

Experience AGRIP-SNIPgt

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Experience AGRIP-SNIPgt

The SNIP of Guatemala, and its efforts to generate more resilient infrastructure against disasters and the effects of climate change. Since 2005, SNIP has been developing the Risk Management Analysis Tool for Public Investment Projects (AGRIP) as a continuous effort. This tool enables the identification of potential threats at the Project site where construction, expansion, or improvement is planned, using field evaluation reports that are then incorporated into the digital AGRIP tool to estimate the level of risk. Based on the results obtained from AGRIP, the Project developer should consider either revising the project plan and identifying a new location or presenting relevant Risk Mitigation Measures (RMM) to reduce the probable impacts of the threats present in the location, along with the costs associated with implementing those measures. Another significant aspect of SNIP's experience is that AGRIP is applied to all sectors, regardless of the investment amount, and to achieve this, the Investment Directorate for Development under the SEGEPLAN's Investment Sub Secretariat has a national training program. This program aims to train both national entities and municipalities in using the AGRIP tool effectively.

Global Context of the Experience.

Regulatory framework

The Secretariat of Planning and Programming of the Presidency (SEGEPLAN,) is responsible for planning processes in the country, with one of its main objectives being to link the public policy processes, investment planning, and programming with the National Development Plan and the National Development Policy. The investment process is managed by the Investment for Development Sub Secretariat of SEGEPLAN through the National Public Investment System (SNIP).

The attributions of SEGEPLAN are regulated by the Budget Organic Law (Decree 101-97),¹ and its Regulations², as well as the Executive Organism Law. Based on this legal framework, the SNIP Norms are published annually, which, together with the Climate Change Framework Law, Decree No. 7-2013, seek to incorporate variables for Disaster Risk Management (DRM) and adaptation to the effects of climate change into the investment planning and programming process. In order to comply with and develop preventive and corrective actions, SEGEPLAN has developed one of the most important instruments of SNIP Guatemala, which is the "Risk Management Analysis in Public Investment Projects" tool, better known as AGRIP.

Within the Basic Requirements of the SNIP Norms⁴, in section 3.1.7, Public Investment Entities (PIEs) are required to include risk and climate change analysis in the project documentation in accordance with the procedures and parameters of the AGRIP tool, where threats, vulnerability, and climate variability of the site where the project is to be developed must be analyzed. One of the stages of the AGRIP includes the formulation of adaptation, protection, and risk mitigation measures, in accordance with the results of the application of the AGRIP, which entails placing the cost of such measures in a specific line item, as well as their operation and maintenance cost.

On the other hand, within the SNIP norms, emphasis is placed on ensuring that the design bases and criteria of the infrastructure include technical criteria established in the

corresponding standards for each type of project, as well as observing the NRD standards issued by CONRED.

It should be noted that once the project documentation is submitted, SEGEPLAN issues a technical opinion, which, if “approved”, results in registration in the SNIP.

DRM Methodologies

SEGEPLAN published in 2022 the Guide for Formulating and Evaluating Public Investment Projects (FEPIP), which establishes the methodology to formulating and evaluating an investment project, integrating the risks analysis and the effects of climate change on the exposed infrastructure of the project and the service it provides to society. This enables an assessment of the projects’ level of vulnerability and risk exposure. The guide recommends the use of the AGRIP tool, which is the official tool within the National System of Public Investment (SNIP) and has been well-received by project formulators and evaluators. The tool allows for the documentation of the intensity and frequency of historical events that have affected the proposed project site. Based on the results obtained from the tool and the identification of potential risks, MRRs and their costs should be incorporated into the project formulation to generate more resilient projects.

Regarding the economic evaluation of the projects, the FEPIP guide indicates that the cost of risk reduction measures should be incorporated into the project’s cash flow costs. The guide provides an overview of the types of benefits to be included in the economic evaluation but is not explicit about the potential benefits derived from the implementation of the risk reduction measures.

Description of the Experience

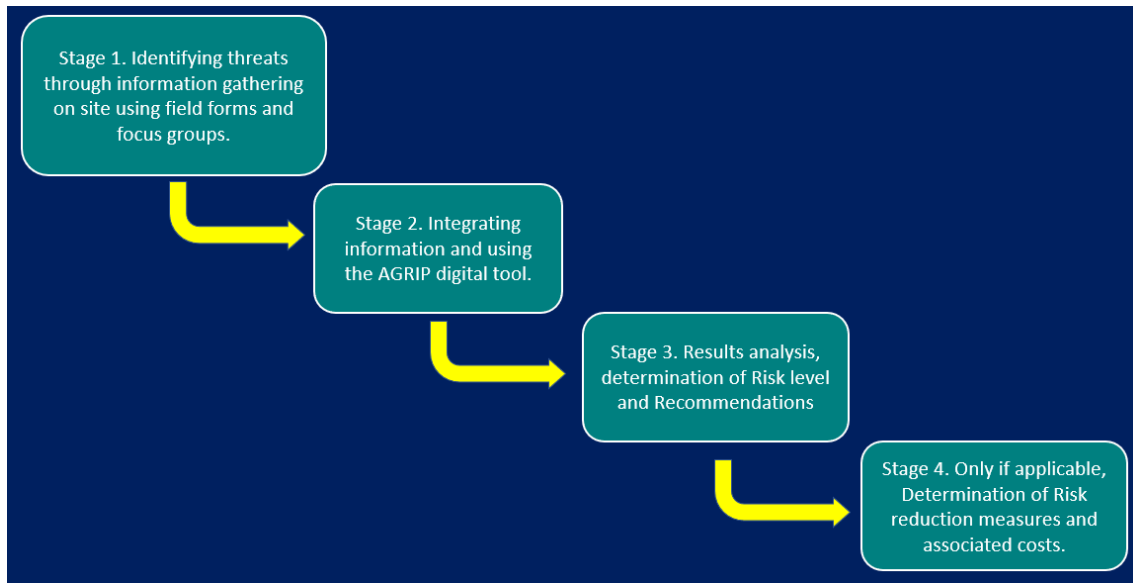
The AGRIP tool is an instrument for gathering field information by the formulator, which allows for the identification of potential threats and vulnerabilities in the site where public infrastructure or investment projects will be constructed, expanded, or improved, thus incorporating DRM into the project formulation and evaluation cycle. The tool allows for the estimation of the level of risk to which a project may be exposed.

The AGRIP tool consists of two instruments for analyzing threats and vulnerability. The first instrument consists of six field assessment forms, which enable the necessary information to be gathered in the field. The second instrument is the AGRIP digital tool, developed in Excel software, which can link to the platform " Guatemala Spatial Data Infrastructure" (IDEG) platform, which contains a geospatial database for analyzing potential threats in the area under examination.

This tool is publicly available through the SEGEPLAN website, including the Field Evaluation Forms and the AGRIP analysis tool.

Therefore, the process of disaster risk analysis in public investment projects in Guatemala is carried out using the AGRIP tool and can be summarized in four stages, which are shown in the diagram below:

Fig 1. Risk Analysis Process on investment projects using the AGRIP tool.



Source: Self-elaborated using AGRIP data

Stage 1.- The objective of the first stage of the threat analysis process using the AGRIP tool is to identify threats specific to the site where the investment project is to be executed (project exposure to threats present on site). To this end, a field evaluation form is used to analyze the site's dimensional characteristics, which consists of a General Information Sheet containing the basis project data and specific location, as well as four Threat Forms: Volcanic Threats, Landslide/ Falling rocks threat, Flood threats, Hurricane/Tropical Storm threat and Climate Change analysis, and a General Threat Form to include any other threats identified directly on site.

The Field forms have a common feature of identifying the presence of the threat, damage scale caused in the last event, and specific characteristics of the events such as date of the last event, duration, distance to the project point, geo-referenced photos, among others. These forms are filled with desk-based information but mainly from information provided by residents. To do this, focus groups are formed, whose requirement is that they have lived in the area for more than 20 years.

Stage 2.- The second stage consists of entering the information obtained from desk research and threat forms obtained in the field into the AGRIP digital tool. Using macros, databases, and formulas the tool makes calculations for each threat and based on probabilistic estimations, indicates the possible damage according to the Risk Level and, generates technical recommendations to be considered for the structural design of the projects.

The Intensity Weighting scale as part of the AGRIP tools, is used by the formulator as a guide to estimate two values: Intensity and Frequency.

On one hand, in terms of Intensity, it applies a 1 to 4 scale, in which 1 corresponds to Low intensity and 4 corresponds to High Intensity.

On the other hand, in terms of frequency where the time elapsed since the last event is measured in years, it applies a 1 to 4 scale; where 1 is less frequent and 4 is the most frequent.

At this point, the AGRIP tool presents options that allows the formulator to consult geo-spatial information that may contribute to the formulator's analysis.

Stage 3.- This is the final step, where the AGRIP tool calculations obtain the final results, which are shown in a Project's Risk level Report consisting in the analysis of each threat, threat intensity and frequency ratio in site, that is rated in low, medium, high and very high.

It also provides the results on the estimated effects derived from the project's exposure to the threat and recommendations regarding technical standards that the project formulator must observe.

Stage 4.- Although this last stage is not part of the AGRIP digital tool, it is part of the risk analysis process, where, based on the results of the AGRIP, the formulator must either reconsider the project and look for a new site for its execution or present the relevant Risk Mitigation Measures (RMM) to reduce the probable impacts of the threats present on the site and calculate the associated costs of such measures.

Finally, the results should be incorporated into the project budget in the "Risk Mitigation Measures" category for the project's economic evaluation, where the losses and damages, that the natural phenomenon could cause should be included, as well as the costs of investment, operation, and maintenance of the RMM.

Lastly, it is worth noting that the SNIP management system allows the classification of the budget allocated to RMM and these are label within the system with the code 671MMR, which allows for Macro analysis of the resources allocated to DRM.

Age of implementation

The AGRIP tool was develop by SEGEPLAN in 2005, with the objective of creating a report to strengthen the capabilities of the investment system and to incorporate risk reduction analysis into the development processes. This made Guatemala a pioneer in the field.

One of the most important advances occurred in 2013, when the name AGRIP was adopted and a methodological document was created that included tables for field surveys of threats in the project area and the quantification of the frequency and intensity of events on a quantitative scale, resulting in a “threat Level” rating”. Additionally, the document includes a procedure for estimating vulnerability and arriving at a site exposure rating. This document also incorporates concepts for developing RMMs and how to incorporate costs and benefits into the economic evaluation.

Figura 2. AGRIP Evolution



Source: 2023 AGRIP Presentation

In 2021, SEGEPLAN, in cooperation with the United Nations Development Programme (UNDP), the government of Sweden, and AGIES, evolved the AGRIP tool to develop the “Guide for Risk Analysis and Management in Public Investment Projects,” a synthetic document that makes it more user-friendly and practical to apply the AGRIP methodology by EPI. This adjustment allows for information gathering using Field Surveys for subsequent data entry into the digital AGRIP tool, with the expectation of achieving better results in field work.

The latest advancements in the Guide include probability damage indicators and suggestions for mitigation measures based on the threat level, logical formula calculations, criteria linkage through macros, identification of recurring threats, and focused on works and differentiated criteria by threats and vulnerability.

Analysis of the application of the experience

In order to analyze the AGRIP tool in action the project “Expansion of the drinking water system of Cooperativa Las Flores village, El Chal, Petén” was reviewed as an example.

It was observed that the AGRIP tool is necessary to integrate project documentation into the SNIP system, as shown in the following screenshot:

Código: **CG284550**
Nombre del Proyecto: **AMPLIACION SISTEMA DE AGUA POTABLE CASERIO COOPERATIVA LAS FLORES EL CHAL PETEN**

OPINIÓN TÉCNICA

Opinión técnica: **APROBADO**

Requisitos

- Oficio solicitud de opinión técnica ✓
- Solicitud de financiamiento ✓
- Documento de proyecto ✓
- Aval ente sectorial ✓
- Certificación de propiedad del terreno ✓
- Resolución ambiental ✓
- Resolución de CONAP ✓
- **AGRIP** ✓
- Atención Personas con Discapacidad ✓
- Dictamen Ministerio de Cultura ✓
- Certificado de calidad del agua ✓
- Cumple criterios técnicos ✓

The Agrip documentation uploaded to the system includes an analysis of social and environmental threats and vulnerabilities. Additionally, maps are used to georeference the project and conduct a geospatial analysis of possible threats the project may face. The field receipts are scanned and attached to the documentation, signed by the responsible party, and georeferenced photos of the site and nearby locations are also included in the investigation.

The analysis results, corresponding to the AGRIP results sheet, show the danger level, intensity and frequency of threats to the project site (exposure), recommendations, and analysis of risk reduction measures and conclusions.

The project developer incorporated an analysis of the most exposed point to a potential event in the AGRIP, in this case, the vehicular bridge over San Juan River, where the project’s pipeline would be anchored, so a brief analysis of the bridge is conducted without delving into the bridge’s conditions. The document, among other environmental, social, and construction-related conclusions, presents a map that shows the project site’s location and potential threats in the area.

Systematic Applicability

The AGRIP tool is part of the National Public Investment System framework, within the SNIP 2023 rules, and is mandatory for all infrastructure projects regardless of sector or investment amount. Therefore, the EPI must include a risk analysis (threats and vulnerabilities) in the project documentation, following what is established in the AGRIP tool. It is noteworthy that the tool has gained good acceptance and has been applied to 169 projects in 2022 among ministries and executing units. The Investment for Development Undersecretariat is responsible for nationwide dissemination and training, providing training to both EPIs and municipalities.

The AGRIP can be used by all government entities and the private sector and seeks to be a practical and effective tool in disaster risk prevention culture for project formulation and evaluation.

Main Results/Findings/Recommendations

The AGRIP is a tool that has evolved over time, simplifying the necessary fieldwork and its systematization for the on-site disaster risks analysis of an investment project, incorporating the tool results into the project formulation and evaluation cycle.

The tool is now part of the basic requirements to be submitted by the EPIs to SEGEPLAN to access resources and execute infrastructure or fixed capital projects. One of AGRIP 's strengths is its institutional capacity, with a qualified team that constantly receives training in DRM and is responsible for providing training at different levels of government, permeating the use of the tool and the importance of DRM analysis.

Among the challenges faced by SEGEPLAN is the methodological incorporation to economically evaluate MRR, particularly their benefits, and subsequently incorporate them into the economic evaluation of investment projects.

SEGEPLAN is currently updating the methodological guide to incorporate these concepts accurately.

The AGRIP's current results identify possible damages and recommendations to consider, which refer to construction regulations. It is considered important that the AGRIP results specifically shows climate change variables and whether the phenomena exacerbate and their possible effects.

It is recommended to develop a practical guide for the use of the IDEG and its relationship with the AGRIP.

Bibliography

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<https://ideg.segeplan.gob.gt/geoportal/>

Annex

Field forms, example taken from “Guía para el Análisis de Riesgo en Proyectos de Inversión Pública” (AGRIP), for fixed capital projects. Guatemala 2021.

Threat Forms (example)

SEGEPLAN AGRIP AMENAZA VOLCÁNICA

ESTA PRESENTE LA AMENAZA:
SI NO

- SI LA RESPUESTA ES "SI", CONTINUAR LLENANDO EL CUADRO SIGUIENTE.
- SI LA RESPUESTA ES "NO", PASAR A LAS OTRAS AMENAZAS.

CARACTERÍSTICAS

FECHA DEL ÚLTIMO EVENTO:	ARENA VOLCÁNICA	SI <input type="radio"/> NO <input type="radio"/>
TIPO DE EVENTO:	FLUJO DE LAVA	DISTANCIA EN METROS:
	FLUJOS PIROCLÁSTICOS	DISTANCIA EN METROS:
	DISTANCIA DEL SITIO ANALIZADO AL EDIFICIO VOLCÁNICO	KILOMETROS:
EL SITIO ANALIZADO SE ENCUENTRA EN O CERCA DE QUEBRADAS QUE SURGEN DEL EDIFICIO VOLCÁNICO	DISTANCIA EN METROS:	
CUANDO HA SUCEDIDO UN EVENTO VOLCÁNICO, CUAL HA SIDO EL DAÑO	MEDIO: <input type="radio"/>	
	ALTO: <input type="radio"/>	
	MUY ALTO: <input checked="" type="radio"/>	

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1 Verify with secondary sources and the focus group the presence of a hazard.

- If there is a threat the work is continued.
- If not, move forward to the next threat.

2 With the gathered information from the focus group, the characteristics requested for this threat are noted.



Note: This procedure is similar for all threat ballots

ie



AGRIP Digital Tool, example taken from the Guide for Risk Analysis in Public Investment Projects (AGRIP), for fixed capital projects. Guatemala 2021

Threat Data Entry Form (example)

Ponderación del Factor Intensidad

Criterio	Ponderación
1. Distancia del sitio del proyecto en relación a un edificio volcánico mayor de 30 km. Eventualmente caída de cenizas (medida centímetros o menos de espesor de lámina)	1
2. Distancia del sitio del proyecto en relación a un edificio volcánico de aproximadamente 30 km. Eventualmente caída de TEPFA arena volcánica (un centímetro de espesor de lámina). Actividad volcánica baja	2
3. Distancia del sitio del proyecto en relación a un edificio volcánico de menos de 30 km. Atenuamiento de actividad volcánica. Historial de sitios de TEPFA (línea volcánica de más de un centímetro de espesor de cenizas)	3
4. El sitio del proyecto se encuentra ubicado cerca de quebradas que surcan el edificio. Distancia del sitio del proyecto en relación a un edificio volcánico de 20 km o menos. Con historial de frecuente actividad volcánica. Cada trazo de TEPFA arena volcánica, suelto, supera los tres centímetros de espesor. Tamaño de la TEPFA volcánica supera los 20 milímetros. Historial de fugas de lava, bloques, flujo procedentes en las cercanías del sitio del proyecto. El sitio del proyecto se encuentra ubicado en quebradas que surgen del edificio volcánico.	4

Ponderación del Factor Frecuencia

Criterio	Ponderación
1. El evento se presentó hace más de 20 años	1
2. El evento se presentó en los últimos 10 a 19 años	2
3. El evento se presentó en los últimos 5 a 9 años	3
4. El evento se presenta anualmente	4

Buttons: Guardar Datos Volcánicos, Información de Referencia, Instrucciones, Salir

1. Intensity: Notice the box where it reads: Enter Intensity weighting, select the number from 1 to 4 by clicking on the Attached arrow, this value is selected according to the criteria and their weighting indicated in the chart.

Not all criteria need to match, just consider the most relevant ones such as Distance and Volcanic Track record.

2. Frequency: This refers to the time elapsed in years since the last threat event occurred. In the same way as for the intensity, in the "enter frequency weighting" box, select the weighting that coincides with the time criterion.

3. If the uploaded data is correct then press "Save

Data"

4. If the analyzed data threat is not present in the site, do NOT enter data on intensity and frequency, when pressing "save data" a legend will appear indicating "are you sure that the threat does not exist", indicate that it does, and the following tab will appear for another threat.

5. NOTICE the commands at the button of the form; "REFERENCE": Use to consult and verify data.

"INSTRUCTIONS": Use to find general advice on how to fill in the form.

"EXIT": Use to leave the app.

c) Digital AGRIP tool Results, Example taken from Guía para el Analisis de Riesgo en Proyectos de Inversión Pública (AGRIP), for fix capital projects, Guatemala 2021.

Resultados del Análisis

Resultado Análisis de Amenazas

Sismicidad | Volcánicas | Deslizamientos | Vientos | Huracanes | Inundaciones | Otras 1 | Otras 2 | Otras 3

Nivel de la relación intensidad y frecuencia de las amenazas en el sitio del proyecto (Exposición)	Efectos probables a exposición del sitio del proyecto y según amenaza evaluada	Recomendaciones
<p>MUY ALTA</p>	<ul style="list-style-type: none"> > Desastrosos a catastrófico EMM (X-XII), > Pocas estructuras de mampostería permanecen en pie. > Destrucción de algunas estructuras de madera bien construidas. > Rieles doblados 	<p>A NIVEL NACIONAL SE RECOMIENDA CONSULTAR:</p> <ul style="list-style-type: none"> > NORMATIVA NSE-2-2018 (modificada 2020) de AGIES, con el objetivo de calcular y según el índice de sismicidad del sitio, el diseño de acuerdo a la ordenada espectral de período corto y la ordenada espectral con período de 1 segundo; > NORMATIVA NSE-2.1-18 (modificada 2020) de AGIES relacionada a los estudios geotécnicos. > NORMATIVA NSE-1, 2018 (modificada 2020) de AGIES, relacionada a generalidades, administración de las normas y supervisión técnica. > Así como las demás NORMAS NSE de AGIES relacionadas al diseño de los proyectos.

Inprimir | Guardar PDF | Salir

DATOS GENERALES DEL PROYECTO				
NOMBRE Y TIPO DEL PROYECTO	Herramienta AGRIP			
SNIP	1234			
BREVE DESCRIPCIÓN DEL PROYECTO	Revisión de la herramienta AGRIP			
UNIDAD EJECUTORA	Municipalidad			
REGIÓN	VI			
DEPARTAMENTO	RETALHULEU			
MUNICIPIO	SAN MARTÍN ZAPOTITLÁN			
LUGAR POBLADO	Caserio la Poza			
COORDENADAS GTM		Grados	Minutos	Segundos
	Latitud	14	34	40
	Longitud	90	50	23
FECHA DEL ANÁLISIS DE RIESGO	11/11/2022			
NOMBRE DEL EVALUADOR	Juan Pérez			
CARGO	Formulador de Proyectos			
INSTITUCIÓN	U de G			
PROFESIÓN	Ingeniero Civil			
No. COLEGIADO	4321			

NIVEL DE RIESGO PARA EL PROYECTO

Exposición MUY ALTA en algunas de las amenazas identificadas, se recomienda buscar un nuevo sitio o indicar medidas de mitigación/protección y costo estimado de las mismas.

Es obligatorio anexar mínimo 6 fotografías del sitio y/o infraestructura, junto con la boleta de evaluación de campo.

sellos

Firma de Formulador del Análisis de Riesgo

V."B." Director de Planificación