

Road Development and Sand Mining: New Employment Opportunities in Tigray, Ethiopia



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1. Introduction

- Water from road catchments often carries sediments of various types and sizes.
- Road embankments could act as sediment traps.
- Road side drainages, culverts, and bridges could be silted up; leading to flooding.
- Road hydraulic systems often require inspection and cleaning, when needed.
- Depending on the type and quality, these sediments could be used for various purposes.

➤ ***Example: Sand for fine aggregates***



Example: road embankments act as sediment trap leading to blockage of drainage systems



2. Current Practices: Sand Mining in Tigray

2.1 Demand for Sand

The price for Sand has been increasing over the years:

Price of Sand in Mekelle:

- 35 Eth. Birr/m³ in 1996.
- 160 Eth. Birr/m³ in 2016.

Reasons for increase in price over time:

- Increase in demand (quality and quantity).
- Increase in hauling distance.



2.2 Sand Mining and Youth Employment

Two modalities:

(a) Organized: groups of youth (with equal numbers of male and female) are given permit to mine for some time.

- Each member saves up to 20000 birr/year.
- Government scheme: 20% (contribution from beneficiary) and 80% (loan from government).
- Each member establishes his/her own business with about 100000 Eth. Birr initial investment.



(b) Non-organized:

individuals or groups of individuals mine sand from roadside drainages, culverts etc in non-organized manner.

- No permit.
- No clear saving scheme.
- Individuals have no clear target and most of the daily income is spent for daily consumption.
- No support is provided.



3. Promoting controlled sand mining: saving roads and creating livelihood opportunities

Controlled sand mining has several benefits:

- Reduces blockages of road hydraulic structures (road side drainages, culverts, and bridges).
- Minimizes maintenance costs of roads and their hydraulic systems.
- Minimizes flooding of surrounding areas due to blockages of hydraulic structures
- Creates livelihood opportunities for the youth.



Example: blockages of roadside drainages and culverts leading to flooding of farm lands and damage on roadside drainages



**Blockages and
damage on
roadside drainages**





Sand mining from roadside drainages: reducing damage to road and enhancing livelihood of youth

Multi-functional road: water and sand storage structure

Irrigation



Stockpiled sand (mined from pond)





4. Concluding remarks

- Controlled sand mining from road hydraulic structures could enhance the safety of the road and at the same time provide livelihood opportunities for nearby communities.
- In order to ensure the safety of roads, the road sector, Mines offices and other institutions should work closely with those involved in mining.



- The youth involved in sand mining seem to have less awareness on saving and it is important to support and train them so that they become future entrepreneurs.
- It is advisable that controlled sand mining is legalized (for both the organized and non-organized groups) with proper working procedures and standards
 - Be part of the road and construction material development.



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Q & A

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Can Sand and other small-scale mining play important opportunities for youth employment?

How could we promote controlled and well planned sand and other small-scale mining?

Can we design and construct roads to manage water and sand?

Thank You

