

Experience in the Application of the General Methodology for the Preparation and Evaluation of Public Investment Projects and Sector Methodologies for DRR and CCA in Nicaragua

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Executive summary – Experience in the Application of the General Methodology for the Preparation and Evaluation of Public Investment Projects and Sector Methodologies for DRR and CCA.

Nicaragua has significant experience in incorporating disaster risk reduction (DRR) and climate change adaptation (CCA) variables. In 2009, the first General Methodology for Project Formulation and Evaluation was introduced, and 2010 saw the adoption of the Economic Evaluation Guide for the Inclusion of the Disaster Risk Variable in Public Investment, developed by CEPREDENAC.¹ Based on the experience of applying this guide and developments and adaptation in different sectors, the National Public Investment System (SNIP) identified the need to update the methodology and published the General Methodology for the Preparation and Evaluation of Public Investment Projects (General Methodology) in 2012. This methodology is currently in the process of being further updated in coordination with the Economic Commission for Latin America and the Caribbean (ECLAC) under the RIDASICC² project.

Additionally, in 2016, four sector-specific guides were developed for incorporating DRR and CCA, along with a guide to preparing terms of reference (ToR) for studies for drinking water supply projects.

The progress made by Nicaragua in the past decade in terms of DRR and CCA has significantly influenced the adoption of best practices by project formulators and evaluators. These practices have been successfully applied at different stages of the investment cycle, resulting in the development of more resilient projects. An interesting initiative undertaken by the Ministry of Transport and Infrastructure (MTI) is the development of Climate Change Correction Factors, which are applied at the project formulation stage to adjust infrastructure design based on climate change considerations.

Another noteworthy achievement is the improvement of investment programme and project management processes within the SNIP in Nicaragua. A clear three-phase³ pre-investment framework has been established, which requires all investment projects, regardless of their size, type or sector, to commence from Phase 1 and progress to subsequent phases based on the investment amount and the evaluation results. It should be noted that DRR and CCA analysis is included from the initial phase in the evaluation carried out at the profile stage, with the completion of a technical data sheet.

Continuous capacity building is being carried out in Nicaragua's SNIP for both SNIP personnel and project formulating entities. Notably, a significant training programme was implemented from 2013 to 2017, thanks to funding from the Inter-American Development Bank (IDB) and

¹ Coordination Centre for the Prevention of Natural Disasters in Central America

² RIDASICC project – Disaster Risk Reduction and Sustainable and Inclusive Adaptation to Climate Change in Public Investment

³ Phases – profile, pre-feasibility and feasibility

the Swiss Agency for Development and Cooperation (SDC). It involved a postgraduate course on project formulation and evaluation, with a focus on disaster risk management (DRM).

Context of the experience

Regulatory framework

The SNIP is the administrative and inter-institutional coordinating body for public investment programmes and projects in Nicaragua. Decree No. 61-2001⁴ establishes the characteristics of the SNIP and sets out its purpose and objectives, which include the following:

- Develop capacities in the analysis, formulation, evaluation and planning of public investment projects and contribute to guiding, coordinating and improving public investment processes and measurement of their economic and social impact.
- Strengthen the institutional capacity of the public sector in matters relating to public investment, project formulation, planning and evaluation processes and the administration of public expenditure, supporting its modernisation in order to ensure the rational use of resources and more effective resource allocation and implementation in public investment programmes and projects.
- Provide the instruments necessary to improve the development and monitoring of public investment in the pre-investment and project evaluation stages.

According to this decree, every project must obtain technical approval from the Technical Secretariat of the Presidency. This approval is based on a technical analysis that takes into account the technical and economic study prepared and submitted by the corresponding public institution in accordance with the standards and methodologies established by the SNIP.

In addition, the Financial Administration and Budget Law⁵ states that the SNIP is part of the subsystems linked to the Public Sector Financial Management System, which aims to ensure the efficient management of public sector revenues.

Methodologies

One of the functions of the Directorate General for Public Investment (DGIP) is to provide technical support on DRR and CCA to the agencies and entities involved in formulating and evaluating projects across different sectors and levels of public administration. In 2009, the first version of the General Methodology was published, and in 2010 the Economic Evaluation Guide for the Inclusion of the Disaster Risk Variable in Public Investment, developed by CEPREDENAC, was adopted. Building on these methodological foundations and the progress made by sectoral entities, the Nicaraguan SNIP undertook the task of updating the General Methodology in 2012 and developing four sector guides to incorporate DRR and CCA variables and a guide to preparing ToR for pre-investment studies for drinking water projects. The current theoretical

⁴ Decree No. 61-2001 on the creation, organisation and functioning of the National Public Investment System (SNIP), Nicaragua

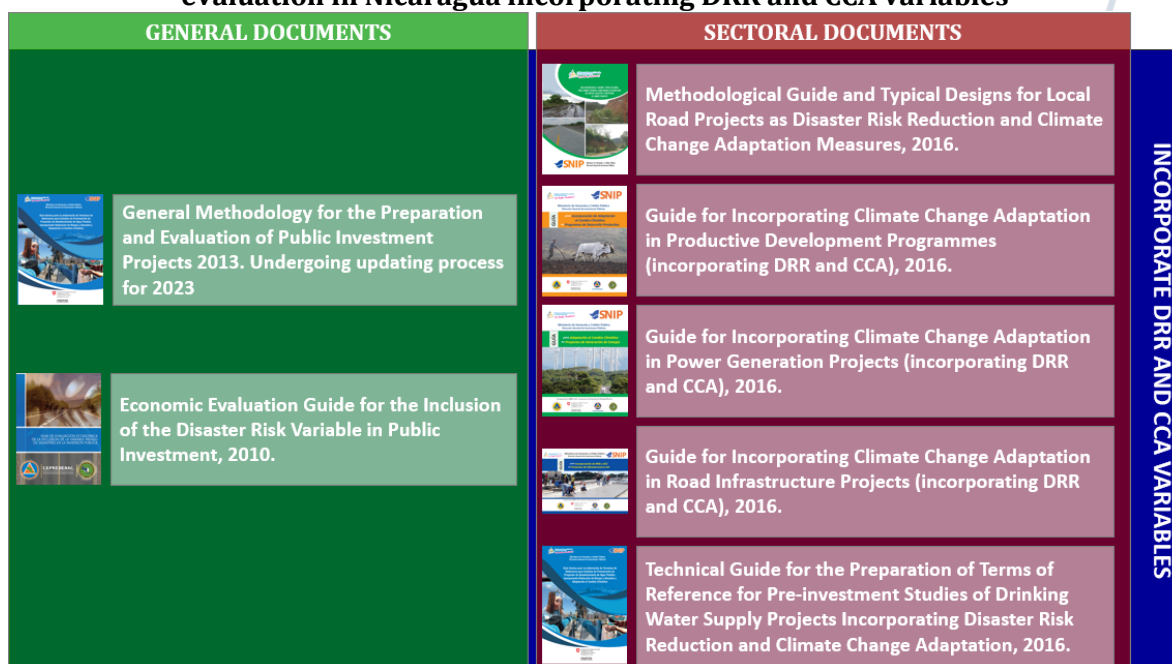
⁵ Law No. 550-2005, Nicaragua (<http://www.snip.gob.ni/Docs/leyes/Ley550.pdf>)

framework of the Nicaraguan SNIP includes the following documents:

- General Methodology for the Preparation and Evaluation of Public Investment Projects (2009, updated in 2012, and with a new update in progress for 2023)
- Economic Evaluation Guide for the Inclusion of the Disaster Risk Variable in Public Investment (CEPRENAC, 2010)
- Methodological Guide and Typical Designs for Local Road Projects as Disaster Risk Reduction and Climate Change Adaptation Measures, 2016
- Guide for Incorporating Climate Change Adaptation in Productive Development Programmes (incorporating DRR and CCA), 2016
- Guide for Incorporating Climate Change Adaptation in Power Generation Projects (incorporating DRR and CCA), 2016
- Guide for Incorporating Climate Change Adaptation in Road Infrastructure Projects (incorporating DRR and CCA), 2016
- Technical Guide for the Preparation of Terms of Reference for Pre-investment Studies of Drinking Water Supply Projects Incorporating Disaster Risk Reduction and Climate Change Adaptation, 2016

Requirements for the incorporation of DRR were introduced in the General Methodology in 2012, with the aim of assessing disaster risks associated with threats or hazards at project sites, whether due to site vulnerability or caused by the project itself. It also involves identifying risk reduction measures (RRMs), including them in the project budget and conducting a social evaluation of the inclusion of RRMs. Additionally, a Climate Scenario Atlas for Nicaragua up to the year 2080 was developed in 2016 in collaboration with the DGIP, the Nicaraguan Institute for Territorial Studies (INETER) and the Ministry of Environment and Natural Resources (MARENA).

Figure 1. Methodologies and guidelines for socio-economic evaluation in Nicaragua incorporating DRR and CCA variables



Source: Prepared by the authors

Pre-investment process

In order to properly contextualise the methodologies developed by the SNIP, it is important to analyse the public investment process. Institutions seeking to implement a project must go through up to three phases during the pre-investment process.

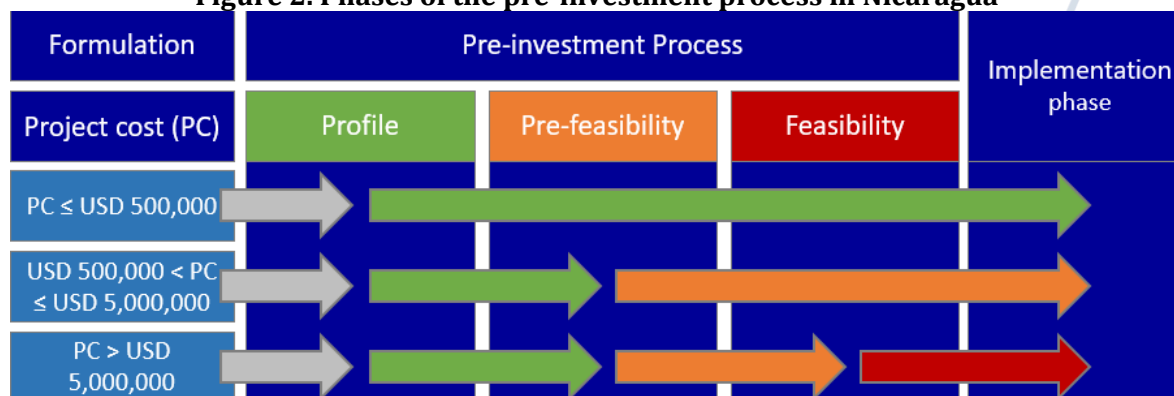
The first step involves identifying a need or opportunity and proposing a total or partial solution, leading to the development of an initiative. All initiatives submitted to the DGIP must be accompanied by an economic evaluation conducted at the profile stage to officially initiate the investment cycle. This evaluation, primarily based on secondary information, analyses various aspects, such as supply, demand, technical feasibility, organisational considerations, and environmental impact. For projects worth up to USD 500,000, the regulations allow the institution or agency to prepare an executive project document to obtain technical approval and proceed directly to the implementation phase.

For projects worth more than USD 500,000 but less than USD 5,000,000, the technical approval received at the profile stage is the requirement for proceeding to the pre-feasibility study stage. During this stage, primary information relevant to the project needs to be obtained. If the initiative is deemed suitable, based on the socio-economic and financial evaluations and on its technical, financial, economic and environmental feasibility, it can proceed to the implementation phase.

For projects worth more than USD 5,000,000, the procedure is the same as in the previous phase for obtaining technical approval for pre-feasibility studies. If appropriate at this stage of analysis, further feasibility studies are conducted to measure and assess the costs and benefits

of the project more accurately, aiming to reduce any uncertainties that may still exist. If the project's viability is supported by the new information gathered during the socio-economic and financial evaluation, the project can proceed to the implementation phase.

Figure 2. Phases of the pre-investment process in Nicaragua



Source: Adapted from the Standard Content Guide for Public Investment Initiative Proposals at the Profile Stage, SNIP Nicaragua

Description of the experience

Nicaragua has been strengthening public resources management by incorporating DRM to address the risks faced by the national territory and the implications of climate change. To this end, Nicaragua has developed six reference documents for the incorporation of DRR and CCA variables to address factors that exacerbate these risks, along with a guide for the preparation of ToR for commissioning pre-investment studies for drinking water projects, as shown in Figure 1.

For projects with a budget of less than USD 500,000, Nicaragua introduced the executive project document⁶ (DEP) in 2019 to expedite the formulation process for smaller projects. In addition to the basic details of the project, the DEP also indicates if the project location has been affected by hazards. Any threats to the site are recorded, and the degree of exposure and vulnerability is specified. It also includes a section with a breakdown of RRM and their cost, which is added to the total investment amount. For projects with higher budgets, the General Methodology must be rigorously applied. This ensures that all projects undergo an initial qualitative risk assessment and that any threats and their potential impact on national infrastructure are

⁶ In general, the sections included in the technical data sheet are the name of the project, the institution proposing the project, the investment amount and period, geographic location, description of the current situation, identification of hazard events that have occurred in the area where the project is to be located (indicating hazards, exposure and vulnerability), measures considered to reduce disaster risk, description of the scope of the project, project benefits, project costs, investment studies, operating and maintenance costs (scenarios without and with project) and legal status of the site and surroundings.

identified, regardless of the sector and project size.

In addition to the above, one of the sections of the **profile-level document** requires a threat analysis as part of the assessment of the area of influence. This involves identifying natural hazards (geophysical, hydrological, meteorological) and those caused or intensified by climate variability (socio-natural and anthropogenic) that could potentially damage the capacity to produce or deliver the goods or services the investment project is intended to provide. Potential damages and losses in the event of a disaster then need to be identified, quantified and assessed. This includes identifying RRM, quantifying their cost and estimating operating and maintenance expenses.

For the **documents required at the pre-feasibility and feasibility stages**, the general structure of the evaluations remains the same, and an analysis is conducted using information with a higher degree of certainty, according to the level.

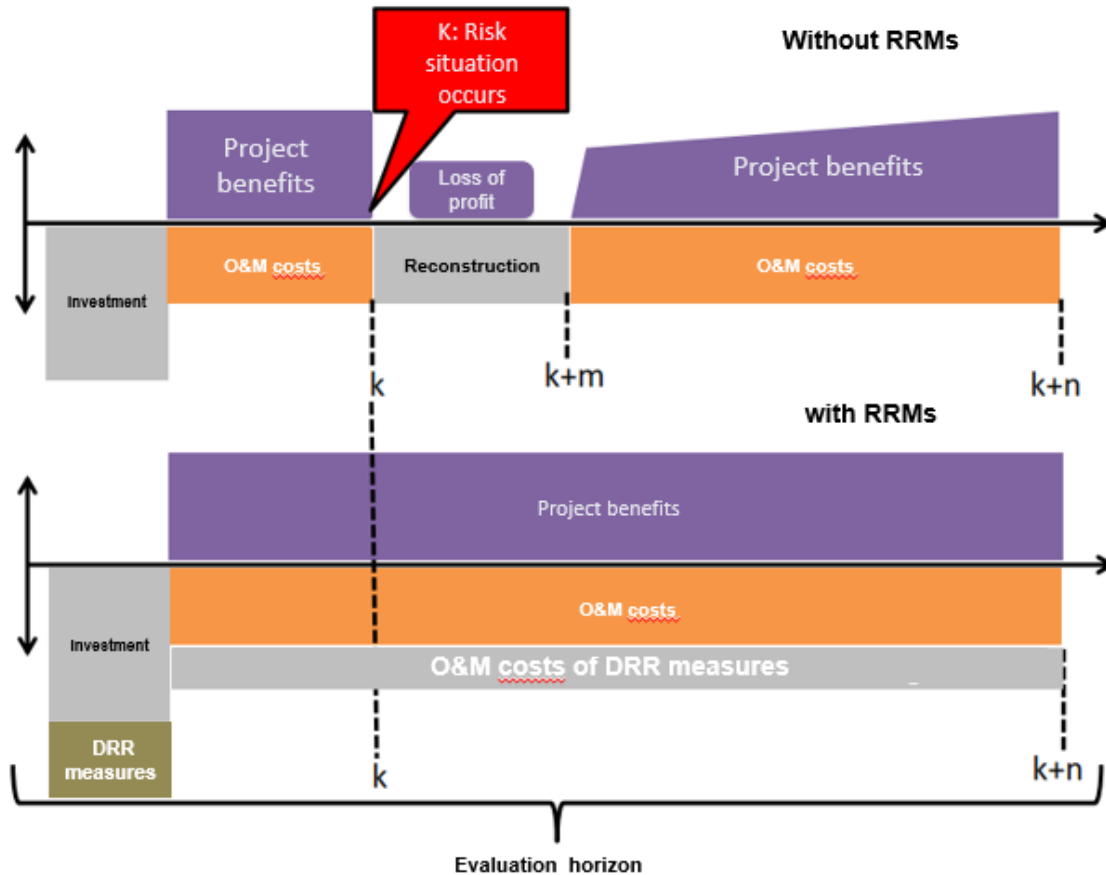
Through these methodologies, Nicaragua has successfully incorporated into its economic evaluations the effects of including DRR and CCA measures in evaluation flows within the analysis of social costs and benefits. This is achieved through the identification, quantification and valuation of costs and benefits, taking into account RRM in terms of costs avoided as a result of reducing the likelihood of adverse events affecting the project. A particular challenge in the new methodology is the evaluation of RRM and determining their cost-effectiveness independently of the main project.

Social benefits refer to the value of the damage avoided by implementing RRM, that is, the cost of damage that would occur if such measures were not in place. It includes a) loss of profits during service interruption, b) emergency response costs, c) rehabilitation and reconstruction costs, and d) costs for users, such as material losses. With the implementation of RRM, these costs would be avoided, resulting in social benefits.

Social costs are those associated with RRM and include investment in these measures and their operating and maintenance expenses.

The General Methodology exemplifies and synthesises the conceptualisation of the costs and benefits of a project with and without RRM and the assumptions necessary to model the effects in the economic evaluation, as shown in the figure below.

Figure 3. Project flows without and with RRM



Source: General Methodology for the Preparation and Evaluation of Public Investment Projects

Over the past 10 years, Nicaragua has implemented the General Methodology, including variables related to disaster risk and their effects for all types of projects. For projects involving rural roads, productive development, power generation and road infrastructure, sector-specific methodological guides, developed for this purpose, are also used. As a result of their implementation, some projects have been relocated to areas with a lower risk of being affected by hydro-meteorological hazards, and others have been technically redesigned to incorporate the expected behaviour of variables inherent in hydrologic design in the face of climate change. Under a project funded by the Nordic Development Fund, Nicaragua's MTI successfully developed Climate Change Correction Factors⁷ (used exclusively by the MTI). They are used in the technical evaluation of infrastructure sizing for scenarios with and without disaster risk. The project formulator makes decisions regarding the project design based on these

⁷ Another interesting result of the project financed by the Nordic Development Fund was the identification of critical points for disasters throughout the national road network.

evaluations and subsequently evaluates the alternative selected to include it in the documentation submitted to the SNIP. It should be noted that the RRM's are not presented as separate items in the documents submitted to the SNIP, which means that the project formulator includes RRM's without it being clear what the additional cost is.

An evidently favourable effect of the implementation by Nicaragua's SNIP of the new policies addressing CCA and DRR has been observed in the infrastructure projects undertaken by central government. Major projects, particularly for road infrastructure, have recently withstood extreme events without experiencing service disruptions. The changes have led to more resilient infrastructure which also requires less maintenance.⁸ It should be noted, however, that there is no formal *ex post* evaluation study available showing the results of implementing the methodologies.

As it is now a requirement to identify threats at project locations, Nicaraguan sectoral institutions have developed their own tools and criteria for incorporating DRR in their project formulation processes. In addition, INETER's information resources, including maps, a climate scenario atlas up to the year 2080, a map of seismic-volcanic activity, bulletins and geoportals, are publicly available.

Continuous capacity building has undoubtedly been a key success factor for the implementation of the methodologies. There was an intense period of training from 2013 to 2017, with a programme funded by the IDB offering a postgraduate course for project formulators and evaluators. Each year, 30 to 40 officials from different institutions received training. Additionally, in 2021, some officials from the DGIP completed a diploma course in project evaluation, with a focus on DRM, run by the Central American Institute of Public Administration (ICAP). These efforts, along with the recruitment of new staff who are required to have some form of DRM training, have contributed to achieving a medium to medium-high level of expertise in the field. The DGIP continues to provide short training courses and advisory support for project formulators, aiming to train 50 public officials a year through the Office for Civil Servant Development and Professionalisation of the Ministry of Finance and Public Credit (MHCP).

Another advance in DRM and CCA was the development, in 2017, of an expenditure classification system⁹ which allows for the identification of budget allocations for losses and damages associated with climate, meteorological and hydrological events, distinguishing them from allocations for other types of events, such as geological and geophysical hazards. This achievement is the result of a coordinated effort by the MHCP, MARENA and SINAPRED,¹⁰ with technical support from the World Bank.

Implementation history

Procedures for incorporating DRM and CCA variables and their effects on investment

⁸ Information provided by the DGIP

⁹ INETER (<https://cambioclimatico.ineter.gob.ni/adaptacionfclimaticas.html>)

¹⁰ National Disaster Prevention, Mitigation and Response System

programmes and projects that are relevant to economic evaluations and the pre-investment process in general have been applied in Nicaragua since 2012, when the General Methodology for the Preparation and Evaluation of Public Investment Projects was updated.

In 2016, the SNIP also focused efforts on producing sector-specific methodological guides for the formulation and evaluation of projects in various fields, defining the general criteria incorporated into the analysis of public investment projects. The General Methodology is currently undergoing a further update in coordination with ECLAC under the RIDASICC project. It can therefore be said that Nicaragua has incorporated DRM and CCA into its investment processes and made significant progress over the past decade.

Systematic applicability

According to Decree No. 61-2001, all publicly funded projects must obtain technical approval from the Technical Secretariat of the Presidency, indicating their suitability for implementation. Therefore, the SNIP has established, through the Standard Content Guide for Public Investment Initiative Proposals at the Profile Stage, that it is compulsory for all projects to go through the various phases of the pre-investment process, taking into account the methodologies, guides and standards published by the SNIP, as applicable, in order to obtain the technical approval required to register the investment project in the systems managed by SNIP-DGIP and proceed to the implementation phase.

Main results/findings/recommendations

The implementation of RRM has enabled the country to achieve more resilient infrastructure, ensuring the continuity of services for the Nicaraguan population and visitors. However, the current methodologies do not evaluate the economic feasibility of the RRM implemented per se, which means that it is not possible to examine the economic feasibility of the project and the proposed RRM separately. Resolving this issue is one of the expected outcomes of the current update of the General Methodology.

Advances in techniques, the development of new technologies and the learning on DRM and CCA acquired by Nicaraguan sectoral institutions have prompted a need to update some of the methodologies.

Some sectors have a national investment strategy for the medium and long term, such as the housing sector, where it is considered important to develop specific methodologies and tools in order to contribute to the efficient use of public resources to deliver more resilient infrastructure.

It is suggested that formal studies be carried out to explore the results of implementing the methodologies and guidelines and their influence on project formulation. While it can be seen that CCA considerations are incorporated in terms of hazards that are exacerbated by climate change, it is also important to include the concepts of greenhouse gas (GHG) mitigation in the methodologies. This can be achieved by incorporating tools in the methodologies for the

identification, quantification and valuation of GHG emissions and seeking strategies to mitigate GHG generation by means of appropriate technologies or project alternatives.

Finally, it was noted that a key factor in implementing the methodologies is training. The lack of resources for postgraduate programmes has meant that this kind of training has been discontinued. It is therefore important to find new financing mechanisms to resume continuous training for SNIP staff and sectoral agencies.