

An aerial photograph showing a landscape heavily impacted by illegal small-scale gold mining. The foreground and middle ground are dominated by large, irregularly shaped areas of exposed, light-colored earth and sand, interspersed with small, shallow pools of greenish water. The background shows a dense forest of tall, thin trees, some of which appear to be dead or sparsely leaved. The overall scene depicts significant environmental degradation and deforestation.

Supporting Public Prosecutors to Value Impacts of Illegal Small-Scale Gold Mining

Pedro Gasparinetti

The Mining Impacts Calculator Tool



Conservation Strategy Fund

- Design and Evaluation of Environmental Projects and Policies
- Impact assessment of infrastructure projects
- Economic Incentives for Conservation
- Ecosystem Services Valuation

www.conservation-strategy.org

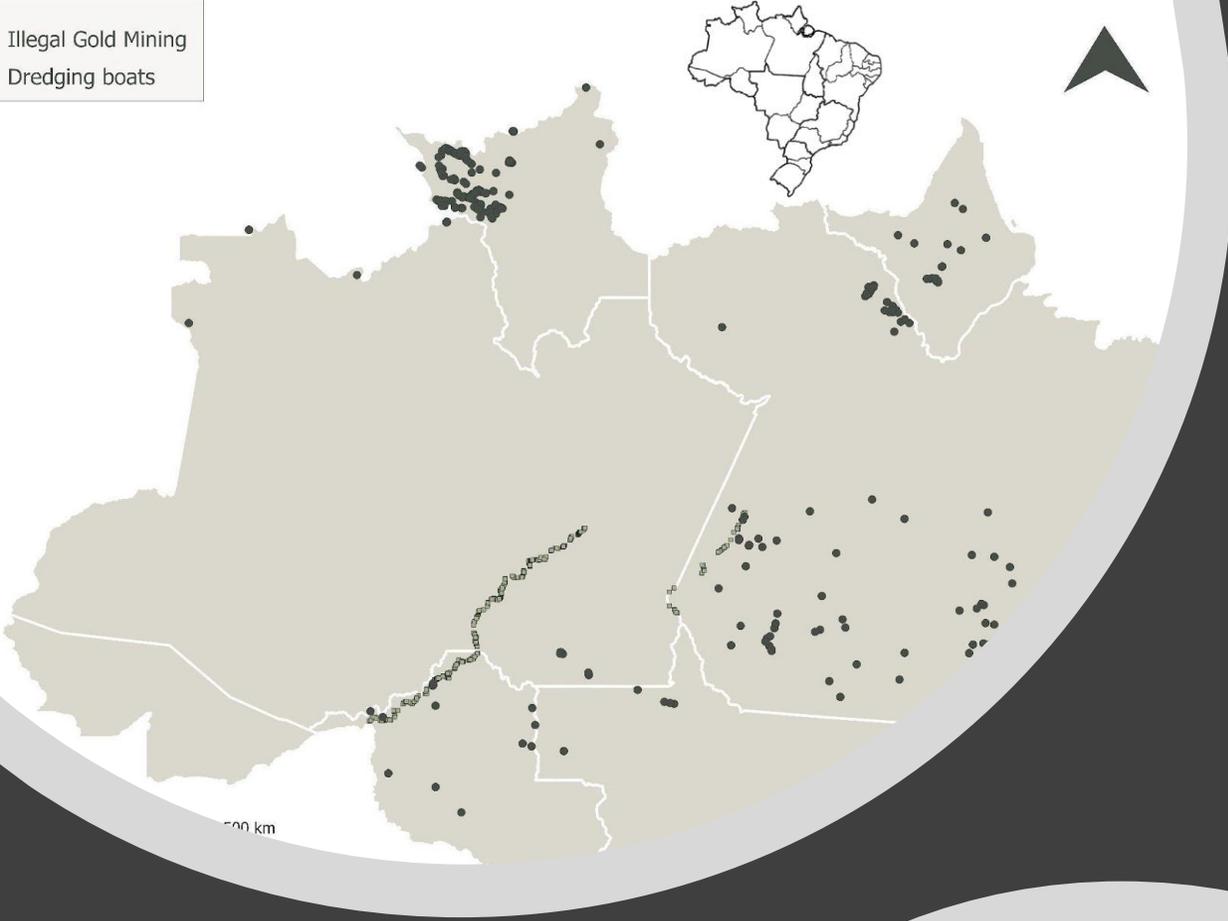


Presentación

- Context
- Objective
- Online Calculator
- Results

- Methodology

Illegal Gold Mining
Dredging boats



Background

- Increase in illegal gold mining in Brazil
- Impacts on the environment and health (mercury)
- Public Prosecutors Office (MPF)
 - Public institution engaged in guaranteeing people's rights

Setting fine amounts

- MPF wanted a valuation tool (robust and quick)
 - Challenges:
 - Difficulty to sustain claims in courts
 - Lack of valuation methodology
 - Time consuming



Purpose

- Create a “mining impact calculator tool”
 - Standardized formula with generalized parameters
 - Context → Value
 - Training prosecutors to use it
- Increase Public Prosecutors’ capacity to use economic tools to sustain cases and monetary values claims in courts
 - Reduce arbitrariness in valuation
 - Increase probability of holding offenders accountable for their actions
 - Reduce environmental and health negative effects of gold mining on communities and miners.



Introduction

The impacts calculator is the result of a partnership between CSF and MPF, an analytical and pedagogical tool that describes the impacts of illegal gold mining, their monetary values and the steps for measuring them.

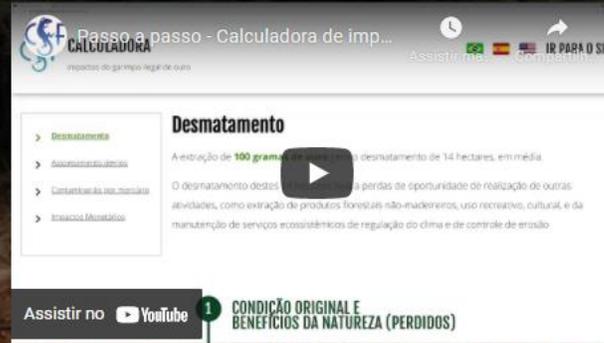


I don't know it

TAKE ME TO THE WALKTHROUGH

I know it already

TAKE ME TO THE SHORT VERSION



VER OUTROS VIDEOS SOBRE GARIMPO ILEGAL

<http://calculadora.conservation-strategy.org/>

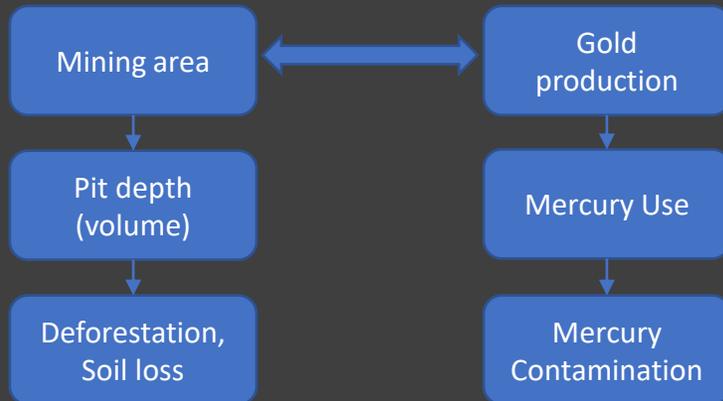
Methodology

- Productivity
- Deforestation
- Soil degradation
- Mercury Contamination



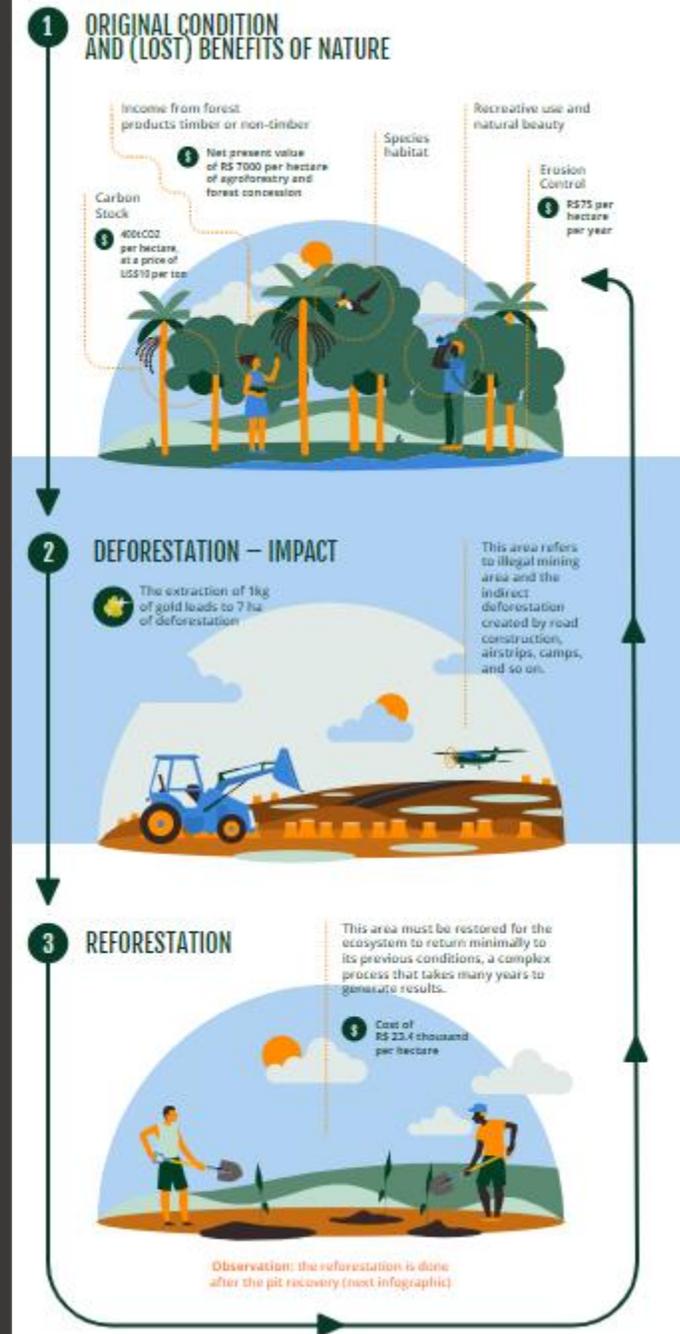
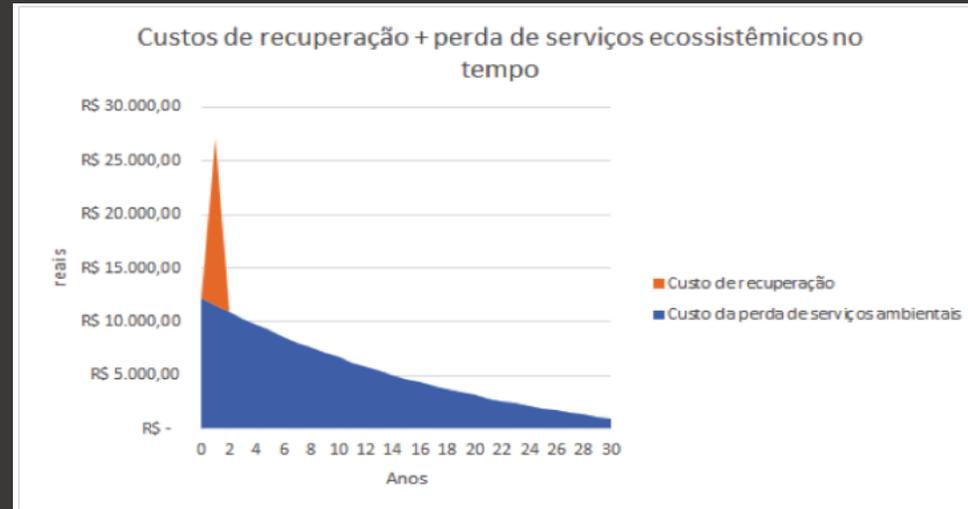
Methodology

- Productivity: Establishes equivalence between:



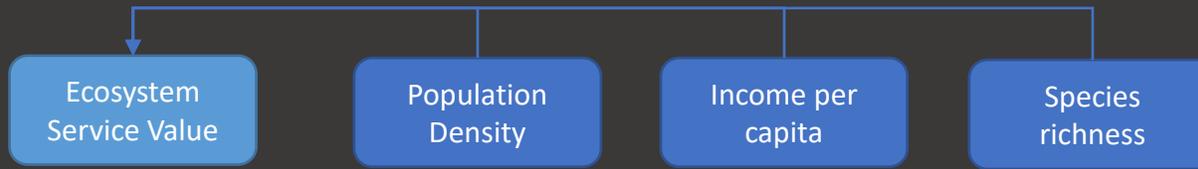
Methodology: Deforestation

- Restoration Cost
 - Official data
 - Adapted by transportation costs
- Opportunity Costs
 - Meta-analysis (ecosystem services)
 - Provision services: Timber forest products & NTFP
 - Climate regulation: Carbon
 - Other: Recreation, habitat and species protection, and water services



Methodology: Deforestation

- Value transfer function (meta-analysis)

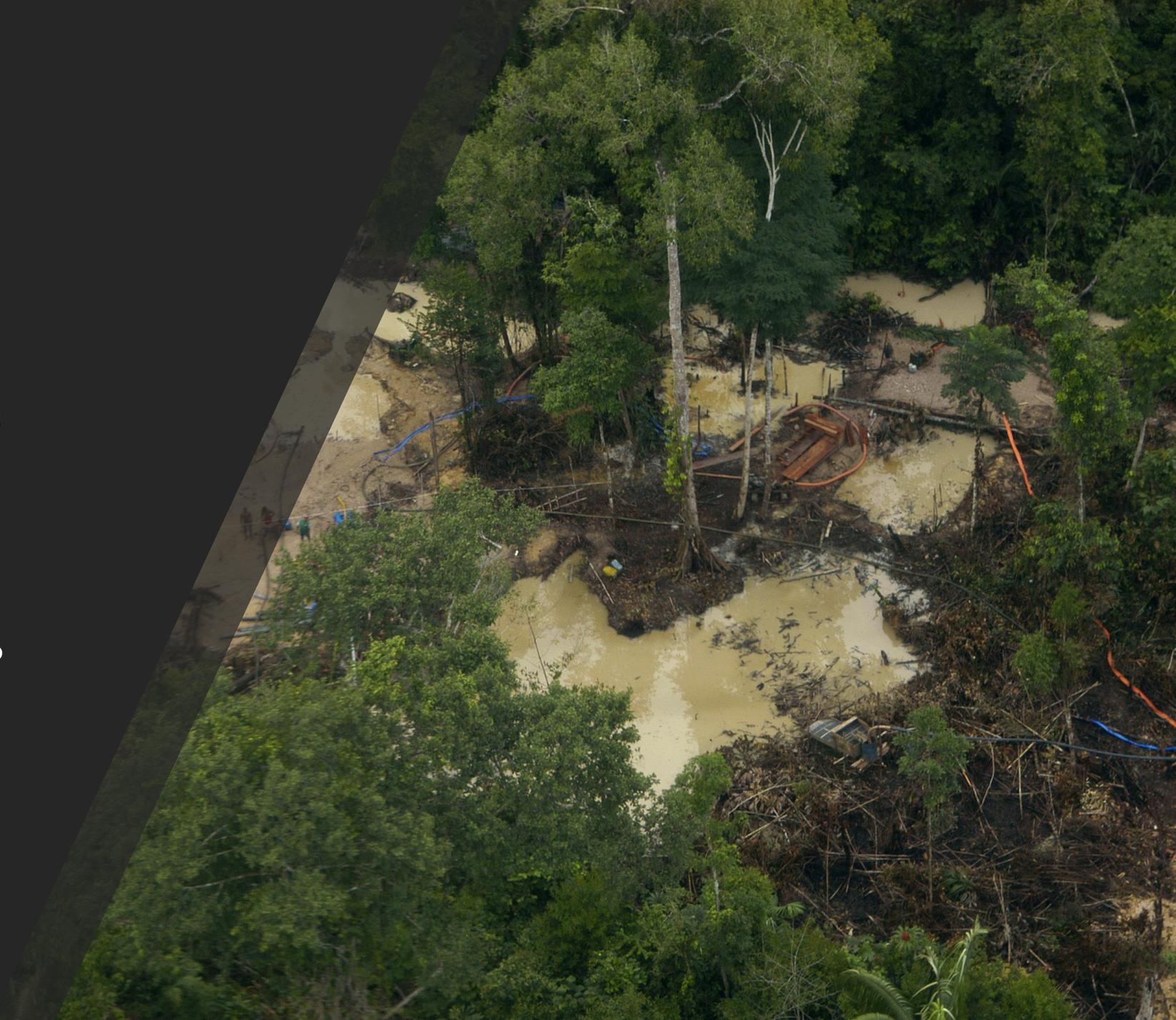


- $ES = \text{EXP} (0.562 * \text{LN} (Dd) + 0.566 * \text{LN} (\text{GDPpc}) + 0.0178 * T + 1.133 * \text{LN} (\text{Sr}) - 8.375)$

(Siikamaki et al. 2015)

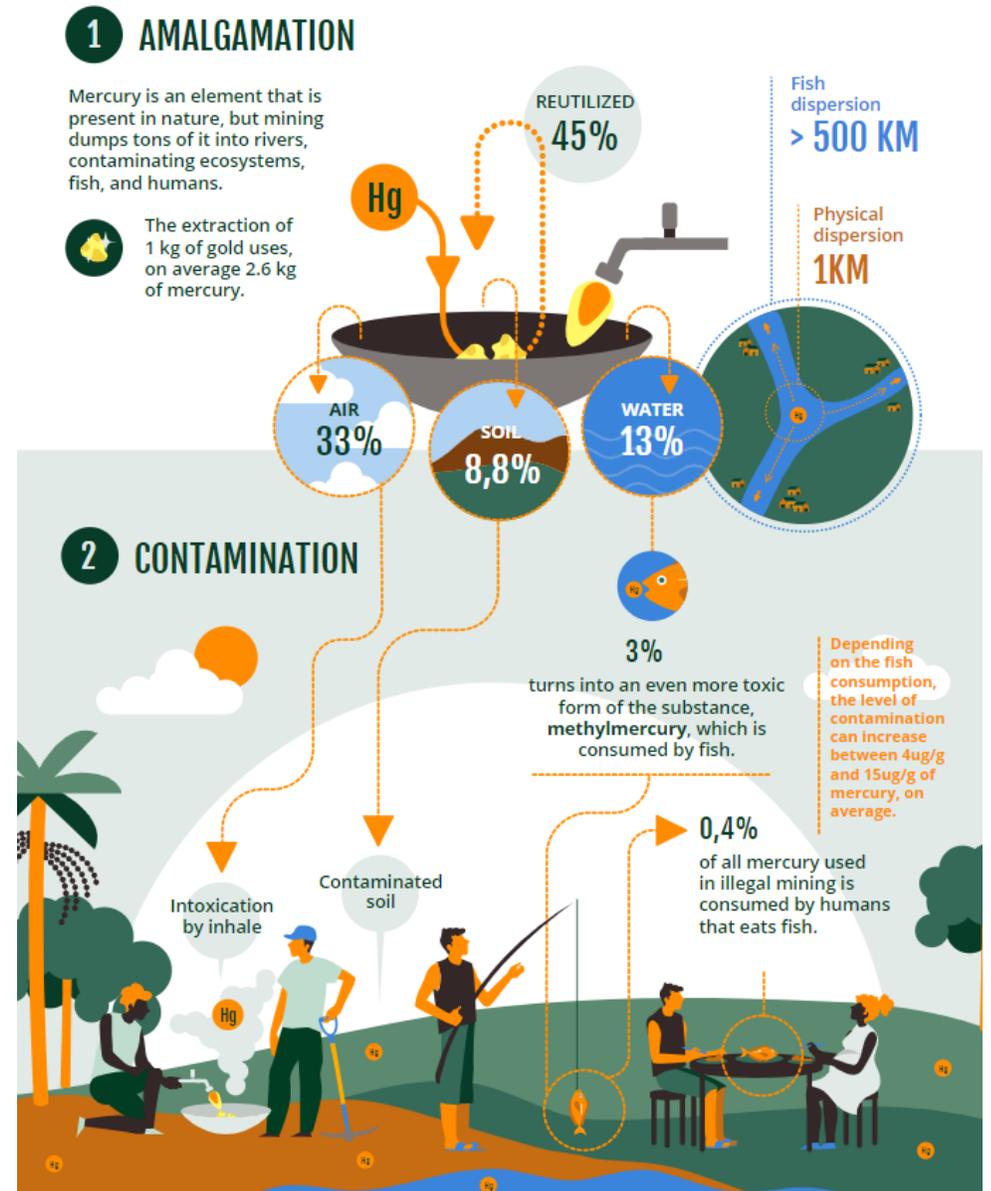
Methodology: Mercury

- Mercury is naturally present in the environment
 - Deforestation also spreads mercury
- How to differentiate sources?
 - How to attribute responsibility from ASGM?



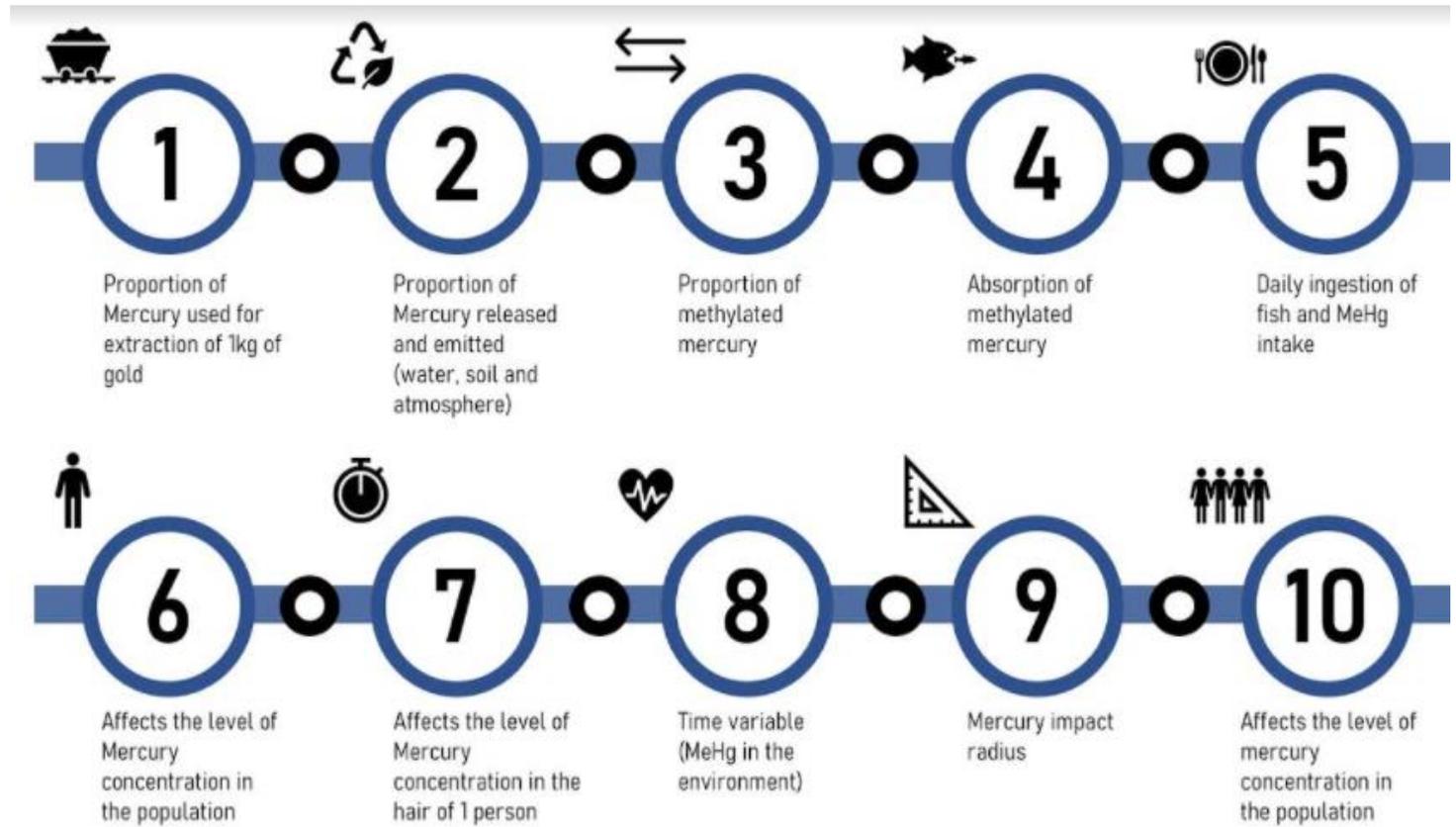
Methodology: Mercury

- “Metal mercury” becomes “organic mercury”
- Fishes get contaminated and spread it
- People eat fish and get contaminated



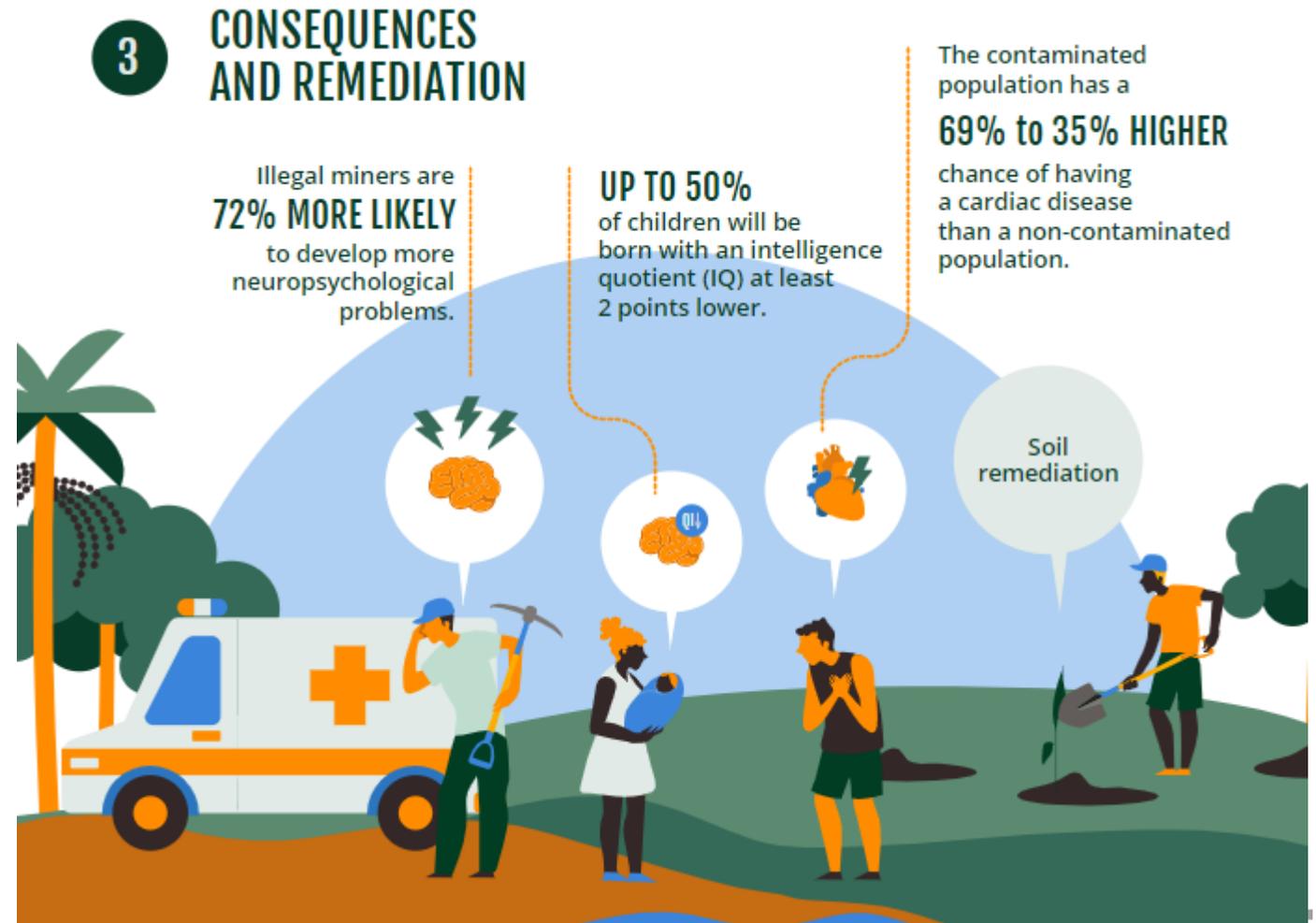
Methodology: Mercury

- Link (additional) mercury use and expected average health outcomes



Methodology: Mercury

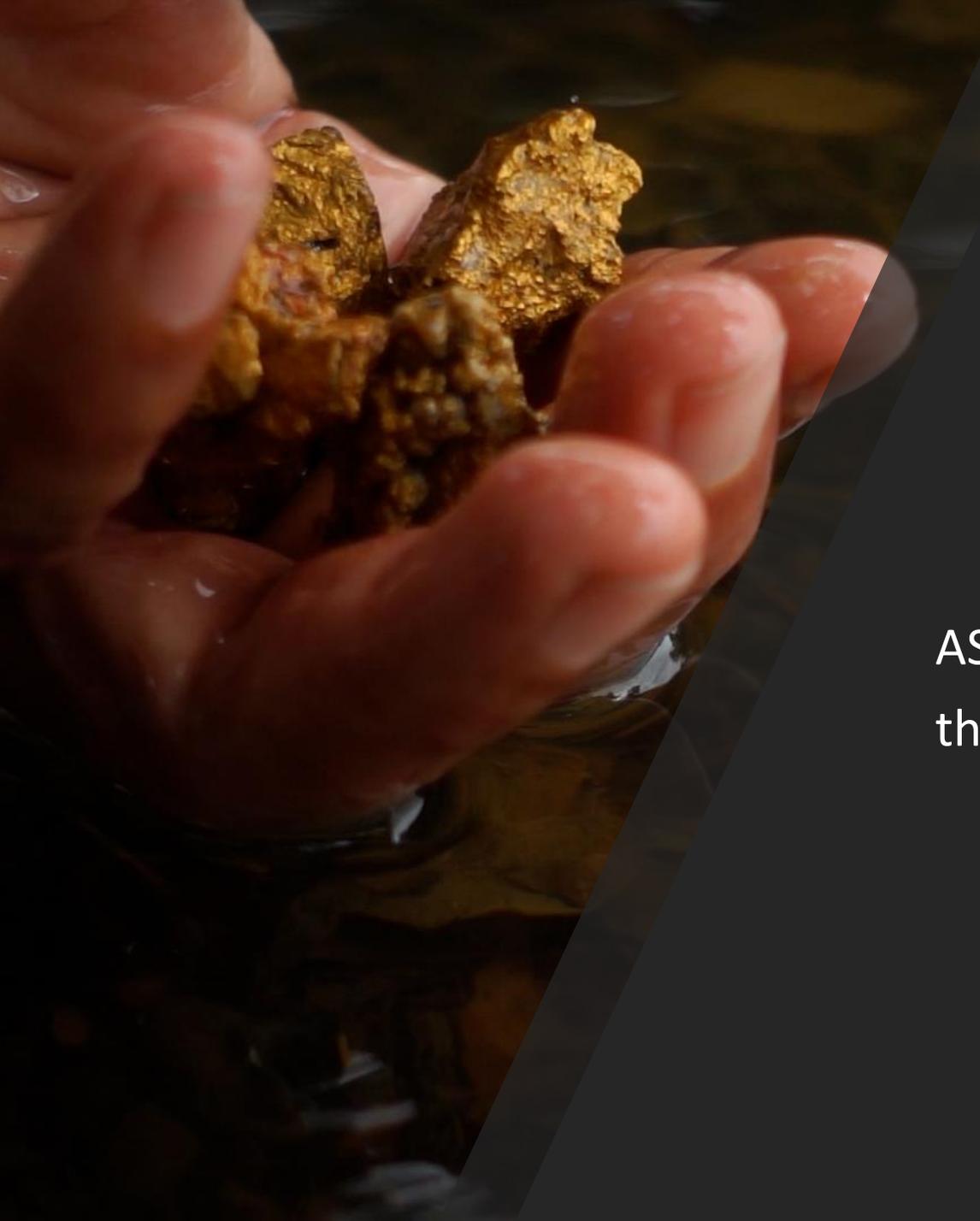
- Health effects
 - Neuropsychological problems
 - Mental retardation
 - Heart disease (IQ loss)



Methodology: Mercury

- Health indicator: Disability-adjusted life Years (DALY) (0-1)
- Economic indicator: Value of Statistical Life (VSL) (\$)
- Using VSL to value DALY





Economic Results

ASGM Social Cost is at least 2x greater
than Private Benefits

Project Results

- Public Prosecutors
 - Incorporated it as official methodology
- Federal Police
 - Will use the tool to sustain a case in the Brazilian Supreme Court
- Other countries
 - Planning processes and investment in law enforcement



Next Steps

- Adapting calculator to other countries and contexts
- Potential: Other types of damages
 - Oil spills, pesticides impacts, etc





Tambopata
National
Reserve

• Thank you!

Gold
prospecting
pits

pedro@conservation-strategy.org

Inambari
River

Rainforest

Highway —