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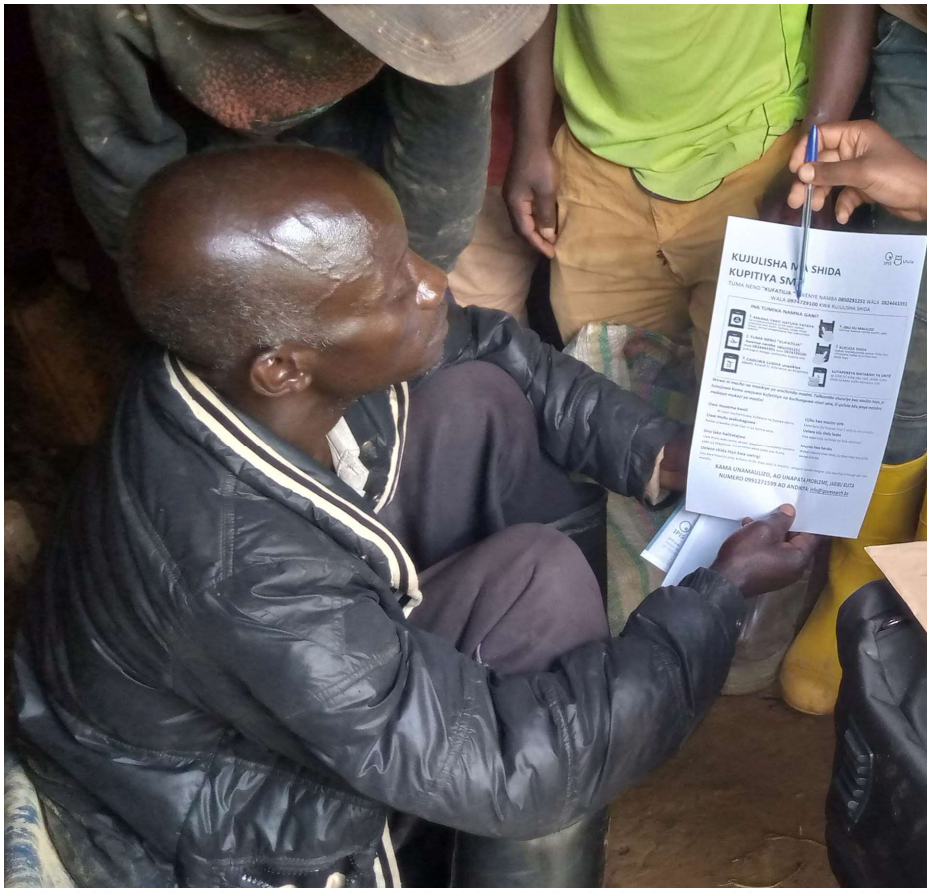
How do technological changes in artisanal and small-scale gold mining affect the environment and communities' health?

LOCATING TECHNOLOGICAL CHANGE IN AN INFORMAL SPHERE

INFORMALITY and RESPONSIBILITY

- both in terms of costs and administrative procedures

- and in terms of reputation if something goes wrong



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Diseases and complicated access to healthcare

Industry using these minerals does not take responsibility

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Research sites and methods

- This study was carried out in two mining towns in South Kivu province, Kamituga and Misisi, in April, May and August 2021.
- The sites were chosen for their accessibility, chronicity in ASGM & breadth of exploration
- 134 interviews in Kamituga (106 individual & 28 focus group) and 127 in Misisi (99 & 28)
- Target: mineworkers,other ASGM stakeholders, medical professionals, medicine sellers (in pharmacies, on the streets) & traditional healers.
- We supplemented the interviews with field observations

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Extraction
Processing
Trade

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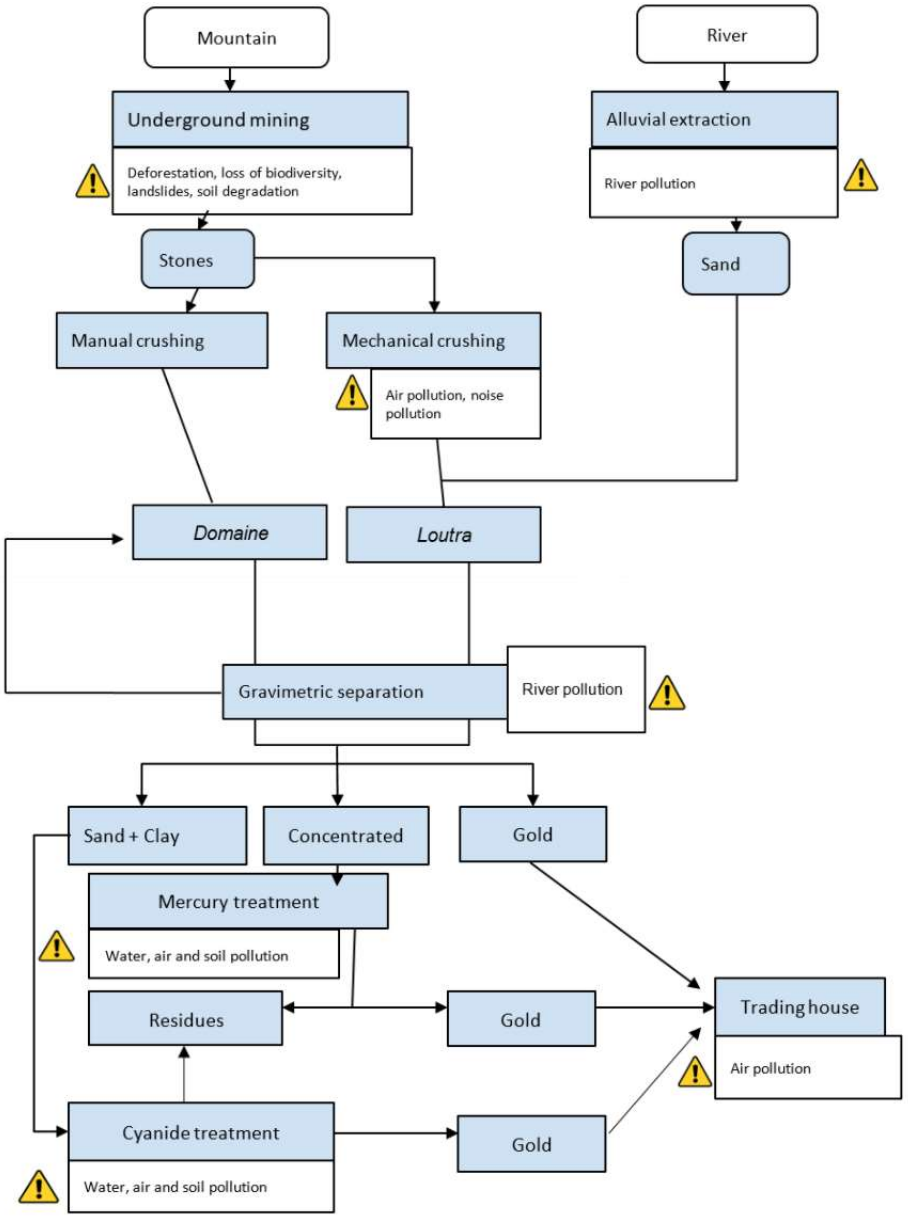
Mountain
River
Underground mining
Deforestation, loss of biodiversity, landslides, soil degradation
Alluvial extraction
River pollution
Stones
Sand
Manual crushing
Mechanical crushing
Air pollution, noise pollution
Domaine
Loutra
Gravimetric separation
River pollution
Sand + Clay
Concentrated
Gold
Mercury treatment
Water, air and soil pollution
Residues
Gold
Trading house
Air pollution
Cyanide treatment
Water, air and soil pollution
Gold

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Wood demand -> deforestation

→ biodiversity loss

The lunar landscape they create is not suitable for animals life

And plant growing (~~agriculture~~)

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- Explosions: landslide, and sometimes fatal accident
- Dust associated to tuberculosis by mine workers.
- Infiltrated water in pits leads to the use of Motorised pumps.
- The motor smoke (carbon monoxid poisoning)
- →more deaths than all others fatalities combined

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Processing and trade

- Cyanide: very dangerous. Supervisors have limited knowledge
- Mercury…
- Ball mill (concasseurs): silica rich dust, smoke, noise, injuries to machiniste & customers
- Washing pits (lutra) and sluices tables (domaine) : water pollution (increase turbidity, change of chemical composition) and Domestic use leads to sickness (digestive, urinary tract and skin problems).
- Nitric acid: air pollution.

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Mining related diseases

- Case of trauma: contusion, wounds, and fractures
- Digestive disorders; H. pylori and typhoid ferver : lack of hygiene and toilets
- Lungs diseases: silicosis ---→ tuberculosis
- Malaria: stagnant water
- STDs: limited sexual education, excessive alcohol And sex.

Cases of mercury and cyanide poisoning are very likely to be overlooked or misinterpreted since the medical staff lacks special training in diseases particular to ASGM communities

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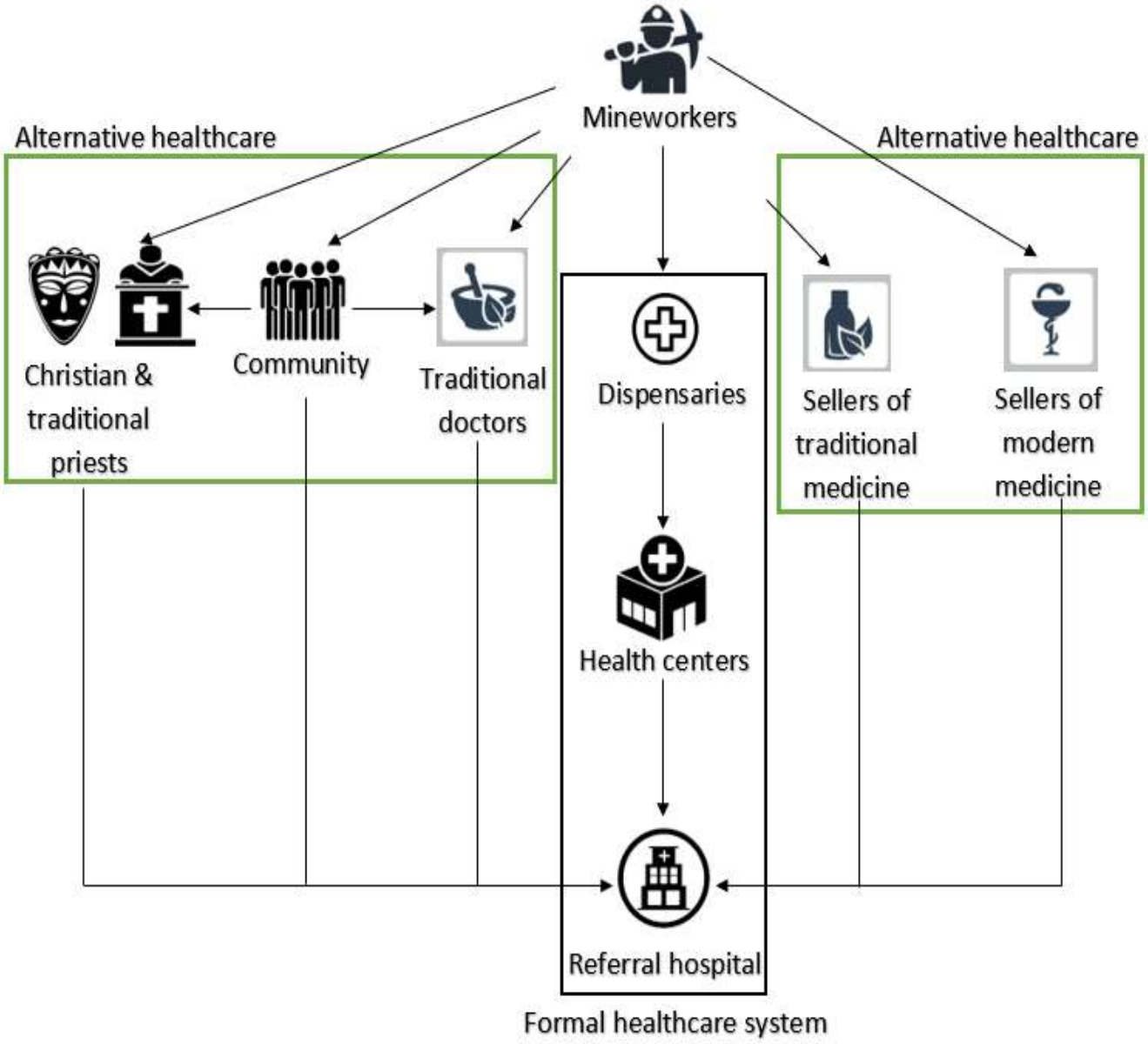
Mineworkers
Alternative healthcare
Alternative healthcare
Christian & traditional priests
Community
Traditional doctors
Dispensaries
Sellers of traditional medicine
Sellers of modern medicine
Health centers
Referral hospital
Formal healthcare system

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- Good tech: criteria (preserve health and environment, be affordable, and maintain/increase production)/ rare
- Approch: lower the price, educate miner and formalisation
- Health care coverage
- Who can pay for formalisation? 355-800 M USD

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Conclusion

To conclude, although adapted technological innovations, formalisation and adapted legal tools are very challenging to put in place, they may represent a rare way to protect the environment and local communities while the latter can still benefit from the increased income technologies provides.

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Thank you!