OLACEFS
ORGANIZACIÓN LATINOAMERICANA Y DEL CARIBE DE ENTIDADES FISCALIZADORAS SUPERIORES

OpenGeoHub 2022

Satellite information as a tool to combat human rights violations in extractive industries in the Amazon

cooperação alemã
DEUTSCHE ZUSAMMENARBEIT

Por meio da:
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Team

EFS Brazil

Chair of the Olacefs Capacity Building Committee

Director of Advanced Studies and Institutional Cooperation

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Technical coordinator of the project

Leonardo Leão

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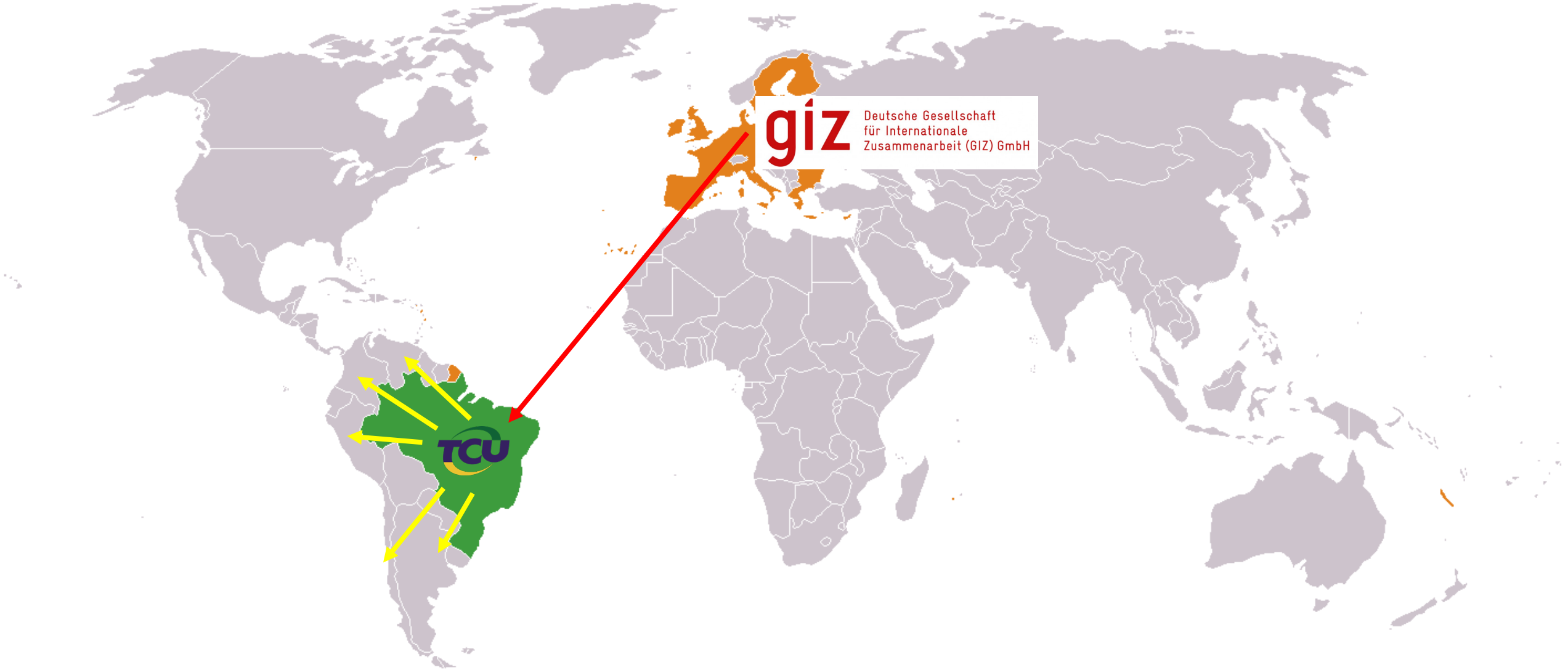
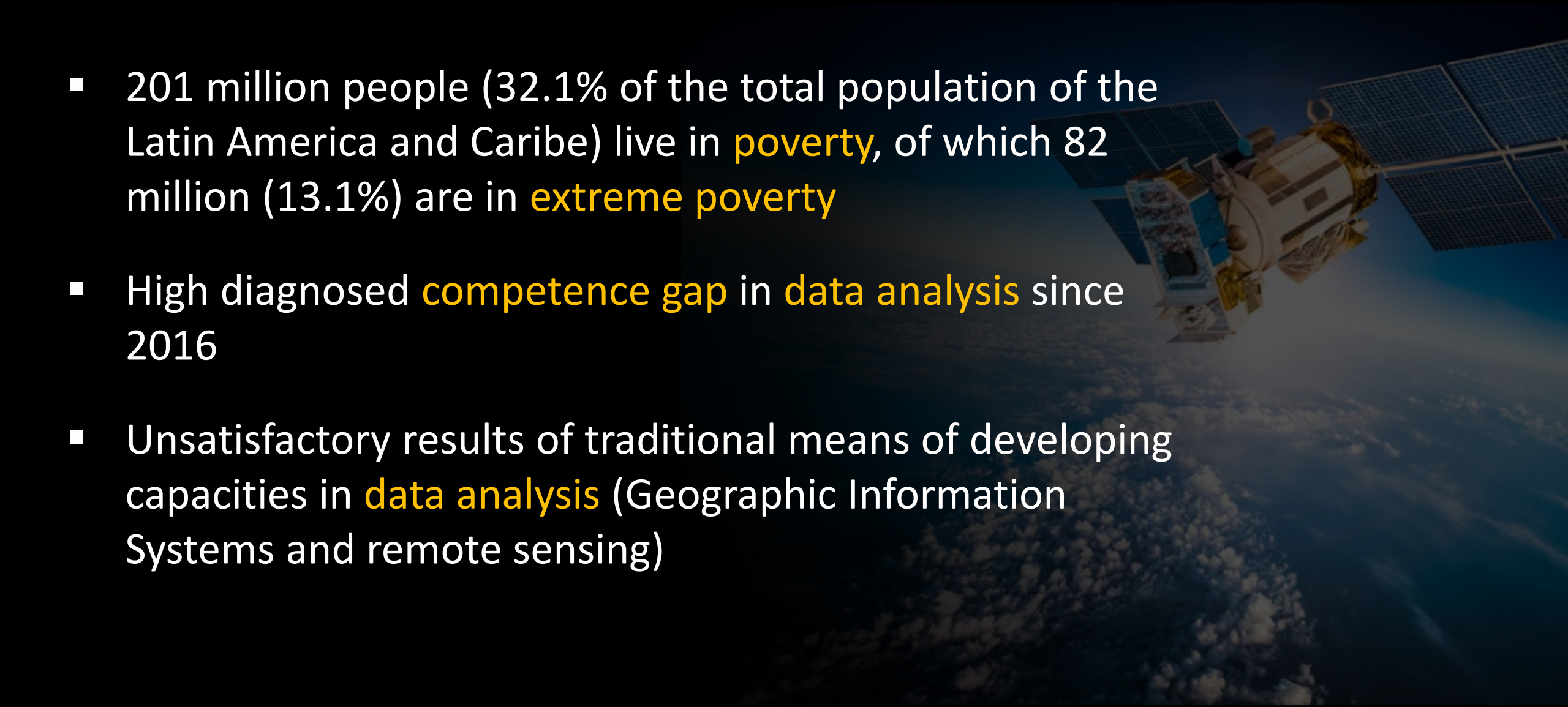
CCC
CREACIÓN DE CAPACIDADES

Project background



Justification of the project

- 201 million people (32.1% of the total population of the Latin America and Caribe) live in poverty, of which 82 million (13.1%) are in extreme poverty
- High diagnosed competence gap in data analysis since 2016
- Unsatisfactory results of traditional means of developing capacities in data analysis (Geographic Information Systems and remote sensing)



Conceptual framework - 3 axes

Axis 1: vulnerable populations

Axis 2: technology

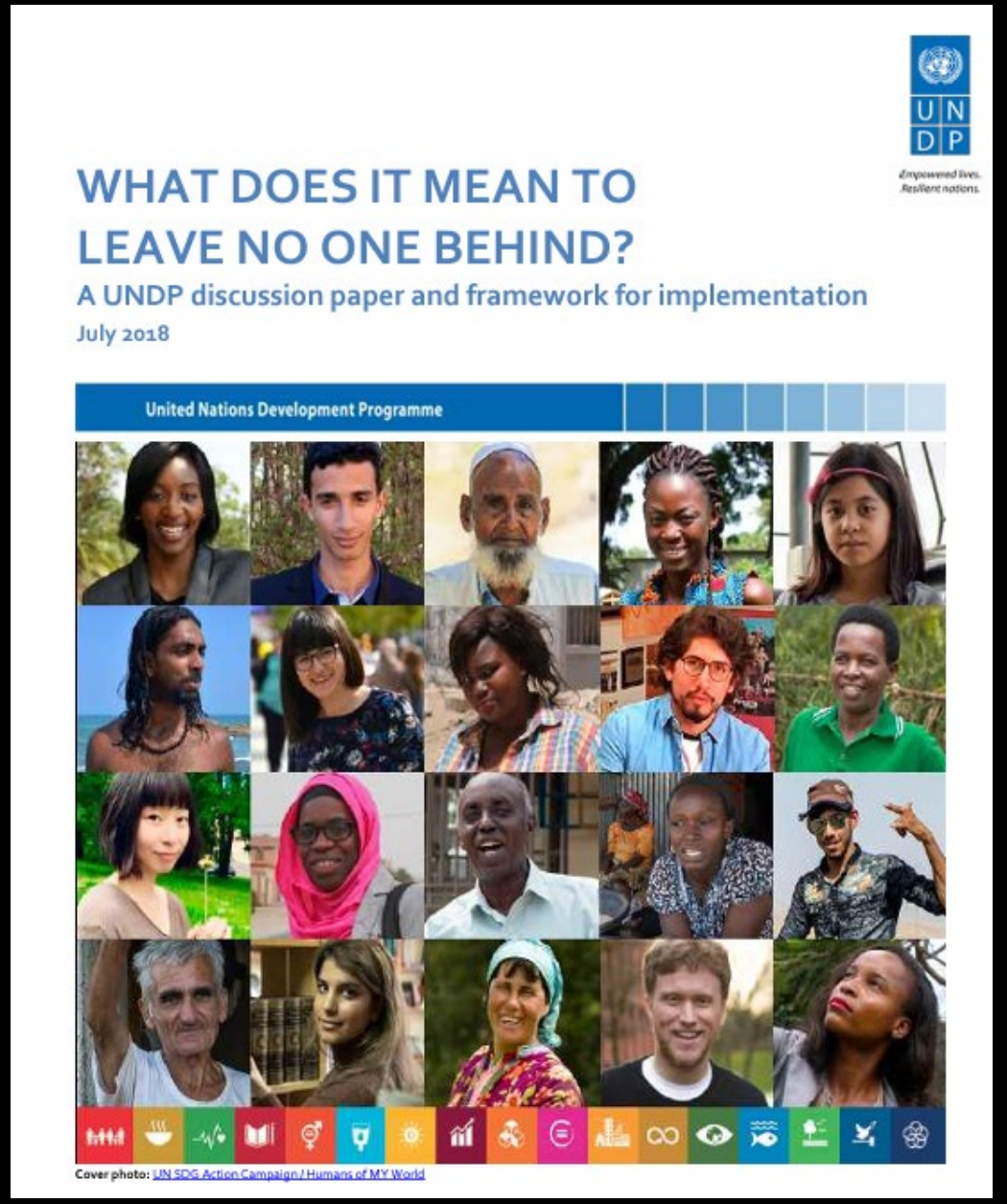
Axis 3: pedagogical and methodological structure

Conceptual framework

Axis 1: vulnerable populations

What does it mean to
"leave no one behind"
(2030 Agenda)?

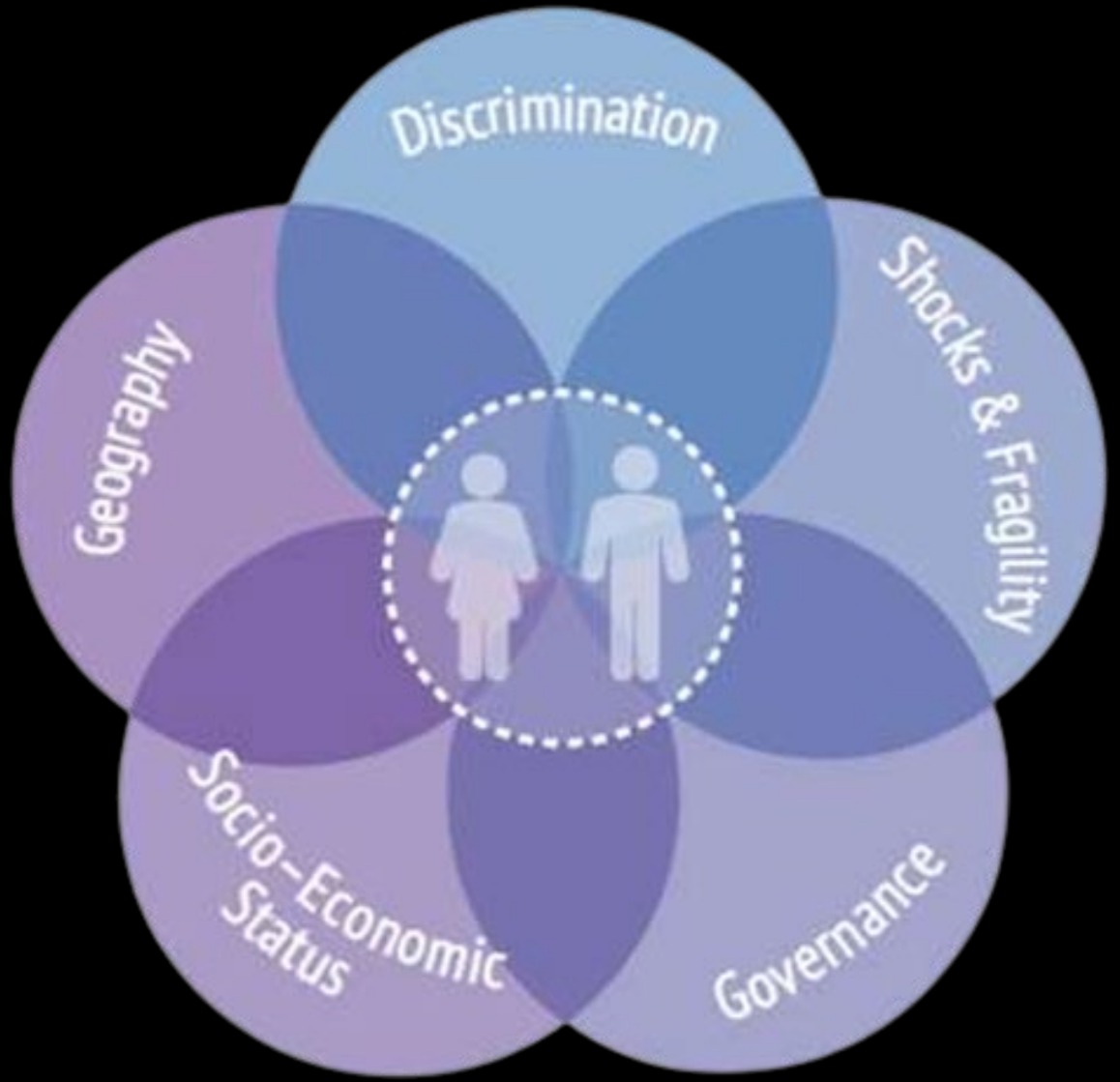
How to integrate the
"leave no one behind" principle
into the process of prioritizing
audit topics?



Conceptual framework

Axis 1: vulnerable populations

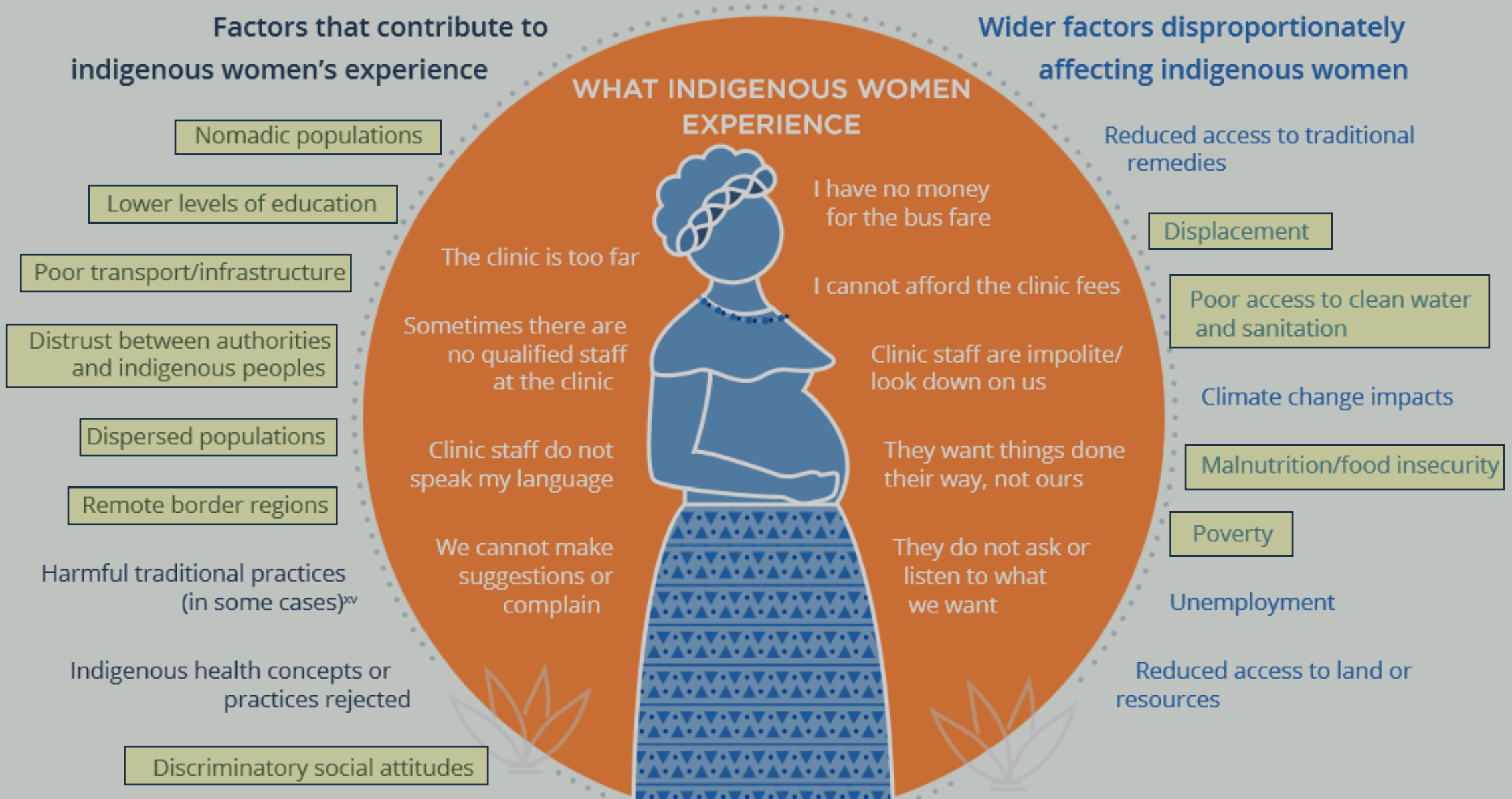
- Discrimination
- Geography
- Socioeconomic status
- Governance
- Shocks and fragilities



UNDP, 2018

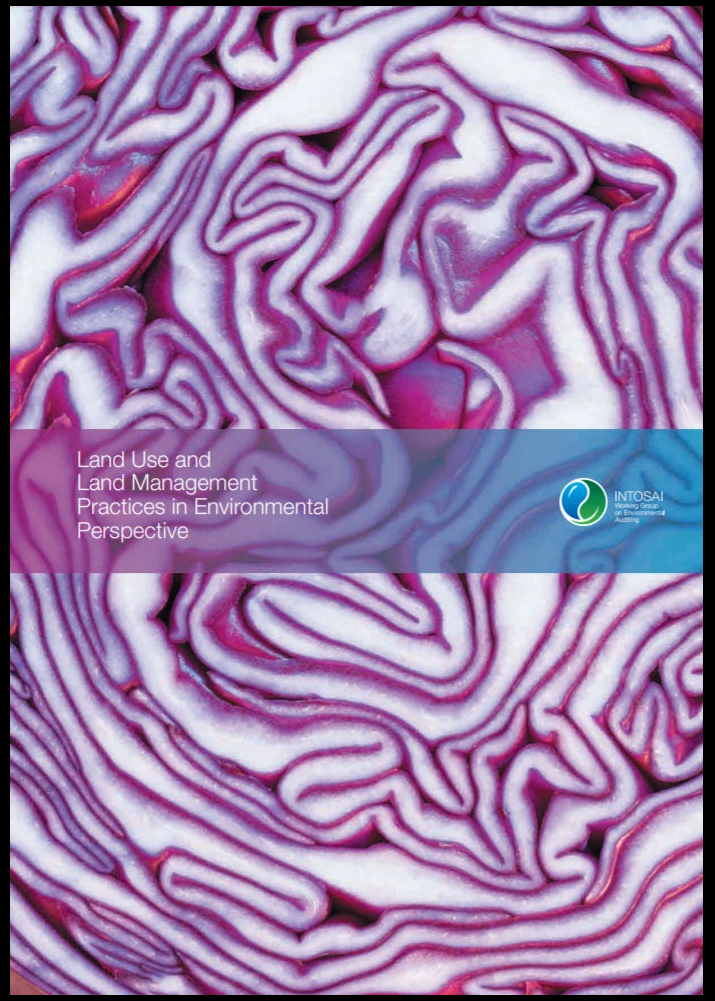
WHY DO INDIGENOUS WOMEN HAVE WORSE MATERNAL HEALTH OUTCOMES?

WIDER CAUSAL OR CONTRIBUTING FACTORS



Conceptual framework

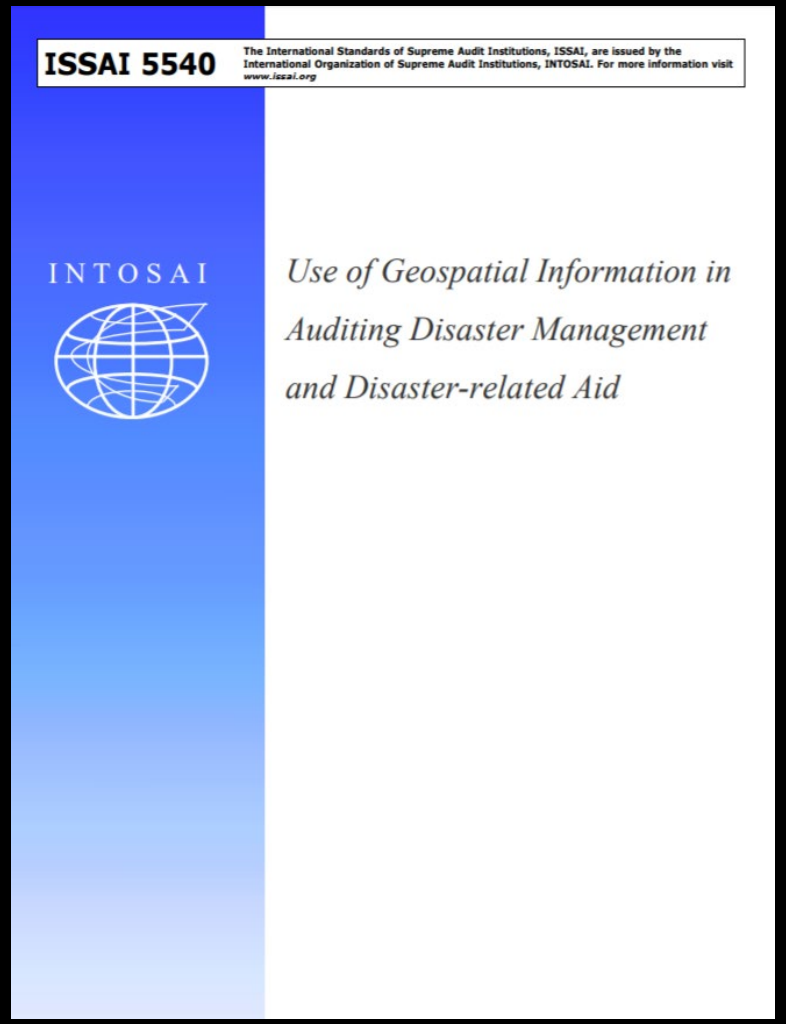
Axis 2: technology



INTOSAI. Working Group on Environmental Auditing (WGEA). 2013.

Conceptual framework

Axis 2: technology



ISSAI 5540

The International Standards of Supreme Audit Institutions, ISSAI, are issued by the International Organization of Supreme Audit Institutions, INTOSAI. For more information visit www.issai.org

INTOSAI

Use of Geospatial Information in Auditing Disaster Management and Disaster-related Aid

Articles

Geotechnologies and monitoring of Sustainable Development Goals by Supreme Audit Institutions

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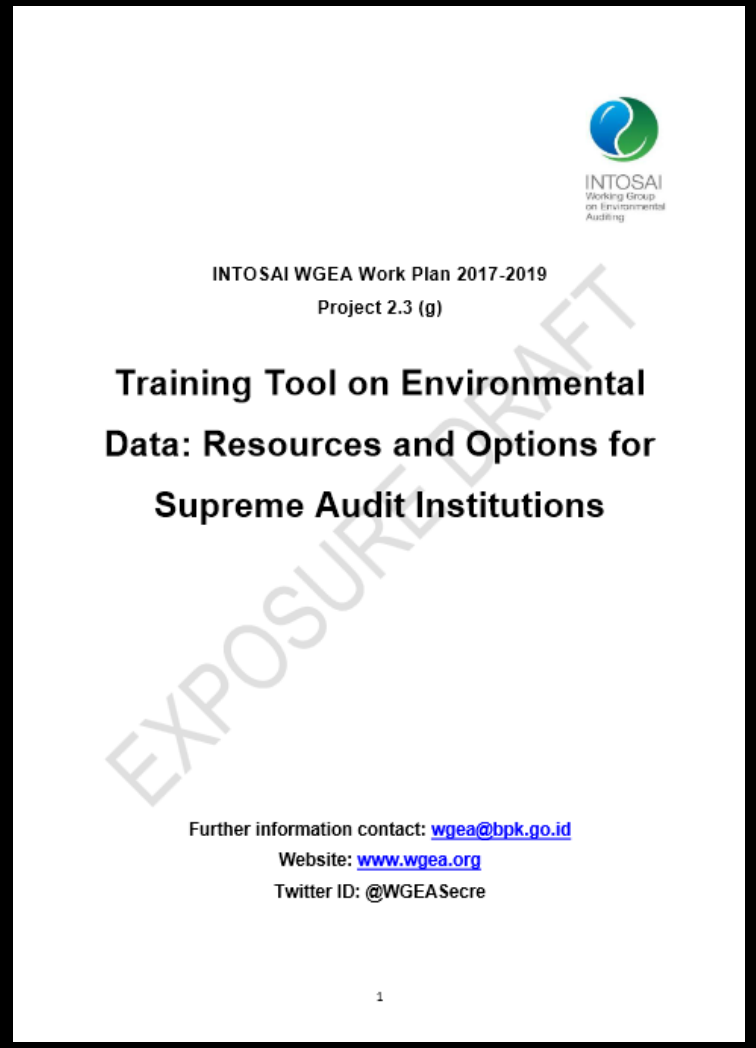
Revista do TCU 137



INTOSAI Working Group on Environmental Auditing

INTOSAI WGEA Work Plan 2017-2019

Project 2.3 (g)

Training Tool on Environmental Data: Resources and Options for Supreme Audit Institutions

EXPOSURE DRAFT

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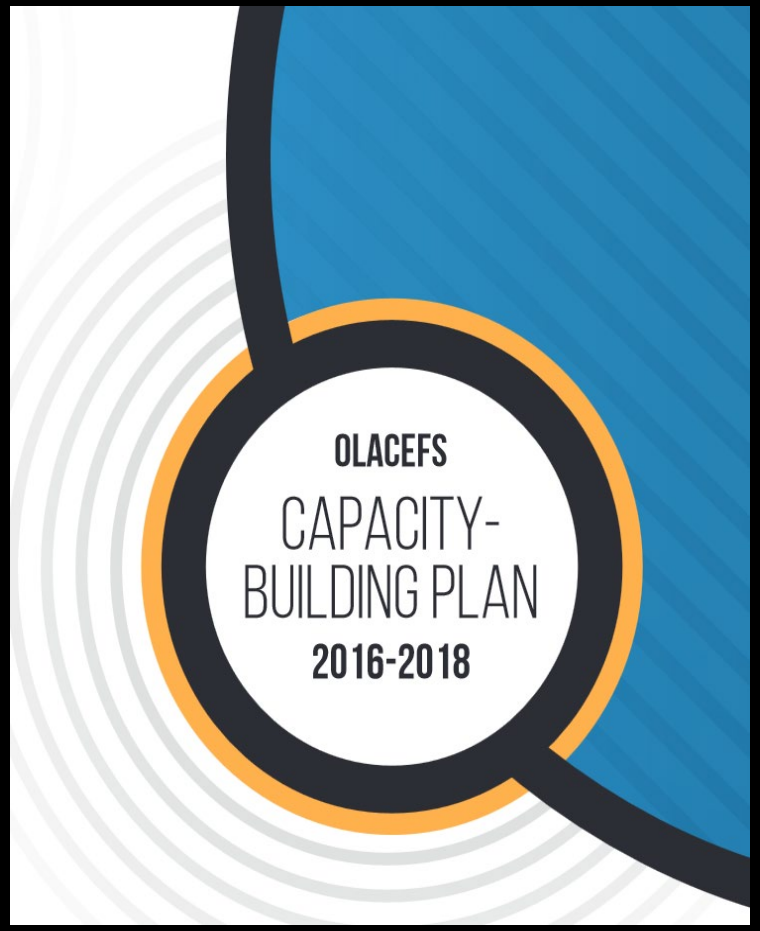
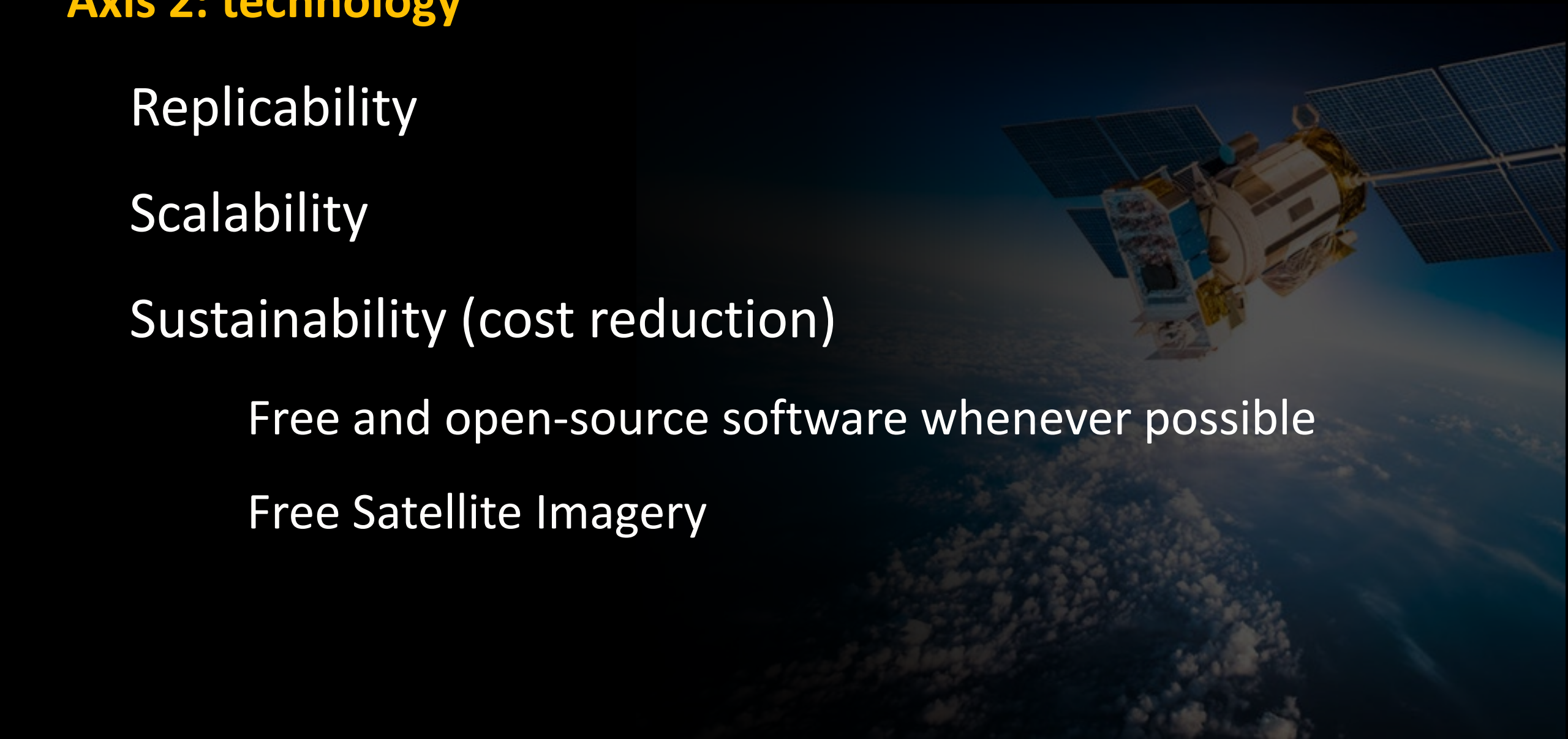
Conceptual framework

Axis 2: technology



Conceptual framework

Axis 2: technology



- Replicability
- Scalability
- Sustainability (cost reduction)
  - Free and open-source software whenever possible
  - Free Satellite Imagery

Conceptual framework

Axis 3: pedagogical and methodological structure

Project-based Learning (PBL) - themes

2022: satellite information as a tool to combat human rights violations in extractive industries in the Amazon

2023/2024: anthropogenic pressures (fire, deforestation, mining, etc.) in Indigenous Lands and Conservation Units

2024: the theme will be selected with the support of civil society organizations that work in the defense of indigenous women's rights

Conceptual framework

Axis 3: pedagogical and methodological structure

Concentration of institutional resources in a small group of multipliers

- High workload (154 hours)
- One-on-one mentoring

Instructors of the course linked to a research center that works on the subject studied (illegal mining)

The theme of the project (PBL)

Illegal gold mining and indigenous health

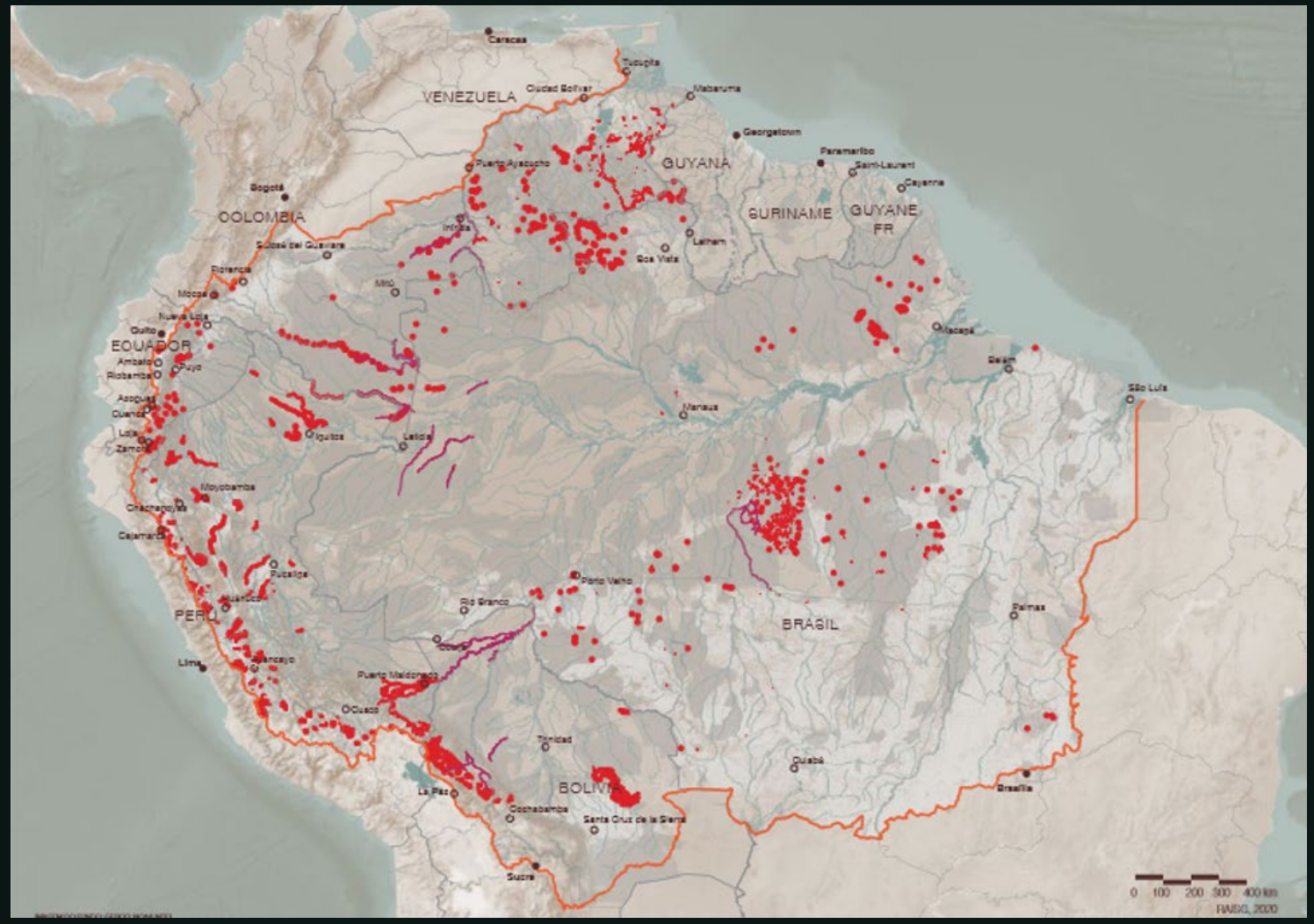
Brazil's SAI was tasked with assessing the relationship between the death of indigenous children and adults due to malnutrition and illegal gold mining in the Yanomami Indigenous Territory

Yanomami child with malnutrition and malaria, in the Maimasi village (EL PAÍS).

The subject of the project (PBL)

Illegal gold mining and indigenous health

Illegal mining is a transnational problem in the Amazon



(RAISG, 2021)

The subject of the project (PBL)

Illegal gold mining and indigenous health

Yanomami and Ye'kwana are binational people (Brazil and Venezuela)

(DRISHTIIAS, 2023)

The subject of the project (PBL)

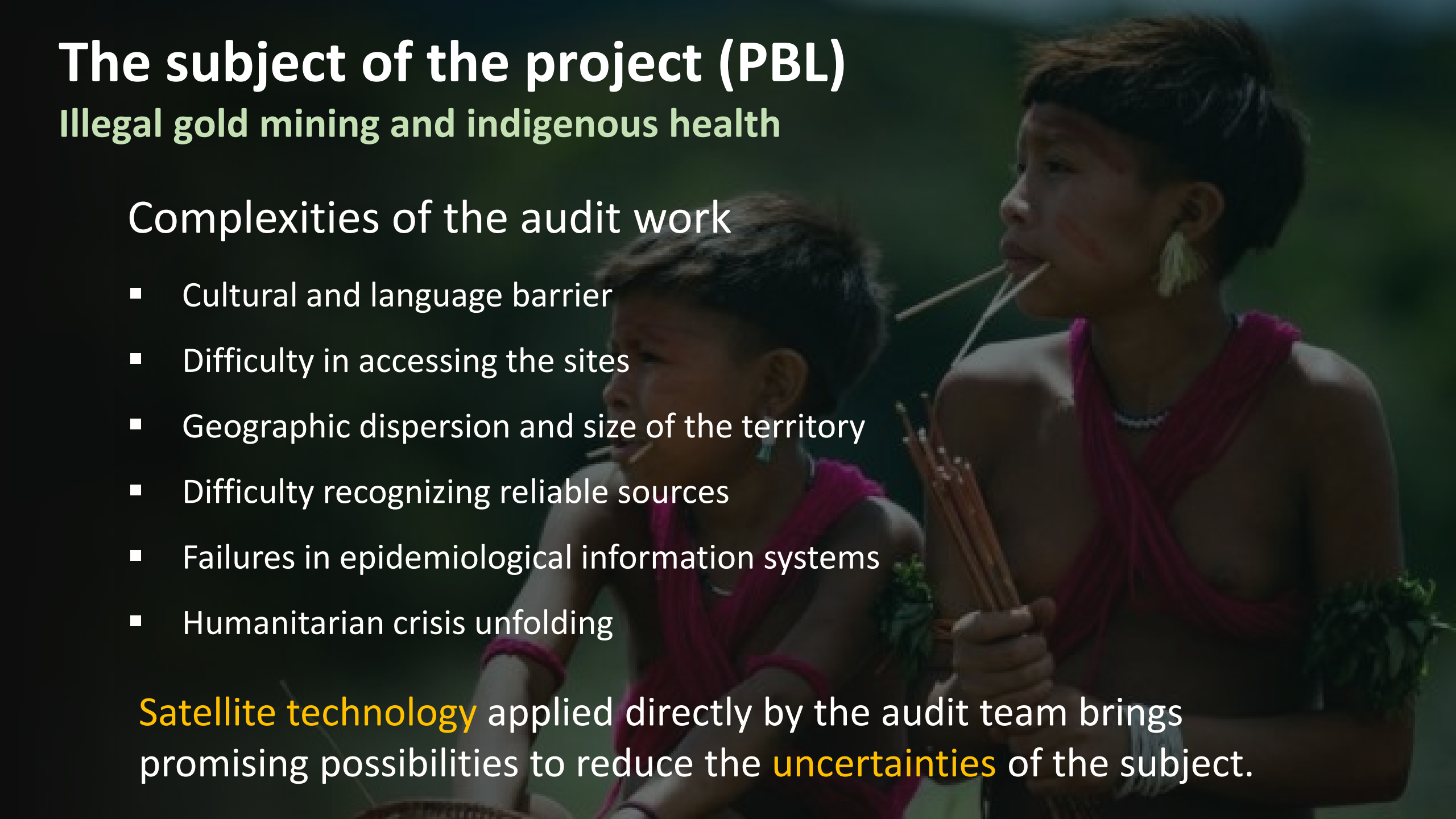
Illegal gold mining and indigenous health

Politically polarized topic

Against the backdrop of a bill to legalize mining on indigenous lands

The subject of the project (PBL)

Illegal gold mining and indigenous health



Complexities of the audit work

- Cultural and language barrier
- Difficulty in accessing the sites
- Geographic dispersion and size of the territory
- Difficulty recognizing reliable sources
- Failures in epidemiological information systems
- Humanitarian crisis unfolding

Satellite technology applied directly by the audit team brings promising possibilities to reduce the uncertainties of the subject.

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Project Resources - 2022

Duration: 4 months - training

Budget: $10,500 - instructors and mentors

Technology:

- QGIS and Google Earth Engine
- Free satellite imagery - Landsat and Sentinel
- Machine learning-based alerts for mining detection

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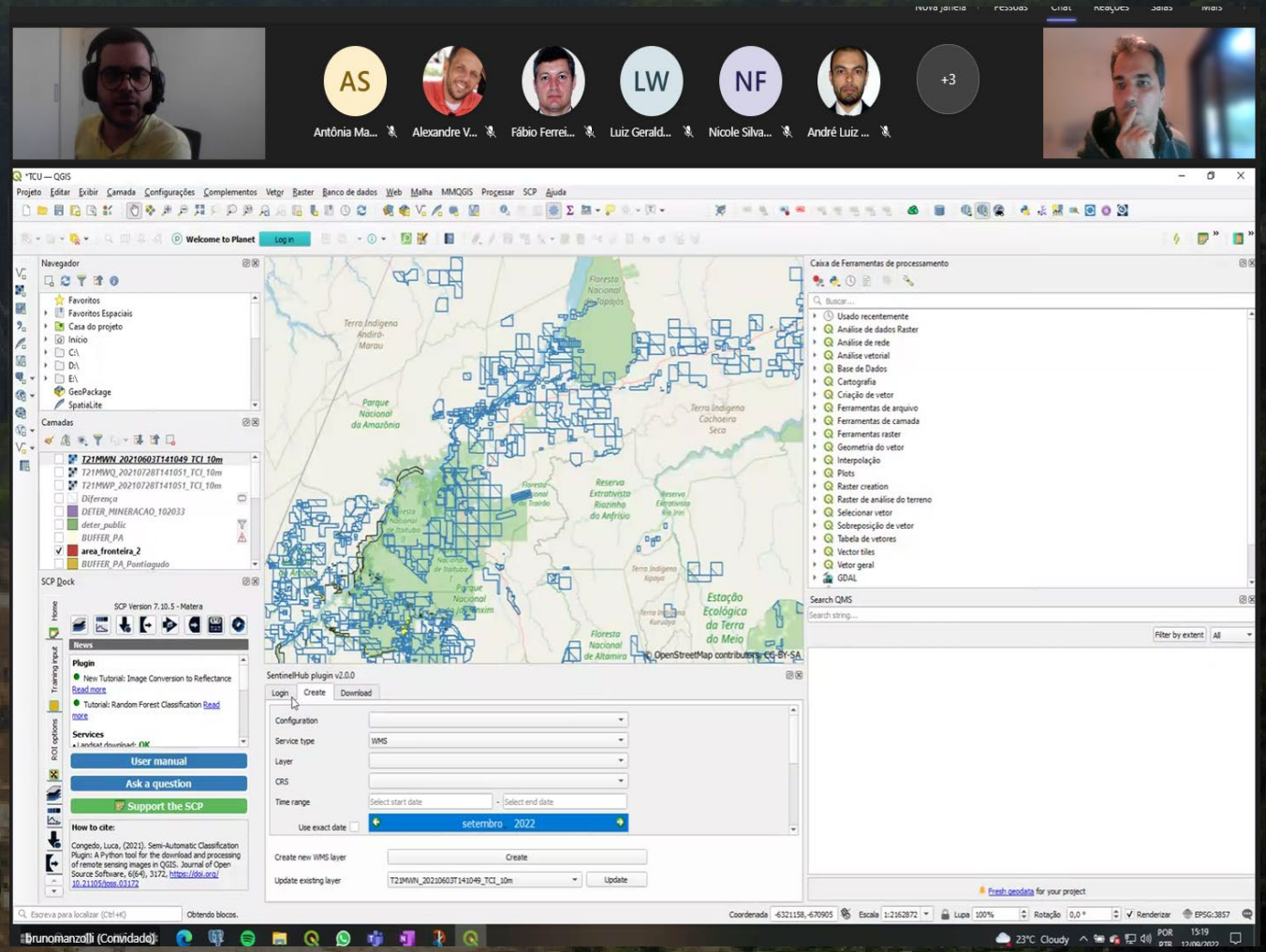
Project Results

8 auditors able to perform medium complexity projects using GIS and remote sensing

3 auditors able to serve as multipliers of knowledge



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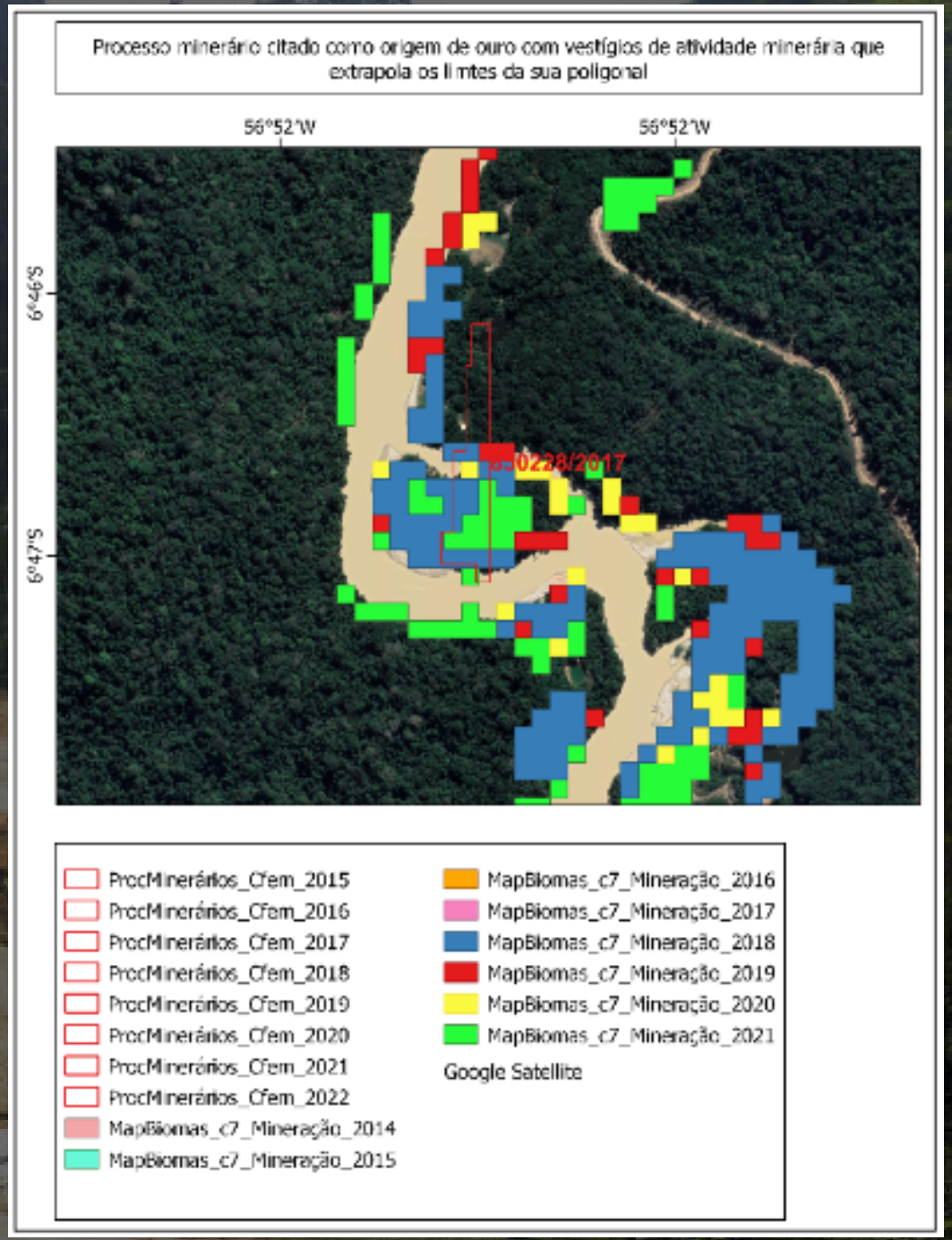
Products (during the course)

Knowledge production about illegal gold exploration

Identification of weaknesses in the mining chain through geotechnologies



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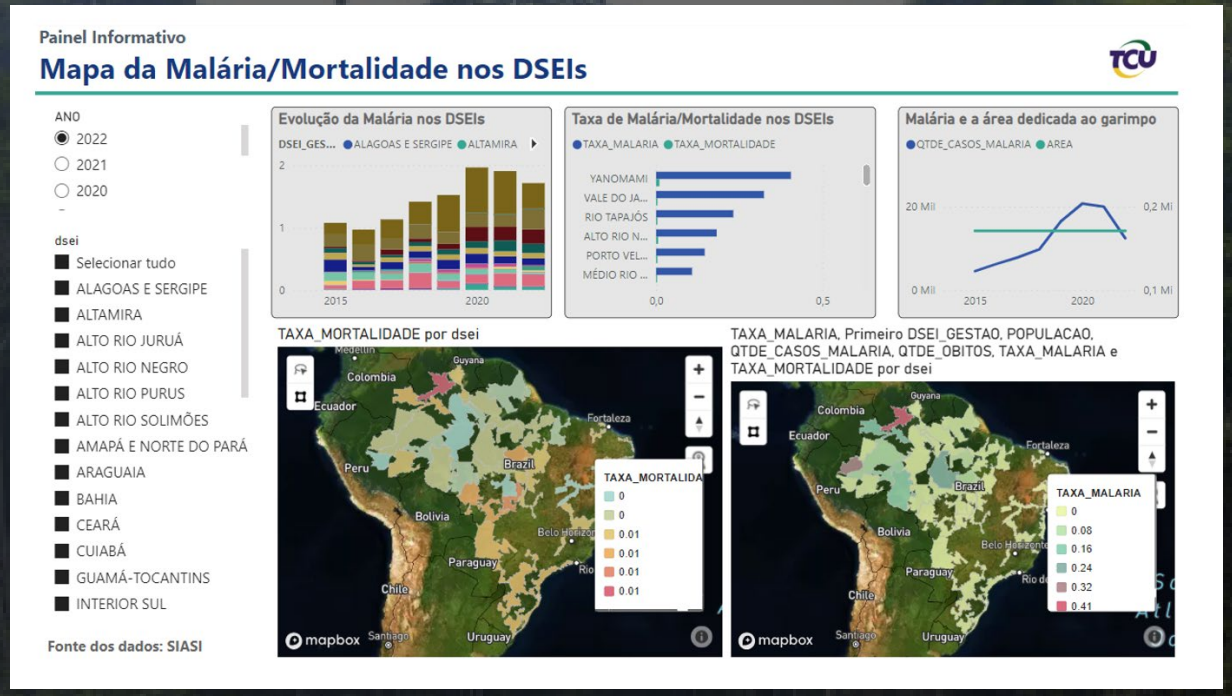
Products (during the course)

Elaboration of interactive panels with maps and statistics on the use and occupation of indigenous lands



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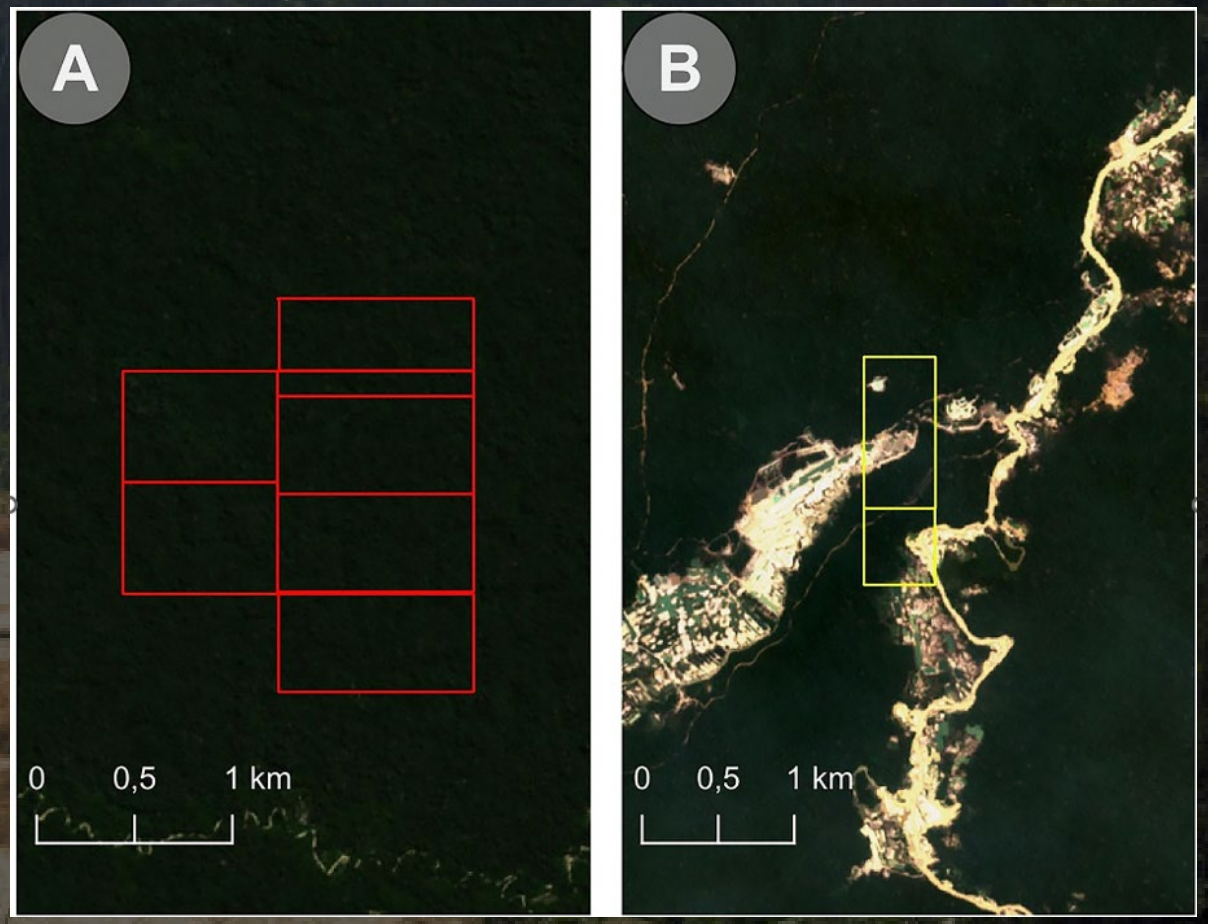
Products (after the course)

A Google Earth Engine App to the team of auditors interact with the data

Evaluation of the quality of mining alerts from different sources

Thematic maps related to the theme of the audit



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Lessons learned

International cooperation demands high load of administrative activities for bids

Support from multidisciplinary areas of knowledge, such as anthropology, is needed

Projects that propose simultaneous change on technological and methodological fronts need support from the institutional leadership

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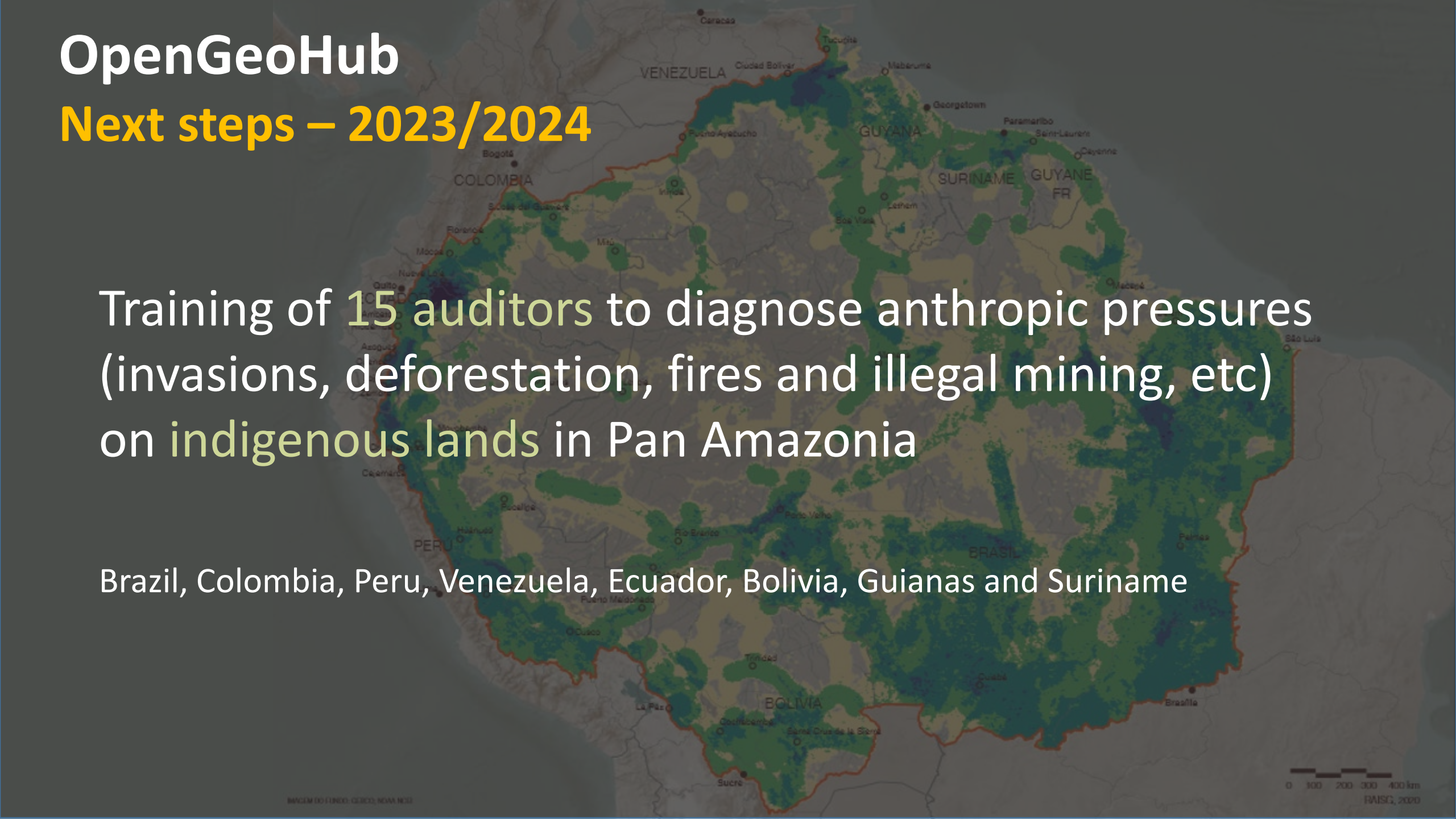
Next steps – 2023/2024



Training of 15 auditors to diagnose anthropic pressures (invasions, deforestation, fires and illegal mining, etc) on indigenous lands in Pan Amazonia

Brazil, Colombia, Peru, Venezuela, Ecuador, Bolivia, Guianas and Suriname

Panoptes project

Next steps – 2023/2024

Automation of the analysis routines
of rural credit data operations using:

- geographic data cubes
- automatic classifications of land use and occupation
- time series analysis
- phenological analysis

The project includes the transfer of technology to the government, academia and the third sector

Brazilian Federal Court of Accounts

Serzedello Corrêa Institute

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Contact us!