

# The importance of understanding the interrelated nature of social problems and contributing factors before deploying interventions: a Nepal case study

Andrew South, Clifton Farnsworth, Cambrie Ball, Genevieve Rozell, Becca Apgar

## INTRODUCTION

**Problem:**  
The United Nations’ sustainable development goals (UN SDGs) address global-scale issues, but much development work occurs at the community level. We lack a community-scale SDG framework to motivate, guide, and otherwise inform community development.

**Context:**  
Nearly 200,000 individuals in Nepal work and live in brick kiln communities. These individuals are exposed to near constant levels of hazardous air and experience a high incidence of COPD.

**Motivation:**  
Social problems are interconnected, and implementation of sustainable interventions in humanitarian contexts requires a comprehensive understanding of the local communities.

**Research Goal:**  
Develop and test a localized framework for analyzing communities prior to deploying potential solutions to address social problems.

*What are the comprehensive contributing factors to high incidents of prolonged exposure to hazardous air pollution in Nepali brick kiln communities?*



## RESEARCH APPROACH

**Interdisciplinary Team:**  
Researchers from civil engineering, anthropology, environmental science, and sociology, public health

**Methods:**  
Qualitative ethnographic study to understand and describe the behaviors, perspectives and interactions of brick kiln community members within their cultural context

**SDG-inspired Survey Instrument:**  
Questions were developed from the SDG targets and indicators, but framed at a community level

**Data:**  
A mixed dataset consisting of 110 semi-structured interviews, approximately 8 hours of observation notes per researcher per day, and environmental sampling of air, water and soil

**Informants:**  
Brick workers and their families, adjacent community members, nonprofit organizations, public primary and secondary schools, and government officials in and around brick factories within Kathmandu Valley

**Analysis:**  
The formal coding of all recorded data and subsequent data analysis, conducted with the aid of qualitative research software and multiple coders/analysts

*For example, SDG 1 (No Poverty) included questions such as “How much money does a family spend per month?” or “What determines if a person is wealthy in this community?”*

## PRELIMINARY RESULTS

This table shows several community concerns identified in the research and corresponding contributing factors. This table is not all-inclusive but delineates some of the primary observed themes from the research. This research indicates that social issues in any given community are tied together by interrelated contributing factors.

Contributing Factors	Community Concerns				
	Air Pollution	Poor Child Education	Land Degradation	Respiratory Disease	Waste Management
Construction Methods	x		x	x	
Work Conditions	x	x		x	
Community Health Education	x			x	
Family Roles		x			
Lack of (gov) Funds	x	x		x	x
Household Habits	x			x	x
Poor Urban/Rural Planning			x		x

By designing technologies and appropriate interventions applicable to specific contributing factors, it is expected that multiple social issues can be subsequently improved. For example, developing a technology to improve work conditions may also mitigate the problems of education quality, exposure to air pollution, and incidents of disease that are affected by work conditions in the given community.



## CONCLUSIONS

By using a community-scale SDG framework, the research aimed to bridge the gap between national progress reports and community development efforts. This research demonstrates to practitioners, engineers, and innovators the critical need to understand a community context, including the interrelated nature of social problems and contributing factors. Without this understanding, it is near impossible to implement sustainable solutions.



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