Multidimensional evaluation framework for science technology and innovation instruments: GEOPI Impact Evaluation Approach

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Purpose of the presentation

- methodological framework to evaluate ST&I Instruments: the Geopi Approach

    - STI instruments considered as policies and programs

- the case of Biota Fapesp Program evaluation

- overview of other experiences in Brazil e LA

Outline

1. Theoretical concepts

2. Geopi Approach

3. Biota Fapesp case

4. List of other applications

5. Conclusions

Conditions under which ST&I evaluation is submitted

- indeterminacy

- causality

- multidimensionality

- time lag
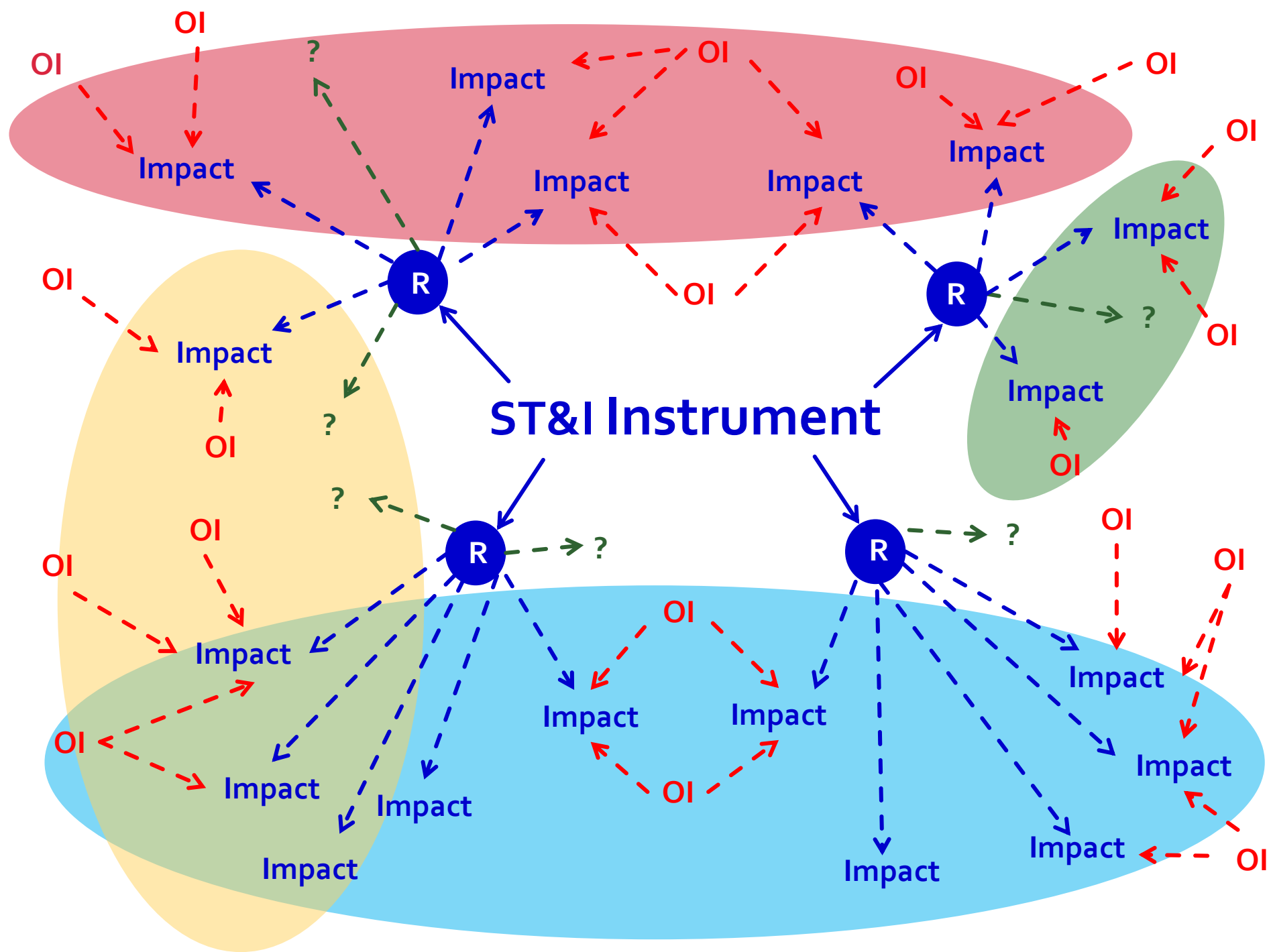
ST&I Instrument

GEOPI Approach

Decomposition Method ➔ **identification**

+

Additionality Associated to Causality
Attribution Method
(AACAM) ➔ **measurement**

Decomposition Method Steps

1. **Analysis** of ST&I instrument goals

2. **Decomposition** of **goals into terms**

3. **Transformation** of **terms into evaluation themes**

4. **Identification** of **indicators and metrics** to qualify and measure evaluation themes

5. **Validation** of indicator set by stakeholders

Biota Fapesp Program

Program

FAPESP

Research geared towards applications

BIOTA Program

Goals

to foster scientific research and technological development of the State of São Paulo through the support of research projects

to support research which, in addition to the advancement of knowledge, has economic or social interest and clear application objectives.

to inventory and characterize the biodiversity of the State of São Paulo, by defining the mechanisms for its conservation and sustainable use

to study and understand the biodiversity of the state of São Paulo and disseminate this knowledge and its importance

to understand the generating, sustaining and impacting processes of biodiversity

to increase the ability of the state and public and private organizations in managing, monitoring and using biodiversity in a sustainable way

to evaluate the effectiveness of conservation initiatives within the state, identifying priority areas and components for conservation

to develop a methodological basis and reference standards for studies on environmental impact

to produce estimates about biodiversity loss in different spatial and time scales

to subsidize the decision making process about development projects, especially those concerning sustainable development

to qualify the state and public and private organizations to benefit from the sustainable use of genetic resources

to qualify the state to estimate the value of biodiversity and its services, such as conservation of water resources, biological control, etc.

to enable state institutions to comply with legal instruments concerning live organisms, such as the deposit of specimens

Terms

training for research	research funding
technological development	research facilities

advancement of knowledge

technological innovation and formulation of public policies

biodiversity characterization

biodiversity conservation

economic potential of biodiversity

commercial use of biodiversity

sustainable use of biodiversity

new sustainable technologies

environmental policy and legislation

dissemination of knowledge

studies of the processes that generate biodiversity

studies of the processes of biodiversity maintainers

training of public and private organizations in managing biodiversity

training of public and private organizations in monitoring biodiversity

training of public and private organizations in the use of biodiversity

evaluating the effectiveness of conservation efforts in the state

identifying priority components for conservation

development of methodological bases for environmental impact studies

estimations of biodiversity loss in the temporal and spatial scale

support for making decisions

training for valuing biodiversity and its services

training for *ex situ* conservation

Biota Fapesp Program

Goal: to inventory and characterize the biodiversity of the State of São Paulo, by defining the mechanisms for its conservation and sustainable use

Terms: characterization of biodiversity | public policy | innovation

Theme Advancement of knowledge

Indicator New species described

- advancement of knowledge
- support for making decisions
- characterization of biodiversity
- new sustainable technologies
- environmental policy and legislation
- dissemination of knowledge
- training of public and private organizations in monitoring biodiversity
- evaluating the effectiveness of conservation efforts in the state
- training for *ex situ* conservation

- economic potential of biodiversity
- commercial use of biodiversity
- sustainable use of biodiversity
- studies of the processes that generate biodiversity
- training of public and private organizations in the use of biodiversity
- identifying priority components for conservation
- training for valuing biodiversity and its services
- development of methodological bases for environmental impact studies

- technological development
- training for research
- research funding
- research facilities
- innovation
- public policy
- studies of the processes of biodiversity maintainers
- training of public and private organizations in managing biodiversity
- estimations of biodiversity loss in the temporal and spatial scale
- biodiversity conservation

advancement of knowledge

support for making decisions

characterization of biodiversity

new sustainable technologies

environmental policy and legislation

dissemination of knowledge

training of public and private organizations in monitoring biodiversity

evaluating the effectiveness of conservation efforts in the state

training for *ex situ* conservation

economic potential of biodiversity

commercial use of biodiversity

sustainable use of biodiversity

studies of the processes that generate biodiversity

training of public and private organizations in the use of biodiversity

identifying priority components for conservation

training for valuing biodiversity and its services

development of methodological bases for environmental impact studies

technological development

training for research

research funding

research facilities

innovation

public policy

studies of the processes of biodiversity maintainers

training of public and private organizations in managing biodiversity

estimations of biodiversity loss in the temporal and spatial scale

biodiversity conservation

advancement of knowledge

support for making decisions

characterization of biodiversity

new sustainable technologies

environmental policy and legislation

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studies of the processes of biodiversity maintainers

training of public and private organizations in managing biodiversity

estimations of biodiversity loss in the temporal and spatial scale

biodiversity conservation

Theme
ADVANCEMENT OF KNOWLEDGE

New species described
New records of taxa
Theses and
Dissertations
Papers
Book chapter
Books
Introduction of new
lines of research on
biodiversity
New research groups in
the area of biodiversity
Research facilities

Theme
INNOVATION

Results obtained from the
research
Innovations generated from
the results obtained
Adopting Institution
Intellectual property rights
Licensing/Assignment of IP
rights
Spin-off

Theme
TRAINING AND DISSEMINATION OF THE RESULTS

Courses
Number of participants
Employed people
Dissemination of results in
the media
Scientific events held
Other forms of technical-
scientific (websites, CD-
ROM, etc.).

AACAM: Measuring the effects of the program

Was there any variation on the zoological collection?
( ) No
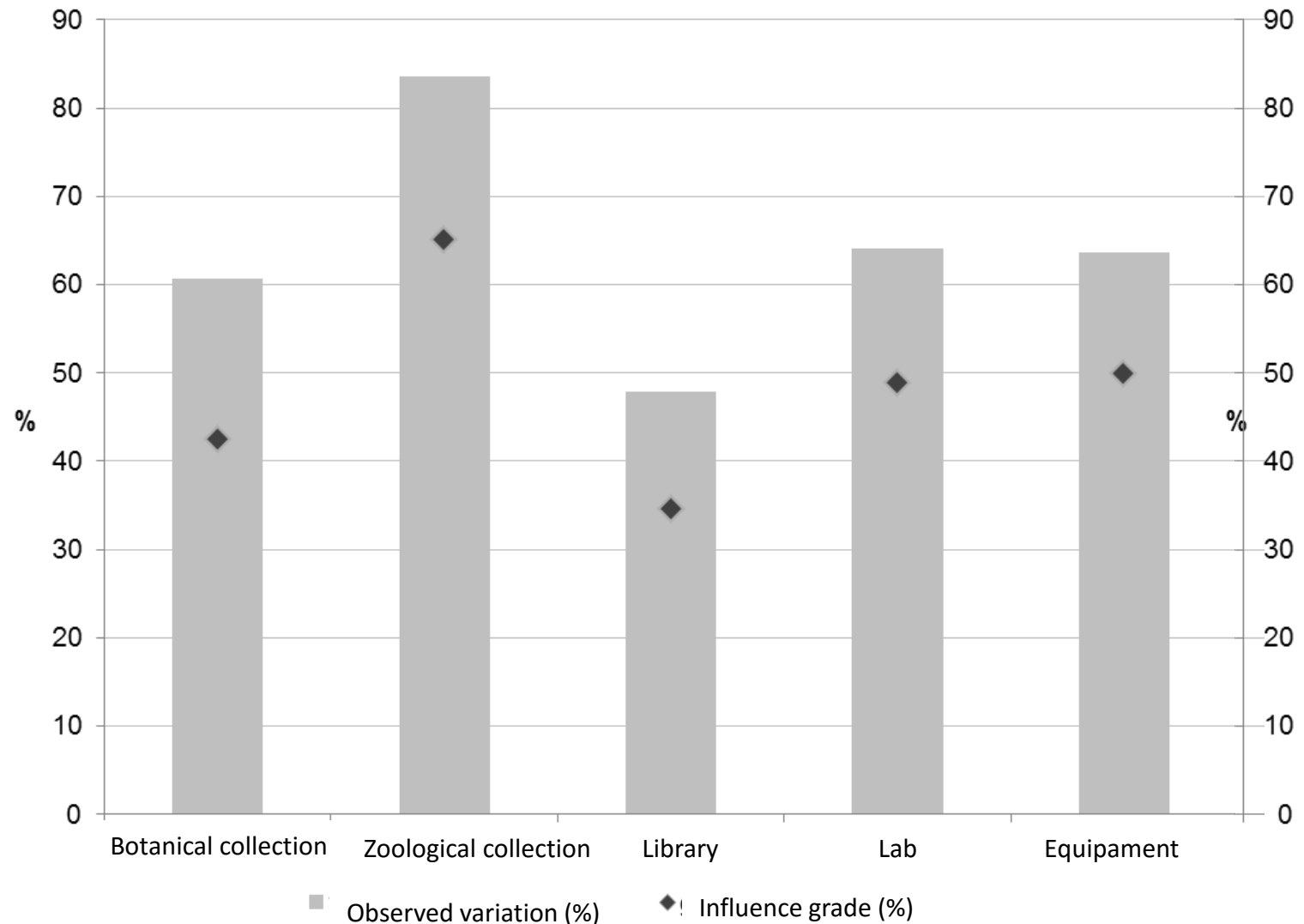*( ) Yes, <u>positively</u>*
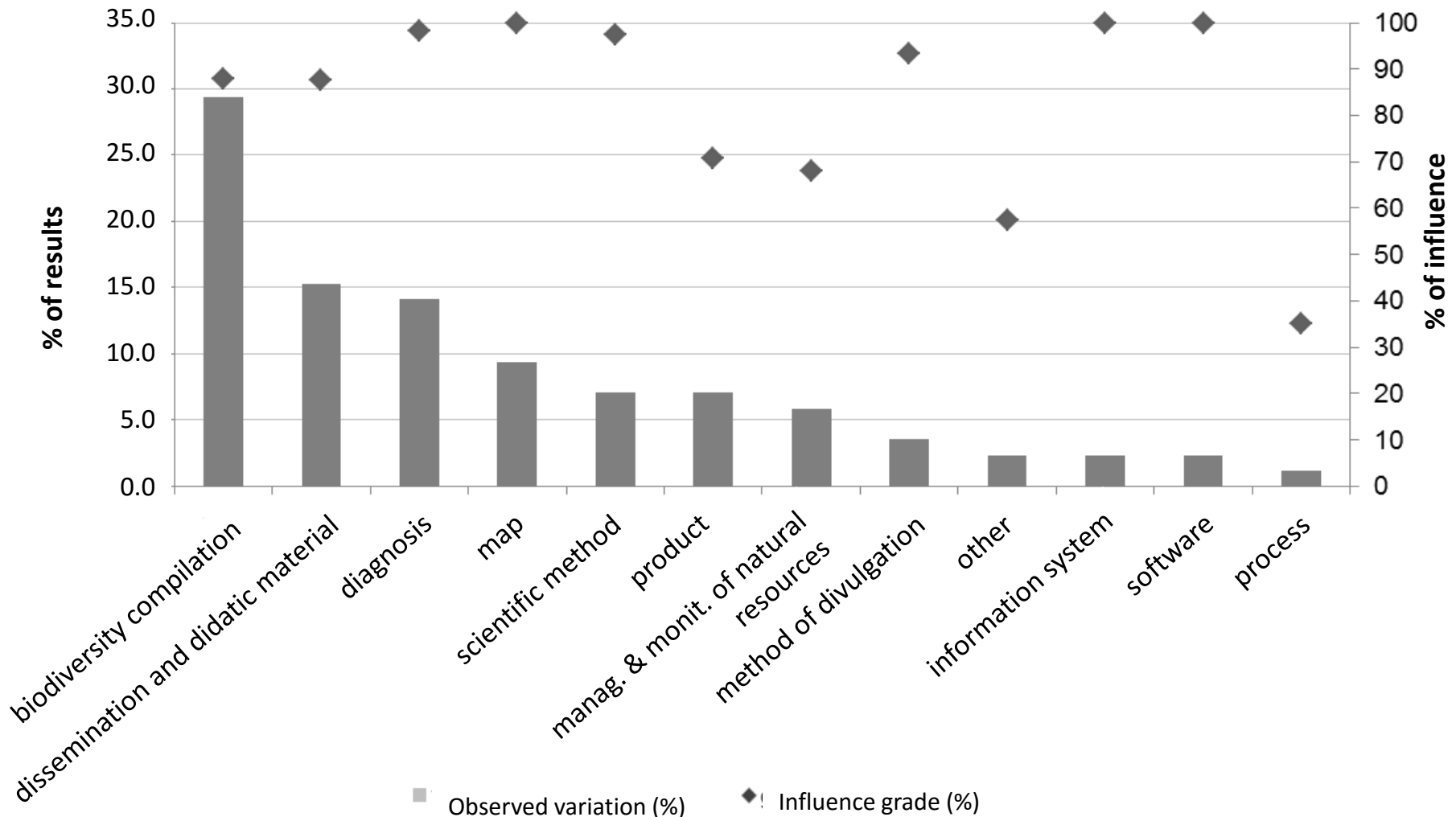*( ) Yes, <u>negatively</u>*

[If "yes"]

➔ *How much was it?*

➔ *What was the influence of the program on this*

  variation?"

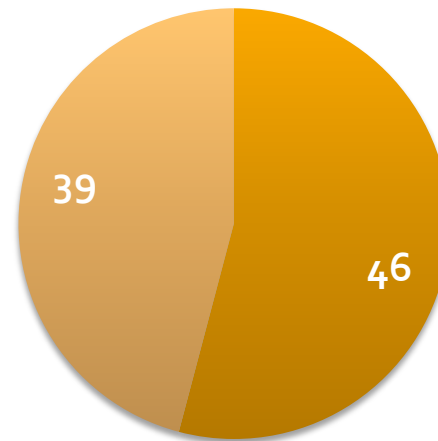# Results - Variation of the research infrastructure

Results of the Program and its influence

Adopted Results

innovation (39)

Adopter	N
Public administration	20
Non-profit organization	9
University	8
Companies	2
Total	39

Results – Established Human Resources

	Name	Agency	More details
R&D and Innovation Programs	Young Investigator Award	FAPESP	Colugnati, Carneiro, Salles-Filho 2011a; Bin et al. 2015a
	Brazilian Small Business Program	FAPESP	Salles Filho et al. 2011a
	Research Partnership for Technological Innovation	FAPESP	Arruda et al. 2007
	Intellectual Property Program	FAPESP	Arruda 2008
	Public Policy Research Program	FAPESP	Salles-Filho, 2009
	Innovation and Competitiveness of the Peruvian Agriculture Program	INCAGRO (Peru)	Salles-Filho et al. 2010
	Scholarships Program	FAPESP	Bin et al. 2015b
	Multiuser Equipament Program	FAPESP	Castro et al. 2012
	Biodiversity Conservation Research Program	FAPESP	Salles-Filho et al. 2011b, 2011c, Castro 2011, Colugnati et al. 2014
Public Fund	Technological Development Fund for Telecommunications	FUNTTEL Management Counsel	Salles-Filho, 2009
Policy	Brazilian Informatics Law	CGEE	Salles Filho et al. (2012)
Technologies	Coffee/ certified reference materials	IEA, INMETRO	Vegro, Franzaglia, Veiga-Filho (2009); Rauen et al. (2013);
Property rights	Geographical indications / designations of origin	Embrapa	Capanema et al. (2013)
R&D Project portifolio	Energy sector	CPFL	Massaguer et al (2013)

Conclusions

- indeterminancy

- multidimensionality

- causality

- time lag (in progress)

Conclusions

- participation of stakeholders

- wide panorama of the STI performance

- combination with others methods

THANK YOU!

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