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The HIA4SD Project

Health impact assessment for engaging natural resource
extraction projects in sustainable development in producer regions



Swiss Programme for Research
on Global Issues for Development

PD Dr. Mirko WINKLER

HIA4SD Project multi-stakeholder meeting
Accra, Ghana
17 August 2021



HIA4SD HEALTH IMPACT ASSESSMENT
FOR SUSTAINABLE DEVELOPMENT



SUSTAINABLE DEVELOPMENT GOALS



Introduction

- **Health is a cross-cutting issue of the 2030 SDG agenda**
 - Health outcomes
 - Determinants of health
- 33 health-related SDG indicators (total 230)
(GBD 2015 SDG Collaborators, Lancet, 2016)



- **By minimising risks and maximising opportunities:**
 - **Win** (local communities) – **win** (countries) – **win** (projects)
 - **Smart planning → prospective impact assessment**

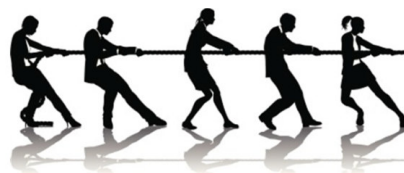
Introduction

- **Environmental impact assessment (EIA) common practice**
- **In Africa, not a single country is actively promoting HIA**
- **Health included under EIA**
 - Strong focus on environmental of health
 - Poor methodological guidance
 - Weak inclusion of health sector
 - Weak evidence-base



Countries/regions promoting HIA (Winkler et al. Bull WHO (2013))

Resource extraction projects



Public sector



Overarching objective

- **Inform and facilitate a policy dialogue that will strengthen the application of impact assessment as a regulatory mechanism**

The future of impact assessment

Integrated impact assessments	Intersectoral collaboration
Policies and methodological guidelines that embrace the SDG 2030 agenda	

Methodology

- **Diverse research portfolio:**

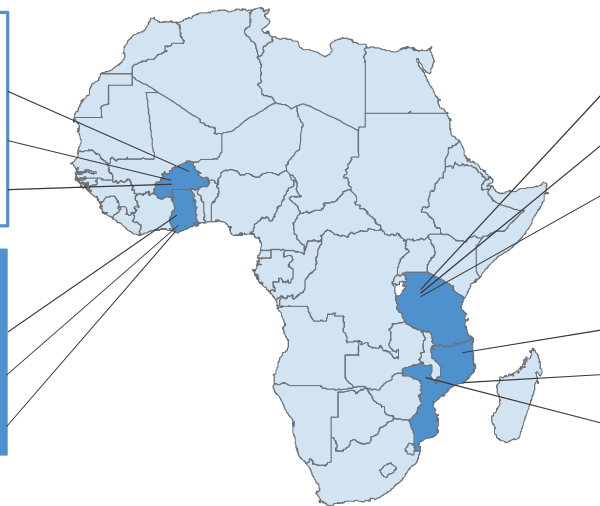
- Multidisciplinary and transdisciplinary: epidemiology/public health, political sciences
- Qualitative, quantitative and "mixed-methods" approaches
- Research at the regional (sub-Saharan Africa), national (project countries) and local (three active mining areas per country) levels

Burkina Faso

- Nordgold Mine (Bissa)
- Roxgold Mine (Bagassi)
- Endeavour Mine (Houndé)

Ghana

- Newmont Ahafo Gold Mine (Asutifi)
- Tarkwa Manganese Mine
- Edikan Gold Mine (Ayanfuri)



Tanzania

- Geita Gold Mine
- Bulyanhulu Gold Mine
- Buzwagi Gold Mine

Mozambique

- Montepuez Ruby Mine
- Kenmare Titanium Mine (Moma, Larde)
- Moatize Coal Mine

Organisation of the project

Phase I
(2017-2020)

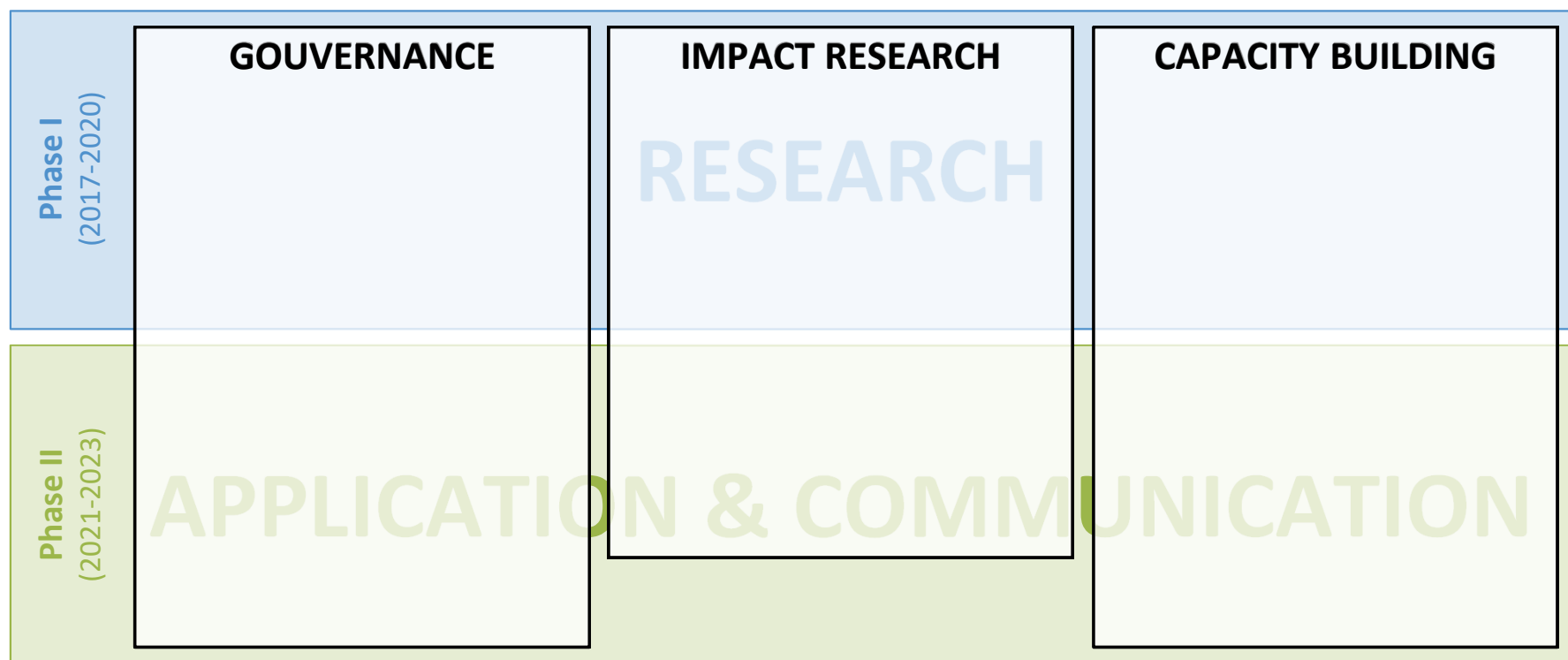
Phase II
(2021-2023)



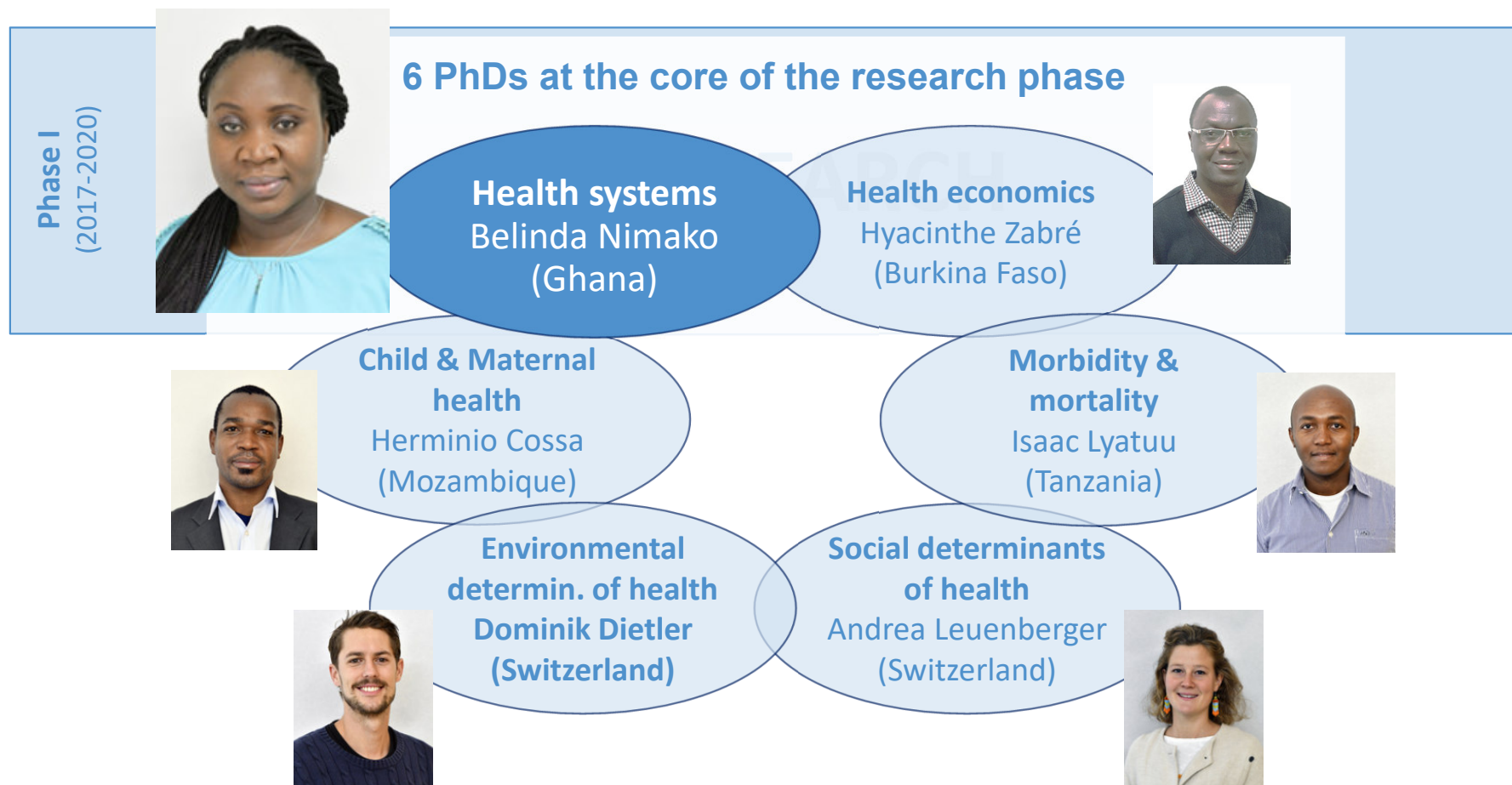
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Organisation of the project



Organisation of the project



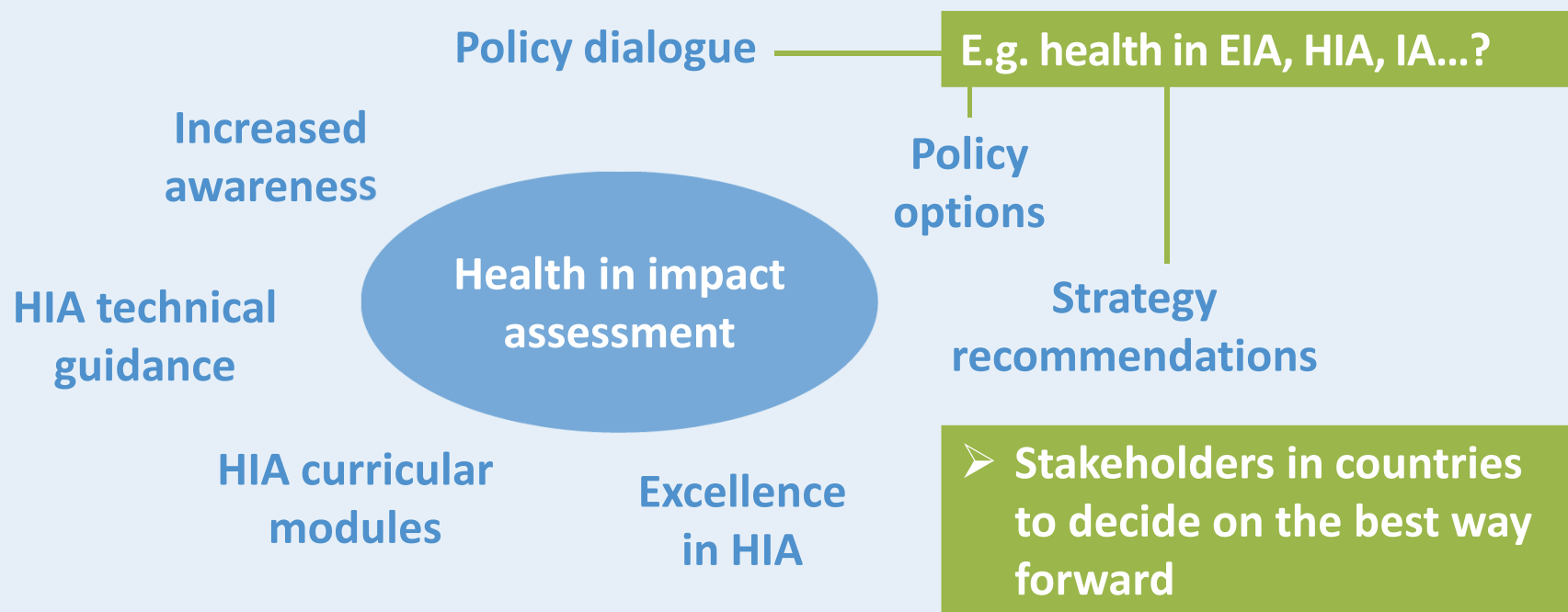
Organisation of the project

- **Dissemination of results at the national and local level**
- **Policy options and policy dialogue**
- **Teaching and training in health impact assessment**
(post-graduate course and integration at universities)

Phase II
(2021-2023)

APPLICATION & COMMUNICATION

Contributions of the project (in addition to scientific evidence)



HIA4SD Project: main findings

Health impact assessment for engaging natural resource extraction projects in sustainable development in producer regions

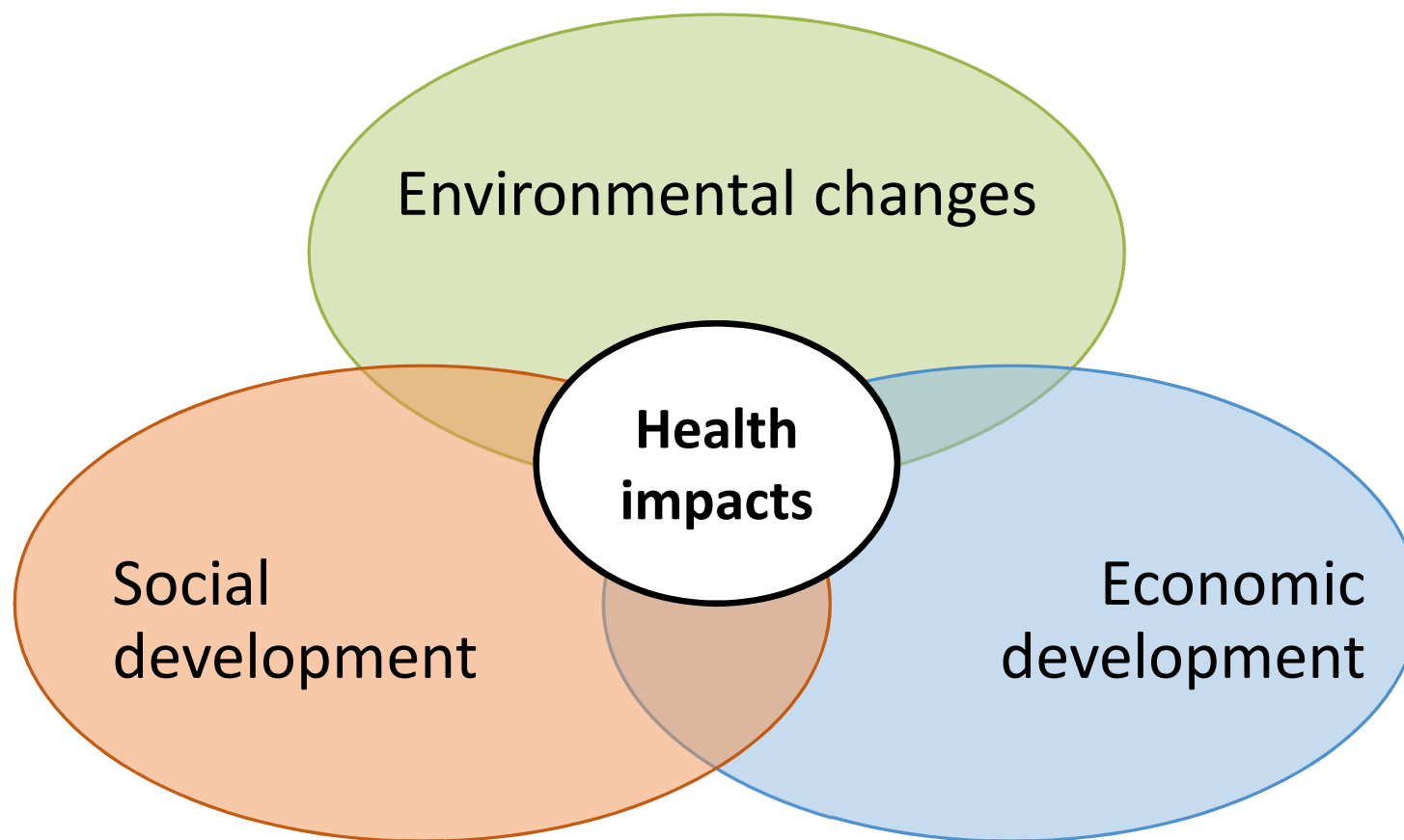


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Environmental impacts

- Water access & quality**

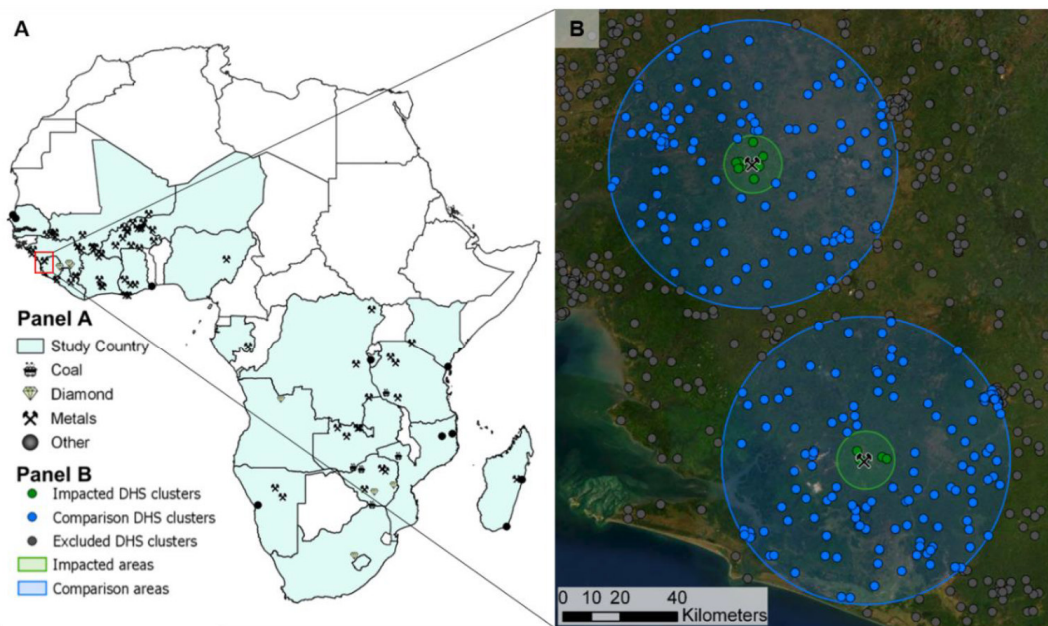


Figure 1. Spatial distribution of mines (panel A) and visualization of the selection of Demographic and Health Survey clusters (panel B). DHS: Demographic and Health Survey.

Included in the data analysis:

- 711 mines** from 27 African countries
- 189,992 households** located within 100 km of active mines

Source: Cossa et al. PLoS Medicine (under review)

Environmental impacts

- Water access & quality**

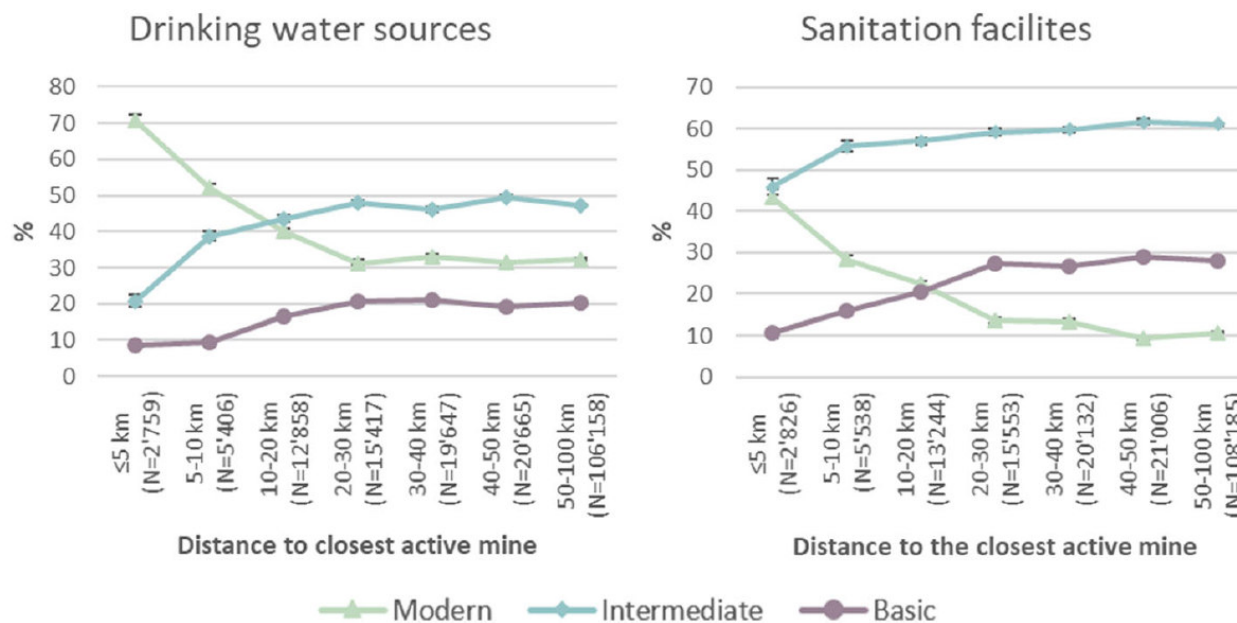


Fig. 2 Percentage of drinking water sources and sanitation facilities by distance to the closest active mine. Error bars show 95 % confidence intervals

Environmental changes

- **Water access & quality**
 - Communities in mining areas have better access to water & sanitation
 - Concerns about pollution of water sources around mines
- **Air pollution**
 - Dust often noticed as a major problem
- **Soil pollution**
 - Farmers particularly affected



- **Often both negative and positive impacts on the environment prevail**
- **Perceived impacts change over time**

Social development

- **Several contributions to the development of mining communities identified**
 - Improved access to water points
 - Improved quality of housing constructions
 - Decreased use of traditional cooking fuels
 - Better access to health facilities and schools
- **Wealthy households benefit more from improvements in infrastructures**
- **Social changes**
 - Sexual transactions with mine employees (e.g. early pregnancies)
 - Job opportunities not equally distributed



Economic development

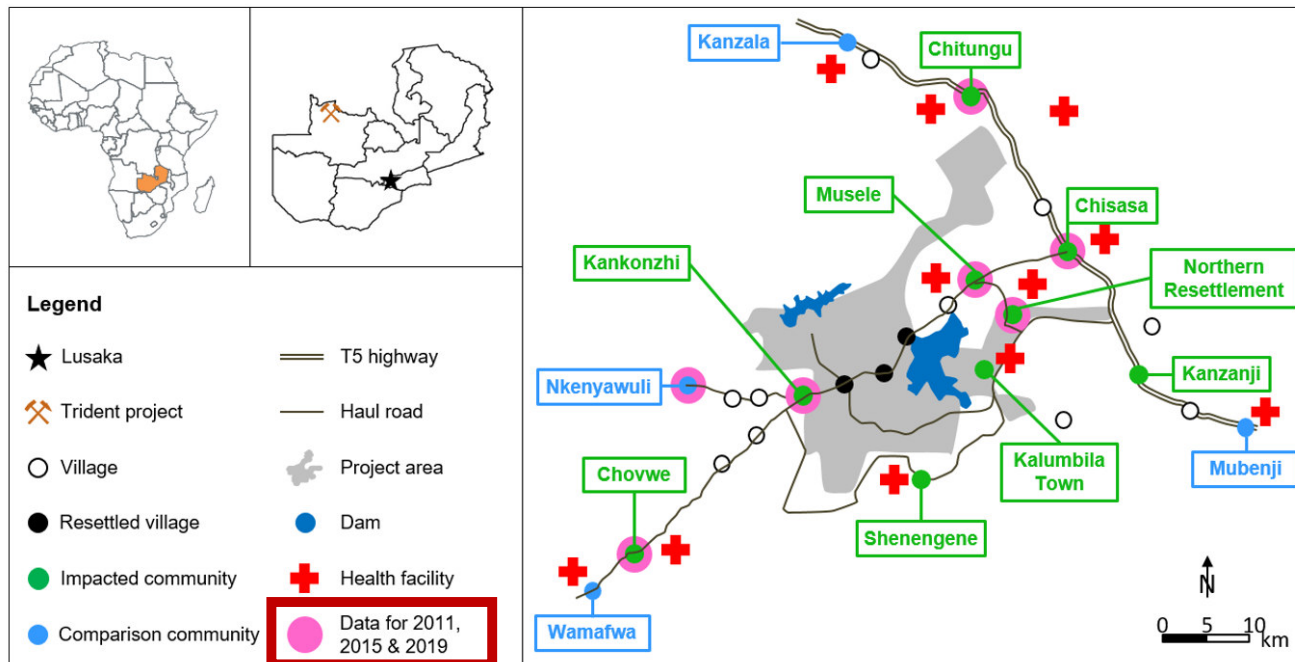
- **Local job creation**
 - Direct employment by the mine
 - Indirect employment (catering, organization of events)



Economic development

- Local job creation**

Study area and surveyed communities, Kalumbila district, Zambia (Knoblauch et al., 2020a)



Economic development

- Local job creation

Table 4: Changes of the mean wealth quintile (MWQ) in the study area (2011-2019)

	2011 survey		2019 survey		Change (2019-2011)
	HH	MWQ (SD) (A)	HH	MWQ (SD) (B)	(B)-(A); (p-value)
Chisasa	58	1.88 (1.01)	66	3.59 (0.82)	+1.71 (<0.001)
Chitungu	30	2.03 (1.22)	32	2.75 (0.98)	+0.72 (0.01)
Chovwe	63	1.67 (0.99)	32	2.97 (0.54)	+1.30 (<0.001)
Kankonzhi	39	1.85 (0.96)	32	3.41 (0.76)	+1.56 (<0.001)
Musele	29	1.72 (1.03)	65	3.35 (0.84)	+1.63 (<0.001)
Wanyinwa/NR	35	2.71 (1.27)	30	3.23 (0.50)	+0.52 (0.03)
Overall	254	1.94 (1.10)	257	3.28 (0.82)	+1.35 (<0.001)

Increase of 1.07 when compared to the regional average (North Western province)

Economic development

- **Local job creation**
 - Direct employment by the mine
 - Indirect employment (catering, organization of events)
 - **In general, increase in socio-economic level**
 - **Some groups may lose their livelihoods**
- **Especially men are employed by mines**
 - **Women are disproportionately affected by negative impacts**



Health impacts

Negative impacts

- Sexually transmitted diseases (e.g. HIV)
- Respiratory diseases
- Diarrheal diseases
- Chronic diseases
- Mental Health
- Substance addiction



**Extractive projects
increase health
equity gap**

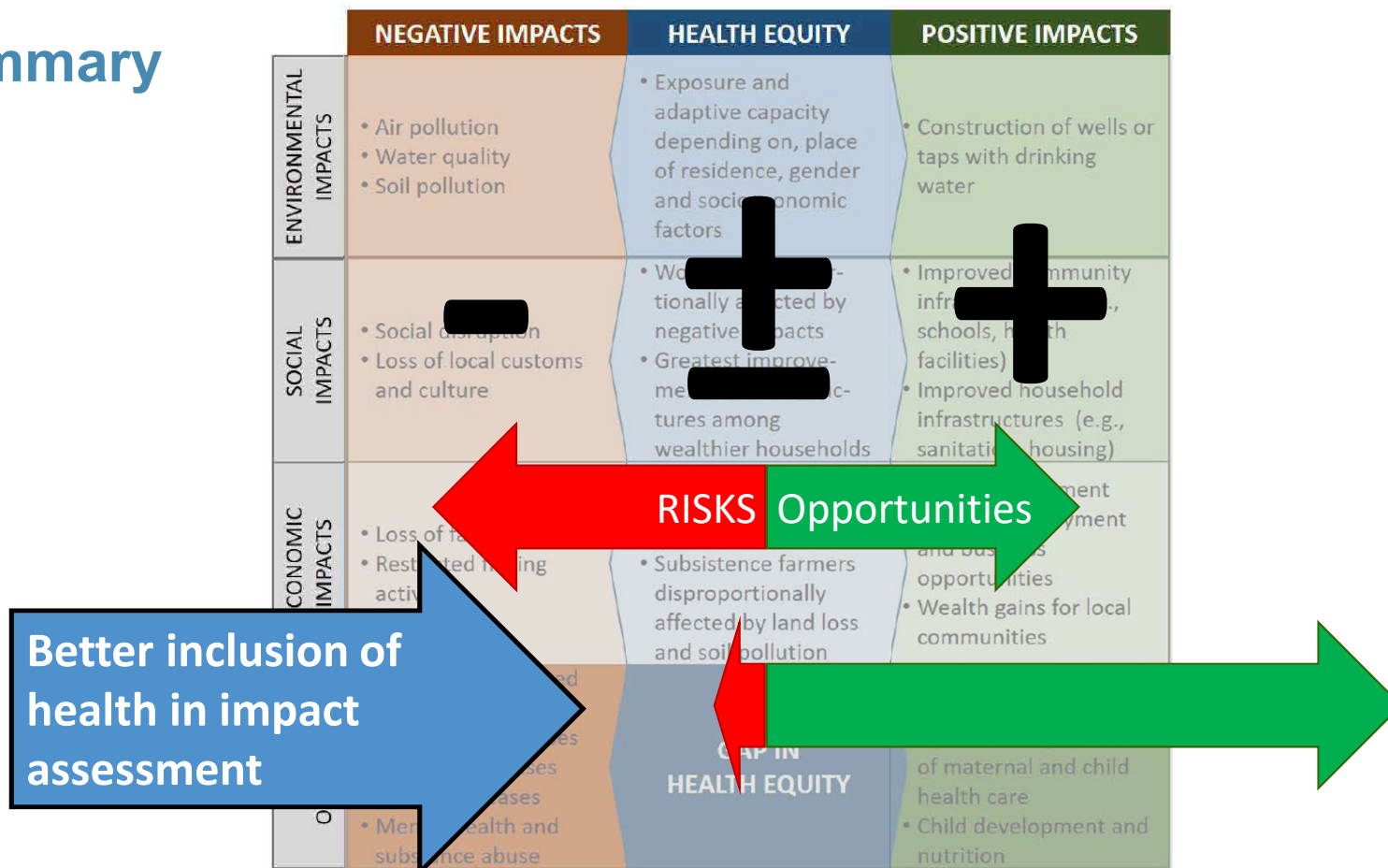
Positive impacts

- Reduced neonatal mortality
- Perceived improvement in maternal and child health care
- Child development and nutrition

Summary

	NEGATIVE IMPACTS	HEALTH EQUITY	POSITIVE IMPACTS
ENVIRONMENTAL IMPACTS	<ul style="list-style-type: none"> Air pollution Water quality Soil pollution 	<ul style="list-style-type: none"> Exposure and adaptive capacity depending on, place of residence, gender and socioeconomic factors 	<ul style="list-style-type: none"> Construction of wells or taps with drinking water
SOCIAL IMPACTS	<ul style="list-style-type: none"> Social disruption Loss of local customs and culture 	<ul style="list-style-type: none"> Women disproportionately affected by negative impacts Greatest improvements in infrastructures among wealthier households 	<ul style="list-style-type: none"> Improved community infrastructures (e.g., schools, health facilities) Improved household infrastructures (e.g., sanitation, housing)
ECONOMIC IMPACTS	<ul style="list-style-type: none"> Loss of farmland Restricted fishing activities 	<ul style="list-style-type: none"> Men are more likely to benefit from job opportunities Subsistence farmers disproportionately affected by land loss and soil pollution 	<ul style="list-style-type: none"> Direct employment Indirect employment and business opportunities Wealth gains for local communities
HEALTH OUTCOMES	<ul style="list-style-type: none"> Sexually transmitted diseases (e.g. HIV) Respiratory diseases Diarrheal diseases Chronic diseases Mental health and substance abuse 	<p>GAP IN HEALTH EQUITY</p>	<ul style="list-style-type: none"> Reduction in neonatal mortality Perceived improvement of maternal and child health care Child development and nutrition

Summary







Policy Brief

no. 4 | 2021

Health impacts of industrial mining in Ghana and sub-Saharan Africa

Many countries in sub-Saharan Africa, including Ghana, have mineral deposits in commercial quantities. While industrial mining is expected to contribute to economic development and improve life, the process of mining can have negative impacts on local communities. New evidence from the Health Impact Assessment for Sustainable Development (HIA4SD) project illuminates the interaction between industrial mining and public health, health care delivery and other health determinants.

Photo: Community near a large industrial mining site in Ghana. © Andrea Leuenberger

Policy Brief | no. 4 | 2021

KEY MESSAGES

- In Ghana and elsewhere in sub-Saharan Africa, mineral extraction has a wide range of environmental, economic and social impacts that affect the health and well-being of local communities.
- Many negative impacts on environmental health and other risk factors are identified.
- Health equity is a major concern, with women and the poorer households being disproportionately affected.
- Diverse impacts on health were identified, including increases in sexually transmitted, diarrheal and chronic diseases.
- Strengthening health impact assessment (HIA) practice for industrial mining projects could improve the health of local communities.

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<http://www.hia4sd.net>

HIA4SD

HEALTH IMPACT ASSESSMENT FOR SUSTAINABLE DEVELOPMENT

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PUBLICATIONS

Many of the findings and experiences of the HIA4SD research project are published in the peer-reviewed literature and other outlets. In addition, the country teams have developed policy brief to summarize the findings for policy makers.

Below, the links to the publications are categorized by topic. All documents are available open access.

HIA tools & methods

Winkler et al. (2021): Health impact assessment international best practice principles

Zabré et al. (2021): Scoping review of the inclusion of economic analysis in impact studies of natural resource extraction projects

Dietler et al. (2020): Inclusion of health in impact assessment: A review of current practice in sub-Saharan Africa

Farnham et al. (2020): Using district health information to monitor sustainable development

Winkler et al. (2020): Current global health impact assessment practice

Leuenberger et al. (2019): Health impact assessment and health equity in sub-Saharan Africa: A scoping review

HIA4SD project

Farnham et al. (2020): Investigating health impacts of natural resource extraction projects in Burkina Faso, Ghana, Mozambique, and Tanzania: Protocol for a mixed methods study

Winkler et al. (2019): Health impact assessment for promoting sustainable development: The HIA4SD project

Health impacts of natural resource extraction projects

Cossa et al. (2021): Health studies in the context of artisanal and small-scale mining: A scoping review

Dietler et al. (2021): Housing conditions and respiratory health in children in mining communities: An analysis of data from 27 countries in sub-Saharan Africa

Dietler et al. (2021): Impact of mining projects on water and sanitation infrastructures and associated child health outcomes: A multi-country analysis of demographic and health surveys (DHS) in sub-Saharan Africa

Leuenberger, Dietler et al. (2021): Water and health in mining settings in sub-Saharan Africa: A mixed methods geospatial visualization

Leuenberger et al. (2021): Gendered health impacts of industrial gold mining in northwestern Tanzania: perceptions of local communities

Leuenberger et al. (2021): Health impacts of industrial mining on surrounding communities: Local perspectives from three sub-Saharan african countries

Lyatuu et al. (2021): Associations between natural resource extraction and incidence of acute and chronic health conditions: Evidence from Tanzania.

Lyatuu et al. (2021): Short-term effects of national-level natural resource rents on life expectancy: A cross-country panel data analysis

Dietler et al. (2020): Quantification of annual settlement growth in rural mining areas using machine learning

Knoblauch et al. (2020): Community health impacts of the trident copper mine project in northwestern Zambia: Results from repeated cross-sectional surveys



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Project sponsor



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The r4d programme finances research partnerships between Switzerland and African, Asian and Latin American countries in order to provide policy-makers with scientific and development-relevant knowledge.

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