



Monitoring and Evaluation of ANII's programs

ANII AGENCIA NACIONAL
DE INVESTIGACIÓN
E INNOVACIÓN

Ec. Elisa Hernandez
Evaluation and Monitoring Unit
National Research and Innovation Agency

Founded in 2006 as a key player to foster and support research and innovation.

Objectives:

1. Prepare and implement STI instruments and programs.
2. Promote articulation and coordination.
3. Contribute to the development of an effective monitoring and evaluation of program system.



More than 12.000 proposals received
More than 5.000 proposals supported
USD 280 mill. financed

E&M Unit

Within the structure of the Agency, the E&M Unit was created with the following competencies:

1. Monitor the instruments of the Agency and evaluate their results and impacts
2. Design control mechanisms of programs and instruments executed by ANII.
3. Develop national indicators on Science, Technology and Innovation.

Our Team

Ximena Usher: Manager of the E&M Unit

PhD c. Daniel Bukstein:
Econometric Specialist

MSc. Elisa Hernandez:
Specialist in quantitative
methods

PhD. Lucia Monteiro:
Specialist in mixed methods,
qualitative evaluations

Mariana Vaz: Experience in
database management and
Innovation Surveys.

Martín Peralta: Experience
in monitoring and indicators
of STI

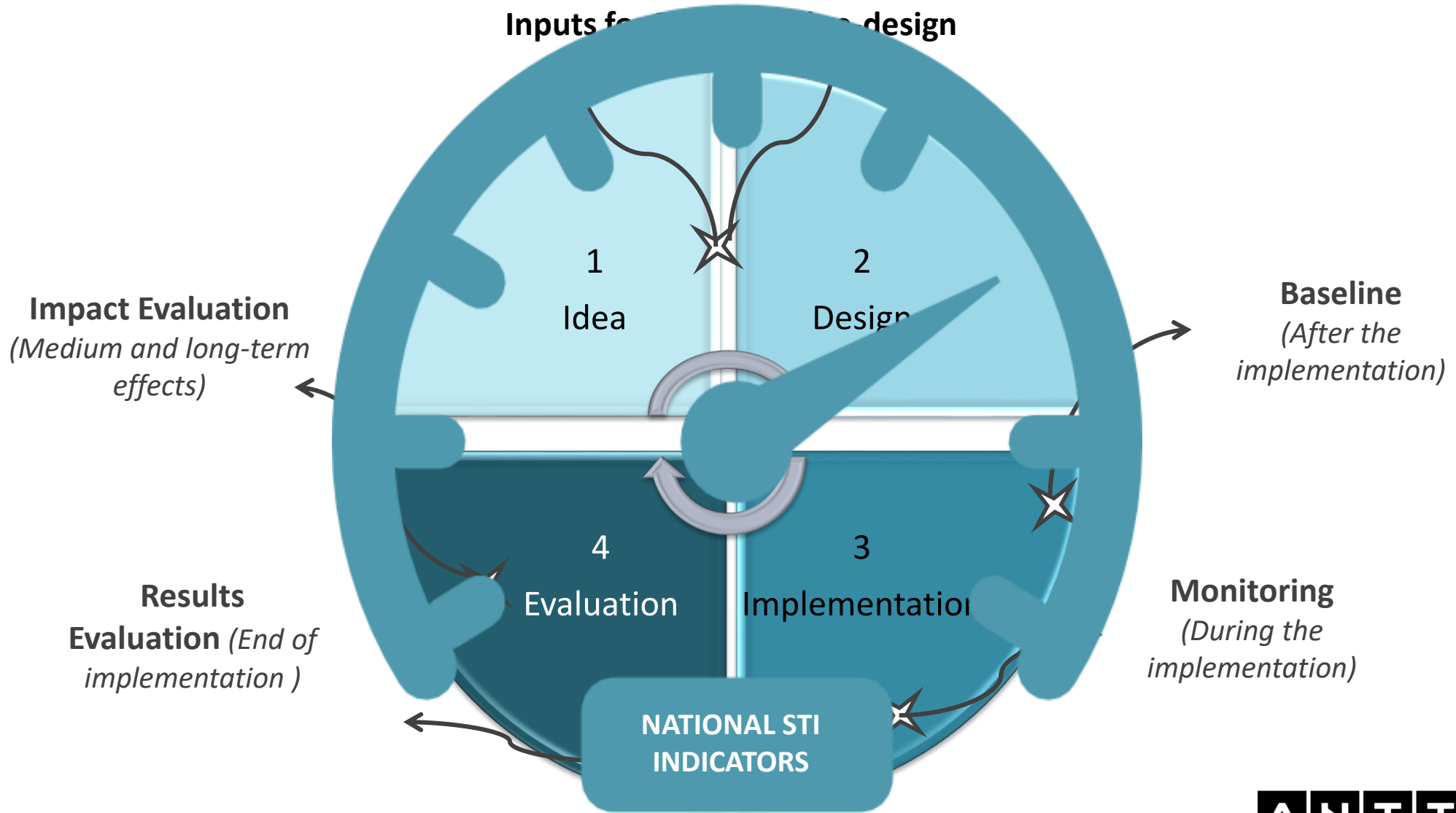
Monitoring and Evaluation

Monitoring is the routine process of data collection and measurement of progress towards program objectives, identify its strengths and weaknesses, and design adjustments to optimize its performance and results.

Evaluation is the use of social research methods to study the factors (predicted or not) that determine the effectiveness, efficiency, and impact of a project.










Evaluations analyze the effects of ANII programs on a set of results and provides feedback about programs.

M&E Strategy



Information System

Good quality data are essential to good impact evaluation.

National			 Expenditure on STI
			 Innovation Survey
Beneficiaries	 CVuy	 Ex Post	
		 GesPro	
Applicants	 CVuy	 Satisfaction	 Mini Innovation Survey
		 Postulations	
	Researchers	Projects	Firms

Monitoring: Information reported

For each ANII instrument :

Number of Approved Projects (Approval Rate)

Number of Signed Projects

Number of Closed Projects (Closing Rate)

Amount of money financed /executed

Management times (evaluation, execution)

Deviations (Delays, Sub-execution)

Firms:

Size

Age

ISIC Sector

Foreign capital

Innovative behavior

Economic performance

(sales, employees, export, others)

Researchers:

Sex

Age

Area of knowledge (OECD)

Academic level

Experience



Products:

Annual Monitoring Report

Semiannual Monitoring Report

Financial Institutions Reports

Evaluation

Combination of different methodologies:

1. **Impact Evaluation:** Econometric analysis based on the measure of the average effect of the treated group on a set of predetermined indicators (attribution).

Requires a counterfactual of what those outcomes would have been in the absence of the intervention (control group: applicants who have not received support)

2. **Results Evaluation:** Statistical analysis from information of the **Ex Post Survey** applied to beneficiaries.
3. **Qualitative Evaluations:** The information of the Survey is deepened with qualitative tools.

Be creative and flexible

Impact Evaluation

Theory of Change (causal chain or storyline)

Outcomes variable

Firms

Crowding
In/Out

- Investment on Innovation Activities
- Private Investment on Innovation Activities
- Investment in R & D

Innovative
Behavior

- Innovative (Yes / No)
- Innovate in products (Yes / No)
- Innovate in processes (Yes / No)
- Amount of sales in new products

Productive
performance

- Productivity
- Sales
- Employees
- Exports

Researchers

- Bibliographic production
- Technical production
- Human Resources training
- Personal qualifications

Impact Evaluation

Steps to impact evaluation

Once the data required to conduct an impact analysis are available and the theory of change is defined, the steps of the impact evaluation are:

1. Validate data (survey or administrative register) and potential attrition
2. Check the internal validity of the data (Balancing check, Placebo analysis)
3. Impact estimation (Diff in Diff, PSM, others)
4. Report with results

Impact Evaluation

Econometric techniques

Firms (Innovation Survey)

- Differences in Differences
 - General version

$$y_{it} = \alpha + \beta_1 T_i + \beta_2 t + \beta_3 T_i \cdot t + X + \varepsilon_{it}$$

- Fixed effects
- Common support
- Propensity Score Matching
- Tobit Model

Researchers (Cvuy)

- Differences in Differences
 - General version
 - Fixed effects
 - Common support
- Propensity Score Matching

At least 3 methods

Results Evaluation

Ex-Post survey: beneficiaries establish whether the project allowed them to achieve a set of results in different dimensions

Firms

- Improvements in techno-productive aspects.
- Improvements in commercial aspects.
- Innovative behavior.
- Economic performance.
- **Main Success of the Project.**
- **The role of ANII in the projects.**

Researchers

- Insertion in national and international academic networks.
- Labor insertion linked to research.
- Contribution to the development of lines of research.
- H index variation.
- Consolidation of the researcher team.
- **Main Success of the Project**
- **The role of ANII in the projects.**

beneficiary's self-perception

Qualitative Evaluation

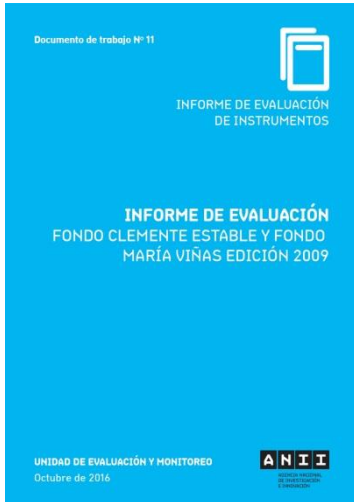
Objective: complement the results obtained in the quantitative one, by conducting different techniques to unpack key aspects of the topic under research.

Sample: We use an approximation of mixed methods, generally constructing our sample from select quantitative results.

Techniques: depth interviews, semi – structured, and focus group.

Analysis: We do speech analysis, we construct trajectory, events and transitions and made typologies.

Evaluation



Products:

- Nº1 Evaluación de Resultados de Popularización de la CTI
- Nº2 Evaluación de Resultados de Becas de Movilidad Capacitación
- Nº3 Evaluación de Impacto de Becas de Iniciación a la Investigación
- Nº4 Evaluación de Impacto del Sistema Nacional de Investigadores
- Nº5 Evaluación de Resultados de Instrumentos de Apoyo a la Innovación Empresarial
- Nº6 Evaluación de Impacto del Fondo Clemente Estable
- Nº7 Evaluación de Impacto de los Instrumentos de Promoción de la Innovación
- Nº8 Evaluación de Impacto de Becas de Posgrado Nacional
- Nº9 Evaluación de Fondos Sectoriales
- Nº10 Evaluación de Alianzas para la Innovación y Redes Tecnológicas Sectoriales
- Nº11 Evaluación de Fondo Clemente Estable y Fondo María Viñas

<http://www.anii.org.uy/institucional/documentos-de-interes/>

Lessons learned

1. It is important to **plan for impact** (the 'start point').
 - Encourage the development of an explicit Theory of Change.
 - Ensure that key variables for evaluation are collected.
 - Ensure the quality of the information.

2. ANII's **information systems** need further refinements to maximize the use of **administrative data and statistics**.
 - Balance between quantity and quality of information requested (taking into account the processing capacity).

Lessons learned

3. It is convenient to realize **both quantitative and qualitative** evaluations to better understand causes and effects, which leads to better policy recommendations.

- Main challenge: Findings should be triangulated
- Evaluation findings are strengthened when several pieces of evidence point in the same direction.
- Better still if different data sets and approaches can be used and come to broadly the same conclusion.

4. Evaluation opportunity

- Sometimes the program makes a new call and the evaluation has not been completed
- Balance between the best time to evaluate according to the methodology and the use of the information for design or redesign instruments.

Lesson learned

5. It is important to take into account the **cost-benefit ratio** of the evaluation.

- Consider the costs of conducting an evaluation (surveys, technical team) versus the benefits of evaluating a small program (Size of Treatment and Control Groups)

6. Pay attention to **communication of the results**

- Main challenge: Adjust format to audience
- We have different end users of the reports (technicians, policy makers, researchers, and the public in general) and we need to create appropriate products (different language) for each of them.

Focus on producing **inputs for design and redesign program**.

- Main challenge: Use findings creatively to *improved impact* of impact evaluations!



Thank you!

ANII AGENCIA NACIONAL
DE INVESTIGACIÓN
E INNOVACIÓN

hernandez@anii.org.uy