

POLICY BRIEF No. 97.1

POVERTY AND THE ENVIRONMENT:**Informal Sand-mining, Quarrying and Lime Making**

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Research

A study on the relationship between poverty and the environment, was undertaken in 1995/96 and focused on three types of natural resource extraction and processing around Dar es Salaam: Sand, limestone and coral mining and processing. The aim was to verify to what extent poverty is both a cause and effect of environmental degradation. This study has been published as REPOA Research Report No. 97.1: **Poverty and the Environment: The Case of Informal Sand-mining, Quarrying and Lime-making Activities in Dar es Salaam, Tanzania**; by *G. Jambiya, K. Kulindwa and H. Sosovele*.

Mining activities geared towards poverty reduction are likely to contribute to environmental degradation if conservation aspects are neglected. But usually short-term needs of the people prevail, and small-scale informal activities are hard to regulate. This study tries to understand the factors influencing poor people to undertake sand, limestone and coral mining and the effects of uncontrolled exploitation of these resources on the urban environment. The main questions were on how these activities benefit the urban poor, but at the same time push external cost on to others and whether there is a more sustainable exploitation of these same resources given the demands of large construction boom in town.

Research Methodology

This research looked into the nature of these artisanal operations (motives, ownership, scale of operations) and the characteristics of those involved in it (income, age, gender). It also looked at what extent poverty is reduced and the environmental consequences. The social (behaviour), economic and ecological dimensions of the problem were also addressed.

Seven mining areas were selected in and around Dar es Salaam for the three types of activities. A baseline survey and some case studies were carried out to assess physical aspects of the area and poverty status of the miners. Through a participatory (group) approach and a formal questionnaire, 185 respondents were interviewed, based on a rule of thumb to try to reach about 50% of those found in each area during field visits.

Inter-related hypotheses of the research were that people take part in this mining for income generation, survival, lack of alternatives, lack of education; that they are ignorant of the environmental consequences; that the latter perpetuate poverty; and that rules and regulations governing the use of these resources are inadequate, unclear and not well implemented, which contributes to irresponsible behaviour.

Research Findings

Sand mining and limestone quarrying are most common, because of the relative ease of exploitation and abundant availability. They each accounted for 43% in the sample, while coral mining and lime making – constrained by labour and capital requirements - accounted for the remaining 13%. About two third of miners were male, with women concentrating on (less risky) specialized activities such as chipping stones, and on providing food to miners. Age also influence division of labour to some extent, with the majority of miners being young (19-30 years). Less than 10% was under 18, with some children helping their parents in river sand mining and stone aggregate processing.

Almost half of the miners were married, and all had some dependants to take care of: 9 or more (14%), between 4 and 8 (43%) and three or less (43%). A large majority (72%) had at least undergone primary education, with 4% having secondary education, while 23% considered themselves illiterate. Special training was only taken by two miners, but some others had acquired special skills in their (previous) jobs, such as nursing, cooking, crushing, masonry, tailoring and carpentry. Only very basic equipment was in use, like spades, hoes, axes, chisels, costing from Tsh 1,000 to 9,000. This seriously limited their productivity. Only in lime making substantial amounts of wood have to be purchased for firing the kilns.

Earnings ranged from Tsh 11,000 to 200,000 per month, with an average of Tsh 65,000. A good majority (64%) of miners was poor, in the sense of earning less than Tsh 48,000 per household per month (money equivalent of recommended calorie/food intake). About 70% of the miners also perceived themselves to be poor, with 30% claiming a decline in their living standards, due to inflation, lack of markets and poor education.

Two thirds of the miners take this as a full-time employment, while for the rest it is seasonal. Only one third had other income earning activities. Artisanal mining proved to be very important for the poor, especially for those without adequate skills to acquire other jobs. For most it was a matter of survival or poverty alleviation; only a few managed to accumulate wealth in this way.

Most activities had negative environmental effects, such as over-exploitation of land makes it to be no longer fitting for other uses, soil erosion, habitat destruction, altering stream courses, water pollution, deforestation, beach erosion and health effects on miners themselves (eye, lung and skin diseases; accidents leading to injuries and death) and the community (water-borne diseases, pollution, dangerous areas).

A majority of the miners is aware of the environmental damage their activities cause, although some blame it on the concession (or pit) owners. About 40% see rehabilitation as a task for the government, and few realize that if nothing is done their future income will be in jeopardy. Some miners are organized, such as in lime and coral extraction, others form informal groups, and many have to share their proceeds with land/pit owners. In unlicensed areas there is occasional harassment by the police, but formal sanctions are minimal.

Most of the tested hypotheses were confirmed, except the one linking these activities to ignorance of environmental consequences. That proved not to be the case.

Policy Lessons

- Appropriate national poverty reduction policies will reduce the need for poor people to engage in environmentally destructive activities.
- Specific areas should be designated to small artisanal miners, so as to reduce pressure on illegal land. This will also help proper regulation of the sector, including tax collection.
- Official capacity to enforce rules and conduct environmental impact assessments must be enhanced and landowners should be forced to rehabilitate their own plots. But community participation in these and other conservation efforts should also be initiated.
- The whole institutional set-up of the environmental sector should be streamlined, so as to avoid overlap, duplication and conflict amongst various (non-) governmental actors.

Further Research

- More work on other formal and informal (mining) activities is recommended to broaden the insight into the relationship between poverty and the environment.
- A study on the institutional setting and community participation in environment conservation is also recommended.

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