structural nature of the COFOG affects all types of cross-cutting expenditures, such as those allocated to poverty and gender, seriously limits its analytical capacity, and is particularly significant when dealing with climate-relevant expenditures.

To understand this problem, let us return to the same case mentioned above: the classification of expenses incurred in planting trees. If the government makes a transfer to implement reforestation activity with an exclusively economic aim, this expenditure must be classified in Division No. 4. However, irrespective of the purpose of the expenditure, the activity executed has measurable and significant impacts on climate change mitigation. Identifying this expenditure, therefore, is of interest to the authorities, given that this is a transfer related with an activity that supports climate management.

In effect, aside from the purpose, there is a multiplicity of activities that can mitigate or support climate adaptation and that are executed in expenditures whose function may not be climate-related. These activities must be identified for analytical reasons.

Classifying the function of the expenditure will depend on the chief objective of decision-makers when they declare the purpose behind the disbursement. This is coherent with the logic of the COFOG and comparable at the international level. However, as observed in the previous example, although the purpose of an expenditure may not be overtly climate-related, if the activity generates a climate impact or supports climate policy, it must be identified as being of interest to the authorities.

To separate these effects and adequately classify the different expenditures and activities, a new classification of climate-relevant expenditures is herein proposed based on the relevance of the activities executed, which is dealt with in greater detail in the next chapter. In any case, what matters most is the proposal of a double-entry or extended system of COFOG.

## Extended Matrix for the Classification of the Functions of Government

To solve the problems mentioned above, it is proposed to develop an extended or double-entry functional classification. In short, this means implementing an extended matrix of the classification of the functions of government (EMCOFOG), which incorporates functional expenditure tagging in accordance with their primary purpose, but also the tagging of expenditures that include activities that,

irrespective of their functional classification, also have climate impacts.

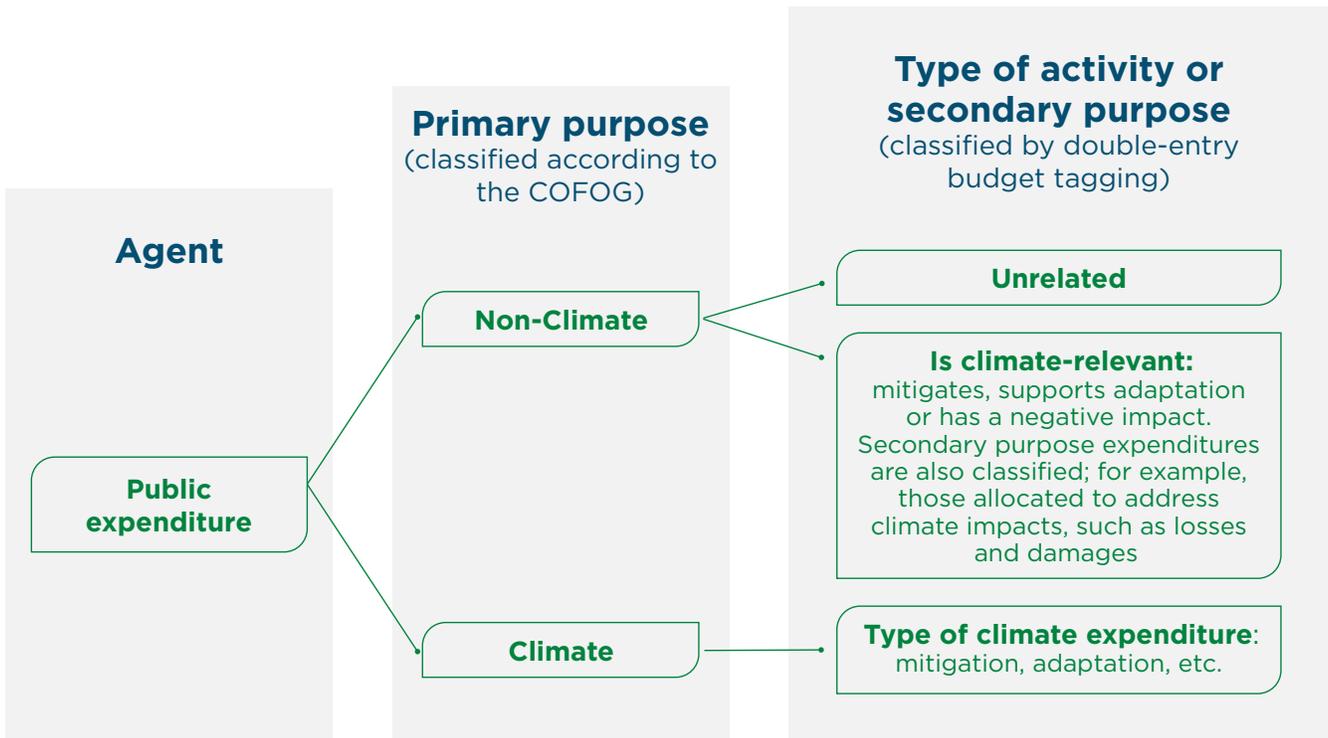
Specifically, the idea is that in this classification system all expenditures are identified whose primary purpose is related to climate management, reclassifying them into a new climate subdivision alongside the activities that, due to their nature, have an impact on the climate, which may also include activities that generate a negative impact.

Moreover, this structure can also be used to classify the secondary purposes of the expenditures; for example, expenditures whose initial purpose is not climate-related, in the COFOG sense, but that are made as a consequence of climate impacts, and that support recovery or tackling an emergency following an extreme weather event.

Figure 1.1 presents a conceptualization of the purpose-based structure of classification of expenditure, as well as the impact of the activity executed. As can be observed, there are two key moments in classification. In the first place,

the expenditure is identified in accordance with its function and primary purpose, classifying only those expenditures that are explicitly motivated by, or intended to respond to, climate change, irrespective of the activities executed. As this COFOG division did not exist, this means reclassifying expenditures that may have been cataloged in other divisions. Second, the secondary purposes of the expenditure or the technical climate relevant activities are identified that were originally included under expenditures whose function or intention was not climate-related.

**Figure 1.1.** Classification of Expenditures according to Purpose and Activity



Source: Authors' elaboration.

Table 1.2 presents an example of the EMCOFOG using currency units. The number and name of the COFOG divisions currently recommended by the IMF (2014) are located in the first two columns; in the third, the total amount of spending associated with that functional

category is recorded. In the following columns, the different attributes or classification criteria of the activities associated with the expenditures are given in detail. This identification of the additional attributes of a budget item is what gives rise to the idea of the EMCOFOG.

**Table 1.2.** Extended Matrix of the Classification of the Functions of Government

Stage 1: Identification and tagging of expenditures and activities									
Number	Government functions and activities	Transfer (Project or program) \$	Double-entry classification: secondary purpose or impact of activity associated with the expenditure						
			Mitigation (primary purpose)	Mitigation (secondary purpose)	Adaptation (primary purpose)	Adaptation (secondary purpose)	Negative impacts	Recovery	Emergency
1-3	General public services, defense, security	180							
	Example: organization of the COP (Conference of the Parties)	⑤	x						
4	Economic development	180							
4.1.1	Agriculture	80		x					
	Example: genetically-modified seeds	②			x				
4.3.5	Electricity	120					x		
	Example: Energy from fossil fuels	40					x		
	Example: Solar energy	⑮	x						
	Example: Coal-based energy	65					x		
5	Environment	53							
6-10	Housing, health, recreation, education, social protection	260						x	x
	<b>TOTAL</b>	<b>1.000</b>							
Stage 2: Reclassification of primary purpose climate expenditures									
Number	Government functions and activities	Transfer (Project or program) \$	Double-entry classification: secondary purpose or impact of activity associated with the expenditure						
			Mitigation (primary purpose)	Mitigation (secondary purpose)	Adaptation (primary purpose)	Adaptation (secondary purpose)	Negative impacts	Recovery	Emergency
1-3	General public services, defense, security	180							
	Example: organization of the COP (Conference of the Parties)	-	x						
4	Economic development	170							
4.1.1	Agriculture	75		x					
	Example: genetically-modified seeds	-			x				
4.3.5	Electricity	105							
	Example: Energy from oil and gas	40		x					
	Example: Solar energy	-	x						
	Example: Coal-based energy	65					x		
5.1	Environment	53							
5.2	<b>Climate change</b>	30							
	<b>Mitigation (primary purpose)</b>	⑳	x						
	<b>Adaptation (primary purpose)</b>	②			x				
6-10	Housing, health, recreation, education, social protection	260						x	x
	<b>TOTAL</b>	<b>1.000</b>							

Source: Authors' elaboration.

COP: Conference of the Parties.

From a practical point of view, there are two key moments in the act of classification, which are represented by the upper and lower stages in Table 1.2. In Stage 1, an extended COFOG matrix is presented that includes the currently existing divisions, and the different attributes are tagged, with the inclusion of primary purpose expenditures, in each one of the expenditures already classified in the COFOG. In this stage, the different expenditures are only being tagged and identified.

For example, in the agriculture subdivision, a transfer is listed that is associated with seeds that are genetically modified to adapt to climate change, which in the numerical example is given a value of US\$2. Although this activity was originally classified as having an economic function, in the objective of the expenditure the principal declared an explicit purpose associated with climate adaptation. It must therefore be tagged as a disbursement whose primary purpose supports adaptation and reclassified in the new climate change subdivision. This can be observed in Stage 2 of Table 1.2.

Likewise, other expenditures, such as those associated with solar power generation or distribution (US\$15, in the numerical example), may be given an explicit climate change objective; consequently, these must also be reclassified as expenditures whose primary purpose is climate-related. Finally, it is possible that expenses incurred from organizing climate change conferences (US\$5, in the example) come under the heading of administrative functions and/or international relations. Although their primary purpose is also to address climate-relevant questions, they do not in themselves develop activities to mitigate or support adaptation to climate change. Therefore, these three expenditures must initially be identified, and thereafter reclassified and registered in the climate change subdivision, as presented in Table 1.2. In line with the logic of the COFOG,

these expenditures may or may not implement mitigation or adaptation activities, but the prior condition for classifying an expenditure as climate-relevant with regard to its primary purpose is the intention of the principal, rather than the activity's direct impact.

Nonetheless, authorities are also keen to identify activities that yield direct climate impacts. The EMCOFOG thereby can help to identify other attributes of the activities associated with expenditures that, although lacking explicit climate purpose, do have a climate impact. Consequently, the expenditures on activities with climate impacts must be tagged as such. However, such activities should only be identified; in effect, in contrast with explicit climate-relevant expenditures, these cannot be reclassified as this would lead to double accounting and therefore be inconsistent with the COFOG formulation, in accordance with the GFSM criteria of the IMF (2014). The proposal of the EMCOFOG is to reclassify primary purpose climate expenditures and identify secondary purpose expenditures and CRAs, including those with negative impacts such as, for example, those associated with the coal-based electricity generation, as shown in Table 1.2.

The reclassified EMCOFOG is presented in the lower stage of Table 1.2, having identified the expenditures whose primary purpose or intention is to address climate change. Note that in the numerical example, the primary purpose climate expenditures classified would be US\$20 in mitigation and US\$2 in adaptation. The identification of the activities executed is also maintained in the different expenditure categories. This would be the definitive extended COFOG matrix. It maintains the previous structure of functional classification, but includes a reclassification based on the function of the climate-relevant expenditures and identifies the non-climate relevant functional expenditures, whose primary purpose is not climate-related, but that include activities that are incidentally

climate-relevant. In the example, the sum of primary purpose climate spending would be US\$22, whereas positive climate-relevant expenditures (without considering negative impacts) would reach US\$500. The EMCOFOG is the main analytical instrument proposed in this conceptual framework and fulfills, at least, three essential functions when it comes to identifying, classifying and analyzing government efforts in terms of climate policy, which are:

- 1. Functional classification structure.** The EMCOFOG is a new double-entry structure for classifying expenditures and activities. It therefore enables the classification of disbursements to be clearly presented on the basis of major functions, maintaining the logic of the COFOG in accordance with the recommendations of the IMF (2014), while adding a new subdivision for primary purpose climate-relevant expenditures, and subordinate functions or activities that have secondary impacts or significant externalities.
- 2. Data model.** The EMCOFOG also identifies disbursements in accordance with the different attributes of interest of a budget item. In practice, it therefore acts as a data model. It is worth stating that each budget item can have a chain of attributes that are tagged in accordance with the different objectives of the decision-maker. Although

the focus of this paper centers on identifying and classifying climate-relevant expenditures, thinking of the matrix as a data model means that an unlimited number of analytical attributes of interest can be identified.

- 3. Analytical model.** The EMCOFOG can also act as an analytical model, given that, as the information is structured in a double-entry matrix, information can be cross-classified between different categories of disbursements. In the first stage, it helps to determine the government's total effort in responding to the climate crisis but, by crossing information between different functions, it also facilitates responses to multiple questions. The latter include, for example, in which areas the greatest government climate spending is being concentrated, whether the effort in terms of economic disbursements has climate components or whether health expenditure responds to climate impacts, and so on. In other words, the EMCOFOG has enormous analytical potential.

The following chapter gives details of the definitions needed to implement the EMCOFOG. It is important to reiterate that this is the methodological proposal of the conceptual framework and the main innovation in the COFOG.



CHAPTER 2.  
**WHAT TO MEASURE**

**T**o identify and thereafter precisely classify climate-related expenditures, a series of clear and consistent definitions is required that can subsequently be built into a classification. Moreover, to make sense for

public policymaking, the definitions must address the demands of decision-makers and, at the same time, be consistent with the existing principles and concepts in the current statistical standards.<sup>11</sup>

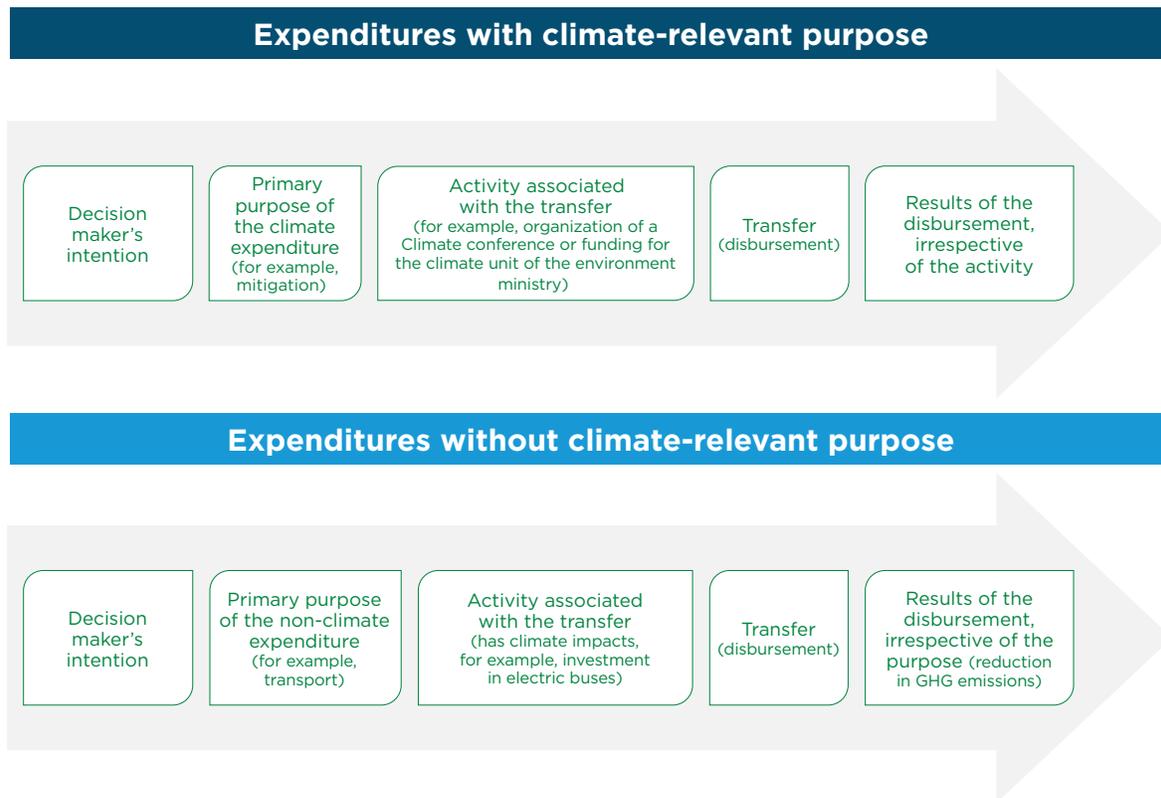
## The Relationship between Expenditures and Activities

The government has two general economic functions: 1) to provide goods and services to the community, mainly on a non-market basis and 2) to redistribute incomes and wealth through transfers (IMF, 2014). Transfers are counterpart entries that diminish assets and increase liabilities and accounting for them has consequences for the government's final position in terms of its wealth. They constitute the concrete expression of government climate management policies and have an effect on climate change, depending on the impact of the expenditures or activities executed.

Figure 2.1 presents the disbursement process, which begins when a principal or decision-maker identifies activities with a certain objective or intention. There are two alternatives: the first consists in a disbursement with an exclusively climate-relevant purpose, which is represented in the figure by the upper flow; the second, reflected in the flow in the lower section, shows what happens when the decision-maker has no explicit purpose or intention associated with a climate action.

In the first case, the transfer must be considered as climate-relevant irrespective of whether the activities executed as a consequence of the disbursement have a direct climate impact; for example, funding provided for a conference on climate change or the climate change unit within the ministry of environment. In the second, a disbursement is presented that has no climate-relevant purpose, but the activity does have a climate impact. In the latter, the objective can be very different from the climate action but, due to the technical nature of the activities executed, there is a climate impact that must be identified. Likewise, in the first case, the expenditure's impact must be evaluated, as well as whether the principal's climate objective has been achieved. In contrast, in the second case, the activity's impact must be assessed. Bearing in mind the distinction and the relationship between expenditures and activities, the different concepts are described below that will be used in the classification system, the climate activities and the different types of expenditures.

<sup>11</sup> For further discussion of this matter, see Pizarro et al. (2021).

**Figure 2.1.** Sequence of Expenditures and Activities

Source: Authors' elaboration.

## Main Concepts: Activities That Are Climate-Relevant due to their Technical Nature

According to the International Standard Industrial Classification (ISIC), productive activities are considered as those that use inputs (for example, capital, labor, energy and materials) to produce products. For the purposes of this paper, a broader definition is used for activities that, by their technical nature, are climate-relevant and are therefore denominated as climate-relevant activities (CRAs). These are actions, processes, services or product generation that—depending on the characteristics of the final products, the type of process or the services they generate—either have an impact on climate change or respond to it.

A variety of activities are related to public climate management. The CRA denomination can identify whether they have an observable or a presumed impact on the state or the management of climate change. These activities can be positive or negative, according to the impact they cause.

Positive CRAs are those that have a positive impact on climate management and can be divided into different categories and subcategories depending on the analytical purposes. The main categories are mitigation and adaptation and, when they cannot be clearly differentiated, they are categorized as mixed. For their part, negative CRAs are those that, by their nature, have substantial, observable and potentially measurable negative

impacts on climate change. It is worth noting that there is no such thing as an expenditure whose avowed purpose is climate-negative; no government would wish to spend resources on increasing global warming or the planet's vulnerability. Consequently, this is a type of secondary purpose expenditure that, due to the nature of the activities executed, can have negative impacts. Box 2.1 defines these activities in detail.

Activities not only have impacts because of their nature and the products or services they generate, but also owing to the processes implemented in their line of production, the

inputs used or the changes they undergo. For example, disbursements that include natural gas-based energy production have a negative impact on the climate; nonetheless, a disbursement that includes this activity under certain assumptions could be classified as mitigation if the expenditure executed delivered a transition from a coal-fired power station to one using natural gas.<sup>12</sup> Therefore, for a full analysis, it is essential to identify the transformation of activities consistent with achieving a decarbonized world, rather than merely observing whether emissions are reduced in the short term.

### Box 2.1. Activities that are Climate-Relevant due to their Technical Nature

CRAs are actions, processes, services or the generation of products that—depending on the characteristics of the final products, the type of process or the services they generate—either have an impact on climate change or respond to it. Such activities can be positive or negative.	
<b>Positive CRAs</b>	Activities with an impact on climate policy that affect the capacity to limit the effects of climate change or its impacts. There are three types of policy responses to climate change: mitigation, adaptation and mixed (IPCC, 2014a; IPCC, 2014b).
<b>Mitigation</b>	Activities that help to stabilize the concentration of greenhouse gases (GHG) in the atmosphere to levels that would avoid a dangerous anthropogenic perturbation of the climate system, by promoting initiatives to reduce, limit or sequester such emissions.
<b>Adaptation</b>	Actions or activities undertaken in the process of adjusting to the real or projected climate and its effects, whose aim is to moderate the damage or exploit any beneficial opportunities. In natural systems, in the process of adjusting to the real climate and its effects, human intervention can facilitate adjustment to the projected climate. In the case of extreme hydrometeorological events, adaptation to climate change corresponds to disaster risk management, insofar as it aims to reduce vulnerability or improve resilience in response to observed or expected changes in the climate and its variability.
<b>Mixed</b>	Activities that mitigate and reduce the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by conserving or increasing the capacity of adaptation and resilience, even though it is impossible to differentiate between activities undertaken with these aims.
<b>Negative CRAs</b>	Activities that have substantial, observable and potentially measurable impacts on climate change. The base is comprised of the activities identified in the list drafted by the Intergovernmental Panel of Experts on Climate Change (IPCC) (Annex 4). For example, coal-burning power stations. There are two types of Negative CRAs: 1) production, distribution and use of fossil fuels, and 2) processes with a highly negative climate impact (agriculture, etc.).

Source: Author's elaboration.

<sup>12</sup> The burning of coal, oil and gas is the dominant source of greenhouse gas (GHG) emissions. The committed emissions from current power stations in Latin America and the Caribbean (LAC) are incompatible with the Paris Agreement (González-Mahecha et al., 2019). The only way to reduce the committed emissions is to close the existing power stations, substitute them with renewable energy capacity, and leave the natural gas, oil and coal reserves in the ground.

To facilitate analysis, Box 2.2 presents a typology of activities which can be direct, adaptive or enabling. The first two have climate impacts due to their nature or the transformation they cause, whereas the third type, enabling activities, includes actions or projects that, while not generating direct climate impacts, can affect climate management because they enable other activities that have positive impacts such as, for example, connecting electricity transmission systems to facilitate renewable energy access and distribution in isolated areas.

The specific CRA can be classified by using a positive and, ideally, agreed list of predetermined projects or activities. This is the methodology

used by the multilateral development banks (MDBs), and which is adopted here. Annex 3 presents a full list of activities, that due to their technical nature, are considered climate-relevant positive. Nonetheless, even with a list of activities, the criterion of who is responsible for classifying them is still needed, as there are cases (for example, enabling activities) in which specialist knowledge is required regarding the intention or the secondary impacts of the classified activities. This list can be completed insofar as this conceptual framework is applied, and a list of activities can be elaborated that is directly relevant for LAC countries.

### Box 2.2. Typology of Activities

To facilitate analysis, activities can be divided into typologies, thus helping to determine an activity's impact. Three types of activities can be identified that generate responses to climate change: direct, modified and enabling.	
<b>Direct activities</b>	Activities or processes that, by their nature, help to reduce or sequester emissions in an attempt to stabilize the concentration of greenhouse gases (GHG) in the atmosphere. For example, solar power generation.
<b>Modified activities</b>	Activities that have substantial, observable and potentially measurable impacts on climate change, which have been adapted through processes or inputs, and that can potentially reduce climate impacts to some degree. For example, transforming coal-fired power stations to natural gas.
<b>Enabling activities</b>	Activities that may or may not generate GHG emissions themselves, but that enable other activities that help to reduce or sequester emissions, or that favor adaptation, through activities that have adapted processes or through new activities, so as to help stabilize the atmospheric concentration of GHGs. For example, electricity storage facilities that contribute to the viability of renewable energy systems.

Source: Authors' elaboration..

Table 2.1 presents the extended classification of climate-relevant expenditures included in the classification of the functions of government (COFOG). In effect, the subfunctions are identified therein that, while classified under non-climate divisions, contain expenditures on activities that presumably generate either negative or

positive climate impacts. Annex 3 gives a general breakdown and thereafter provides detail at the project level. A list of negative activities can be seen in Annex 4 and, in Annex 5, a list of presumable activities and expenditures classified in the COFOG.

**Table 2.1.** Subfunctions with Climate-Relevant Activities

Division	Subfunctions
General public services	There may be climate-relevant expenditures, but lacking subfunctions with activities that generate climate impacts.
National defense activities and services	There may be climate-relevant expenditures, but lacking subfunctions with activities that generate climate impacts.
Public order and safety	There may be climate-relevant expenditures, but lacking in subfunctions with activities that generate climate impacts.
Promotion and regulation of economic development	Subfunctions with CRAs: <ul style="list-style-type: none"> <li>• Agricultural production, forestry, hunting and fishing.</li> <li>• Fuel production and distribution, power generation and distribution.</li> <li>• Non-energy mining, industry and construction.</li> <li>• Transport services.</li> <li>• Communication services.</li> <li>• Services in other economic activities.</li> <li>• Research for service production or provision.</li> <li>• Others not specified.</li> </ul>
Environmental protection	Subfunctions with CRAs: <ul style="list-style-type: none"> <li>• Waste disposal.</li> <li>• Sewage disposal.</li> <li>• Pollution abatement.</li> <li>• Protection of biodiversity and the landscape.</li> <li>• R&amp;D related with environmental protection.</li> <li>• Environmental protection NEC.</li> </ul>
Housing and community amenities	Subfunctions with CRAs: <ul style="list-style-type: none"> <li>• Regulation of housing and community amenities.</li> <li>• Construction and provision of housing and complementary services.</li> <li>• Research in housing, land use, public space, water supply, sewage systems and urban development.</li> <li>• Housing and public space NEC.</li> </ul>
Health	There may be climate-relevant expenditures, but without subfunctions with activities that generate climate impacts.
Recreation, sport, culture and communication	There may be climate-relevant expenditures, but without subfunctions with activities that generate climate impacts.
Education	There may be climate-relevant expenditures, but without subfunctions with activities that generate climate impacts.
Social protection	There may be climate-relevant expenditures, but without subfunctions with activities that generate climate impacts.

Source: Authors' elaboration, based on IMF (2014). NEC: not elsewhere classified.

## Main Concepts: Expenditures

In general terms, government climate-related expenditure is defined as expenditure by the State whose primary purpose or ultimate cause is to tackle climate change-related phenomena. This definition is consistent with the COFOG, the Government Finance Statistics Manual (GFSM) and the logic of the System of Environmental and Economic Accounts (SEEA).

Although there are many expenditures whose primary purpose is not climate management, due to the type of activities financed or executed in accordance with them, they can have substantial impacts on climate change or its consequences. Such expenditures also are of interest for policymakers. Likewise, there are certain climate impact-related expenditures whose purpose is to tackle a public emergency or

speed the recovery of physical or natural capital as a consequence of such impacts. These, strictly speaking, are not climate-related expenditures, but their identification is also of interest to the authorities. These could include, for example, increased spending to tackle disasters caused by the impacts of climate change, or expenditures earmarked to address the increasing incidence of forest fires caused by climate change-related variations in temperatures and precipitations. Such defensive expenditures are important because they reflect the eventual fiscal risks or contingent liabilities associated with climate impacts. Therefore, climate-related expenditures are defined in this paper according to the different analytical categories presented below.

### Primary Purpose Climate-Relevant Expenditures (declared)

In line with the COFOG, this category covers all expenditures whose primary purpose or whose ultimate cause is climate change mitigation or adaptation. Explicit or primary purpose climate-related expenditures may be classed as mitigation, adaptation or mixed. As previously shown, although some activities, by their nature, can mitigate or support adaptation to climate change, defining a climate expenditure does not depend on the intrinsic nature of the activity but, rather, on the intention of the principal or decision-maker. Consequently, the criterion for identifying such expenditures is the explicit declaration of said authority.

In effect, it is the decision-maker who deliberately specifies the objective of a transfer and, therefore, the aim of the expenditure. Precisely identifying the principal's intention or motivation is difficult, as there is very often more than one purpose behind the execution of a program, project or public policy. However, from

the perspective of a classification of functions coherent with the COFOG, there may only be one objective, or one intention and this logic is maintained here. Primary purpose climate-related expenditures must be registered in the classification of climate-related expenditures. This is essential in order to avoid double accounting and to maintain the exhaustive logic of expenditure classification.

For practical classification of such expenditures, therefore, a criterion is proposed based on the decision-maker's explicit declaration, that is, only those expenditures that have been explicitly designated, in an official, legislative or political declaration, as expenditures mainly oriented to climate action, will be considered as climate-related expenditures.

Examples worth considering might include commitments to nationally determined contributions (NDCs), the decarbonization plan, or expenditures disbursed to fund the

organization of climate conferences. These will also therefore be denominated as declared climate-related expenditures.

At the same time, these expenditures can be divided according to the policy response; in effect, these expenditures must be identified as mitigation, adaptation, or as mixed climate-related expenditures if the categories cannot be clearly distinguished. Box 2.3 presents the definitions of explicitly declared climate-relevant expenditures, that is, those whose primary

purpose is climate action. Further below, Table 2.3 contains the full classification linked to the primary purpose, with all its categories and subcategories, while the catalog of accounts, which contains a detailed definition of each one of the categories, may be found in Annex 2. These expenditures are already registered in the current budget systems; however, they must be reclassified based on their function, as indicated in Figure 1.1 and Table 1.2.

### Box 2.3. Definitions of Declared or Primary Purpose Climate Change Expenditures

Primary purpose climate expenditures, based on the declared intention of the principal
<p><b>General definition</b></p> <p>The criterion of principal's intention must contain, at least, one of the following characteristics:</p>
<ul style="list-style-type: none"> <li>• <b>Purpose in a limited sense.</b> The decision-maker's main motivation. For example, transfers to fund activities included in the national climate change mitigation or adaptation plan.</li> <li>• <b>Purpose established by law.</b> For example, the declaration of objectives set out in the budget law.</li> <li>• <b>Purpose with clear intentions.</b> For example, by public declarations, nationally determined contributions (NDCs) or others. For example, commitments in the NDCs that have been presented to the convention.</li> </ul>
<p><b>Specific definition</b></p> <p>Expenditures whose primary purpose is focused on climate actions, such as those listed below:</p>
<ol style="list-style-type: none"> <li>1. <b>Mitigation expenditures.</b> Disbursements with a firm declaration of intent by the principal and whose primary purpose is climate change mitigation. For example, a transfer to close a coal-fired power station as part of the decarbonization plan.</li> <li>2. <b>Adaptation expenditures.</b> Disbursements backed by the principal's declaration of intent and whose purpose is adaptation to climate change. For example, additional investment in ports and other coastal infrastructure to tackle the problem of rising sea levels.</li> <li>3. <b>Mixed expenditures.</b> Disbursements backed by the decision-maker's declaration of intent and whose primary purpose is climate action, although it is impossible to say whether for mitigation or adaptation. For example, administrative costs incurred by the climate action unit that coordinates climate policy in the ministry of the environment.</li> </ol>

Source: Authors' elaboration, based on the environmental goods and services sector (EGSS) of the System of Environmental and Economic Accounts (SEEA).

## Secondary Purpose Expenditures

As previously mentioned, there is a series of disbursements whose primary purpose is not climate action, but that respond to climate impacts or contain activities that are climate-relevant (CRA) due to their technical nature. These are considered to be secondary purpose

expenditures because their main motivation is not climate action in the sense in which such actions are defined in the classification of the functions of government. Box 2.4 presents a precise definition of these expenditures, and thereafter describes them in detail.

**Box 2.4. Definitions of Secondary Purpose Climate Expenditures****Secondary purpose expenditures (CRAs)**

These are expenditures whose motivation or main intention is not to tackle climate change, but that, due to the nature of the activities executed within this framework, generate positive identifiable and measurable impacts on such change. These can be mitigation, adaptation or mixed expenditures. They can be further subdivided into the same categories recognized in the classification of primary purpose climate-related expenditures. They should only be identified; they must not be reclassified as climate-related expenditures within the extended COFOG.

**Secondary purpose expenditures (recovery and emergency)**

These are expenditures whose main motivation or intention is not to tackle climate change, but arise in response to, or as a consequence of, the impacts associated with such change. These may be emergency or recovery expenditures. Moreover, they can be subdivided into subcategories considered analytically relevant. They should only be identified; they must not be reclassified as climate-related expenditures within the extended COFOG. Recovery is understood to be the reestablishment or improvement of the means to life and health, as well as the goods, systems and economic, physical, social, cultural and environmental activities of a community or society affected by a disaster, according to the principles of sustainable development and of “building back better”, with a view to avoiding or reducing the risk of future disasters (United Nations, 2016).

Source: Authors' elaboration.

***Secondary Purpose Expenditures: Climate-Relevant Activities***

As previously described, there are certain activities that generate impacts on the responses to climate change. Therefore, expenditures that fund activities that, due to their technical nature, are climate-relevant are considered to be secondary purpose climate expenditures. The main motivation or intention of such expenditures is not to tackle climate change but, owing to the characteristics of the activities executed, they do have positive measurable and identifiable impacts on such change. As previously highlighted, these can encompass mitigation, adaptation and/or mixed measures.

Furthermore, these expenditures can be subdivided into the same categories recognized

in the classification of primary purpose climate expenditures presented in Table 2.3. However, in contrast to the primary purpose climate expenditures, these can only be identified by using the extended matrix of the classification the functions of government (EMCOFOG) and must not be reclassified as climate-related expenditures (primary purpose) within the extended COFOG. For example, investment in renewable energy has positive climate relevance, but if it is not identified with the explicit objective of mitigation, it must be considered as a secondary climate expenditure (CRA) and continue to be listed as an energy generation function in the economic division of the COFOG.<sup>13</sup>

<sup>13</sup> By broadly defining CRAs, from the conceptual point of view, it would be feasible to identify those that report a negative impact on the climate, such as energy produced by burning fossil fuels.

### Secondary Purpose Expenditures: Recovery and Emergency

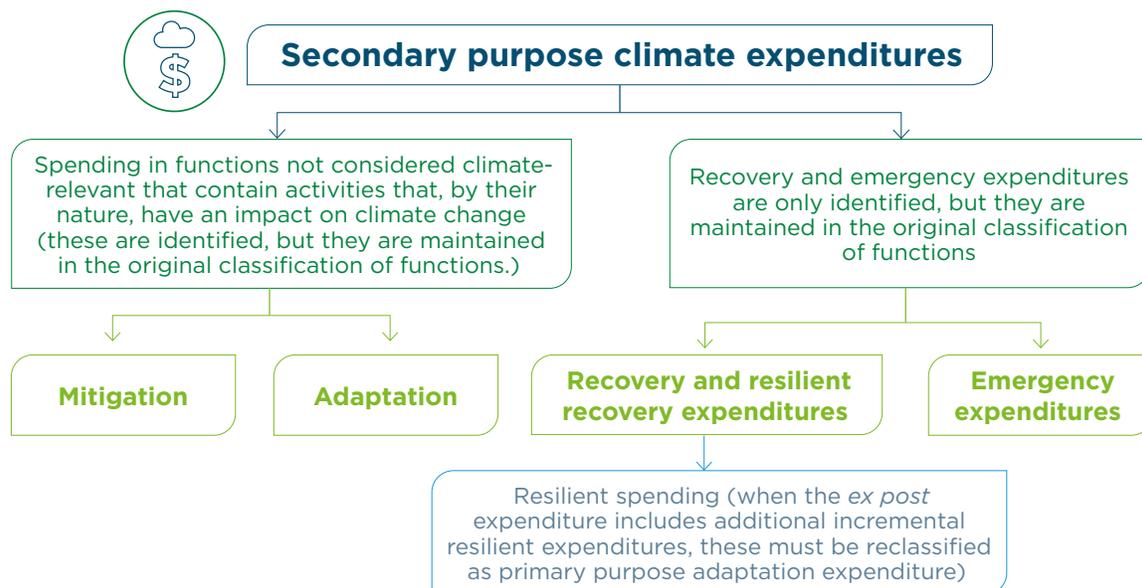
Recovery and emergency expenditures are part of defensive spending and refer to disbursements made to address the losses and damage caused by the physical impacts of climate change. The latter are related to individual climate change-related events with a high impact and a low probability, or else a high probability and a moderate impact, which have generated an identifiable loss (Lacambra et al., 2015). The primary purpose of the expenditure used to tackle such a situation is dealing with the subsequent emergency or restoring physical capital following the impact. It cannot therefore be treated as primary purpose climate spending according to the COFOG criteria for functions.

Nonetheless, such expenditures must be identified and are crucial when it comes to analyzing the consequences of climate change,

particularly in relation to contingent fiscal liabilities, and these are undoubtedly climate-related expenditures in the broader sense of the word. In any case, as already mentioned, they cannot be considered as primary purpose climate expenditures according to the conceptual logic of the COFOG.<sup>14</sup>

Therefore, although identification depends on an explicit declaration by the principal, in this case, if such expenditures are indeed linked to a response to physical impacts caused by adverse weather events, they should also be considered as secondary purpose expenditures. There are two types of disbursements: those earmarked for tackling climate emergencies and those linked to recovery activities (see Box 2.5). Figure 2.2 presents the complete structure of secondary purpose climate expenditures.

**Figure 2.2.** Structure of Secondary Purpose Climate Expenditures



Source: Authors' elaboration.

<sup>14</sup> This approach to classification generates confusion and controversy. Consider, for example, health expenditures. In a country with high levels of atmospheric pollution, some public health expenditures arise as a consequence of the impacts of pollution, but they are classified as health costs, irrespective of their origin. In effect, classifying expenditures as losses associated with climate change is equivalent to classifying health expenditures caused by pollution as environmental expenditures.

**Box 2.5. Climate Recovery and Emergency Expenditures****1. Climate recovery expenditures**

Expenditures incurred to recover, repair, restore or rebuild the means to life and health, as well as the goods, systems and economic, physical, social, cultural and environmental activities of a community or society affected by a disaster (United Nations, 2016). They are gross fixed capital formation (GFCF) expenditures or current expenditures. There are two types:

- a. Recovery expenditures.** These are expenditures incurred to recover physical, social, cultural and environmental assets damaged as a consequence of adverse weather impacts. For example, spending to restore physical infrastructure (bridges, ports, roads, housing, etc.) following a physical impact caused by climate change.
- b. Resilient recovery expenditures.** These are expenditures incurred to improve, strengthen or perfect physical, social, cultural and environmental assets with the aim of attenuating the potential impacts of adverse weather events and strengthening the resilience capacity of physical or environmental assets. Physical assets recovered thanks to climate change defensive actions are considered to be adaptation expenditures. For example, spending on flood barriers in flooded areas due to a catastrophic adverse climate event. They must, therefore, be considered as a primary purpose expenditure.

**Rehabilitation.** Stage of the recovery that corresponds to reestablishing the means of life and health, as well as of the goods, systems and economic, physical, social, cultural and environmental activities interrupted or damaged by the disaster. This is a temporary stage or situation in which help is still being given to the population, while at the same time reestablishing the operation of vital services, such as power, water, roads and communications as well as other basic services, such as health and the supply of food and provisions.

**Reconstruction.** Stage of the recovery that corresponds to the process of restoring, repairing and strengthening the means of life and of health, as well as the goods, systems and economic, physical, social, cultural and environmental activities affected by a disaster.

**Resilience.** Defined as the capacity of a system and its components to anticipate, absorb, adapt to or recover from the effects of a dangerous phenomenon, in a timely and efficient way, while still overseeing the conservation, restoration or improvement of basic essential structures and functions.

**2. Climate emergency expenditures**

These are current or capital expenditures incurred to tackle disaster situations caused as consequence of the climate impacts. Incurred in response to health needs, temporary accommodation and policing operations to tackle an emergency caused by a climate change-related event.

Source: Authors' elaboration, based on Lacambra et al. (2015).

**Analytical Categories**

To facilitate subsequent analysis, a series of definitions of an analytical character is presented below that classifies and reclassifies the previously described categories.

***Climate-Relevant Expenditures***

This heading includes all expenditures related with climate action, irrespective of their purpose or impact. Among them, it is worth mentioning the expenditures whose primary purpose is to address climate phenomena, that is, which have been declared with that purpose, and secondary purpose climate-related expenditures.

There may also be expenditures among this set that contain activities that cause positive and negative climate impacts. Figure 2.3 presents the structure of climate-relevant expenditures.

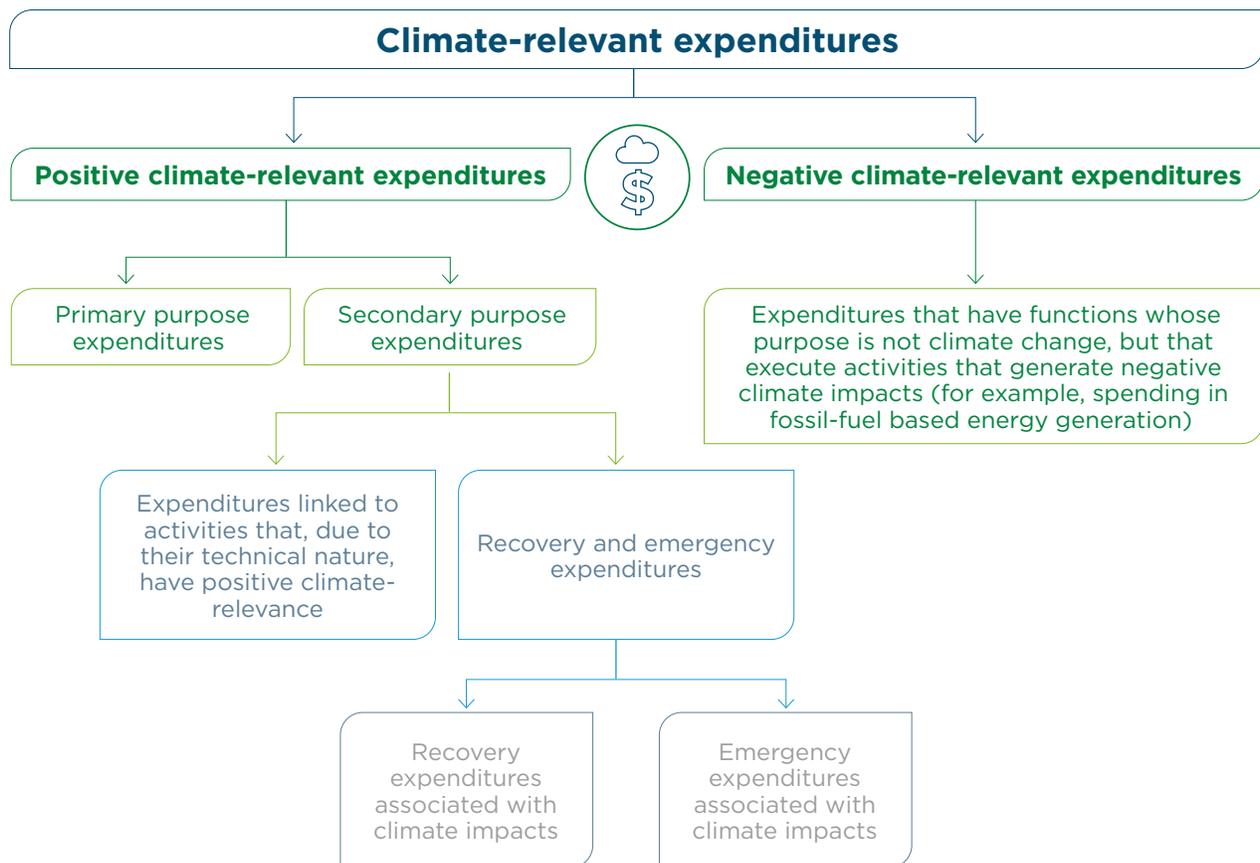
### Positive climate-relevant expenditures

Positive climate-relevant expenditures include all expenditures that, whether due to their intention or to the activities executed, limit climate change or its impact. The sum of these expenditures should guide public climate policies and the different categories and subcategories included in the classification. In fact, these classification criteria, which are detailed in the following section, constitute the basis for ordering, presenting and assessing direct and indirect climate management.

### Negative climate-relevant expenditures

Negative climate-relevant expenditures are those linked to activities with negative impacts for climate change. They must only be identified, and do not represent a reclassification according to the categories established in the COFOG. According to the IPCC, two groups of activities are proposed within these parameters: those related with fossil fuel combustion processes and high-impact processes not associated with energy production (see Annex 4).

**Figure 2.3.** Structure of Climate-Relevant Expenditures



Source: Authors' elaboration.

## Classification of Climate Expenditures

A system for classifying climate-relevant expenditures can therefore be structured according to the above definitions. Table 2.2 presents the full structure of said system. It is noticeable that only the climate-related expenditures backed by the principal's declaration can be considered primary purpose expenditures and, consequently, are coherent with the major COFOG systems.

At the same time, three subfunctions may be identified: mitigation, adaptation and mixed. To facilitate analysis, the subcategory of "climate disasters and risk management" is introduced. This adaptation expenditure is aimed specifically at attenuating the physical impacts of climate change and is conventionally included in the adaptation subfunction. However, due to the characteristics of each country, this is likely to be particularly important and, therefore, it is considered as a complete subfunction. Table 2.3 and 2.4 present the full classification.

As already noted, secondary purpose expenditures or those associated with impact activi-

ties are not climate-related expenditures in the sense of functions, but, but as expenditures that have an impact. Consequently, they depend on the type of activity carried out. Nonetheless, they can be classified according to the subcategories included in the classification of climate-related expenditures. Note that in Table 2.2, recovery expenditures with an adaptive or resilient intention must be reclassified as primary purpose expenditures. Table 2.3 presents the categories and subcategories of climate-relevant expenditures, both primary and secondary purpose, in CRAs. Finally, Table 2.4 shows the expenditures associated with climate impacts. These are considered as secondary purpose expenditures. However, the proposed list must be considered as guidance only, while the rest will depend on the specific situation of each country. In this case, final classification will be conditioned by the principal's intention, if the latter declares, during budget execution, that this is, in effect, an expenditure related with a climate impact.

**Table 2.2.** Structure of the Climate Expenditures Classification System

		<i>Ex ante</i> expenditures in relation to an extreme weather event			<i>Ex post</i> expenditures in relation to an extreme weather event			
		Expenditures that respond to climate change			Expenditures that increase climate change	Expenditures that respond to the impacts of climate change (defensive expenditures)		
Climate-relevant expenditures, irrespective of impact or purpose	Positive climate-relevant expenditures	Primary purpose climate expenditures	Mitigation	Adaptation	Mixed activities		Recovery and resilient recovery (resilient reconstruction)	
				Disaster management and resilience				
	Expenditure in positive climate-relevant activities (secondary purpose)	Mitigation	Adaptation	Mixed activities				
				Disaster management and risks posed by climate phenomena				
	Expenditures to tackle climate impacts (secondary purpose)					Recovery	Emergency	
	Negative climate-relevant expenditures				Anti-mitigation (negative mitigation)			

Source: Authors' elaboration.

**Table 2.3.** Classification of Primary Purpose Climate Expenditures

1. Mixed	3. Adaptation and disaster risk management
1.1 Administration of climate change management	3.1. Administration <sup>a</sup>
1.2 Financial instruments	3.1.1 Governance
1.2.1 Non-life/general insurance	3.1.2 Risk identification and knowledge
1.2.2 Financial services	3.1.3 Preparations for response/monitoring adaptation and/or risk
1.3 Regulatory aspects	3.1.4 Preparations for emergency response
1.3.1 Laws; 1.3.2 Auditing; 1.3.3 Others NEC	3.1.5 Others NEC
1.4 Climate change education, training and communication	3.2 Financial protection and instruments
1.5 Environmental and biodiversity actions with impacts on climate change mitigation and adaptation	3.2.1 Non-life/general insurance
1.6 Others NEC	3.2.2 Financial services
2. Mitigation	3.3 Adjusted or transformed productive processes (economic affairs) <sup>b</sup>
2.1 Mitigation management administration and information	3.3.1 Agriculture, livestock, fishing; 3.3.2 Silviculture
2.2 Reduction of pollution from productive processes	3.3.3 Mining; 3.3.4 Manufacturing; 3.3.5 Gas and water
2.2.1 Agriculture, livestock, fishing;	3.3.6 Construction
2.2.2 Silviculture; 2.2.3 Mining	3.3.7 Energy and fuel; 3.3.8 Transport
2.2.4 Manufacturing; 2.2.5 Gas and water	3.3.9 Others NEC
2.2.6 Construction; 2.2.7 Others NEC	3.4. Environment and biodiversity
2.3. Energy and energy efficiency	3.4.1 Waste and pollution
2.3.1 Energy efficiency	3.4.1.1 Wastewater treatment
2.3.2 Transformed energy	3.4.1.2 Land use
2.3.3 Renewable energy; 2.3.4 Fugitive emissions	3.4.1.3 Air pollution
2.3.5 Fuel; 2.3.6 Others NEC	3.4.2 Biodiversity and protected areas
2.4 Transport	3.4.3 Other NEC
2.5 Environment and biodiversity	3.5 Housing and urban/community development for adaptation
2.5.1 Waste and decontamination	3.6 Human health for adaptation
2.5.1.1 Water; 2.5.1.2 Land; 2.5.1.3 Air	3.7 R&D
2.5.1.4 Industry and/or CO <sub>2</sub> or GHG capture technology	3.8 Others NEC
2.5.2 Biodiversity and protected areas	
2.5.3 Changes of land use 2.6 R&D	
2.7 Others NEC	

Source: Authors' elaboration. NEC: not elsewhere classified.

**a.** Risk reduction policies are often geared towards multiple threats, which are usually impossible to identify as threats specifically related with adverse weather phenomena. Here, they are classified together; nonetheless, if possible, a distinction should be drawn between threats linked to adverse weather phenomena and other types of unrelated threats. **b.** These expenditures refer to disbursements earmarked for public works. Everything that corresponds to design, planning, evaluation and study must be classified under Administration.

**Table 2.4.** Classification of Recovery and Emergency Climate Expenditures (secondary purpose or presumed climate-relevant)

4. Emergencies (weather events)	5. Recovery (weather events)
4.1 Security, defense and control of the emergencies	5.1 Recovery management and planning
4.1.1 Safeguarding the population and first response	5.1.1 Recovery plan and activity design
4.1.2 Combat and/or control of emergencies	5.1.2 Evaluation of damage, direct losses and impacts
4.2 Supply of basic services	5.2 Fixed assets
4.3 Health	5.2.1 Infrastructure works
4.4 Social protection	5.2.2 Buildings and engineering works
4.5 Others NEC	5.2.3 Machinery and equipment
	5.2.4 Cultivated biological resources
	5.2.5 Others NEC
	5.3 Natural capital
	5.3.1 Land and property
	5.3.2 Non-cultivated biological resources
	5.3.3 Others NEC
	5.4 Others NEC

Source: Authors' elaboration.

Note: Emergency and recovery expenditures are considered as presumably climate-relevant in the sense that, although they focus on tackling emergencies or disasters caused by extreme weather events, their association with climate change cannot be confirmed until the event has been adjudged to be attributable to "climate variability" rather than to climate change itself. This latter can only be confirmed if there has been a statistically significant change in the state of the climate over the long term (see Pizarro et al. [2021] for further discussion of this topic). NEC: not elsewhere classified.

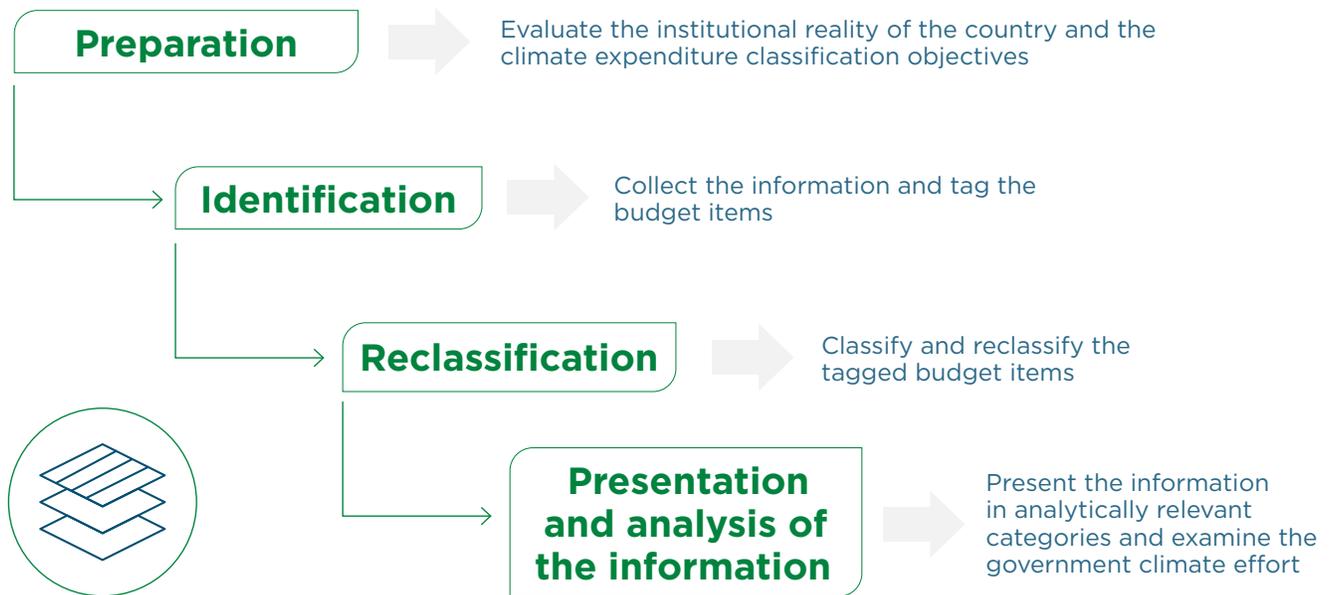


CHAPTER 3.  
**HOW TO MEASURE**

This chapter presents the steps to follow for gathering data, as well as practical recommendations for identifying climate-related expenditures. The steps are divided into a minimum of four stages, and

two data collection alternatives are considered, based on the strategic option chosen by authorities to conduct either *ex ante* or *ex post* classification of expenditures. The stages mentioned are shown in Figure 3.1.

**Figure 3.1.** Stages of the Data-Gathering Process



Source: Authors' elaboration.

## Strategic Options for Budget Data Classification

The aforesaid stages involve a minimum of eight generic steps. Their implementation, however, depends on the option that the government takes with respect to its strategic commitment to the classification of budget data and, consequently, to any given collection procedure.

In general terms, there are only two possible data collection procedures. This depends on the extent to which the authorities are willing to

intervene in the budget process and especially in the budget files, annexes and request forms and the classification of expenditures. The two procedures are as follows: 1) a mechanism for tagging at source or *ex ante* that automatically permits expenditures to be classified and 2) *ex post* classification carried out by reevaluating and reclassifying already-classified budget data.

### Alternative 1: *Ex Ante* Classification

The first alternative involves incorporating the functional dimension into the basic accounting records. Specifically, this means establishing a climate-relevant classification of purpose and activities within the classification system currently in force in the national jurisdiction, an exercise whose viability will depend on the budgetary process of the country in which the identification is carried out. To these ends, steps must be taken

at the preparation stage, which are described with greater detail below, establishing different fields for the attributes of each budget item. Although the first steps are complex and extensive, and require intervening in the budget process, the subsequent classification of expenditures will follow immediately and help to automatically generate a database and an extended matrix of the classification of the functions of government (EMCOFOG).

### Alternative 2: *Ex Post* Classification

In the second alternative, expenditures that have already been classified *ex post* must be tagged and reclassified in conjunction with the line ministries, who are aware of the objectives of the expenditures and the activities committed for their execution. This can be done by using data already classified by functions, or without classification. For this purpose, the data must be tagged based on the presumed functions of the program or the budget project, taking as a guide the classifications presented in Annex 2 and the climate-relevant activities (CRAs) registered in Annex 3.

For this classification, not only is a budget database required but, moreover, the support is needed from the main agencies responsible

for executing the climate-relevant expenditure. This would confirm that the expenditures have been correctly reclassified and that the activities executed have been adequately identified.

Table 3.1 shows that both alternatives have advantages and disadvantages. However, any decision regarding how to implement the methodology will depend on the institutional administrative reality of the jurisdiction implementing the project. Whichever option is chosen, the established stages will not undergo further changes, although the specific steps will be affected throughout the preparation and data-gathering process. Table 3.2 presents the differences, and the steps relevant to each one of the stages are dealt with in greater depth below.

**Table 3.1.** Advantages and Disadvantages of the Different Data-Gathering Approaches

	<i>Ex ante</i> classification	<i>Ex post</i> classification
Advantages	<ul style="list-style-type: none"> <li>Common criteria</li> <li>Internal work</li> <li>Less costly over the long term</li> <li>Easier to maintain the effort permanently</li> </ul>	<ul style="list-style-type: none"> <li>Different criteria</li> <li>Different consultants</li> <li>Expensive over the long term</li> <li>Difficult to maintain the effort permanently</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>High investment</li> <li>High institutional cost</li> <li>Results only seen over the long term</li> </ul>	<ul style="list-style-type: none"> <li>Low investment</li> <li>Low institutional cost</li> <li>Rapid results</li> </ul>

Source: Authors' elaboration

**Table 3.2.** Differences in the Classification Procedure, according to each Option

	<b>Alternative 1: <i>Ex ante</i> classification of expenditures</b>	<b>Alternative 2: <i>Ex post</i> classification of expenditures</b>
<b>Stage 1: Preparation</b>	Requires intervention in the budget request files, forms and/or annexes, establishing new climate classifications and the budget item attributes.	Only requires an analysis of the budget process to identify where the presumed climate-relevant expenditures are to be found.
<b>Stage 2: Collection</b>	The data-gathering process is automatic. The budget data are already classified at source. The data model only needs to be automated.	The collection of data is a complex process requiring the tagging of presumed climate-related budget data that already have been classified in other categories. Although part of this process may be automated, as there is no <i>ex ante</i> classification, expenditures or budget items must be reviewed.
<b>Stage 3: Reclassification</b>	Reclassification is carried out automatically alongside data collection.	The tagged budget data must be reclassified.
<b>Stage 4: Analysis</b>	The output tables are the same.	The output tables are the same.

Source: Authors' elaboration.

## Steps in the Data-Gathering Process

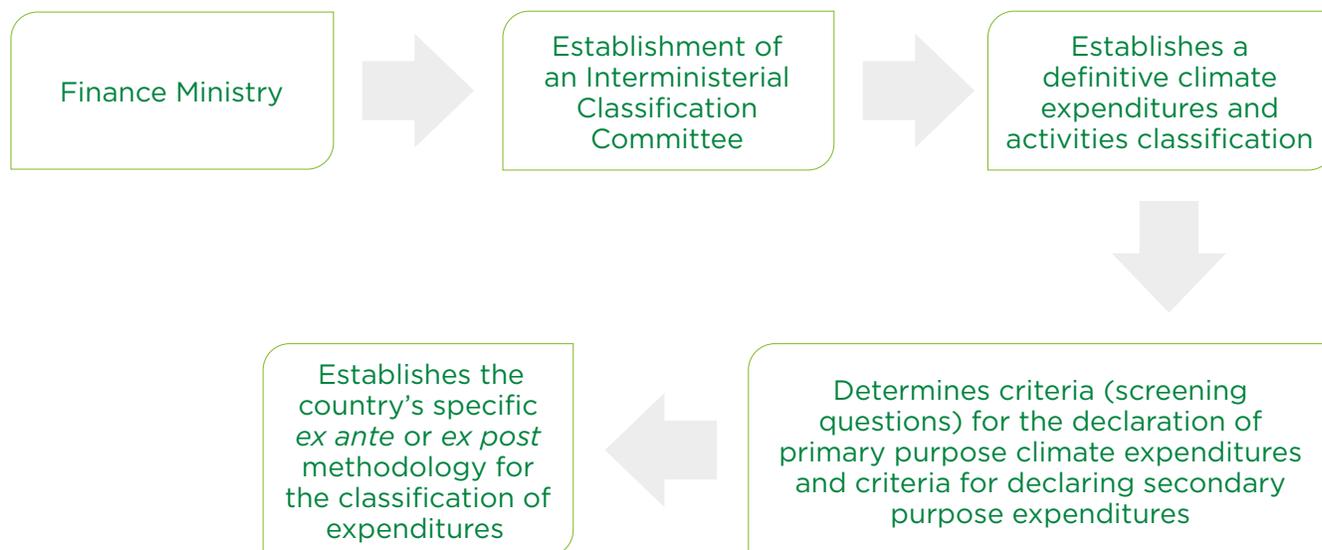
### Stage 1: Preparation

#### *Step 1: Identifying relevant classification institutions and agreeing on a classification system*

In general, the chief public institution in Latin American and Caribbean (LAC) countries responsible for budget formulation and execution is the finance ministry or the treasury, alongside the budget directorate. Therefore, any effort made to classify and evaluate climate-relevant expenditure must undoubtedly require the participation of these institutions.

The finance ministry lacks the technical capacity to classify all types of expenditures or the impacts of the activities executed, making it essential to coordinate with the relevant institutions that execute CRAs to define the procedures and

classification systems and the upgrading of files, annexes or classification forms. For this reason, the finance ministry should take responsibility for convening and coordinating the line ministries to create an Expenditures Classification Committee (such as those already existing in many countries). Based on this conceptual framework, the Committee should establish the definitive relevant climate management classification and request records of expenditures from the line ministries, at the time of the request, on the basis of the agreed classifications. Figure 3.2 presents a model process.

**Figure 3.2.** Possible Process for Developing Definitive Classifications

Source: Authors' elaboration.

### ***Step 2: Building consensus on classification criteria and attributes (other classifications) of the target data***

While this work presents a classification of climate expenditures and a list of CRAs, before making the definitive classification, the finance ministry, in conjunction with the Expenditures Classification Committee or a similar government institution, can establish a definitive expenditures classification that adjusts to the reality of the country, as well as of the activities that, due to their technical nature, have a significant climate impact in the country.

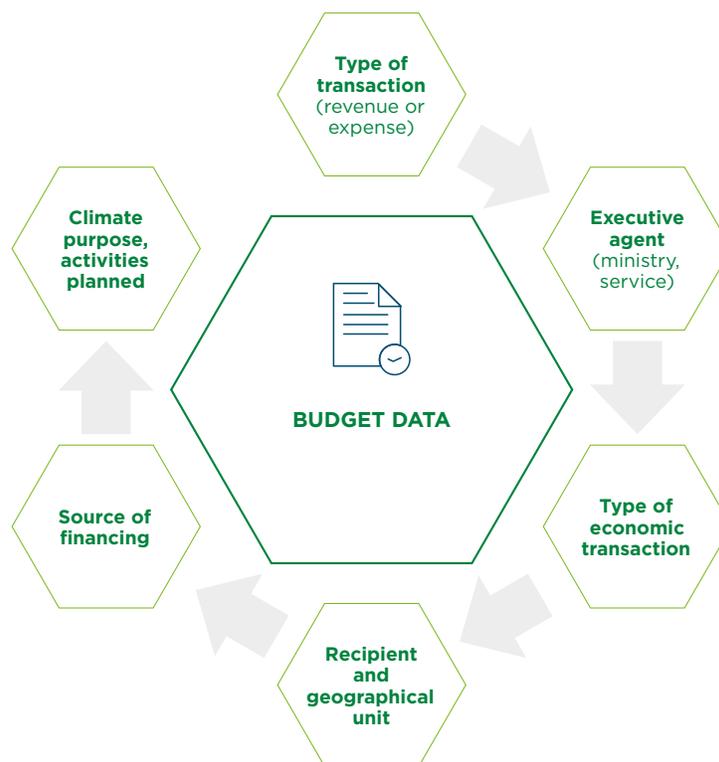
The finance ministry will require support from the line ministries, both for recording the expenditures and activities executed and for adjusting the classification presented in this paper to the local conditions. This is necessary whichever classification option is chosen: *ex ante* or *ex post*. The task of agreeing on the screening questions used to identify the CRAs is particularly important.

Likewise, the finance ministry, alongside the Committee, must establish a series of attributes ascribed to the budget item that will subsequently help to implement the multiple classifications used, to which the definition of purpose and the CRAs are subsequently added. This helps to increase the capacity to analyze climate-related expenditures during budget execution. Each item must include attributes that relate to the characteristics of the environmental and/or climate policy, its objectives, its management model and the population groups to which the resources are targeted, on top of the customary attributes requested by the budget authority. With this end in mind, the results obtained will permit a more complete analysis for both the policymaker and for the user in general. In the case of *ex ante* classification, new attributes may be incorporated, but in the case of the *ex post* evaluation, as there

is no intervention in the budget process, only the most relevant attributes already registered for evaluating and analyzing the budget information for climate-relevant expenditures can be identified. The following are some of the attributes that should form part of the database (see Figure 3.3):

- **Level of government.** The level of government to be evaluated must be defined: central or state government, decentralized institutions, local governments or a combination of these.
- **Function and/or activity.** The function or activity is related with the classification of climate-relevant expenditures. The way in which the information is related is based on a review of the objectives of the programs, projects and lines of work, information that can usually be obtained from the description of the budget lines. It is worth remembering that the criterion of causality is given by the principal responsible for the expenditure and, in this case, is reflected in this objective, that is, if the primary purpose of the expenditure is to tackle climate change, then the information in the programmatic structure must clearly reflect this objective.
- **Type of transaction.** This is where the revenue or the expenditure is defined. Although herein the focus is on measuring the latter, certain transactions relative to revenue could also be considered, such as taxes and international cooperation, which are of interest for this analysis and should therefore be considered in the structure of the database.
- **Classification of functions of government.** This information is already defined or compiled in each country according to the guidelines provided by the Government Finance Statistics Manual (GFSM) of the International Monetary Fund (IMF).
- **Geographical unit.** This unit corresponds to the political or administrative classification existing in each country.
- **Source of financing.** This source corresponds to the categories of levels of government or institutional sectors. That is, it may correspond to government (central, regional and/or local), nonprofit institutions serving households (NPISH), households, financial companies, non-financial companies, or external sources.
- **Executive agent.** This agent uses the same classification as the institutional sectors.
- **Recipients.** Those in receipt of the goods and services distributed should be identified. Recipients may be grouped according to income level, age, geographical location, gender, ethnic-cultural group or other characteristics.
- **Economic transactions.** The main economic transactions considered in these measurements are detailed in this paper; however, for greater detail, the guidelines of the National Accounts System (NAS) (United Nations, 2008) should be followed.
- **Estimation method.** This is a methodology for classifying fractions of a transfer when the expenditures involve more than one activity. One methodology employed is proportionality, which is dealt with in greater detail below.
- **Comments.** These include information that enables data traceability and/or tracking for the following years.

As already mentioned, these are some of the attributes that the budget data must contain for the analysis of climate-relevant expenditures and their relationship with other variables of interest. Data collection and analysis may proceed once the minimum attributes have been defined and/or agreed (Figure 3.3).

**Figure 3.3.** Budget Data Attributes (other classifications)

Source: Authors' elaboration.

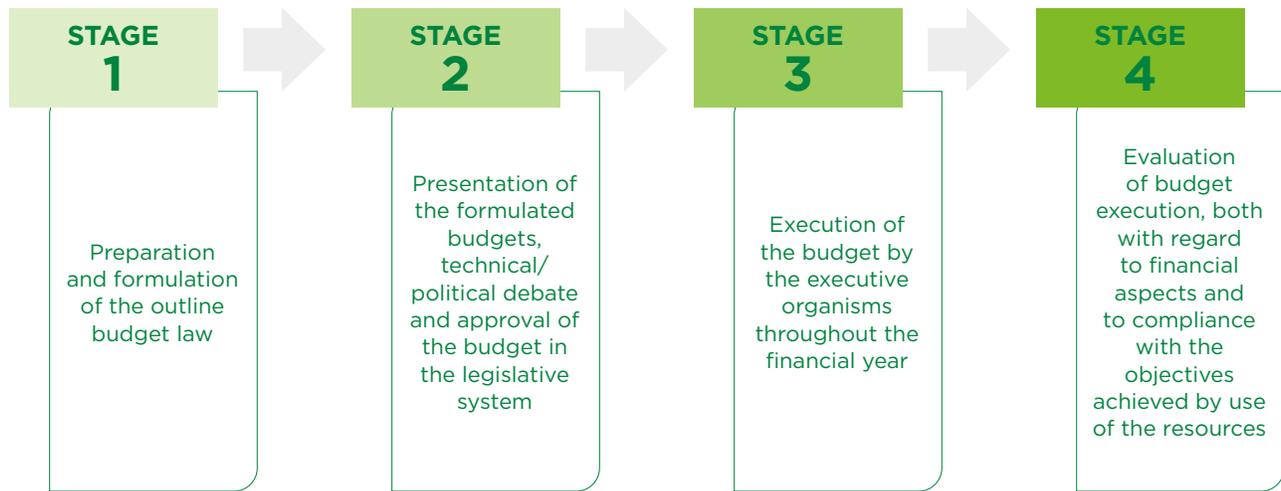
### ***Step 3: Deciding the scope and evaluating the budget process***

To be effective and efficient, whichever methodological approach is taken to gather budget data means recognizing and adapting to the specific budgetary process of the country in which it is implemented, with all of its stages and requirements. This, in turn, depends on the level of government being studied. In this paper, it is assumed that the expenditures are classified for the general government, but this can also be applied in the subnational ambit or at both levels.

In the event that all levels of government are included, care must be taken to avoid double accounting, which would include the same expenditure in different levels of government (once from the perspective of the financing unit and then again from the execution perspective).

When different levels of government are covered, a consolidated budget approach must be maintained.

In effect, although different budget models and processes exist in the LAC region, all the countries have a certain system, even though its scope may be limited, which establishes an *ex ante* evaluation function for public programs. The unit responsible for such a system will be the key institution for demanding from the sector authority the requirements needed to classify the requested expenditure or sufficient information to enable a central authority to carry out an evaluation. Four stages usually identified in the budget cycle can facilitate the classification process (Figure 3.4).

**Figure 3.4.** Budget Cycle in Latin America and the Caribbean

Source: Authors' elaboration.

In the first stage, a process of preparing and formulating the outline budget project takes place, in which case the services or sector organisms request budget resources for their activities. The budget evaluation authority, in turn, assesses the appropriateness of the expenditure request on the basis of the criteria of efficiency, effectiveness and compliance with the government program. If the authorities have opted for *ex ante* classification, this is the moment in which expenditure classification criteria, or information for subsequent classification may be introduced, using a form that allows the activities associated with that expenditure to be tracked in accordance with the previously presented definitions and classifications.

By way of example, in the case of Chile's budget process, every program requires a "public program *ex ante* evaluation file" to be completed and delivered to the budget directorate. This file contains information regarding the program, its relevance, its impact and other data related with its characteristics. It is at this point that relevant information can be provided for classifying the

expenditure associated with the program or activity in question.

In the case of *ex post* classification, adequate knowledge of the budget process can help to establish which institutions are most important when it comes to executing presumed climate-relevant expenditures. For example, in the pilot case in Costa Rica, a detailed analysis of the budget process and current state revealed that the main institutions responsible for climate management-related expenditures are located in decentralized agencies, such as the National Forestry Financing Fund (FONAFIFO) (Fondo Nacional de Financiamiento de la Forestación). The data-gathering process must therefore involve these institutions, as the central government budget database will be unable to identify the main climate-relevant expenditures. This prior evaluation stage is crucial, in the case of *ex ante* evaluation, for identifying the moment in which to incorporate the classifications into the budget process and, in the event of *ex post* evaluation, to determine where best to direct data-gathering efforts.

**Table 3.3.** Stages of the Preparation Phase, according to each Option

	<b>Alternative 1: Ex ante classification of expenditures</b>	<b>Alternative 2: Ex post classification of expenditures</b>
<b>Step 1: Identification of institutions relevant for classification</b>	The role of the finance ministry or the Treasury in classification is crucial. This will be the key institution to carry out data gathering and classification. However, technical support is needed to establish the classification categories, screening questions and to identify the activities. Technical support from the line ministries will therefore be essential. This may be achieved through <i>ad hoc</i> consultations or by setting up a Classification Committee.	<i>Ibid</i>
<b>Step 2: Agreement of a system of classification and attributes (to implement other classifications) of the target data</b>	In this case, new attributes may be incorporated. When considering the analytical aims of the identification and classification expenditures, any additional attributes must be identified that can be implemented to facilitate analysis of the information.	Identify already-classified relevant attributes. When considering the analytical objectives expenditure identification and classification, it is necessary to identify the relevant attributes used that can be implemented to facilitate analysis of the information.
<b>Step 3: Decision on coverage and evaluation of the budget process</b>	Decide on the coverage to clarify and characterize the budget. The objective is to identify the ideal moment to intervene in the budget process with an annex, form or field for <i>ex ante</i> classification.	<i>Ibid</i> The aim is to identify which institutions gave presumed climate-relevant expenditures, in order to facilitate the data-gathering process.

Source: Authors' elaboration.

## Stage 2: Identification and Collection of Information

### Step 4: Data capture and tagging

The data-gathering process is a significant challenge when it comes to implementing identification and classification methodologies for statistical categories. As already mentioned, in general terms, there are only two possible procedures in gathering data. The first is a classification mechanism at source or *ex ante*, while the second is an *ex post* classification, based on a reevaluation and reclassification of already classified budget data.

#### Alternative 1: Classification at source

In the first case, once the budget process has been described, and the definitive classification and attributes of interest of the budget data established, it is important to incorporate the functional dimension into the basic accounting books. The feasibility of conducting this exercise will depend on the interest shown by authorities to intervene in the budget process with additional annexes, files or fields that would enable the expenditures to be immediately tagged and thereafter classified.

To these ends, the steps of the preparation stage described above must be implemented, establishing the different fields associated with the attributes of each budget item, its objective or its justification, and the type of activities executed. This can be done through the budget request form or file, which can provide a list of possible activities.

The first steps are complex and extensive, and call for intervention in the budget process, but

thereafter expenditures will be classified automatically, and a database and an EMCOFOG can be created. In effect, the data-gathering process as such will become a minor question, as the classification will be defined at the same time as the budget request. Figure 3.5 presents a flow diagram reflecting the moment at which the line ministries present their budget expenditure request. It is at this point that any additional climate classification file or field should be included.

**Figure 3.5.** Classification of Climate Expenditures in the Budget Process



Source: Authors' elaboration.

### Alternative 2: *Ex post* classification

The problem of data-gathering emerges during *ex post* classification. Should the authorities opt to take this route, then “retro-accounting” is required, reclassifying the expenditures *ex post*. This may be done using data already classified by function or without classification. To these ends, the data should be tagged on the basis of the presumed functions of the budget program or project, taking as a guide the EMCOFOG structure presented in Table 1.2. Annex 2 presents the classifications and Annex 3 the CRAs of a technical nature.

To achieve this classification, access to the budget database as well as support from the main agencies responsible for executing climate-relevant expenditure are required. This helps confirm that expenditures have been correctly reclassified, revealing the intentions of the sector authorities and that the activities executed have been correctly identified. In practice, a decision tree that includes a series of screening questions helps to identify and tag these already classified climate-related expenditures. In effect, tagging implies two simultaneous actions: tagging the budget item and, at the same time, keeping in mind the type of expenditure; that is, making a

prior classification considering the categories proposed in Tables 2.3 and 2.4 herein.

Annex 2 presents the list of definitions of primary purpose climate-related expenditures for reclassification. However, as already mentioned, the chief criterion must be the principal's intention and, consequently, the classification requires a legal declaration by the authorities. A declaration of intent is also required when classifying expenditures associated with losses and damages. For its part, the screening process means using the general criteria listed below, although each country will need to define its own screening questions according to specific conditions:

**1. Primary purpose expenditures:** these are detected by a procedure that identifies whether the expenditure has been officially

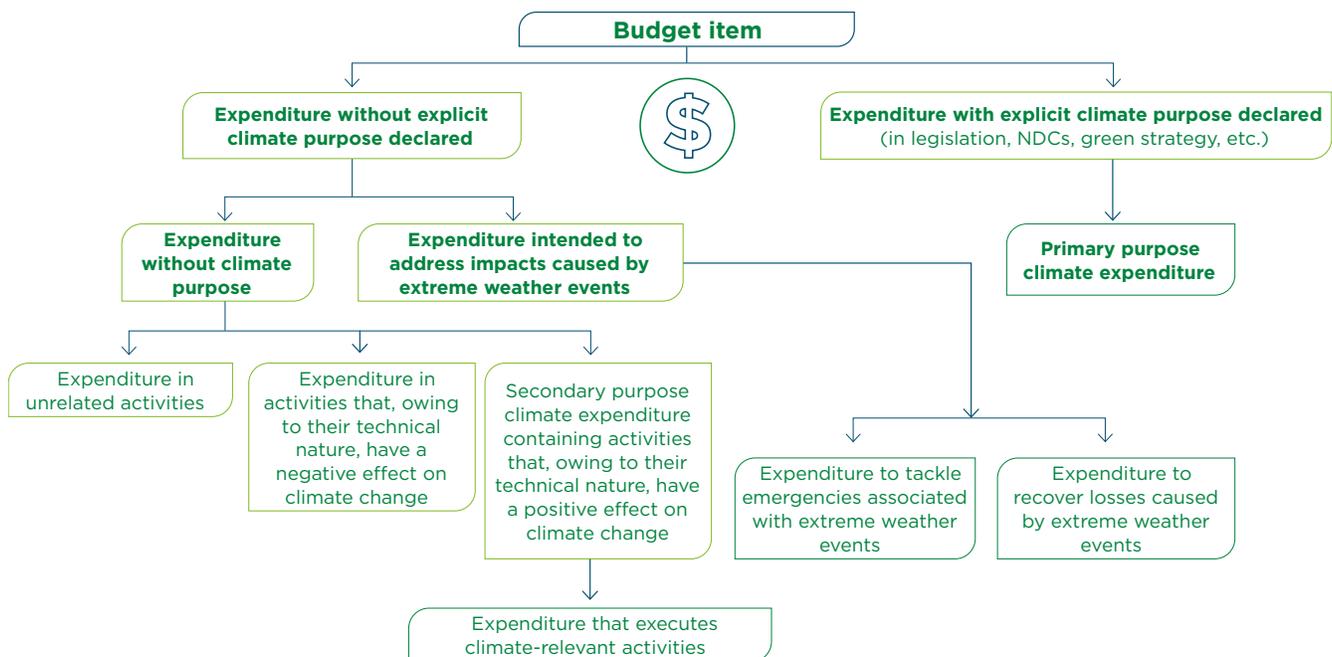
declared with a primary purpose of addressing climate change.

**2. Recovery and emergency expenditures:** these are backed by an explicit justification of responding to or tackling demonstrable climate impacts.

**3. Climate-relevant expenditures linked to activities of a technical nature:** these are identified through a list of previously selected activities (secondary purpose) that can detect expenditures on activities that, by their technical nature, have an impact on climate change.

Figure 3.6 presents the decision tree, beginning with the budget item. Based on this, the data are separated and registered, according to the previously mentioned criteria. The final results of the climate-relevant expenditures are highlighted in red in the tables.

**Figure 3.6** Decision Tree for Tagging Budget Data



Source: Authors' elaboration.

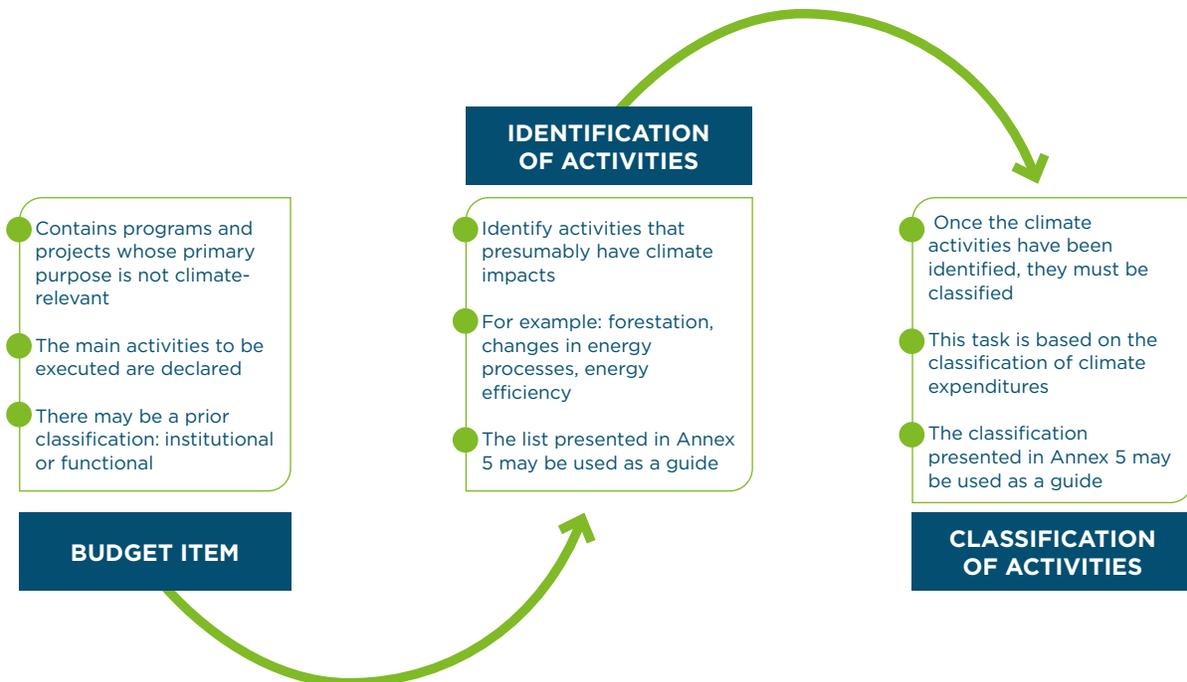
### Classification of Climate-relevant Activities

In practice, it is difficult to identify and classify CRAs. This means disaggregating disbursements that do not have an explicit climate declaration according to the different programs or projects, and identifying the activities that could presumably be related with climate impacts. Potentially, all programs or projects have a climate component.

Classification is comprised of two steps: 1) identifying activities considered to be climate-relevant and 2) ordering these activities according to the classification previously presented. It is worth repeating that identifying and classifying activities will depend on the available budget data. As there is so much budget data, the classification process is complex.

In these cases, it is possible that the budget data have already been given a prior classification, such as an institutional or a function-based classification of expenditures: this would provide an initial indication of how the data should be classified. However, both the identification and subsequent classification processes must be carried out via an individual transfer, which would signify a tremendous effort to examine each transfer and identify the activities to execute. To facilitate the task, it is best to begin with the most important institutions. This may possibly imply reviewing thousands of budget items, which could be achieved by using algorithms to detect key words and types of projects, a process that is detailed in Figure 3.7 below.

**Figure 3.7.** The Climate-Relevant Activity Classification Process



Source: Authors' elaboration.

To streamline the process, a preliminary list of CRAs is presented in Annex 3. This should be understood as a preliminary approach and should not be treated as the definitive list. However, it does provide a starting point to enable each country's classification committee, through feedback, to establish a list of activities agreed among all countries of the region. The activities are ordered on the basis of the typologies presented and according to the classification of climate-relevant expenditures.

Unless a budget structure exists at the project level, in both cases a methodology of propor-

tionality must be implemented. This attempts to disaggregate the proportion of expenditures that are effectively climate-related from the aggregate budget item. For example, various projects with different purposes may co-exist within the same program, and there is no information available to help determine how much of the expenditure was spent on the climate-relevant project. Ultimately, the coefficient of proportionality is an assumption regarding which part of the expenditures can be considered climate-relevant, either due to their purpose or to the activities contained. Box 3.1 provides greater detail.

### Box 3.1. Methodology of Proportionality

The functional classification of expenditures means identifying transfers whose primary or secondary purpose is climate action. In principle, therefore, transfers will have to be identified and classified individually. Once the decision has been taken regarding the primary objective, the total value of the transfer is considered as a value earmarked for that objective.

Many programs have multiple purposes or activities, which calls for more information to be collected to determine the number and value of the individual transfers linked to CRAs. In these situations, it is important to establish criteria to estimate the proportion of the value of the transfers of a given government program that reflects the value of the individual transfers of the CRA programs.

It may be necessary to estimate by using factors of proportionality. In practice, methodological exercises have made use of different criteria, such as standard percentages (15, 50, and 75) for climate-related expenditures, according to the primary objective (whether climate-based or not). The criterion of expertise may also be considered, based on the experiences of professionals in the specific areas in which such programs are executed. This type of methodology depends on agreements or conventions.

Institutions sometimes draw this type of distinction by examining the proportion of professionals who work directly in the activities and/or projects. These are weighted according to their respective salaries, to make as close an approximation as possible to the true value of the respective expenditure.

Source: Authors' elaboration.

### Step 5: Developing the data model and extended matrix of classification of the functions of government

As detailed in Chapter 2, the EMCOFOG fulfills various functions, such as the construction of a data model. In effect, collecting and classifying data in the EMCOFOG leads to a model where the budget information has attributes beyond those already recorded by the authorities regarding climate actions. In practice, this is a matrix for establishing relations between budget data and different attributes.

The structure of the classification of the functions of government (COFOG) is maintained, although this is expanded with the aggregate of

attributes or categories of interest that become additional attributes of the budget item (Table 3.4). Details are provided, for example, of whether the item is associated with mitigation or adaptation and whether it is of primary or secondary purpose. Other existing attributes are also incorporated into the matrix: for example, whether a current or a capital expenditure; type of economic expenditure; source of financing and so on. These attributes help to develop other systems of classification and strengthen analytical capacity.

**Table 3.4.** Data Model and Extended Matrix of the Classification of the Functions of Government

N.º	Government functions and activities	Transfer (Project or program)	Double-entry classification: secondary purpose or impact of activity associated with the expenditure					Data attributes				
			Mitigation (secondary purpose)	Adaptation (secondary purpose)	Mixed (secondary)	Recovery	Emergency	Type of expenditure	Institution	Source of funding	Attribute 1	Attribute 2
<b>1 to 3</b>	General public services, defense, security	125										
	Example: organization of the COP (Conference of the Parties)	-										
<b>4</b>	Economic development	128										
<b>4.1.1</b>	Agriculture	98	x									
	Example: genetically-modified seeds	-										
<b>4.3.5</b>	Electricity	100										
	Example: Energy from oil and gas	50										
	Example: Solar energy	-	x									
	Example: Coal-based energy	60										
<b>5.1</b>	Environment	15										
<b>5.2</b>	<b>Climate change</b>	17										
	Mitigation (primary purpose)	15										
	Adaptation (primary purpose)	2										
<b>6 to 10</b>	Housing, health, recreation, education, social protection	390				x	x					
	<b>TOTAL</b>	<b>1.000</b>										

Source: Authors' elaboration.

**Table 3.5.** Stages of Identification Phase, according to each Option

	Alternative 1: <i>Ex ante</i> classification of expenditures	Alternative 2: <i>Ex post</i> classification of expenditures
<b>Step 4: Data capture and tagging</b>	Expenditures are identified at the moment the budget request is submitted by the line ministries.  Does not require gathering data.	This is the major challenge of this alternative.  A process must be implemented involving screening questions to include the previously mentioned criteria.  Keywords must be identified to determine the authorities' intention as well as the activities executed.
<b>Step 5: Development of the data model and the EMCOFOG</b>	Automatic development with <i>ex ante</i> classification.	Developed alongside budget data tagging.

Source: Authors' elaboration.

## Reclassification

### **Step 6: Reclassification of data**

Following the logic of the COFOG, the following step involves reclassifying the climate-related primary purpose expenditures in the climate change subdivision, as presented in Table 3.4, in the red files. Note that only the climate-relevant expenditures identified as primary purpose are reclassified, while the other expenditures are not

considered as main functional expenditures and, consequently, should continue to be recorded in their original categories and have only their climate impact identified. This helps maintain consistency with the exhaustive logic of the COFOG and permits international comparison.

**Table 3.6.** Stages of the Reclassification Phase, according to each Option

	Alternative 1: <i>Ex ante</i> classification of expenditures	Alternative 2: <i>Ex post</i> classification of expenditures
<b>Step 6: Classification and reclassification</b>	Expenditures are classified on the basis of their primary purpose using the classification presented in Table 2.3 of the previous chapter.  Expenditures that further the execution of CRAs are not reclassified, but they are identified.	<i>Ibid.</i>

Source: Authors' elaboration.

## Presentation and Analysis of the Information

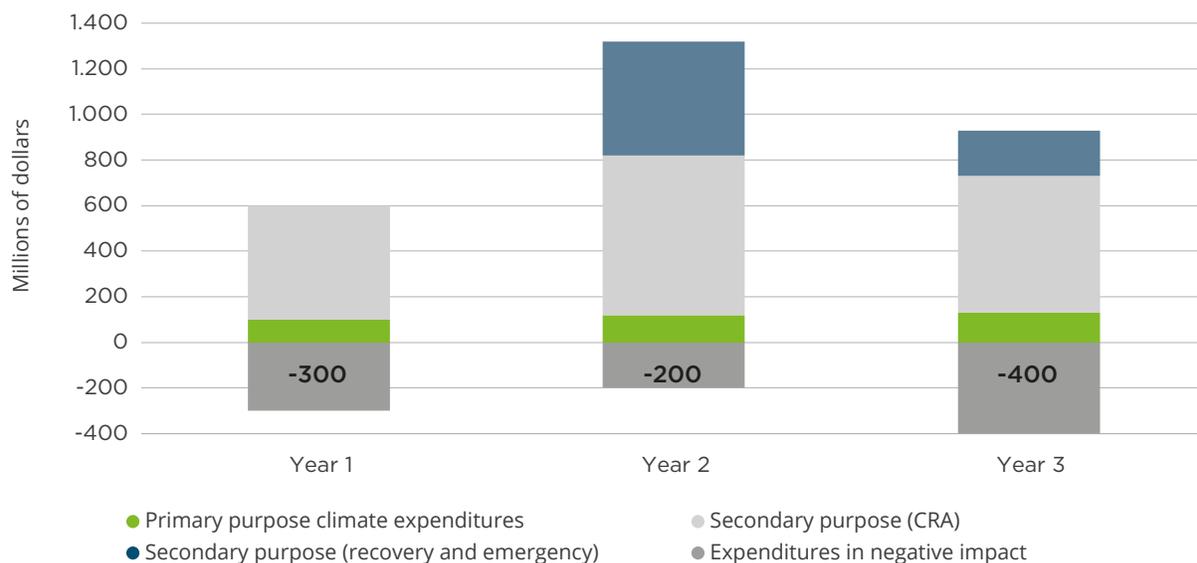
### Step 7. Presenting the data and estimating climate-relevant expenditures

Step 7 refers to the presentation of data and final estimate of climate-relevant expenditures. There are two presentation possibilities here. According to the first, all climate-relevant expenditures can be presented according to different categories and subcategories considered in the classification. Figure 3.9 illustrates a possible presentation of data over a period of three years. Note that expenditures in negative CRAs were included; they are shown in negative to distinguish them, but in no case is it

suggested that they should be added or offset, as these are expenditures of a different nature to be identified and classified.

It is worth remembering that climate-related primary purpose expenditures are approximately constant, which reflects explicit climate policy. Expenditures in CRAs show greater variation, but it is in recovery and emergency spending where greater variety is observed. This owes to the fact that climate events do not occur in a predetermined pattern.

**Figure 3.8.** Example of a Presentation of Climate Expenditure Results



Source: Authors' elaboration.

A second alternative consists in presenting the data according to the COFOG. This implies identifying the functional categories in accordance with this classification and identifying CRAs inside each functional category. In effect, this is a synthesis of the extended COFOG matrix, which reveals that the totals at the

function level are maintained, thereby ensuring that double accounting is avoided. Table 3.7 provides an illustrative example, in which primary and secondary purpose expenditures, as well as those of negative climate relevance, can all be identified.

**Table 3.7.** Example of Budget Data Presentation, classified according to Climate-relevant Actions (in monetary units)

	Secondary purpose			Negative impacts	Total COFOG (sum of primary and secondary purpose)
	COFOG primary purpose divisions	CRAs	Recovery and emergency	Negative activities	
Administration	200	0	0	0	200
Security	300	50	50	0	400
Defense	750	150	100	0	1000
Economic development	1,200	550	175	575	2,500
Environment	600	100	50	0	750
Climate change	100	0	0	0	100
Housing	1,225	200	75	0	1,500
Social protection	950	0	50	0	1,000
Education	1,200	0	0	0	1,200
Health	1,300	0	50		1,350
<b>TOTAL</b>	<b>7,825</b>	<b>1,050</b>	<b>550</b>	<b>575</b>	<b>10,000</b>

Source: Authors' elaboration.

**Step 8: Indicators and evaluation of results**

Step 8 refers to the development of indicators and other evaluation techniques, which is examined in greater detail in the next chapter.

**Table 3.8.** Stages of the Data Analysis Phase, according to each Option

	Alternative 1: <i>Ex ante</i> classification of expenditures	Alternative 2: <i>Ex post</i> classification of expenditures
<b>Step 7: Presenting the Information</b>	There are two main ways of presenting the information:  1. A time series in which the main categories of climate-relevant expenditures are identified.  2. A cross section of expenditures according to functions and purposes.	<i>Ibid.</i>
<b>Step 8: Elaborating indicators and implementing evaluation methodologies</b>	See Chapter 5.	<i>Ibid.</i>

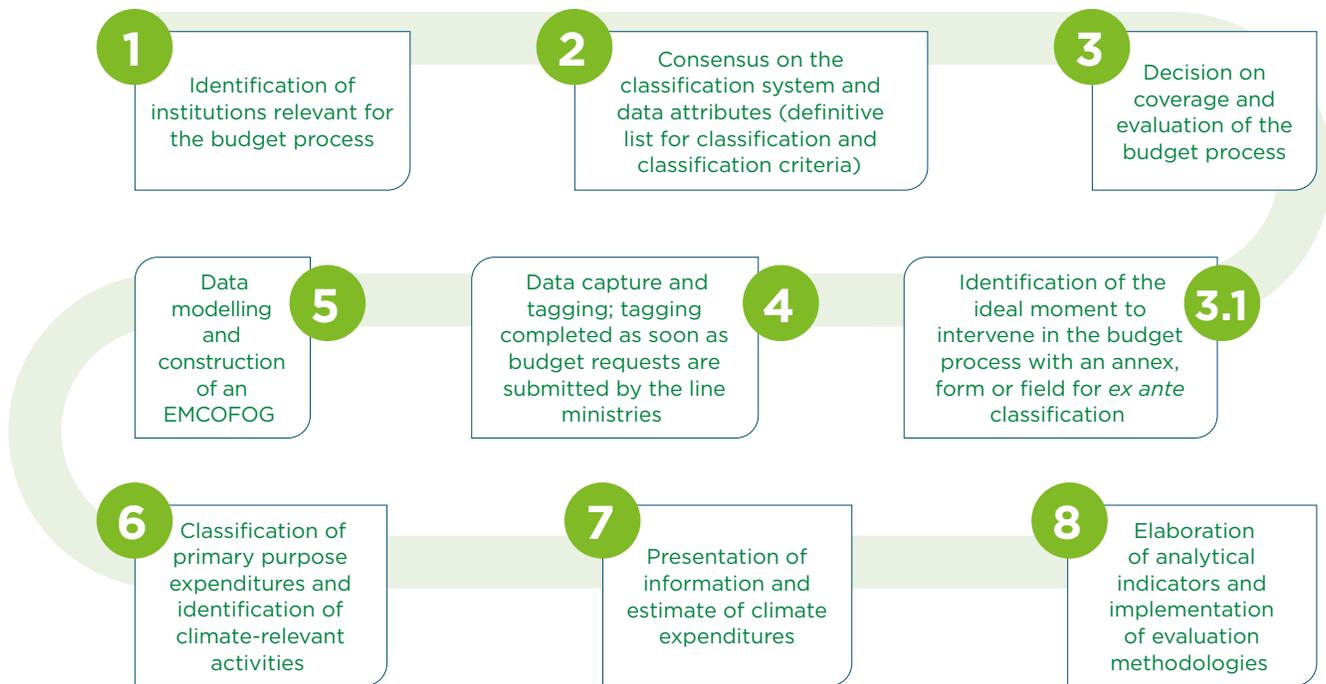
Source: Authors' elaboration.

## Summary Flowcharts

Figure 3.9 presents a summary of the steps to follow for identifying and classifying climate-related expenditures, which includes the gathering of data based on an *ex ante* classification or at-source system. This alternative requires intervention in the budget process and the addition

of attributes to the budget file, enabling expenditures and activities to be classified the moment that line ministries submit their budget requests. In this case, the data-gathering process is automatic, but requires a significant investment to change the existing budget files or forms.

**Figure 3.9.** Summary of Alternative 1: *Ex Ante* Classification of Budget Data

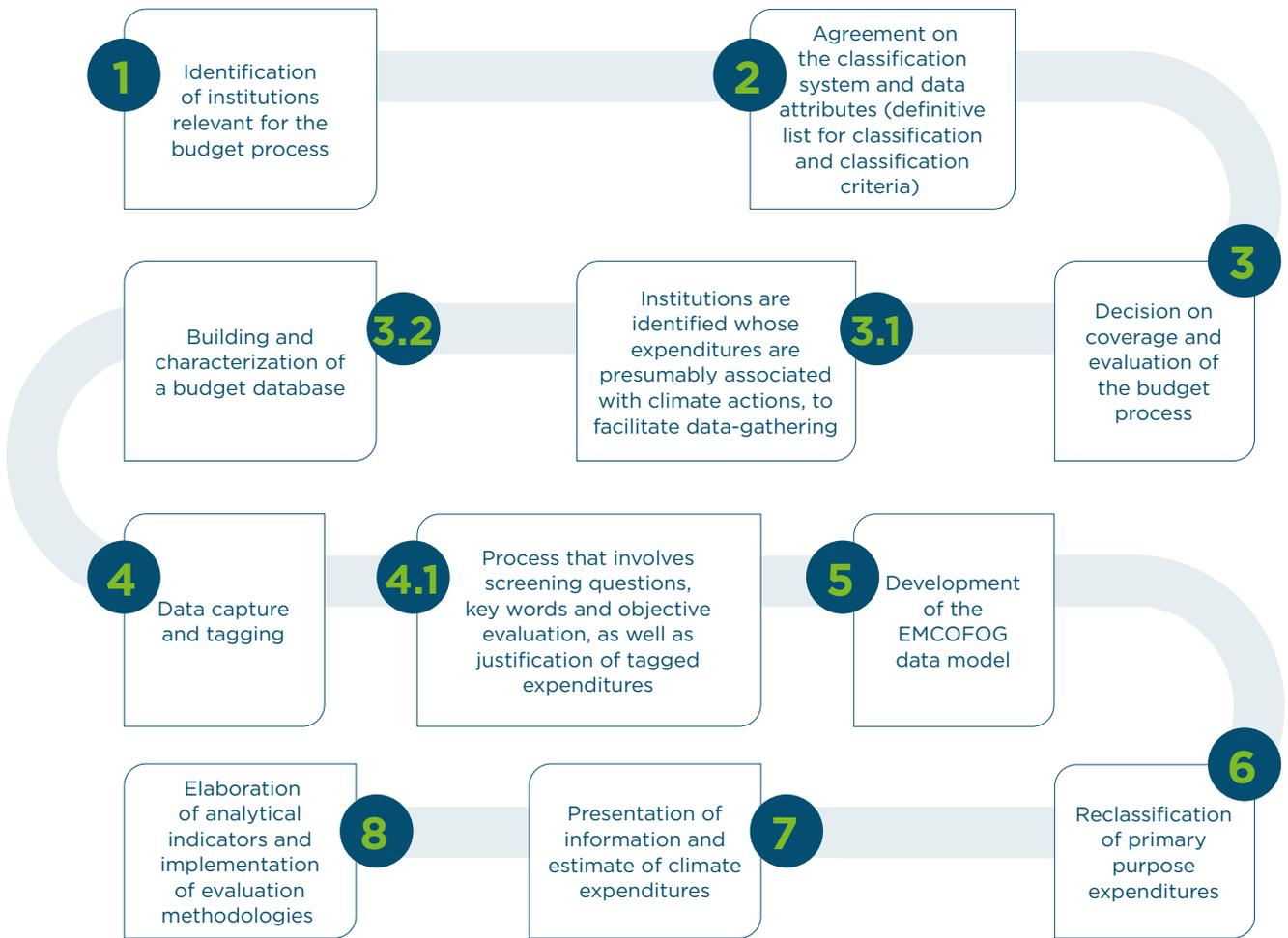


Source: Authors' elaboration.

Figure 3.10 contains the summary of steps to follow when identifying and classifying climate-related expenditures using an *ex post* classification system. This alternative means concentrating ef-

forts on identifying and thereafter reclassifying budget data that have already been classified. In this case, no intervention in the budget process is required.

**Figure 3.10.** Summary of Alternative 2: *Ex Post* Classification of Budget Data



Source: Authors' elaboration.



CHAPTER 4.  
**WHAT TO EVALUATE**

**B**ased on the identification of climate expenditures, their classification and subsequent reclassification, different indicators may be used to analyze expenditure data that focus on climate management and its impacts. The most significant are presented below.

Figure 3.8 and Table 3.7 summarize the most relevant information on climate-related expenditures. As indicated, these expenditures can be detailed in accordance with different analytical

categories and subcategories of the classification of climate expenditures in Tables 2.3 and 2.4.

As shown below, breaking down expenditures helps to develop an unlimited number of indicators that can support climate management. It is worth highlighting that the indicators mentioned are of a general nature and do not seek to represent a comprehensive evaluation. Rather, they constitute a preliminary approach to measure the proportion of the public sector budget earmarked to combat climate change.

## Indicators of Climate Expenditures

### Primary Purpose Expenditures, Direct Climate Management

As previously mentioned, only primary purpose expenditures can be considered as expenditures explicitly related with climate efforts made by authorities and they are the only ones consistent with the classification of the functions of government (COFOG) and the System of Environmental and Economic Accounts (SEEA). For their analysis and international comparability, different indicators

may be developed in accordance with relevant aggregates (Table 4.1). This can determine the explicit effort of the State in climate terms, in accordance with different categories, and allow for international comparisons. This is consistent with the National Accounts System (NAS) 2008 (United Nations, 2008), the Government Finance Statistics Manual (GFSM) (IMF, 2014) and function categories of the COFOG itself.

### Secondary Purpose Expenditures

For their part, secondary purpose expenditures with CRAs may be considered as secondary purpose climate expenditures, but only when the activities executed have an effect on climate change. Different indicators can be developed for their analysis, in accordance with the relevant aggregates, as shown in Table 4.2. This helps to determine the explicit effort of the State in climate terms, in accordance with different categories,

and is consistent with the NAS 2008, the GFSM 2014 and the COFOG's own function categories. Rigorous criteria are called for when making international comparisons, as the explicit purpose is not related to climate change, and this can lead to erroneous conclusions. A comparative aggregate analysis, rather than an individual one, is therefore recommended.

**Table 4.1.** Indicators of Primary Purpose Climate Expenditures

Description of the indicator	Indicators	Unit	Explanation
<b>Total government effort in response to climate change (can be divided into subcategories of the classification)</b>	$COFOG_{primary\ climate}$	In the currency of each country	Enables monitoring of the direct government effort in response to climate change. Permits monitoring over time and international comparisons.
<b>Government effort in response to climate change in relation to other policies</b>	$\frac{COFOG_{primary\ climate}}{COFOG_{total}}$	Percentage	Enables monitoring of the direct government effort in response to climate change in relation to other policies. Permits monitoring over time and international comparisons.
<b>Government effort in response to climate change in relation to gross domestic product (GDP)</b>	$\frac{COFOG_{primary\ climate}}{GDP}$	Percentage	Enables monitoring of the direct government effort in response to climate change in relation to GDP. Permits monitoring over time and international comparisons.
<b>Government effort in response to climate change in relation to the population</b>	$\frac{COFOG_{primary\ climate}}{Population}$	In the currency of each country, per capita	Enables monitoring of government effort in response to climate change in relation to the national population. Permits monitoring over time and international comparisons.
<b>Government effort in response to climate change in relation to greenhouse gas emissions (GHG)</b>	$\frac{COFOG_{primary\ climate}}{GHG\ emissions}$	In the currency of each country, per ton of GHGs	Enables monitoring of government effort in relation to the country's responsibilities regarding GHG emissions. Permits monitoring over time and international comparisons.

Source: Authors' elaboration.

**Table 4.2.** Indicators of Secondary Purpose Expenditures to Finance Activities that are Climate-Relevant due to their Technical Nature

Description of the indicator	Indicators	Unit	Explanation
Indirect total government effort in response to climate change	$SPE_{CRA}$	In the currency of each country	Enables monitoring of indirect government effort in response to climate change. Permits monitoring over time and international comparisons.
Indirect government effort in response to climate change in relation to other policies	$\frac{SPE_{CRA}}{COFOG_{total}}$	Percentage	Enables monitoring of indirect government effort in response to climate change in relation to other policies.
Indirect government effort in response to climate change in relation to a specific division of the COFOG classification	$\frac{SPE_{CRA_i}}{COFOG_i}$	Percentage	Enables monitoring of indirect government spending effort in climate activities in a COFOG division of interest.
Government effort in response to climate change in relation to the GDP	$\frac{SPE_{CRA}}{GDP}$	Percentage	Enables monitoring of indirect government effort in response to climate change in relation to GDP. It is also an indicator of the market for climate-relevant goods and services.
Government effort in response to climate change in relation to the population	$\frac{SPE_{CRA}}{Population}$	In the currency of each country, per capita	Enables monitoring of government effort in response to climate change in relation to the national population. This can be very important when it comes to adaptation. Permits monitoring over time and international comparisons.
Government effort in response to climate change in relation to GHG emissions	$\frac{SPE_{CRA}}{GHG\ emissions}$	In the currency of each country, per ton of GHGs	Enables monitoring of government effort in relation to each country's responsibilities for its GHG emissions. Permits monitoring over time and international comparisons.

Source: Authors' elaboration.

Notes: SPE CRA: secondary purpose expenditure (SPE) with CRAs of a technical nature SPE<sub>CRA<sub>i</sub></sub>: secondary purpose expenditure (SPE) with CRAs of a technical nature corresponding to only one COFOG division.

## Recovery and Emergency Expenditures

As detailed earlier, expenditures in recovery and emergency are expenditures whose purpose is to respond to the losses and damages associated with climate impacts. These are not climate expenditures in the sense of responding to climate management and, therefore, are identified under already-classified functions.

Nonetheless, for their analysis and international compatibility, different indicators may be developed, in accordance with relevant aggregates, as

shown in Table 4.3. This can determine the explicit effort of the State in climate terms, in accordance with different categories, and facilitates international comparability. This is consistent with NAS 2008, GFSM 2014 and the COFOG function categories. When making a comparative international analysis, the same recommendation put forward for the climate-relevant indicators should be observed.

**Table 4.3.** Indicators of Recovery and Emergency Expenditures caused by Extreme Weather Events

Description of the indicator	Indicators	Unit	Explanation
Government effort in response to impacts from events associated with climate variability	$SPE_{R+E}$	In the currency of each country	Enables monitoring of government effort in response to impacts presumably related with climate change. Permits monitoring over time and international comparisons.
Government effort in response to impacts from events associated with climate variability in relation to other policies	$\frac{SPE_{R+E}}{COFOG_{total}}$	Percentage	Enables monitoring of government effort in response to impacts presumably linked to climate change in relation to total expenditure.
Government effort in response to impacts from events associated with climate variability in relation to a specific COFOG division	$\frac{SPE_{R+E}^i}{COFOG_i}$	Percentage	Enables monitoring of government effort in response to impacts presumably related with climate change with regard to other policies.
Government effort in response to impacts from events associated with climate variability in relation to GDP	$\frac{SPE_{R+E}}{GDP}$	Percentage	Permits monitoring of government effort in response to impacts presumably related with climate change in relation to gross national product.
Government effort in response to impacts from events associated with climate variability in relation to the population	$\frac{SPE_{R+E}}{Population}$	In the currency of each country, per capita	Permits monitoring of government effort in response to impacts presumably related with climate change with regard to national population.
Government effort in response to impacts from events associated with climate variability in relation to total emissions	$\frac{SPE_{R+E}^i}{GHG\ emissions}$	In the currency of each country, per ton of GHGs	Enables monitoring of government effort in response to impacts presumably related with climate change with regard to each country's responsibilities for its GHG emissions.
Government effort in response to impacts from events associated with climate variability in relation to national debt	$\frac{SPE_{R+E}}{National\ debt}$	Percentage	Enables monitoring of government effort in response to impacts presumably related with climate change in relation to the national debt.

Source: Authors' elaboration.

Notes:  $SPE_{R+E}$ : secondary purpose expenditure (SPE) in recovery and emergency expenditures (R+E);  $SPE_{R+E}^i$ : secondary purpose expenditure in recovery and emergency (R+E) corresponding to only one COFOG division.

## Comparison of Expenditures by Economic Transactions

Having registered different attributes associated with the budget item, it is possible to develop indicators in relation to these. The most significant are obtained by identifying the institutions that execute the expenditure, or

else by considering the economic transactions, in particular the large aggregates of current and capital spending. Table 4.4 presents some of the proposed indicators.

**Table 4.4.** Climate Expenditure, according to Economic Function

Indicator	Totals	Current expenditures	Capital expenditures
Total declared climate expenditure (COFOG <i>primary climate</i> )	$COFOG_{primary\ climate}$	$COFOG_{primary\ climate}(ce)$	$COFOG_{primary\ climate}(ke)$
Expenditure in positive CRAs	$SPE_{CRA}$	$SPE_{CRA}(ce)$	$SPE_{CRA}(ke)$
Expenditure in negative climate-relevant activities (NCRAs)	$NCRA$	$NCRA(ce)$	$NCRA(ke)$
Climate expenditure in recovery and emergency (R+E)	$SPE_{R+E}$	$SPE_{R+E}(ce)$	$SPE_{R+E}(ke)$

Source: Authors' elaboration.

Notes: ce: current expenditures; ke: capital expenditures.

## Cross-Classification with other Systems

As detailed earlier in the classification section, by reconciling the classification of climate actions with the standard classification systems, different types of information can be crossed, thereby enhancing the analytical potential

of the methodology. This means classifying the information at source in accordance with different attributes. At least three data cross-classifications are relevant for climate change analysis, which are described below.

### Cross-Classifying Climate Expenditures with an Economic Classification

Table 4.5 presents a crossover between climate expenditure and the full classification of economic expenditure. This type of approach to expenditure helps analyze the full climate effort associated with different budget items and their economic impact. Moreover, it can evaluate the expenditure over time more precisely, since capital expenditure is often subject to the greatest variation. Thanks to this, conclusions can be drawn regarding the permanent climate effort, the source of financing and those who

depend on the climate spending, among other variables of interest.

To make this comparison, expenditure must first be classified into its economic categories. This means disaggregating each one of the climate-relevant budget items in the economic classification categories of the expenditure, which can yield a disaggregated budget at the project level, with implications for the different expenditure categories.

**Table 4.5.** Cross-Classifying Climate Expenditures with an Economic Classification

Climate-relevant government functions or activities	Employee compensation	Use of goods and services	Fixed capital consumption	Interests	Subsidies	Donations	Social provisions	Other expenditures	Net investment in non-financial assets
<b>Primary purpose climate expenditure (declared)</b>									
Mixed activities									
Mitigation activities									
Adaptation activities									
<b>Secondary purpose expenditure (CRA)</b>									
Mixed activities									
Mitigation activities									
Adaptation activities									
<b>Secondary purpose expenditure (recovery and emergency)</b>									
Recovery									
Defensive adaptation									
Emergency									

Source: Authors' elaboration.

### Climate-relevant Expenditures and Classification of the Function of Government

A transfer is a transaction in which one institutional unit (in this case, the government) provides a good, a service or an asset to another unit without receiving from the latter any goods, services or assets as a direct counterpart. Government transfers are often considered generically as “subsidies”. Nonetheless, in economic accounting, only certain transfers are treated as such. Box 4.1 provides definitions of the diverse government transfers.

Identification and classification of climate expenditures crossed with the type of government transfer helps to determine which institutions or agents are shouldering the greatest climate effort. From the point of view of climate expenditure analysis, distinguishing the type of transfer (which, in turn, depends on its purpose) is essential for

determining how the climate action is affecting State management.

Table 4.6 presents a possible breakdown of the different types of transfers related to climate expenditures, while some examples are included in Table 4.7. During the first stage, interest should be focused on transfers made within the government (the Government-Government cell in Table 4.6), which is where major climate action is undertaken; in other words, transfers from the finance ministry to the line ministries (for example, resources for the agency responsible for climate questions or for implementing the nationally determined contributions (NDCs). However, depending on the budget authority and the country's priorities, certain transfers to firms may also be important (for example, investment tenders), or to households (for example, subsidies for solar panels).

**Box 4.1.** Types of Transfers

- **Subsidies** are current unrequited payments that government units, including non-resident government units, make to firms according to their levels of productive activity or to the quantities or values of the goods or services they produce, sell or import.
- **Social benefits for households** are current transfers received by households, which are made with the purpose of addressing the needs arising from certain events or circumstances, such as illness, unemployment, retirement, housing, education or specific family situations.
- **Investment grants** are capital transfers made by governments to other resident or non-resident units to finance all or part of the cost of their acquiring fixed assets.
- **Other current transfers** are all the current transfers between resident or non-resident institutional units, which are not taxes on income, wealth, etc., social benefits and contributions and social benefits in kind. They include the transfers between different levels of government, between the general government and other foreign governments, and transfers to and from nonprofit institutions.
- **Other capital transfers** are capital transfers, with the exception of capital taxes and investment grants. They include, for example, transfers from the central government to units at lower levels of government, and legacies or large donations and donations made by households or firms to nonprofit institutions to finance their acquiring fixed assets.

Source: United Nations (2012).

**Table 4.6.** Types of Government Transactions Related to Climate Expenditures

		Payments received by:				
		Government	Companies	Households	NPISH	Rest of the world
Payments made by:	Government	Transfers between levels of government	Investment subsidies and grants	Current and capital transfers	Subsidies and current and capital transfers	Current and capital transfers
	Companies	Taxes, fines, fees, charges and rent	Rent	Rent	Donations	Donations to NPISH in the rest of the world
	Households	Taxes, fees, charges and fines			Donations	Donations
	Nonprofit institutions serving households (NPISH)	Taxes	Current and capital transfers	Current and capital transfers		Current and capital transfers
	Rest of the world	Taxes and current transfers			Donations	

Source: Authors' elaboration, based on United Nations (2012).

**Table 4.7.** Examples of Government Transactions Related to Climate Expenditures

		Payments received by:				
		Government	Companies	Households	NPISH	Rest of the world
Payments made by:	Government	Expenditure on reforestation in different regions	Energy efficiency or solar energy subsidies	Program to install solar panels in households	Support for educational climate change-related activities	Help for vulnerable countries
	Companies	Taxes on CO2			Donations for climate change programs	Donations from the World Wide Fund for Nature (WWF) climate change program
	Households	CO2 taxes (mobile sources)			Donations to local nongovernmental organizations (NGOs)	Donations to international NGOs (for example, the WWF)
	NPISH	CO2 taxes (mobile sources)	Training program for measuring carbon footprint	Consultancy program for installing solar panels		Current and capital transfers
	Rest of the world	Green Climate Fund, international aid, carbon emissions trading			Donations to national NGOs (for example, Euroclima)	

Source: Authors' elaboration, based on United Nations (2012).

### Comparison of Expenditures with Revenues: Taxes on GHG Emissions

Although this conceptual framework has concentrated on identifying and classifying climate expenditures, a large part of the climate change-related effort is carried out indirectly, by changing the preferences of economic agents. In this sense, taxes are an important instrument. Comparing taxes with effort in terms of public expenditure, as well as negative climate relevance, is crucial for obtaining a complete picture of climate management.

Revenues are the counterpart to expenditures and, in the case of climate action, taxes are especially important because they can be associated with management instruments that have an effect (either positive or negative) on the climate.

For example, many countries influence the consumption of fossil fuels with generous subsidies; in contrast, other countries intervene positively by introducing carbon taxes (CO<sub>2</sub>) as part of their climate management.

One of the SEEA accounts identifies the subsidies and environmental taxes that are particularly useful in the case of climate change. This account can be used by breaking down in greater detail those subsidies and taxes that are especially detrimental or beneficial for climate change.

The decision on whether the NAS considers a payment as an environmental tax or not is based on an examination of the tax base. Specifically,

an environmental tax is a tax whose *tax base is a physical unit (or its proxy) of something that has a proven negative impact on the environment*. In practice, this definition is applied to all of the diverse taxes collected in a given country, evaluating in each case whether the tax base refers to something that has a negative environmental impact. Box 4.2 presents the generic definition of taxes,

while Box 4.3 provides a definition of environmental taxes in accordance with the SEEA.

The SEEA considers that there are four classes of environmental taxes: energy, transport, pollution and resources (see Box 4.3). In the case of climate change-related taxes, the account proposed by the SEEA should be utilized, distinguishing between carbon taxes and taxes levied on internal combustion vehicles.

#### Box 4.2. Definition of Taxes

Taxes are compulsory unrequited payments, in cash or in kind, made by institutional units to government units. They are grouped into the following categories:

- **Taxes on products** are taxes payable per unit of a good or service. They include value added type taxes, tariffs, taxes and duties on imports and export taxes.
- **Other production taxes** comprise all taxes except taxes on products that enterprises incur as a result of engaging in production. Examples include taxes payable on land, fixed assets or labor employed in the production process.
- **Income taxes** are taxes levied on incomes, profits and capital gains.
- **Other current taxes** are current taxes on capital and other current taxes (such as payments by households to obtain certain licenses).
- **Capital taxes** are taxes collected at irregular and infrequent intervals on the value of assets or the net wealth of institutional units, or else on the value of the assets transferred between institutional units as a consequence of legacies, donations *inter vivos* or other transfers.

Source: United Nations (2012).

**Box 4.3.** Categories of Environmental Taxes in the System of Environmental and Economic Accounts

- **Energy taxes.** This heading includes taxes on energy products used for both transport and stationary purposes. Taxes on fuel used for transport must be shown as a separate subcategory of energy taxes. Energy taxes on products used for stationary purposes include fuel oils, natural gas, coal and electricity. Carbon taxes are included under energy taxes rather than under pollution taxes. If they are identifiable, they should be shown as a separate subcategory of energy taxes. One special category of carbon taxes are payments for tradable emission permits.
- **Transport taxes.** This category mainly includes taxes related to ownership and use of motor vehicles. Taxes on other means of transport (such as airplanes) and related services (such as duties on regular or charter flights) are also included here, as well as those levied on road use. Transport taxes may be “one-off” taxes on the import or sale of equipment, or recurrent taxes, such as the annual road tax. Taxes on petrol, diesel and other transport fuels are included under energy taxes.
- **Pollution taxes.** This category includes taxes on measured or estimated emissions to air or water, and the generation of solid waste. Carbon taxes are an exception, and are included under energy taxes, as already indicated. The taxes on sulfur are included here.
- **Resource taxes.** This category includes taxes on water abstraction, extraction of raw materials and other resources (such as sand and gravel). In consistence with the general scope of environmental taxes, payments to the government for the use of land or natural resources are treated as rent and, consequently, are excluded from resource taxes.

Source: United Nations (2012).

Table 4.8 presents an account of environmental taxes, in which the taxes that have a direct bearing on climate change, such as taxes on greenhouse gases (GHG), are broken down. The current SEEA

structure can therefore identify the instruments or revenues related with climate management. The information compiled can be used as a counterpart for evaluating climate expenditures.

**Table 4.8.** Types of Taxes

	Types of taxes	Taxes on products	Taxes on income			Other current taxes	Taxes on capital	Total
			Taxes on production	Corporations	Households			
	<b>Energy taxes</b>	A	M	N	O	P	Q	A+M+N+O+P+Q
	Taxes on GHGs	A.1						
	<b>Taxes on transport fuels</b>	B = (B.1+B.2)						
	Fossil	B.1						
	Non-fossil	B.2						
	<b>Pollution taxes</b>	C						
	<b>Resource taxes</b>	D						
	Fossil fuel-based resources	D.1						
	<b>Total environmental taxes</b>	A+B+C+D						
	<b>Total taxes on GHGs</b>	A.1+B.1+D.1						
	<b>Non-environmental taxes</b>	E						
	<b>Percentage environmental taxes</b>	$\frac{(A+B+C+D)}{(A+B+C+D+E)}$						
	<b>Percentage taxes on GHG</b>	$\frac{(A.1+B.1+D.1)}{(A+B+C+D+E)}$						

Source: Authors' elaboration (breakdown of taxes on fossil fuels), based on United Nations (2012).

## Impact and Cost-Effectiveness Evaluation Methodologies

The classification of expenditures and the indicators presented help to measure total effort made by the government in its climate action, as well as the indirect climate-relevant

expenditures, but they also provide support for various types of analytical exercises. Some of the alternatives are presented below.

### Evaluation of Public Expenditure

Public expenditure reviews (PER) are systematic assessments of the effectiveness and efficiency of public expenditure allocation. The central question addressed by a PER is whether public resources are being optimally and efficiently allocated. A PER can refine the medium- and long-term budget allocation planning and identify potential risks in the fiscal position. The quality of

the PER depends on the available information and on developing relevant indicators. The fundamental concern regarding efficiency and effectiveness requires information about the relationship between inputs, outputs and results.

Figure 4.1 shows the conceptual model for efficiency and effectiveness. The monetary and non-monetary resources deployed generate an

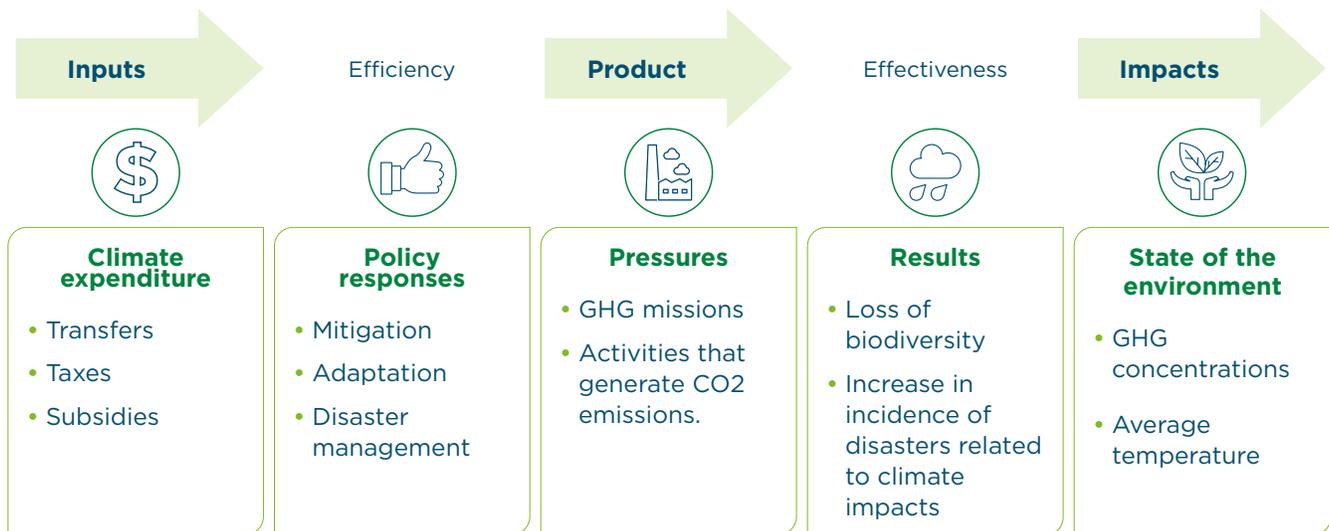
output. For example, climate change spending (input) affects the mitigation responses (output), which has consequences for the results (impact): greenhouse gas (GHG) emissions or concentrations. The input-output relation is the most basic measurement of efficiency. When measuring efficiency, a distinction can be drawn between technical and allocation efficiency. These are fundamental criteria to consider when developing an integrated evaluation of efficiency and effectiveness in government expenditure allocation.

Technical efficiency measures the pure relationship between inputs and outputs; basically, the criterion applied indicates that using fewer inputs to produce the same output is more efficient. Allocation efficiency reflects the link between the optimal combination of inputs, considering the costs and benefits and the output achieved. Nonetheless, to develop this, more information is needed regarding

the general results of the expenditure and the specific results regarding climate change. Such information is compiled from databases and policy areas often removed from the economic sphere, which means it is important to consider the connections between different classification systems. The quality of the PER depends, to a large extent, on the available data and on elaborating relevant indicators, such as those already presented above.

Evaluating effectiveness and efficiency in spending is essential for ensuring that it fulfills its social role and is one of the range of instruments at the State's disposal for improving its public and budget management. Once expenditures in relevant climate actions have been identified, a PER can be developed to evaluate the efficiency, effectiveness and fairness of climate expenditures.

**Figure 4.1.** Conceptual Model of Expenditure Evaluation



Source: Pizarro et al. (2021).

## Other Analytical Techniques

In the field of climate change impact analysis and its relationship with the economic system, the SEEA admits a variety of analytical techniques that may be applied whenever a classification system is put into operation based on the accounts system. One of the most commonly used analytical techniques in terms of environmental policy is to analyze the disconnection between, for example, output and emissions levels.

Other, more detailed and complex, analytical techniques may also be applied. The most important of these, associated with the NAS and the SEEA, consists in using input-output tables, by developing integrated economic and environmental flow datasets. Input-output tables extended to the environmental sphere constitute an integrated dataset that combines information from standard economic input-output tables expressed in monetary units and information on environmental flows, such as natural flows of inputs and waste, which are measured in physical units. The most commonly used environmental flows are related with energy and carbon dioxide, since environmental waste can be standardized as energy contributions or GHG emissions.

Multipliers provide information about the environmental pressures exerted by the effects of direct and indirect demand of a unit increase in production in a specific industry. This is

particularly relevant for climate change policies, as it implies a global impact in policy terms. Thus, multipliers can indicate that an increase in the environmental pressure of one industry will lead to increments in the environmental pressures of other industries, owing to the direct and/or indirect demand generated.

There are other indicators and other analytical techniques, especially relevant for climate change adaptation, which center on environmental assets. The original motivation behind environmental asset accounting, and even the development of environmental accounting in general, consists in evaluating whether the current patterns of economic activity are degrading or depleting environmental assets. This not only affects environmental service provision such as, for example, carbon sequestration, but also significantly portrays the impacts of climate change and the possible mechanism for building more adaptation capacity.

Ultimately, by accounting for climate expenditures using the SEEA and its connected accounts, a series of sophisticated analyses can be implemented to determine what the final impact of the climate expenditure will be, or else to assess how well the society is defending itself from the observed climate impacts. The analytical possibilities are enormous.



CHAPTER 5.  
**FINAL THOUGHTS**

Climate change presents enormous challenges for Latin American and Caribbean (LAC) countries. It is essential to carry out permanent tracking of the expenditures associated with climate policies, as well as the government spending derived from their impacts.

Identifying climate expenditures cuts across different types of activities and functions. In many cases, this is expenditure of secondary importance, and there is currently no internally recognized standard classification or methodology that provides clear criteria to facilitate the classification process.

Developing an identification methodology for climate expenditures for the region implies, in the first place, recognizing what the demands of policymakers are, what information is effectively required and for what purpose. In the second place, a methodology's viability depends on whether it is connected and coherent with the current accounting systems in use and the habitual practices of the region's budget directorates.

There are no technically perfect methodologies, rather only those that can build a consensus and are viable in practice. This preliminary methodological approach should therefore be understood in the context of a process that seeks to generate agreements and consensus in the LAC region, as well as between those responsible for public budget and accounting policies, and climate policymakers.

Application of this conceptual framework in three pilot countries (Costa Rica, Jamaica and the Dominican Republic) has brought to light challenges in implementation that are very similar among all countries and has thereby yielded valuable lessons. Before concluding, it is worth highlighting some examples of these challenges and the options available to address them. It is also important to note that many of these challenges are not exclusive to the use of climate

change-related classifications, as they are also present in other, function-based classifications:

- **Tendency to overuse one code and to underuse others.** This owes to diverse factors but, in particular, it has been observed that such a predisposition is caused by the following: i) teams lacking sufficient training in the concepts related with all the classification tools, ii) the need to save time and iii) the need to report in accordance with the classifications associated with the main government programs.
  - › At the technical level, the best way to address this challenge is to establish regular training programs that include the planning and budget teams from both budget directorates and line ministries.
- **A high degree of disaggregation in classification systems, which means they can be difficult to use.** An extensive breakdown may be overwhelming for the teams responsible for its application and give rise to errors in its application.
  - › To address this challenge, it must first be borne in mind that the level of disaggregation must answer information needs of public policymakers or, in other words, it must not be a parameter defined arbitrarily. It is therefore crucial that the classifications, and their level of disaggregation, are constructed hand-in-hand with the teams that generate the information and those who need it for decision-making purposes, that is, the technical programming and budget teams must participate, but so also should the civil servants who oversee the policies in each sector.
  - › Additionally, at the outset of the implementation phase, a robust training program should be implemented, backed by user guides. Training programs must be regu-

lar and available for rapid consultation (for example, training videos should be made available via institutional intranet).

- **Classification biases and subjectivity.**

No system of classification can address all analysis needs and is inevitable that subjectivity will play a part in classifying many types of expenditures. On many occasions, the classification of primary purpose expenditure reflects an inevitable natural bias between the institutions. For example, an education ministry shows an inclination to classify public investment in medical schools as education expenditure, rather than under the health classification (IMF, 2014). In contrast, a health ministry may face pressures that give rise to different priorities when classifying the same type of expenditure.

- In any case, policy objectives must not be confused with the function of a specific expenditure. In the previous example, the correct classification corresponds to education (the function of health education in itself is not, in reality, to provide health; this is the exclusive function of the health services). Permanent training programs can, with persistence, help to correct these biases and minimize subjectivities.

- **Ex ante classification of disasters associated with extreme weather events and of those not associated with climate change.** Countries tend to make budget allocations for disasters under a “general” heading of disasters, that is, without distinguishing, for example, between the emergency budget

for earthquakes and the funds earmarked for torrential rains. This owes to the fact that classifying under a “specific” heading is inefficient, due to the unforeseen nature of the occurrence of disasters, and since it is sometimes necessary to make budget reallocations when the emergency requires urgent actions.

- In accordance with the Government Finance Statistics Manual (GFSM) (IMF, 2014), expenditures on food and equipment for emergency relief must be classified under the social protection category (not elsewhere classified), according to their function. Nonetheless, this does not solve the problem of maintaining a pool of resources whose classification cannot be fully determined before the event has occurred. A possible option for addressing this challenge, a practice that countries already possessing a classification system have preferred up until now,<sup>15</sup> consists in incorporating disaster risk management as a category under the civil defense classification for use in *ex ante* evaluation, and making the subsequent reclassification after the expenditure has been executed.

- **Classification of adaptation expenditures.**

Action taken for adaptation to climate change is specific to the context of each country and/or region; therefore, the same type of project in a region affected by climate change (for example, a water treatment plant) cannot be classified as an adaptation expenditure in a region not facing the same situation (for the case mentioned, water stress problems caused by climate change). For secondary

<sup>15</sup> In Peru, Risk and Emergency Management (016) is included in the Public Order and Security (05) category. In Costa Rica, risk management, emergency response and disaster recovery expenditures are all included under the Civil Defense (702.2) classification; nonetheless, the Climate Change (705.6) category also includes the possibility of classifying the same type of expenditures in the event that, *ex ante*, they can be recognized as primary purpose.

purpose expenditures, this is a fundamental challenge,<sup>16</sup> since the unit responsible for making the classification does not always have the back-up information in such detail, and without this type of element it is easy to report too many expenditures under adaptation.

- ▶ A good benchmark practice, and one used by the IDB and other multilateral development banks in their projects, consists in following three steps: i) identifying the context of vulnerability of the project or program, ii) indicating the way in which the project or program seeks to reduce vulnerability and iii) defining, within the program or project, the components and investments whose objective is to address such vulnerability (*Reliefweb*, 2021; Delgado, Eguino and Lopes, 2021). If these three points are not satisfied, the program or project should not be classified under adaptation.
- ▶ Of course, it is a major challenge for every country to be able to count on studies to determine the context of vulnerability that specifically threatens each program or project. One possible solution might be found in the work already being carried out by the governments of Costa Rica and Mexico<sup>17</sup> to strengthen their national public investment systems, and which is helping to raise standards so that all new public infrastructure incorporates criteria of resilience to climate change, including the requirement to carry out vulnerability studies at the project level.

- **Statistical architecture related with functional classifications.** Within the finance ministries of the region there is no uniform knowledge regarding what might be termed “statistical architecture” that is recognized at the national level, according to which different statistical standards are related between one and another. In particular, the interrelation and the consistency that exists between the central SEEA framework, NAS, GFSM and COFOG is lacking. The so-called climate change budget classifications currently in use fail to consider this dimension, which means that the usefulness of the practice of budget tagging climate expenditures faces serious limitations. The real need faced by governments lies not only in identifying the expenditure, but also includes evaluating its impact.
  - ▶ In virtue of the generalized nature of climate change, the policies introduced in response to it generate impacts in different ambits, which can be observed in different databases and within the different conceptual approaches, as well as in different geographical and time scales. Therefore, to build the analytical capacity needed to fully understand the consequences of climate change policies, it is essential to link the different statistical systems. This means connecting classification systems and conceptualizing an accounting framework to organize the information, which is achieved with a functional classification of climate expenditures, such as the one proposed here. For further discussion of this theme, see Pizarro et al. (2021). In any case, multilateral institutions can help to create classifications, or a new generation of budget markers, which

<sup>16</sup> This challenge does not arise in the case of primary purpose expenditures, given that, as previously mentioned, the classification of functions depends on the motivation or intention of the principal or policymaker when making a transaction. Clarification is therefore inevitably related to the declaration of purpose.

<sup>17</sup> This work is carried out by the Ministry of National Planning and Political Economy (Ministerio de Planificación Nacional y Política Económica) in Costa Rica, and the Finance and Public Credit Secretariat (SHCP) (Secretaría de Hacienda y Crédito Público) in Mexico.



contain definitions and systems of classification that coincide with internationally recognized statistical standards.

Finally, it is also important to address here the experience acquired regarding the identification of negative climate-relevant expenditures.<sup>18</sup> These are expenditures which institutions may have little or no inclination to record in the extended matrix of the classification of the functions of government (EMCOFOG). During the design phase of the pilot projects and the carrying out of studies of climate-related budgeting by the IDB, it was noticed that negative spending is consistent and substantially higher than positive expenditure. In the cases of the Dominican Republic and Costa Rica, the average negative budget expenditure has been estimated at 0.40 percent and 0.05 percent of gross domestic product (GDP), respectively, whereas positive expenditure is much lower,

coming in at 0.26 percent and 0.02 percent of GDP, respectively. This type of expenditure could increase the exposure of public finances to stranded assets or hamper a country's efforts to fulfill the commitments to its nationally determined contributions (NDCs). However, many countries lack the institutional mechanisms that are capable of evaluating the consistency of public spending when compared with its national climate goals and with the Paris Agreement. To meet this challenge, intervention is required at an early stage of the budget process or, in other words, much before the expenditure has been classified. Specifically, countries may consider reforming their public investment systems to strengthen program and project evaluation criteria with a view to ensuring that they only receive budget allocations if they can demonstrate their coherence with climate goals and they do not increase the risk of contingent liabilities in the form of stranded assets.

<sup>18</sup> As mentioned in Chapter 3, negative climate-relevant expenditures are only identified, that is, these are expenditures whose impact on climate change is never the primary purpose. Therefore, they will not be subject to a reclassification of expenditures in accordance with the categories established in the classification of the functions of government (COFOG), although they are recorded in the extended matrix of the classification of the functions of government (EMCOFOG).

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## **ANNEXES**

## Annex 1: Statistical Frameworks in Use in Latin America and the Caribbean

### 1. The Government Finance Statistics Manual

The general government sector has two main general economic functions, which are: first, to provide certain goods and services to the community, chiefly on a non-market basis and second, to redistribute revenue and wealth through transfers.

These functions are fulfilled by expenditure transactions between different institutional units, which are classified according to different analytical objectives and are ordered using a conceptual framework known as the Government Finance Statistics Manual (GFSM) (IMF, 2014).

To a greater or a lesser degree, government finance statistics in Latin America and the Caribbean (LAC) countries are organized on the basis of this Manual, which follows the methodological guidelines recommended by the International Monetary Fund (IMF) (IMF, 2014).

The main objective of the GFSM (IMF, 2014) is to provide a conceptual framework and to present information appropriate for analyzing and evaluating fiscal policy, especially regarding general government sector performance and, more broadly, public sector performance in any country. It must therefore be the starting point when it comes to identifying and evaluating climate expenditure.

In general terms, expenditure is understood in the GFSM to be a decrease in net wealth as result of a transaction. Transactions are counterpart entries that either reduce assets or increase liabilities and, therefore, reduce the net wealth of the government or the public sector.

This is presented analytically through four financial statements (see Box A1.1). The statement of operations is the principal result of interest, as it summarizes the transactions of an institutional sector or of the government in general. Such a statement reflects the exchange between institutional units and reveals the state of government management, its financial position and eventual sustainability over the long term.

In effect, this conceptual framework focuses on identifying the expenditure transactions that are recorded and are reflected in the statement of operations. However, from the impact evaluation perspective, and with regard to connection with other information systems, the balance sheet is more relevant, as it can connect the government accounts with the System of Environmental and Economic Accounts (SEEA).

**Box A1.1.** Financial Statements of Government Finance Statistics**1. STATEMENT OF OPERATIONS**

This is a summary of the transactions of a sector or subsector in a given period. The transactions represent variations in the balance sheet that derive from voluntary exchanges between institutional units, such as the sale of a good or a service by one unit and its acquisition by another.

$$R - E = \text{VNW}_t = \text{TNFA} + \text{VFNW}_t = \text{TFA} - \text{TL} \quad (3.1)$$

R = revenues; E = expenditure; VNW<sub>t</sub> = variation in net worth (by transaction); TNFA = transaction in non-financial assets; VFNW<sub>t</sub> = variation in financial net worth by transactions (loans– borrowing); TFA = transaction in financial assets; TL = transaction of liabilities.

**2. STATEMENT OF OTHER ECONOMIC FLOWS**

Records variations in the balance sheet of assets, liabilities and net worth that do not have their origin in transactions such as earnings and losses incurred by changing prices.

$$\text{VNW}_{\text{ef}} = \text{OF} + \text{VFNW}_{\text{ef}} = \text{OFA} - \text{OFL} \quad (3.2)$$

VNW<sub>ef</sub> = variation in net worth (by economic flows); OF = other economic flows; VFNW<sub>ef</sub> = variation in financial net worth due to economic flows; OFA = other economic flows in assets; OFL = other economic flows in liabilities.

**3. CASH FLOW STATEMENT**

Records cash inflows and outflows, using a classification similar to the state of operations, but its focus of attention is on net variation in cash flows resulting from transactions during the data reporting period.

**4. BALANCE**

Records the balance sheet of assets, liabilities and net worth of the sector or subsector at the end of each data reporting period.

$$\text{BP}_0 = \text{flows (transactions + other economic flows)} = \text{BP}_1 \quad (3.3)$$

BP<sub>0</sub> = balance position at the beginning of the period; BP<sub>1</sub> = balance position at the end of the period.

Source: Authors' elaboration, based on IMF (2014).

**Box A1.2.** Principal Definitions of the Government Finance Statistics Manual

**Revenue** is an increase in net worth as a consequence of transactions. The main types of revenue are taxes, among which are included green (ecological) or climate taxes; social contributions; donations, a category that may include donations with climate purposes, and other revenues, a category that may include revenues associated with negative climate activities.

$$\text{Revenues} = \text{taxes} + \text{social contributions} + \text{donations} + \text{other revenues}$$

**Expenditure** is a decrease in net worth as a consequence of transactions. The principal types of expenditure are employee compensation, the use of goods and services, the consumption of fixed capital, interests, subsidies, donations, social benefits and other expenditures.

$$\text{Expenditures} = \text{remunerations} + \text{use of goods and services} + \text{consumption of fixed capital} + \text{interests} + \text{subsidies} + \text{donations} + \text{social benefits} + \text{other expenditures}$$

**Net investment in non-financial assets** is equivalent to acquisitions minus disposal of fixed assets, minus consumption of fixed capital, plus variation in stock, plus net acquisition (acquisitions minus disposal) of objects of value and non-produced assets.

**Disbursement is the sum** of the expenditure and the net investment in non-financial assets and is presented as an additional aggregate in the state of operations. For effects of comparative analysis at the international level, disbursements (in aggregate terms or by type of transaction) are presented by function according to the classification of the functions of government (COFOG).

**Non-financial assets** are economic assets different from financial assets. These are stores of value that yield benefits, whether through their use in the production of goods and services, or in the form of property rent and earnings by ownership. These assets are classified as fixed assets, stocks, objects of value and non-produced assets.

$$\text{Transaction in non-financial assets} = \text{net investment} = \text{fixed assets} + \text{stocks} + \text{objects of value} + \text{non-produced assets}$$

$$\text{Transaction in assets and financial liabilities} = \text{net acquisition of financial assets} - \text{net incurrence of liabilities}$$

Source: IMF (2014).

## 2. The Analytical Framework of Government Finance Statistics and its Connection with the System of Environmental and Economic Accounts

In the GFSM, expenditure transactions have counterpart entries that reduce assets or increase liabilities and, therefore, reduce net worth. This is potentially very relevant for understanding the impact of the public expenditure on climate policy objectives and their connection with the SEEA.

The balance equation (3.3), which is presented in Box A1.1, could be reformulated as an equation of net worth, as shown in the following equation (3.4):

$$\text{Net worth} = \text{FA} + \text{NFA} - \text{FL} = \text{NFA} + (\text{FA} - \text{FL}) = \text{NFA} + \text{FNW} \quad (3.4)$$

Where NFA = non-financial assets; FA = financial assets; FL = Financial liabilities; FNW = Financial net worth.

The worth equation shows government worth and liabilities in a given period and, consequently, represents the government's financial sustainability. In turn, it reflects the different policies of the government based on economic flows and borrowing, and their impact on different assets.

The change in net worth over a given period will depend on the economic transactions and

on the variation in the valuation of assets. This may crucially influence the climate impacts and, consequently, the public policy responses. In the GFS, non-financial assets are the government assets (as legal and/or economic owner); however, this concept may be broadened to include the non-financial assets of a nation, as presented in the equation below (3.5):

$$\text{Non-financial Assets of the Nation} = \text{NFA}_{\text{Government Property}} + \text{NFA}_{\text{Others}} \quad (3.5)$$

By extending the concept of non-financial assets, the GFS can be connected directly with the SEEA by conceptualizing wealth much more broadly and introducing the concept of fixed and non-produced assets. The latter includes resources of natural origin, which allow the impact of expenditures on wealth from natural sources to be expressed, as well as the impact of climate change on the assets. Whereas the former should be reflected in variation in net wealth by transaction, the latter will be reflected in the variation in net wealth.

In the case of the other variations in volume, the connection between the SEEA and the GFS is found in the appearance or disappearance of existing economic assets; for example, their appearance may be attributable to discoveries, or to technological advances in the exploitation of non-produced assets (such as rare minerals), while their disappearance may result from over-exploitation (water or natural gas) or from a change in economic usage.

Another way of measuring variations in volume is through the effect of external events on the value of assets, in which case losses not only enable the connection to be made with the SEEA, but also to establish a link with the impact of climate change. In this way, connection with the SEEA and an evaluation of the impact of the transactions attributable to government policies, such as revenues (green taxes) or expenditures (either functional or climate activities), must have a correlate in the net position of non-financial assets that are related with climate change.

The SEEA does not explicitly address climate change, but both the conceptual approach and many of the specific accounts are directly relevant for the analysis of climate policy, particularly when it comes to generating information and developing indicators in different policy areas. Therefore, the connection between government climate expenditures and the SEEA is a link that must be duly valued.

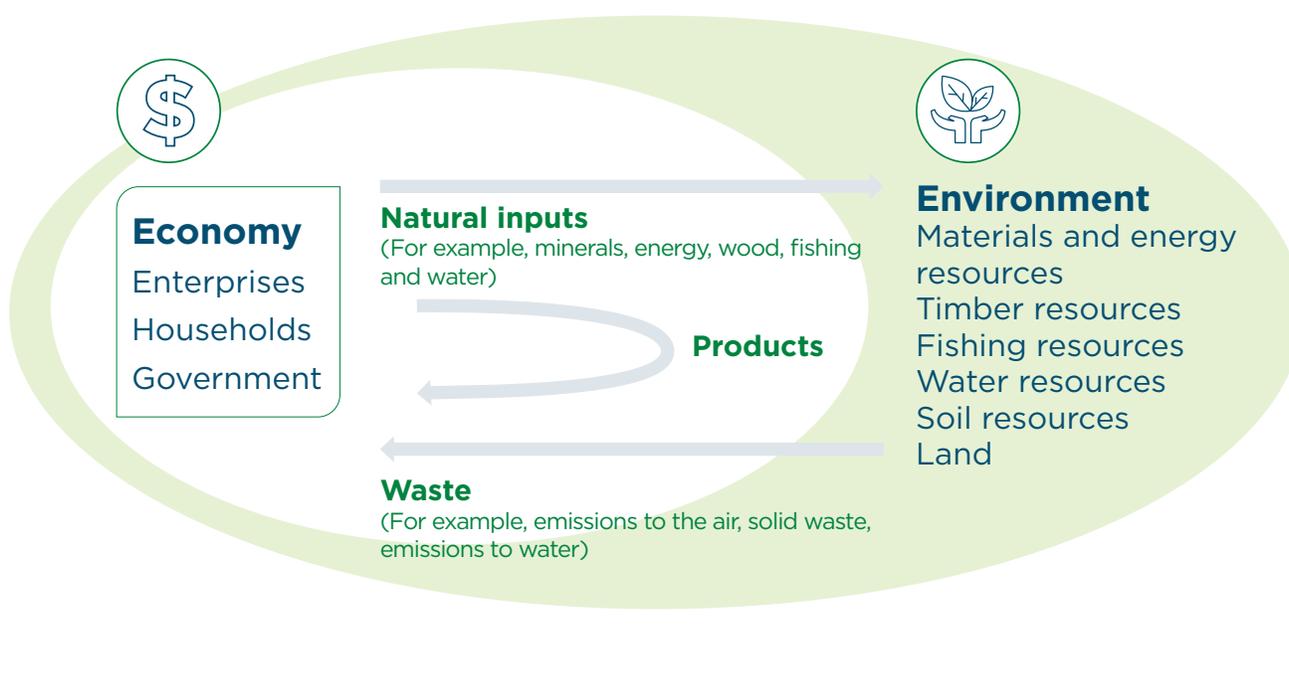
**Box A1.3.** The System of Environmental and Economic Accounts

**The System of Environmental and Economic Accounts (SEEA)** is an integrated framework of accounts that organizes environmental and economic information in a coherent and consistent manner. The SEEA is based upon a conceptual framework that expands the concept of fixed non-financial assets to include natural capital and identifies different flows between the economy and the environment, as presented in Figure A1.3.1. It incorporates a register of natural productive capital (environmental assets) and its change over time, thereby broadening the approach of the National Accounts System (NAS). The asset accounts show the stock of environmental assets at the beginning and the end of each accounting period and the changes in such stock. This type of account is of interest for exploring policies related with climate change mitigation and adaptation and environmental impacts. There are detailed accounts to cover minerals and energy, land, soil, timber and aquatic resources, and other biological and water resources, all relevant for climate change.

Climate change creates pressures or impacts both on economic and on environmental assets, which, in turn, affects the flow of services from those assets. These impacts can be direct (for example, the destruction of productive assets due to extreme weather events) or indirect (the effect on environmental assets, which, in turn, reduces the ecosystem services that have an impact on economic activities, such as agriculture, which may be jeopardized by lower pollination resulting from the loss of biodiversity). Moreover, both the pressures and the drivers of climate change are associated with the economic activities that are reflected in the SEEA and also in specific accounts, such as the accounts of emissions to the air or to the water, energy or agricultural land use.

Therefore, the evident connection between the GFSM and the SEEA is found in the balance or the account of assets. Government transactions impact on fixed non-financial assets, which is reflected in the balance. Moreover, this enables permanent tracking of assets and financial and non-financial liabilities and can help to record the long-term sustainability of government policies. For example, by broadening the balance to include all assets, there will be an evaluation of the total wealth of a nation, while a means of recording the movement of non-financial assets towards financial liabilities reveals a country's final balance with respect to environmental or climate sustainability. Some indicators of this kind were presented in Chapter 4 above.

**Figure A1.3.1.** The SEEA Conceptual Framework



### 3. The Framework of Environmental Statistics

In contrast with economic information, the field of environmental statistics does not have an internationally accepted, global system of classification for environmental information. Rather, there is an abundance of classification systems that coexist for specific thematic areas. Among these, the standardized statistical classifications are worth mentioning, as well as less-formal groupings or categories, which are concerned with different areas, levels of geographical and temporal scale and conceptual approaches. Moreover, some of the classifications and categories that have been utilized in the environmental field have not been specifically developed for statistical purposes and, therefore, it is impossible to link them to the internationally recognized statistical classifications. Due to the variety of

statistical systems that were available in the environmental field, the United Nations Office of Statistics, alongside other international offices, elaborated the Framework for the Development of Environmental Statistics (FDES). This is a multipurpose conceptual and statistical framework to organize statistical information about the environment. The FDES assumes that people and their social and economic activities (the human subsystem) form an integral part of the environment and interact with it. On this conceptual basis, the data systems are organized following a hierarchical structure that, at its highest level, has six components, as can be seen in Figure A1.1, and is thereafter subdivided into subcomponents, statistical themes and individual statistics.

**Graph A1.1.** Components of the Framework for the Development of Environmental Statistics



## Annex 2. Catalog of Accounts

### Classification of Primary Purpose Expenditures

Code	Description
<b>1.0.0</b>	<b>MIXED</b>
1.1.0	Administration of climate change management: includes administration, management, planning, coordination, direction and control; its objectives include climate change mitigation and adaptation actions.
1.2.0	Financial Instruments: includes the design and implementation of financial protection and insurance strategies and mechanisms for climate change mitigation and adaptation actions.
1.2.1	Non-life insurance or general insurance: covers all activities related with the design, implementation, promotion and contract management of insurance annuities and policies, and investment of the corresponding premiums, with a view to creating a portfolio of financial assets to address future claims due to adaptation and mitigation activities.
1.2.2	Financial services: includes all activities related with promoting, managing, receiving deposits and/or surrogate deposits and granting loans or funding. Providing credit can take many forms, among them: loans, mortgages, credit card transactions, etc. These activities are undertaken to cover and/or offset activities related with climate change mitigation and adaptation actions.
1.3.0	Regulatory aspects: comprises elaborating laws and rules; creating organisms and/or entities responsible for the work, and supervising and auditing, among other tasks, actions relating to climate change mitigation and adaptation.
1.3.1	Laws: includes activities whose aim is to update, strengthen or modernize the legal framework to include aspects relating to climate change.
1.3.2	Auditing comprises actions relating to the inspection, review, examination and the compliance with current climate change regulations, without differentiating between actions aimed at mitigation or adaptation.
1.3.3	Others NEC: includes actions relating to regulatory aspects not previously specified.
1.4.0	Education and communication for climate change: includes formulating, administering and applying rules; the regulation, authorization and supervision of teaching centers, and applied research and experimental development in relation with teaching services, as well as communication campaigns. Includes diverse teaching and learning methods in different educational institutions and in diverse social groups, with the aim of transmitting knowledge, values, skills, beliefs, and habits related with climate change. Also comprises the preparation, management, realization and documentation of climate change-related workshops, symposiums, congresses and/or conferences.
1.5.0	Comprises expenditures in environment and biodiversity that have positive impacts on climate change mitigation and adaptation, but it is impossible to distinguish between them, or both share the same objectives.
1.6.0	Others NEC: comprises all those climate change-related actions without identifying mitigation and/or adaptation and that have not been previously detailed.
<b>2.0.0</b>	<b>MITIGATION</b>
2.1.0	Mitigation administration and management: includes administration of affairs and services related with the modification of traditional processes to convert them into efficient processes; the creation of policy, regulatory, auditing and planning instruments; technical assistance, studies, research, training, awareness-raising, production and diffusion of technical and statistical documentation; supervision and regulation for the modification, transformation and/or reduction of production to reduce pollution levels and/or greenhouse gas emissions (GHG) to mitigate climate change. Data-modelling or other information systems to enhance climate change knowledge.
2.2.0	Reduction of contaminants arising from productive processes with the aim of mitigating climate change.

Code	Description
2.2.1	Agriculture, livestock and fishing: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, studies, design, analysis, evaluation, specific research and/or development for production in agriculture, livestock and fishing; training, awareness-raising, diffusion of technical and statistical documentation; supervision and regulation for the modification, transformation and/or reduction of agricultural, livestock and fishing production to reduce pollution levels and/or GHG emissions with the aim of mitigating climate change.
2.2.2	Silviculture: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, studies, design, analysis, evaluation, specific research and/or development for silviculture activities; training, awareness-raising, diffusion of technical and statistical documentation; supervision and regulation for the modification, transformation and/or reduction of forestry production to reduce pollution levels and/or GHG emissions to mitigate climate change.
2.2.3	Mining: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, studies, design, analysis, evaluation, specific research and/or development for mining activities; training, awareness-raising, diffusion of technical and statistical documentation; supervision and regulation for the modification, transformation and/or reduction of production, exploitation and/or exploration of quarries to reduce pollution levels and/or GHG emissions to mitigate climate change.
2.2.4	Manufacturing: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, studies, design, analysis, evaluation, specific research and/or development for manufacturing activities; training, awareness-raising, diffusion of technical and statistical documentation; supervision and regulation for the modification and/or transformation of inputs and/or processes that help to reduce pollution levels and GHG emissions to mitigate climate change.
2.2.5	Gas and water: covers administration, management and policymaking activities, regulatory and planning instruments; technical assistance, diffusion of technical and statistical documentation, studies, design, analysis, evaluation, specific research and/or development for the production and distribution of natural or synthetic gas to consumers, and water catchment, treatment and distribution to address domestic and industrial needs; training, awareness-raising and exploitation; supervision and regulation for the modification and/or transformation of inputs and/or processes that help reduce pollution levels and GHG emissions with a view to mitigating climate change.
2.2.6	Construction: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance, diffusion of technical and statistical documentation, studies, design, analysis, evaluation, specific research and/or development for the activities of construction, training, awareness-raising and exploitation; supervision and regulation for the modification and/or transformation of inputs and/or processes that help reduce pollution levels and GHG emissions with the objective of mitigating climate change.
2.2.7	Others NEC: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, studies, design, analysis, evaluation, research and/or development of activities related with productive activities NEC; training, awareness-raising, diffusion of technical and statistical documentation; supervision and regulation for the modification, transformation and/or reduction of GHGs from economic activities not previously specified to mitigate climate change.
2.3.0	Energy and energy efficiency to mitigate climate change.
2.3.1	Energy efficient products: comprises administration, management and policymaking activities, regulatory and planning instruments; technical assistance, studies, design, analysis, evaluation, research and/or development related with energy efficiency; training, awareness-raising, exploitation, diffusion of technical and statistical documentation; supervision and regulation, design, testing, analysis and production of efficient products/ inputs from the energy perspective, with the aim of mitigating climate change.

Code	Description
2.3.2	Traditional electrical energy: includes reconversion to efficient productive processes in the traditional electricity sector, which includes administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, specific research and/or development for the production of conventional electrical energy; training, awareness-raising and exploitation; diffusion of technical and statistical documentation; supervision and regulation, design and reconversion of productive processes to achieve processes of energy efficiency and/or changes in the use of certain energies for others provided by renewable sources to mitigate climate change.
2.3.3	Renewable energies: includes the administration of affairs and services related with energy processes; policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development for the production of renewable energy; training, awareness-raising and diffusion of technical and statistical documentation; conservation, rational use and exploitation of clean energy based on renewable sources developed with the aim of mitigating climate change.
2.3.4	Fugitive emissions: comprises administration, management and policymaking activities, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development to reduce or capture emissions; training, awareness-raising, supervision, diffusion of technical and statistical documentation, and regulation for control and/or reduction of fugitive emissions to mitigate climate change. Also comprises the improvement and/or reconversion of storage systems to reduce these emissions with the aim of mitigating climate change.
2.3.5	Fuels: comprises administration, management and policymaking activities, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development for fuel production; training, awareness-raising, supervision, diffusion of technical and statistical documentation, and regulation for control and/or transformation of fuels to mitigate climate change.
2.3.6	Others NEC: comprises management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development of activities related with energy or energy efficiency not previously specified; training, awareness-raising, supervision and regulation for the modification and/or transformation of processes or inputs not previously specified to mitigate climate change.
2.4.0	Transport: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development related with passenger and freight transport; training, diffusion of technical and statistical documentation; awareness-raising, supervision and regulation of transport (land, maritime, air and rail) that is more efficient and less polluting, with the aim of mitigating climate change.
2.5.0	Environment and biodiversity.
2.5.1	Pollution abatement: includes all activities of administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development related with reducing pollution (air, water, soil); diffusion of technical and statistical documentation; training, awareness-raising, auditing, regulation and treatment of activities whose primary purpose is the management, transport and final disposal of waste (including all waste that causes pollution) to mitigate climate change. Also includes the creation and/or modification of devices (biological, chemical, physical or technological) to eliminate pollution.
2.5.1.1	Reduction of water pollution: comprises all administration, management and policymaking activities, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development related with the activities of reducing water pollution of the water; diffusion of technical and statistical documentation; training, awareness-raising, auditing, regulation and treatment of activities whose primary purpose is the management, transport and final disposal of sewage to mitigate climate change. Includes the creation and/or modification of devices (biological, chemical, physical or technological) to eliminate water pollution.

Code	Description
2.5.1.2	Reduction of soil pollution: comprises all activities of administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development related with activities to reduce soil pollution; diffusion of technical and statistical documentation; training, awareness-raising, auditing, regulation and treatment of activities whose primary purpose is managing and treating contaminated soils to mitigate climate change. Includes the creation and/or modification of devices (biological, chemical, physical or technological) to eliminate soil pollution.
2.5.1.3	Reduction of air pollution: includes all activities of administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development related with the activities of reducing air pollution; diffusion of technical and statistical documentation; training, awareness-raising, auditing, regulation and treatment of activities whose primary purpose is the management and treatment of air with a view to mitigating climate change. Includes the creation and/or modification of devices (biological, chemical, physical or technological) to eliminate air pollution.
2.5.1.4	Industry and/or carbon or GHG capture technology: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, studies, design, analysis, evaluation, specific research and/or development for carbon production activities or GHG capture technologies; training, awareness-raising, diffusion of technical and statistical documentation; supervision and regulation for development and/or production of technologies that help reduce pollution levels and GHG emissions with the aim of mitigating climate change. Includes all activities related with producing and using integrated circuits, and the application of highly specialized miniaturization technologies. Also covers the manufacture of electronic consumer goods, measuring, testing and control equipment, irradiation equipment, electronic equipment, optical instruments and equipment and magnetic and optical devices.
2.5.2	Biodiversity and protected areas: includes administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development for safeguarding biodiversity and protected areas; diffusion of technical and statistical documentation; training, awareness-raising, auditing and regulation with a view to restoring natural ecosystems for carbon capture to mitigate climate change. Also includes activities to develop biodiversity, as well as measures to protect and safeguard wild flora and fauna, with a view to mitigating climate change.
2.5.3	Changes in land uses: comprises administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development for protection of the habitat; diffusion of technical and statistical documentation; training, awareness-raising, auditing and regulation to change land use with the objective of mitigation.
2.6.0	Research and development: covers all the activities focused on scientific research and development as a principal activity, with the aim of reducing GHGs and/or carbon capture.
2.6.1	Experimental research or theories aiming fundamentally to acquire new knowledge regarding the causes of phenomena and of observable facts, with no application or use envisaged, which have the objective of reducing GHGs and/or carbon capture.
2.6.2	Applied research: includes original research focused on acquiring new knowledge and principally aimed at a practical goal or objective, with a view to reducing and/or capturing of GHGs.
2.7.0	Others NEC: comprises administration, management and policymaking, regulatory and planning instruments; technical assistance, design, analysis, evaluation, studies, research and/or development related with mitigation NEC; diffusion of technical and statistical documentation; training, awareness-raising, auditing and regulation with the aim of mitigating climate change.

Code	Description
<b>3.0.0</b>	<b>ADAPTATION AND DISASTER RISK MANAGEMENT</b>
3.1.0	Administration: includes administration, management, planning, coordination, direction, monitoring and control whose objectives are adaptation actions and reduction of the risk of disasters.
3.1.1	Governance: comprises building the institutions responsible for management, planning, coordination, direction and elaboration of formal and informal rules designed to regulate the public space, the scenario in which the State, as well as economic and social agents, interact to take decisions aimed at controlling actions related with adaptation and reducing the risk of disasters.
3.1.2	Risk identification and knowledge: includes administration, management and identification of risk scenarios, analysis, statistical and/or mathematical modelling of information; design, analysis, evaluation and creation of early warning technological and operational systems and risk evaluation; monitoring and tracking; diffusion of technical and statistical documentation, and communication to raise awareness to enhance disaster risk reduction processes.
3.1.3	Preparations for response/monitoring of adaptation and/or risk: includes organizational resources and capacities; determination of functions and responsibilities; diffusion of technical and statistical documentation; statistical and/or mathematical modelling of information; design, analysis, evaluation and creation of technological and operational systems for response/monitoring and the development of policies and procedures, and planning of activities to reach a level of preparedness that can boost adaptation capacities.
3.1.4	Emergency response preparations: includes organizational resources and capacities; determination of functions and responsibilities; diffusion of technical and statistical documentation; development of policies and procedures, and the planning of activities to reach a level of preparedness that can respond to a disaster in a timely and efficient manner.
3.1.5	Others NEC: includes administration, management and support for activities such as policy formulation, administration, coordination and oversight; production and diffusion of technical and statistical documentation, and actions that help to coordinate and monitor the diverse activities and/or adaptation and risk management actions that have not been previously identified.
3.2.0	Protection and financial Instruments.
3.2.1	Non-life insurance or general insurance: includes all activities related with the design, implementation, promotion and management of annuity contracts and insurance policies, and investment of the corresponding premiums, with a view to creating a portfolio of financial assets to address future claims related with climate adaptation and risk management activities.
3.2.2	Financial services: includes all activities related with promoting, managing or receiving deposits and/or surrogate deposits, and the granting of loans or funding. Providing credit can take many forms, among them: loans, mortgages, credit card transactions, etc. These operations are undertaken to cover and/or offset activities related with climate risk management and adaptation actions
3.3.0	Adjusted or transformed productive processes (economic affairs).
3.3.1	Agriculture, livestock, fishing: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development of agricultural, livestock and fishing activities; training, awareness-raising and exploitation; supervision and regulation for production, as well as agricultural and fishing processes and products that are resilient and/or adapted to climate change, to reduce exposure to climate risks.
3.3.2	Silviculture: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development for forestry activity; training, awareness-raising and exploitation; supervision and regulation for production, as well as forestry processes and products that are resilient and/or adapted to climate change to reduce exposure to climate risks.

Code	Description
3.3.3	Mining: covers administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development for mining activity; training, awareness-raising and exploitation; supervision and regulation for production, exploitation or exploration of mining products, strengthening resilience and/or adaptation to climate change to reduce exposure to climate risks.
3.3.4	Manufacturing: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development for manufacturing activities; training, awareness-raising and exploitation; supervision and regulation for production, as well as processes and products, or their changes, aimed at building resilience and/or adaptation to climate change, to reduce exposure to climate risks.
3.3.5	Gas and water: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, specific research and/or development for manufacturing activities and the distribution of natural or synthetic gas to consumers, and water catchment, treatment and distribution activities to address domestic and industrial needs; training, awareness-raising and exploitation; supervision and regulation for production, as well as processes and products, or their changes, to strengthen resilience and/or climate change adaptation, to reduce exposure to climate risks.
3.3.6	Construction and infrastructure: covers administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development for construction (whether residential, non-residential or engineering works, on top of specialized construction activities); training, awareness-raising and exploitation; supervision and regulation to execute building works that are resilient and/or adapted to climate change, which readjust and manage the infrastructure, protect and reinforce existing infrastructure or, otherwise, retire or relocate such assets with a view to reducing exposure to climate risks.
3.3.7	Energy and fuels: covers administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development for energy and fuel production; training, awareness-raising and exploitation; supervision and regulation to implement energy projects or products that are resilient and/or adapted to climate change, which readjust and manage the infrastructure, protect and reinforce existing infrastructure or, otherwise, retire or relocate such assets with the aim of reducing exposure to climate risks.
3.3.8	Transport: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development for the delivery of transport services; training, awareness-raising and exploitation; supervision and regulation to achieve transport that is resilient and/or adapted to climate change, which readjust and manage the infrastructure, protect and reinforce existing infrastructure or, otherwise, retire or relocate such assets with the aim of reducing exposure to climate risks.
3.3.9	Others NEC: includes administration, management and policymaking, regulatory and planning instruments; technical assistance; studies, design, analysis, evaluation, research and/or development of activities related with productive activities NEC; training and awareness-raising; diffusion of technical and statistical documentation; supervision and regulation for activities that are resilient and/or adapted to climate change, which readjust and manage the infrastructure, protect and reinforce existing infrastructure or, otherwise, retire or relocate such assets with the aim of reducing exposure to climate risks.
3.4.0	Environment and biodiversity.
3.4.1	Waste, management and treatment of pollution: comprises administration, management and policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies, research and/or development for pollution management and treatment; training; diffusion of technical and statistical documentation; awareness-raising and exploitation; supervision and regulation of activities whose objective is to reduce environmental pollution. Also includes pollution abatement plans, promotion of the use of filters and/or changes in processes aimed at reducing pollution, as well as treatment of all types of pollution.

Code	Description
3.4.1.1	Sewage treatment: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies, research and/or development for sewage treatment; training; diffusion of technical and statistical documentation; awareness-raising and exploitation; supervision and regulation of activities whose objective is collecting and transporting human or industrial sewage from one or diverse users, as well as rainwater runoff, by means of sewer pipes, and other means of transport (tanker trucks for collecting black waters, among others), as well as emptying and cleaning cesspits and septic tanks, sewage holding tanks and pumping points, and the maintenance of chemical toilets whose purpose is to reduce pollution.
3.4.1.2	Soil treatment: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies, research and/or development for soil treatment; training; diffusion of technical and statistical documentation; awareness-raising and exploitation; supervision and regulation of activities whose objective is decontamination of soil and groundwater of a contaminated site, on- or off-site, using mechanical, chemical or biological methods whose purpose is to reduce pollution.
3.4.1.3	Air pollution: includes administration, management policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies, research and/or development for air pollution; training; diffusion of technical and statistical documentation; awareness-raising and exploitation; supervision and regulation of activities whose objective is to clean up air pollution with mechanical, chemical or biological methods with an aim to reducing pollution.
3.4.2	Biodiversity and protected areas: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies; diffusion of technical and statistical documentation; research and/or development for actions on biodiversity and protected areas; training, awareness-raising and exploitation; supervision and regulation; promotion and management of genetic resources, activities and actions for the development of biodiversity; control of trade in wild flora and fauna; actions focused on the sustainable management of national parks and protected areas.
3.4.3	Others NEC: comprises administration, management and policymaking activities, regulatory and planning instruments; technical assistance; diffusion of technical and statistical documentation; design, analysis, evaluation, studies, research and/or development related with the environment and biodiversity NEC; training, awareness-raising, and exploitation; supervision and regulation not previously mentioned.
3.5.0	Housing and town planning: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies, diffusion of technical and statistical documentation; research and/or development of activities related with urban development; training, awareness-raising and exploitation; supervision and regulation linked with urban planning in areas with lower vulnerability to climate risks; construction or acquisition and refurbishment of housing units for adaptation to climate change and facing up to its challenges; maintenance and/or strengthening the value of housing located in areas that are highly susceptible to climate impacts.
3.6.0	Health: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies, research and/or development for human health; diffusion of technical and statistical documentation; training, awareness-raising and exploitation; supervision, regulation and elaboration of plans and/or programs to support the population in the face of climate risks; establishment and enforcement of the rules for medical and paramedical staff, as well as for hospitals, clinics, consultancies, and other health establishments in the case of an extreme weather event.
3.7.0	Research and development: covers all activities focused on scientific research and development as a main activity whose purpose is adaptation to climate change and risk management.
3.7.1	Experimental or theoretical research fundamentally aimed at acquiring new knowledge regarding the causes of phenomena and observable facts, with no foreseen application or use, whose aim is adaptation to climate change and risk management.
3.7.2	Applied research: includes original research focused on acquiring new knowledge and principally aimed at a practical goal or objective, with a view to adaptation to climate change and risk management.

Code	Description
3.8.0	Others NEC: includes administration, management and policymaking activities, regulatory and planning instruments; technical assistance; design, analysis, evaluation, studies, diffusion of technical and statistical documentation; research and/or development that bear a relation to adaptation to climate change and risk management NEC; training, awareness-raising and exploitation; supervision and regulation of actions not previously specified.

Source: Authors' elaboration.

NEC: Not elsewhere classified.

## Classification of Secondary Purpose Recovery and Emergency Expenditures

Code	Description
4.0.0	<b>EMERGENCY</b>
4.1.0	Security, defense and control of emergencies.
4.1.1	Safeguarding the population: includes administration, management and support for activities such as the formulation, administration, coordination and oversight of policies, plans, programs and general budgets related with public order; rescue, safeguarding and support for the population in the event of extreme weather emergencies; backing and cooperation for providing shelter and distribution of humanitarian aid received for emergency purposes.
4.1.2	Combat and/or control of emergencies: includes administration, management and support for activities such as the formulation, coordination and oversight of policies, plans, programs and general budgets related with preparedness, training, and procurement of tools and instruments for combatting and controlling climate emergencies.
4.2.0	Supply of basic services: includes administration, management and support for activities such as the formulation and oversight of policies, plans, programs and budget reallocations and actions designed to offer basic supplies to people so they can carry on their usual activities during an emergency.
4.3.0	Health: comprises the administration, management and provision of services of hospital and out-patient care, as well as the inputs needed to offer an optimum service to the population affected by an extreme weather emergency.
4.4.0	Social protection: comprises activities related with affairs such as government policy formulation and administration, and the formulation and execution of legislation and other rules regarding providing social protection to vulnerable people affected by the climate emergency.
4.5.0	Others NEC: includes activities related with affairs such as government policy formulation and administration, and the formulation and execution of legislation and other actions not previously detailed.
5.0.0	<b>RECOVERY</b>
5.1.0	Recovery management and planning.
5.1.1	Administration of recovery management: includes administration, management, planning, coordination, direction and control whose objective consists of actions aimed at recovery from disasters presumably related with extreme climate events.
5.1.2	Studies and evaluation of damages from direct losses and/or impacts caused by disasters presumably related with extreme weather events.
5.2.0	Fixed assets.
5.2.1	Infrastructure works: incorporates all activities of administration, management, planning, coordination, direction and control of funds whose objective is recovery and/or reconstruction of infrastructure works damaged as a consequence of climate impacts.

5.2.2	Buildings and engineering works: contains all the activities of administration, management, planning, coordination, direction and control of funds whose objective is the recovery and/or reconstruction of residential and non-residential buildings, as well as engineering works damaged as a consequence of climate impacts.
5.2.3	Machinery and equipment: includes all activities of administration, management, planning, coordination, direction and control of funds whose objective is the procurement of machinery and equipment to tackle the damages caused by adverse weather events.
5.2.4	Cultivated biological resources: comprises all activities of administration, management, planning, coordination, direction and control of funds whose objective is the acquisition, repair, recovery and/or regeneration of cultivated biological resources (yielding repeat products) damaged and/or lost due to extreme weather events.
5.3.0	Natural capital.
5.3.1	Lands and grounds: includes all activities of administration, management, planning, coordination, direction and control of funds whose objective is to restore uncultivated lands or grounds damaged as a consequence of climate impacts. Moreover, it comprises the elaboration, application and auditing of rules, diffusion of information and technical and statistical documentation regarding protection and/or restoration of uncultivated lands and grounds affected by extreme weather events.
5.3.2	Uncultivated biological resources: comprises all activities of administration, management, planning, coordination, direction and control whose aim is to protect and/or restore any protected areas affected by the effects of climate change.
5.3.3	Others NEC: includes all administration, management, planning, coordination, direction and control activities not previously described.
5.4.0	Others NEC: includes administration, management, planning, coordination, direction and control activities not previously described.
6.0.0	Positive climate-relevant activities: corresponds to actions, processes, services or the generation of products that, due to the nature of the final products or the type of process or the resulting services, have an impact or respond positively to climate change. These activities are found in productive processes, the environment and in the field of housing and town planning.
7.0.0	Negative climate-relevant activities: includes actions, processes, services or generation of products that, due to the nature of the final products or the type of process or the resulting services, have an impact or respond negatively to climate change. These activities are found in productive processes, the environment and in the field of housing and town planning.

Source: Authors' elaboration.  
NEC: Not elsewhere classified.

### Annex 3. Climate Activity Identification and Classification

The aim of elaborating a methodology for identifying and classifying climate activities is to support national teams in reviewing information and in the subsequent identification process, for all the activities, projects or lines of work that do not declare an explicit climate change purpose. The main text of this publication emphasizes the fact that the declaration of climate change purpose is the foremost indication when it comes to classifying a disbursement as being primary purpose climate spending. However, many of these disbursements lack an explicit declaration, and therein lies a large part of the operational work that the countries need to carry out. In this annex, some indications are given to facilitate that task and, moreover, a list of activities is included that can serve as a guide to enable national work teams to identify such actions.

It is worth remembering that there are fundamental differences between climate change adaptation actions and those of mitigation. In the latter case, a one-ton reduction in CO<sub>2</sub> emissions has the same impact, irrespective of where the action takes place; in contrast, in the case of adaptation, actions respond to climate risks, which are for the most part specific to a context and a place. Therefore, the adaptation responses will benefit the community that adopts them and possibly also the systems that depend on or interact with it. These differences mean that the criteria for one or another action must vary. In this way, a project may be considered as adaptation in a certain context, but the same project in a different context might be qualified in other terms. Some criteria for identifying mitigation and adaptation actions are presented below.

### A3.1 Criteria for Mitigation Activities/Actions<sup>19</sup>

An activity or action may be identified as mitigation if it aims to fulfill one of the following objectives:

- To generate, transmit, store, distribute or utilize renewable energy, either through the employment of innovative technology with a potential future saving or through the necessary reinforcement or extension of the grid.
- To improve energy efficiency.
- To substitute materials used for others that are renewable and from sustainable sources.
- To increase the use of carbon capture and use technologies, and carbon capture and storage that are safe from the environmental point of view and permit a net reduction of the greenhouse gas emissions (GHG).
- To strengthen carbon land sinks, avoiding deforestation and forest degradation through forest restoration, sustainable management and the restoration of fields, pastures and wetlands, as well as reforestation and regenerative agriculture.
- To establish the energy infrastructure necessary to permit decarbonization of energy systems.
- To switch to production of clean and efficient fuels, based on renewable or carbon-neutral sources.

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<sup>19</sup> This section is based on *Reliefweb* (2021).

### A3.2 Criteria for Adaptation Actions<sup>20</sup>

Adaptation actions can be identified by analysis of the following criteria (of which the first two are the most relevant):

- Reduction of climate risks. As far as possible, and with the best possible effort, the actions must attenuate all material climate risks. Risks, determined through the corresponding evaluation, are considered to respond to the following characteristics:
  - › They assume that current meteorological variability will be the future climate, including uncertainty.
  - › They are based on an analysis of the available climate data and of projections using future scenarios.
  - › They are coherent with the foreseen duration of the activity.
- The intervention must not generate new risks. The action and its adaptation measures must not negatively affect the adaptation efforts of other persons, nature and goods. That is, they must not increase the risks of an adverse climate impact on other persons, nature and goods, or hamper adaptation in other places. The viability of green or nature-based (ecological) solutions must be considered instead of grey measures to address adaptation. Finally, adaptation actions and measures must be coherent with sector, regional and/or national adaptation efforts.
- The results of the adaptation must be supervised. These results can be measured and monitored through defined indicators. As risks evolve over time, it is important to frequently reevaluate.
- Support the adaptation of other actions. Adaptation actions must reduce the climate risk in other actions and/or tackle systemic barriers to adaptation. Among these actions, the following are worth mentioning:
  - › Promotion of technology, products, practices, processes of governance or innovative uses of technologies, existing products or practices (including those related with natural infrastructure).
  - › Elimination of information, financial and technological barriers and other limits to the adaptation capacity of other persons, businesses, communities, families, regions, etc.
- These are actions that reduce or facilitate adaptation to climate risks beyond the limits of the activity itself. These actions must show how they support adaptation by means of:
  - › An evaluation of the risks resulting from both current and future meteorological variability, including uncertainty, which will help to support an approach based on solid climate data.
  - › An evaluation of the efficacy of the contribution to reducing those risks, considering the scale of the exposure and vulnerability to them.
- In the case of infrastructure that permits adaptation, it must comply with the first two criteria presented.

<sup>20</sup> This section is based on *Reliefweb* (2021) and Lacambra et al. (2015).

### A3.3 Identification Process

The process of identifying actions and activities in terms of climate change from the government finance information perspective requires detailed and coordinated work with the professionals employed in the different areas of government and involved in each one of the allocations under analysis. This is due to the fact that the name of the project (or the program, activity or line of work in question, or a further level of available detail) does not really give full account of the project's objective; therefore, technical support from the professionals responsible for the task is absolutely essential.

The proposed identification mechanism is based on the following criteria:

- Review the objectives of each project (program, activity, line of work) and, according to the previously mentioned criteria, determine whether the aim is mitigation or adaptation.
- If the objective of the project is identified as mitigation, make a classification according to each one of the actions detailed in the climate-relevant classification.
- For each one of these actions, also include the typology of the activity (direct, adaptive or enabling).
- In the event that an action or activity corresponds to adaptation, it is necessary to review the climate-relevant classification to which it corresponds.
- Finally, in each case, the typology of the activity must be included.

This process will not always be immediate, since there are some projects (programs, activities or lines of work) in which more information is needed before an adequate classification can be made. To minimize the inclusion of assumptions and hypotheses in the process it is important to seek technical support from the professionals involved in each one of the actions or activities.

The following section presents a list of projects to help guide this task. On top of the categories detailed in the methodology, the classification of the functions of government (COFOG) has been included, which facilitates the identification and classification tasks. Each country has a different institutional configuration, which can vary with each change of government (and even in a single presidential term). With these shifts, institutional or administrative support may not always be the most beneficial on a national level. Finally, it is worth considering that two projects may have the same name but be designed to achieve different objectives, and that the latter must take priority when it comes to carrying out the classification.

### A3.4 List of Actions/Activities that are Climate-Relevant due to their Technical Nature<sup>21</sup>

#### AXIS: MIXED

Functional group	Category	Type of actions	ISIC Activity-4
<b>1.1 Administration of climate change management</b>	1.1 Administration of climate change management	Cross-sector, national, subnational or territorial political actions that seek to address climate change; mitigation actions or technical support for such actions.	8411
		Management and implementation of the sector action plans for climate change mitigation and/or adaptation.	8411
<b>1.2 Financial Instruments</b>	1.2.1 Non-life insurance or general insurance	Incorporation of mitigation and adaptation criteria into life plans and community and ethnic community development plans.	8411
	1.2.2 Financial services	Development of risk evaluation that integrates considerations of climate change; for example, expansion of the agricultural insurance market and its coverage.	64
		Design, implementation and divulgation of economic and financial instruments for climate change mitigation and adaptation.	8411
		Direct financing, political actions, programs or technical assistance to support closure of fossil fuel power plants or other activities involving the extraction, processing or transport of fossil fuels, including support for workers or communities affected by the closure.	64
		Management and implementation of actions by providing funds for climate change mitigation and adaptation.	8411
		Financial services or carbon trading instruments.	64
	Technical services necessary to develop or implement financial projects for climate change mitigation.	64	
<b>1.3 Regulatory aspects</b>	1.3.1 Laws	Inclusion of climate change considerations in strategic or national interest projects.	8411
		Improvement of regulation and legislation to generate incentives for climate change mitigation and adaptation.	8411
	1.3.2 Auditing	Improvement of regulation and legislation to create incentives for climate change mitigation and adaptation	8411
<b>1.4 Education and communication for climate change</b>	1.4 Education and communication for climate change	Education, training or awareness-raising centered on climate change mitigation.	85
		Congress, seminar, training or education activity.	
<b>1.5 Actions on behalf of the environment and biodiversity, with both impacts.</b>	1.5 Actions on behalf of the environment and biodiversity, with both impacts.	Tree-planting for mitigation and adaptation.	
<b>1.6 Others</b>	Others		

<sup>21</sup> This section is based on *Reliefweb* (2021) and Eurostat (2000).

## AXIS: MITIGATION

Functional group	Category	Type of actions	ISIC Activity-4
2.1 Administration of mitigation management	2.1 Administration of mitigation management	Political actions, programs or technical assistance aimed at carbon pricing or at other payments with equivalent effects.	70
		Coordination of climate action of decarbonization plans at the entity level.	70
		Energy audits.	70
		Energy audits to identify the possibilities of increasing energy efficiency or generating on-site renewable energy.	70
		Programs or systems that provide incentives or tools to the entity units or teams to manage and minimize GHG emissions and contribute to the entity decarbonization goals.	70
		Transparency systems or tools for tracking GHG emissions.	70
		Policy actions, programs or technical assistance for establishing fiscal incentives, for extending incentives or the deployment of technologies and measures with low carbon emissions.	64
		Analysis and data modelling characterize the climate system.	
2.2 Reduction of contaminants arising from productive processes	2.2.1 Agriculture, livestock, fishing	Agricultural projects that improve existing carbon storage (management of pastures; collection and use of chaff, rice husks, or other agricultural waste; reduced cultivation techniques that raise soil carbon content; restoration of degraded land, restoration of peat bogs, etc.).	01
		Livestock projects that improve the carbon capture through pasture management.	01
		Livestock projects that reduce emissions of methane or other GHGs through best feeding practices to reduce methane emissions.	01
		Livestock projects that reduce emissions of methane or other GHGs by managing manure with biogas digesters.	01
		Projects that help to reduce GHG emissions through production of biomaterials/bioenergy based on biomass.	20
		Projects that reduce the concentration of CO <sub>2</sub> in fishing or aquaculture.	01
		Projects that reduce emissions of methane or other GHGs caused by livestock.	01
		Reduction in GHG emissions other than CO <sub>2</sub> arising from agricultural practices or technologies.	01
	Reduction in GHG emissions other than CO <sub>2</sub> arising from agricultural practices or technologies (for example, production of whole grain rice, lower fertilizer use).	01	
	2.2.2 Silviculture	Plantation of forest species.	03
	2.2.3 Mining	Implementation of measures to reduce air pollution in mineral extraction processes.	B
		Promotion of recycling of materials processed during mineral extraction.	B
	2.2.4 Manufacturing	Improvements in the existing industrial processes or setting up of new processes or advanced technological manufacturing solutions that lead to a reduction in consumption or waste of non-energy resources through changes in processes or in inputs to processes.	C
		Production of biofuels, including biodiesel and bioethanol (only if reductions in net emissions can be demonstrated). Biofuels.	20
		Production, storage or use of low-carbon hydrogen.	20
		Reduction of GHG emissions derived from improvements in industrial processes through sustainable energy.	C
	2.2.5 Construction	Decrease in GHG emissions derived from improvements in industrial processes and of cleaner production (for example, of cement or chemical products), excluding carbon capture and sequestration.	23
		Readaptation of existing industrial infrastructure that helps to reduce industrial GHG emissions, changes to industrial GHGs to lower the potential for global warming, or the application of technologies or practices that minimize leakages.	43
	2.2.6 Others NEC	Projects that reduce food losses or waste, or that promote low-carbon diets.	10

Functional group	Category	Type of actions	ISIC Activity-4
		Storage of energy or measures to improve grid stability and that increase energy consumption with very low carbon emissions.	3510
		Energy storage or smart solutions at the industrial scale to increase integration of energy with very low carbon emissions or the use of previously wasted energy.	C
		Autonomous energy-efficient machinery or equipment in construction, either new or replacement.	43
		Conversion of production from a single type of energy, or self-powered desalination, to combined generation or delivery for use in the form of electricity, heat, mechanical energy, refrigeration or desalination.	3510
		Energy efficiency in industry in existing facilities.	C
		Energy efficiency in new commercial, public and residential buildings.	43
		Generation of sustainable electricity.	3510
		High-efficiency or low-carbon emission factory installations, equipment or production lines that are complementary to new creation in an existing factory set-up.	C
		Investment in thermal generators with minimum water-cooling requirements.	36
		Measures to facilitate integration of renewable energies into the national grid.	3510
		Measures that reduce net energy consumption, consumption of resources or carbon emissions, or enhance carbon sinks using vegetation in new buildings and their surrounding grounds.	43
		Measures that reduce net energy consumption, consumption of resources or CO2 emissions, or measures that enhance carbon sinks using vegetation in new or refurbished buildings and their surroundings, in observance of certification rules.	43
		Measures that reduce net energy consumption, the consumption of resources or CO2 emissions, or that enhance carbon sinks using vegetation in public spaces or amenities.	43
		Improvement in energy efficiency in the final use or reduction of CO2 emissions in existing machinery or equipment in the construction sector.	43
		Better energy efficiency in producing energy to supply electricity, heat, mechanical energy or refrigeration.	3510
		Improvement in energy efficiency in water supply systems by the implantation of technologies or equipment of low energy consumption, the promotion of best auditing practices or reducing water wastage.	36
		Improvement in energy efficiency in abandoned industrial zones.	C
		Better energy efficiency, implantation of renewable energies or reduction of CO2 emissions.	3510
		Improvement in energy efficiency, implantation of renewable energies or reduction of CO2 emissions in data centers.	63
		Improvement in efficiency or reduction of CO2 emissions in the transmission or distribution of electricity, heat or gas.	35
		Better energy efficiency in existing commercial, public and residential buildings.	43
		Improvement in energy efficiency in the public service sector.	84
		Efficient operation of the airport system or generation of on-site renewable energy.	5222
		Production of heat or other renewable energy applications.	3510
		Promotion of energy efficiency in the tourism sector.	3510
		Projects to supply water in green areas that comply with regulations regarding high energy efficiency or that use demand management.	36
		Projects in green and abandoned areas that promote operation and maintenance improvements to reduce water wastage, encourage energy saving, or achieve or exceed sewage treatment goals.	36
		Projects that support the production of components, equipment or infrastructure exclusively dedicated for use in the renewable energy sector, improvement in energy efficiency or other technologies with low carbon emissions.	3510
		Projects that support the production of metals or alloys that are predominantly used, or are essential, for renewable energies, technologies that boost energy efficiency, other technologies with low carbon emissions or materials and products with low GHG emissions.	24
	<b>2.3.1 Energy efficiency</b>		

Functional group	Category	Type of actions	ISIC Activity-4
2.3. Energy and energy efficiency	2.3.1 Energy efficiency	Reduction of trading losses and revenue in the distribution of electricity, heating or gas, or demand management measures.	3510
		Reduced operational energy consumption.	C
		Substitution of fossil fuel-based equipment or processes by electrical equipment or processes and components of such processes.	C
		Technologies that boost energy efficiency, other technologies of low-carbon emissions or materials and products with low incorporated GHG emissions.	28
		Transmission or distribution of electricity in green areas that boosts the proportion of electricity supplied with very low-carbon emissions.	3510
		Activity that helps reduce the use of energy or materials in a supply chain (before or after) by improving energy efficiency or the use of resources in the existing supply chain, by changing to a less carbon-intensive supply chain or by applying circular economy systems.	C
		Use of residual gases as raw materials or as fuel to supply electricity, heat, mechanical energy or refrigeration.	3510
	2.3.2 Traditional electrical energy (Transformed or enabling)	Conversion of production from one type of energy to combined generation (CHP), or delivery for use in the form of electricity, heat, mechanical energy, refrigeration or desalination.	3510
		Displacement of a carbon-intensive fuel for another type of fuel with reduced carbon emissions to supply electricity, heat, mechanical energy or refrigeration.	3510
		Electricity power plants.	3510
		Energy transmission and distribution system.	3510
		Thermal energy or high-efficiency refrigeration transmission or distribution.	3510
	2.3.3 Renewable energies	Generation of renewable energy with low GHG emissions throughout its life cycle to supply electricity, heating, mechanical energy or refrigeration.	3510
		Policy actions, programs or technical assistance to establish stricter rules on energy efficiency or the use of resources, or else to apply stricter efficiency rules.	8411
		Projects that support the extraction of minerals and metals predominantly used in generating renewable energy or that are fundamental for it.	07
	2.3.4 Fugitive emissions	Promotion of the use of non-conventional renewable energy sources in the tourism sector.	3510
		Fugitive emissions.	24
		Reduction of fugitive GHG emissions in the transport infrastructure or existing energy storage or burning off fugitive emissions from a coal mine that closes when methane use is not viable from the commercial point of view.	05
	2.3.1 Energy efficiency	Transport, use or permanent storage of captured CO2.	39
		Improvement in energy efficiency, technologies with low-carbon emissions or other technologies that are essential for achieving full decarbonization.	C
		Telecommunications networks with levels of energy efficiency that follow the best international practices.	61
	2.3.3 Renewable energies	Reduced use of energy in farm machinery (such as efficient tilling), irrigation and other agricultural processes.	016
		Research or development in renewable energies.	3510
		2.3.4 Fuels	CO2 capture and storage in refineries.
	Better oil exploitation.		06
	Promotion and implementation of energy efficiency projects in the hydrocarbons sector.		06

Functional group	Category	Type of actions	ISIC Activity-4	
2.4 Transport	2.4 Transport	Energy efficiency in vehicle fleets and low-carbon fuels.	49	
		Passenger or freight transport fleets or infrastructure associated with zero or low direct emissions.	49	
		Efficient air traffic management.	49	
		Infrastructure for transport efficient and low carbon.	49	
		Transport operations that use biofuels or synthetic fuels with low GHG emissions throughout their life cycle.	49	
		Transport demand management policy or associated smart transport systems (STS).	49	
		Promotion of sustainable transport in the tourism sector.	49	
		Projects of energy efficient waterborne freight or passenger transport.	49	
		Public urban and rural transport projects, non-motorized transport (NMT) or bicycle-sharing schemes.	49	
		Sustainable inter-urban transport.	49	
2.5 Environment and biodiversity	2.5.1 Waste and pollution	<b>Projects of waste collection, recycling and management with use of sustainable energies</b>	<b>38</b>	
		Capture, reduction or use of gas from rubbish dumps as part of the closure of old dumps, discharge or landfill sites.	39	
		Capture, reduction or use of waste gases in new landfill sites or discharge dumps.	39	
		Sewage products that reduce emissions by improving energy efficiency or improving the treatment objectives.	37	
		Waste management with sustainable technology.	38	
		Improvements in existing industrial processes, new advanced technological manufacturing processes or solutions, which lead to reduced consumption or to a decrease in waste of non-energy resources by changing the processes or inputs into the processes.	C	
		Projects to convert waste into energy.	38	
		Waste management projects that capture or burn methane emissions.	39	
		New projects that reduce methane or nitrous oxide emissions through capture and treatment of sewage or septic waste.	37	
		Projects in green or industrial areas that improve latrines or the collection of sewage or septic waste.	37	
		Projects that reduce GHG emissions derived from the degradation of marine ecosystems or other aquatic ecosystems.	39	
		Projects that reduce food losses or waste or that promote low-carbon diets.	38	
		Reuse of sewage.	37	
		Sewage treatment with sustainable energies.	37	
	Sewage treatment, including sewage collection networks, which reduce GHG emissions (only if net reductions in GHG emissions can be proven).	37		
	Use of residual gases as transport fuel.	39		
	2.5.2 Biodiversity and protected areas	2.5.2 Biodiversity and protected areas	Establishment of protected areas and buffer zones for the sustainable use of biodiversity and water to satisfy subsistence needs in the most extreme drought scenarios.	8411
			Forest management and conservation.	02
			Agricultural projects that help to increase carbon reserves in the soil or to avoid the loss of carbon from the soil through erosion control measures.	02
			Forestry or agroforestry projects that sequester carbon through sustainable forest management and help to avoid deforestation or land degradation.	02
			Reforestation.	02
	2.5.3 Changes in land use	2.5.3 Changes in land use	Changes of use.	016

Functional group	Category	Type of actions	ISIC Activity-4
2.6 Research and development	2.6 Research and development	Research into potential non-forestry carbon sinks for CO2 storage.	02

### AXIS: ADAPTATION

Functional group	Category	Type of actions	ISIC Activity-4	
3.1 Administration	3.1. Administration	Management and implementation of the sector action plans for adaptation to climate change.	8411	
		Management and implementation of actions providing funding for climate change mitigation and adaptation.	8411	
	3.1.1 Governance	Creation of the coordination office for plans and programs to analyze the risks of climate change.	8411	
	3.1.2 Risk identification and knowledge	Analysis of the vulnerability of the tourism sector to the effects of climate change.	8411	
		Diversification of tourist attractions to include inland or low-risk areas; data-modelling.	8411	
	3.1.3 Preparations for response/ monitoring of adaptation and/ or risk		Policy actions, programs or technical assistance to reduce unplanned low-density urban development or to promote densification to avoid a construction environment with higher long-term carbon emissions.	8411
			Application of hydrological models in catchment areas to assess vulnerability to the effects of climate change.	8411
			Development and improvement of systems for monitoring drinking water in areas affected by high temperatures, floods and rising sea levels as a consequence of climate change.	3600
			Strengthening the hydrometeorological network and national climate change modelling (within the framework of the national network).	8411
			Incorporation of considerations of variability and climate change into water resource management planning instruments.	8411
			Incentives in meteorological and climate services that can efficiently reach final users.	8411
			Improvement of forest fire management.	8411
	3.1.4 Emergency response preparations		Use of revised building codes for the design of infrastructure that envisages higher frequency or severity of adverse weather events.	8411
			Development and strengthening of social food and food security programs to respond to extreme weather events.	8411
			Digitization of service provision or internal operations, which brings a substantial reduction of displacements or the use of material for addressing emergencies.	63
			Strengthening local, regional and national institutional capacities to promote strategies and policies for community, associative and cooperative agriculture.	8411
			Inclusion of climate change considerations into strategic or national interest projects.	8411
		Incorporation of climate change criteria into the structure of public-private partnerships.	8411	
		Integration of climate change scenarios and climate risk evaluations into disaster risk and preparedness plans.	8411	
		Promotion of water catchment and storage in strategic areas most at risk from water shortages due to climate change.	3600	
	Water supply projects in green and brown areas with lower carbon emissions; projects that substitute the use of tanker trucks or local survival mechanisms for a mains water supply system.	49		

Functional group	Category	Type of actions	ISIC Activity-4
3.2 Protection and financial instruments	3.2.1 Non-life insurance or general insurance	Development of an evaluation of agricultural insurance to tackle persistent droughts.	6512
		Evaluation of household fire insurance.	6512
	3.2.2 Servicios financieros	Provision of financing for small- and medium-sized enterprises that offer relevant services, such as engineering adaptation solutions.	6430
3.3 Productive products (economic affairs)	3.3.1 Agriculture, livestock, fishing	Adoption of sustainable fishing and aquiculture techniques to compensate for reduced local fishing supplies.	01
		Increase in the production of suitable forage crops to complement pasture feeding.	01
		Cultivation of non-perennial agricultural crops.	01
		Development of urban and peri-urban agriculture programs in vulnerable areas.	01
		Resource efficiency in agricultural processes and supply chains.	01
		Promotion of organic and ecological production.	01
		Identification and evaluation of adaptation measures to reduce the vulnerability of priority agricultural productive systems through best agricultural practices.	01
		Incentives for the sustainable use of climate-resilient agricultural methods.	01
		Adapted livestock production.	01
		Promotion of agricultural production for community, associative and cooperative activities.	01
		Collection, processing and divulgation of agriculture and climate-related information through early warning systems to promote adaptation.	01
		Supplementary irrigation, polyculture systems, drip watering, keyline, and other approaches and technologies that reduce the risk of broadscale crop failures.	01
	Use, conservation and exchange of varieties of genetically improved crops that are more resistant to extreme climate conditions.	01	
	3.3.2 Silviculture	Reforestation of other types of land.	02
		Reforestation of previously forested land.	03
	3.3.4 Manufacturing	Design of climate-resistant equipment, such as more stable port loading cranes for use in cyclone-prone areas.	29
	3.3.5 Construction	More robust and better applied building rules and regulations.	8411
		Optimization of hydraulic infrastructure design subject to due diligence based on climate and hydrological modeling.	3600
	3.3.6 Energy and fuel	Use of residual gases as raw materials or fuel to supply electricity, heat, mechanical energy or refrigeration.	35
	3.3.7 Transport	Analysis of the risk and vulnerability of the interurban transport sector.	492
Improvement in urban fuel quality.		492	
3.3.8 Others NEC	Water conservation in priority areas subject to hydrological stress caused by climate change.	3600	
	Limitation of negative impacts in tourist areas and restoration of degraded tourist areas.	43	
	Improved management planning for water catchment and regulation of water extraction.	3600	
	Improved refrigeration or other changes in processing and/or distribution of food exposed to extreme heat situations.	52	

Functional group	Category	Type of actions	ISIC Activity-4	
3.4 Environment and biodiversity	3.4.1 Waste and pollution	Waste collection, recycling and management projects that recover or reuse materials and waste as inputs in new products or as resources (only when reductions in net emissions can be demonstrated).	38	
		Temporary storage, accumulation, or transfer of fractions of waste collected separately and separated at source.	38	
		Anaerobic digestion of biowaste collected separately. Other types of recovery and valorization of biowaste. Mechanical or biological treatment of mixed waste. Incineration of waste with energy recovery (conversion of waste into energy) based on mixed waste, refuse-derived fuel (RDF) or solid recovered fuel (SRF).	38	
		Completion of a climate risk evaluation before approving location of landfill sites.	38	
		Integrated waste management in the tourism sector.	38	
		Waste management.	38	
		Better management and collection of solid waste, greater capacity and other changes in drainage systems.	38	
		Waste ground projects designed to improve the energy efficiency of waste management facilities.	38	
		Separated collection and transport of fractions of waste segregated at source.	38	
		Recovery of materials from waste collected separately using mechanical processes.	38	
		Recovery of materials from waste collected separately or waste classified using other than mechanical processes.	38	
		Repair and reconditioning of products or product components to permit their reuse.	38	
	3.4.2 Biodiversity and protected areas	Conservation and sustainable use of the biodiversity in protected marine and coastal areas.	8411	
		Sustainable management of forests to bring multiple global environmental benefits.	8411	
		Improvement in the effectiveness of biosphere reserve management.	8411	
		Development of a program for conservation of the biosphere reserve.	8411	
		Protection and/or rehabilitation of wetlands (bodies of water, swamps, etc.) as providers of ecosystem services to mitigate the impacts of climate change.	8411	
	3.5 Housing and town planning	3.5 Housing and urban and community development for adaptation	Increase in river dredging programs, dike reinforcement, restoration of natural floodplains and vegetation in upstream areas and riverbanks.	42
			Change in urban modes of transport.	49
Wells relocated further away from floodplains, with increased well casing heights.			42	
Development and strengthening of technical assistance models with self-management approaches for community development.			70	
Urban development oriented to sustainable transport.			49	
Establishment of alternative trade routes in case of interruption to the main route.			49	
Strengthening technical assistance for territorial organization plans to incorporate climate change criteria.			70	
Identification of the sites at the highest risk and improvement of the resilience of those sites and/or services.			43	
Measures to ensure access to drinking water.			3600	
Low-carbon and climate-resilient town planning.			70	
Promotion of sustainable and resilient territories in volcanic zones.				
Physical or natural reinforcement of the coast and/or of additional coastal structures or vegetation.			42	
Physical or natural reinforcement of the coast and/or of additional coastal structures or vegetation.			73	
Restoration of floodplains to control flooding.	43			
3.6 Health	3.6 Human health for adaptation	Monitoring of changes in outbreaks of human diseases caused by climate change; development of national response plans.	86	

Functional group	Category	Type of actions	ISIC Activity-4
3.7 Research and development	3.7 Research and development	Incentives for research and development of crops that are more resistant to extreme climate conditions and to climate change.	72
		Promotion of research and development of genetically improved crops that are more resistant to extreme climate conditions.	72

## Annex 4. Identifying and Classifying Climate Activities with Negative Impacts <sup>22</sup>

1	ENERGY	This category includes all GHG emissions that emanate from combustion and fuel leakage. Emissions from non-energy fuel usage are not usually included here, but instead declared in the industrial processes and use of products sector.
1 A	Fuel-burning activities	Emissions from intentional combustion of materials inside an appliance designed to heat and provide energy in the form of heat or as mechanical force for a process or else for applications outside of the appliance.
1 A 1	Energy industries	Includes emissions from fuels burned during the extraction of fuels or by the energy production sector.
1 A 1 a	Production of electricity and heat as main activity	Electricity generation, combined heat and power generation (CHP), power plants.
1 A 1 b	Oil refining	All combustion activities that support the refining of oil products and include on-site burning for power and heat generation for own use. This category does not include emissions from evaporation occurring in the refinery. These should be declared separately in 1 B 2 a.
1 A 1 c	Production of solid fuels and other energy industries	Manufacture of solid fuels, other energy industries of pulp, paper and printing, food processing, drinks and tobacco, non-metallic minerals, transport equipment, machinery, mining (with the exception of fuels) and quarrying, timber and wood products, construction, textiles and leather.
1 A 2	Manufacturing industries and construction	Iron and steel, non-ferrous metals, chemical products.
1 A 3	Transport	Civil aviation, land transport, railways, sea and river navigation, other types of transport.
1 A 4	Other sectors	Emissions from burning activities described below, including burning for power and heat generation for own use in these industries, as well as for commercial, institutional and residential purposes, and in agriculture, silviculture, fishing and fish farms.
1 B	Fugitive emissions arising from fuel production	Includes all intentional and non-intentional emissions arising from the extraction, processing, storage and transport of fuels to the point of final use.
1 C	CO2 capture, transport and storage	Carbon capture and storage (CCS) implies capturing CO2 from anthropogenic sources, its transport to a storage site and long-term sequestration from the atmosphere. Emissions linked to transport, CO2 injection and the storage of CO2 are covered in the category 1C. Emissions (and reductions) linked to CO2 capture should be declared in the IPCC sector in which the capture takes place (for example, the burning of fuels or industrial activities).

<sup>22</sup> This section is based on IPCC (2006).

<b>2</b>	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>Emissions from industrial products and use of products, excluding those linked to energy combustion (declared in 1A), the extraction, processing and transport of fuels (declared in 1B) and CO<sub>2</sub> transport, injection and storage (declared in 1C).</b>
2 A	Mineral industry	Production of cement, production of lime, production of glass, ceramics, other uses of soda ash, production of non-metallurgical magnesium.
2 B	Chemical industry	Production of ammonia, production of nitric acid, production of adipic acid, production of caprolactam, glyoxal and glyoxylic acid, carbide production, production of titanium dioxide, production of soda ash, petrochemicals and production of lampblack, methanal, ethylene, ethylene dichloride and vinyl chloride monomer, ethylene oxide, acrylonitrile and lampblack.
2 C	Metals industry	Production of iron and steel, ferro alloy production, aluminum production, magnesium production, production of lead and zinc.
2 D	Use of non-energy fuel products and solvents	Use of lubricants, use of paraffin wax, use of solvents.
2 E	Electronics industry	Integrated circuit or semiconductors, TFT flatscreens, photovoltaic products, thermal transport and transfer fluid.
2 F	Use of products as substitutes for substances that harm the ozone layer.	Refrigeration and air conditioning, refrigeration and stationary air conditioning, mobile air conditioning, foaming agents, fireproofing products, aerosols, solvents.
2 G	Manufacture and use of other products	Electrical equipment, manufacture of electrical equipment, use of electrical equipment, elimination of electrical equipment, elimination of SF <sub>6</sub> and PFCs by use of other products, military applications, elimination of N <sub>2</sub> O by use of other products, medical applications, propellants for pressurized products and aerosols.
<b>2 H</b>	Others	Paper and pulp industry, food and drink industry.
<b>3</b>	<b>AGRICULTURE, SILVICULTURE AND OTHER LAND USES</b>	<b>Carbon emissions and absorption by forests, arable land, pastures, wetlands, settlements and other lands. Likewise, includes emissions from livestock and manure, emissions from managed soils and emissions from the application of limestone and urea. This category also includes methods for estimating variables for collected wood products (CWP).</b>
3 A	Livestock	Methane emissions from enteric fermentation and emissions of methane and nitrous oxide from manure management.
3 B	Land	Emissions and absorption from five categories of land use (forest, arable land, pastures, settlements and other land), with the exception of the sources classified in 3C (aggregate sources and sources of emissions other than CO <sub>2</sub> from land). With the exclusion of wetlands, the GHG inventory implies estimating, when possible, changes in concentrations of carbon in five carbon sinks (above ground biomass, underground biomass, dead wood, leaf mold and organic material in the soil).
<b>3 C</b>	Aggregate sources and sources of emissions other than CO <sub>2</sub> from land.	Includes emissions from activities that would probably be declared as extremely high at aggregate land levels or even at the country level.
<b>4</b>	<b>WASTE/WASTE</b>	<b>Elimination of solid waste, biological treatment of solid waste, incineration and open incineration of waste, sewage treatment and elimination.</b>

## Annex 5. Guide for Identifying Climate Expenditures Previously Cataloged under the Classification of the Functions of Government

Expenditure and potential climate-relevant activities in the COFOG											
N.º	Climate-relevant government functions/ activities	Definition	Climate-relevant					Recovery and climate emergency			COFOG
			Mitigation			Adaptation		Recovery	Resilience	Emergency	
			Negative	Positive	Declared	Positive	Declared				
1	General public services	Administration, management or support from executive and legislative organs with the aim of carrying out actions to tackle climate change (for example, organizing events, financing IPCC negotiations).	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	N/A	N/A	111,112,113, 121, 122, 132, 140, 150, 170
2	Civil defense activities and services	Administration of civil defense affairs in relation with organization, supply and training to support the population during extreme weather events. Administration, logistics, supply and support for the population in the face of the climate emergency.	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	Requires explicit classification	Requires explicit classification	220, 223
3	Public order and safety	Activities of preparation, supply of provisions and training to support the population during extreme weather events.	N/A	Expenditures in all activities related with fires and flood management.	Requires explicit classification	Expenditures in all activities related with fires and flood management.	Requires explicit classification	Requires explicit classification	Requires explicit classification	Classification of activities related with fires and floods with declared classification	320
4.A	Economic development	Administration of economic affairs and commercial services in general; link between different branches of government, and between the latter and commerce, except for activities listed in 4.B.	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification	421, 422, 435, 441, 443, 445, 452, 453, 454, 483
4.B	Economic development	Administration of affairs and services related with solid fuels, minerals, oil and natural gas; conservation, discovery, use and rational exploitation of oil and natural gas resources.	Climate-relevant activities	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification	431, 432, 455

Climate-relevant activities											
No.	Functions/ activities	Definition	Mitigation			Adaptation		Recovery and climate resilience			COFOG
			Negative	Positive	Declared	Positive	Declared	Recovery	Resilience	Emergency	
5	Environment	Administration of climate-relevant activities related with environmental protection.	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Classification of declared activities	Classification of declared activities	510, 530, 540, 550, 560
6	Housing	Administration of affairs and services related with urban planning and water supply; evaluation of future needs and determination of availability according to this evaluation, in relation with public streetlighting; creation and regulation of rules for public streetlighting.	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification	610, 630, 640
7	Health	Public health service provision related directly with extreme weather emergencies or other phenomena.	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	N/A	Requires explicit classification	Not yet defined
8	Recreation and culture	Recreation and cultural activities or communication related directly with knowledge of climate change or its impacts.	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	N/A	N/A	Not yet defined
9	Education	Education on climate change.	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	N/A	N/A	Not yet defined
10	Social protection	Social protection services related with climate impacts.	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	N/A	Requires explicit classification	Not yet defined

				Climate-relevant					Recovery and climate resilience		
Activities that are potentially climate-relevant (Negative or Positive) according to the COFOG				Mitigation			Adaptation				
Function	No.	Sub-function	Definition	Negative	Positive	Declared	Positive	Declared	Recovery	Resilience	Emergency
ECONOMIC, COMMERCIAL AND LABOR AFFAIRS IN GENERAL	411	Economic and commercial affairs in general	Administration of economic and commercial affairs and services in general, including external commercial affairs in general; formulation and execution of general economic and commercial policies; link between the different branches of government, and between the latter and commerce.	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	N/A	N/A
	412	General labor affairs	Administration of general labor affairs and services; formulation and application of general labor policies; supervision and regulation of working conditions (working day, salaries, safety, etc.); link between the different branches of government, and between the latter and industrial, business and labor organizations.	N/A	N/A	Requires explicit classification	N/A	Requires explicit classification	N/A	N/A	N/A
AGRICULTURE, SILVICULTURE, FISHING AND HUNTING	421	Agriculture	Administration of agricultural affairs and services of agriculture; conservation, improvement or expansion of arable land; agricultural reform and land colonization; supervision and regulation of the agriculture sector.	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	422	Silviculture	Management or support for reforestation tasks, prevention of pests and diseases, services of forest fire prevention and fighting and extension services for forestry companies.	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	423	Fishing and hunting	Commercial fishing and hunting, and sports fishing and hunting. The fishing and hunting affairs and services described refer to activities that take place outside of parks and nature reserves.	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification

Activities that are potentially climate-relevant (Negative or Positive) according to the COFOG				Climate-relevant					Recovery and climate resilience		
				Mitigation			Adaptation				
Function	No.	Sub-function	Definition	Negative	Positive	Declared	Positive	Declared	Recovery	Resilience	Emergency
FUELS AND ENERGY	431	Coal and other solid mineral fuels (SC)	Administration of affairs and services related with the solid mineral fuels; conservation, discovery, use and rational exploitation of solid mineral fuel resources; supervision and regulation of extraction, processing, distribution and use of solid mineral fuels.	Climate-relevant activities	Climate-relevant activities when there is transformation	Requires explicit classification	N/A	Requires explicit classification	Requires explicit classification	N/A	N/A
	432	Oil and natural gas (SC)	Administration of affairs and services related with oil and natural gas; conservation, discovery, use and rational exploitation of oil and natural gas reserves; supervision and regulation of extraction, processing, distribution and use of oil and natural gas.	Climate-relevant activities	Climate-relevant activities when there is transformation	Requires explicit classification	N/A	Requires explicit classification	Requires explicit classification	N/A	N/A
	435	Electricity (SC)	Administration of affairs and services related with electricity supply; conservation, discovery, use and rational exploitation of electricity sources; supervision and regulation of electricity generation, transmission and distribution.	N/A	Climate-relevant activities	Requires explicit classification	N/A	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
MINING, MANUFACTURING AND CONSTRUCTION	441	Extraction of mineral resources except for mineral fuels (SC)	Metallic minerals, sand, clay, stone; minerals for making chemical products and fertilizers; salt, precious stones, asbestos, plaster, etc.	Climate-relevant activities	Climate-relevant activities	Requires explicit classification	N/A	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	443	Construction (SC)	Administration of construction affairs and services; supervision of the construction industry; elaboration and application of construction rules and regulations.	Climate-relevant activities	Climate-relevant activities	Requires explicit classification	N/A	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification

Activities that are potentially climate-relevant (Negative or Positive) according to the COFOG				Climate-relevant					Recovery and climate resilience		
Function	No.	Sub-function	Definition	Mitigation			Adaptation		Recovery	Resilience	Emergency
				Negative	Positive	Declared	Positive	Declared			
TRANSPORT	445	Road transport (SC)	Administration of affairs and services related with the exploitation, use, construction and maintenance of road transport systems and facilities (roads, bridges, tunnels, parking, bus stations, etc.).	Climate-relevant activities	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	452	Water-borne transport (SC)	Administration of affairs and services related with the exploitation, use, construction and maintenance of water-borne systems and services of transport, inland, coastal and on the high seas (ports, quays, support and navigation equipment, artificial and natural canals, bridges, tunnels, wave breakers, esplanades, docks, terminals, etc.).	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	453	Rail transport (SC)	Administration of affairs and services related with the exploitation, use, construction and maintenance of rail transport systems and facilities (railway tracks, terminals, tunnels, bridges, embankments, cuttings, etc.).	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	454	Air transport (SC)	Administration of affairs and services related with the exploitation, use, construction and maintenance of air transport systems and facilities (airports, runways, terminals, hangars, support and navigation equipment, air traffic control facilities, etc.).	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	455	Transport by oil and gas pipelines and other systems of transport	Administration of affairs and services related with the exploitation, use, construction and maintenance of systems for transporting gas and oil by pipeline, as well as other systems of transport (funicular lifts, cable cars, chairlifts, etc.).	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification
	483	Research and development related with fuels and energy (SC)	Administration and management of government agencies dedicated to applied research and experimental development related with fuels and energy.	N/A	Climate-relevant activities	Requires explicit classification	Climate-relevant activities	Requires explicit classification	Requires explicit classification	Requires explicit classification	Requires explicit classification

