

Inclusive and Green Rural Roads:

**Green Roads for Climate Resilience and Water Management
Tailor Made Training - Dhulikhel, Nepal**



Rural Roads: Routes to Inclusive Development



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Rural roads – a formidable development opportunity:

- 20% of land surface within 1 kilometer of a road – 50% of remaining patches < 1km²
- Current connectivity, i.e. population > 2kilometer of all weather road: 1 Billion people globally unconnected; only 30% in SSA

How to capitalize on the opportunity?

How to make roads inclusive and green development vectors?

How to have roads systematically and effectively contribute to many SDGs?

Rural Roads: Routes for Inclusive Development

- (1) Unblock access for goods and services
- (2) Create direct employment/ skills development opportunities
- (3) Enormously trigger local economy activities
- (4) Change land and water environment – for the better





(1) Increased access to services and opportunities

- Access to services (health and education)
- Access to economic opportunities
- General freedom that comes with mobility



Rural mobility by trip purpose

- Trips in rural areas are often made for economic activities, social services, social activities and community association

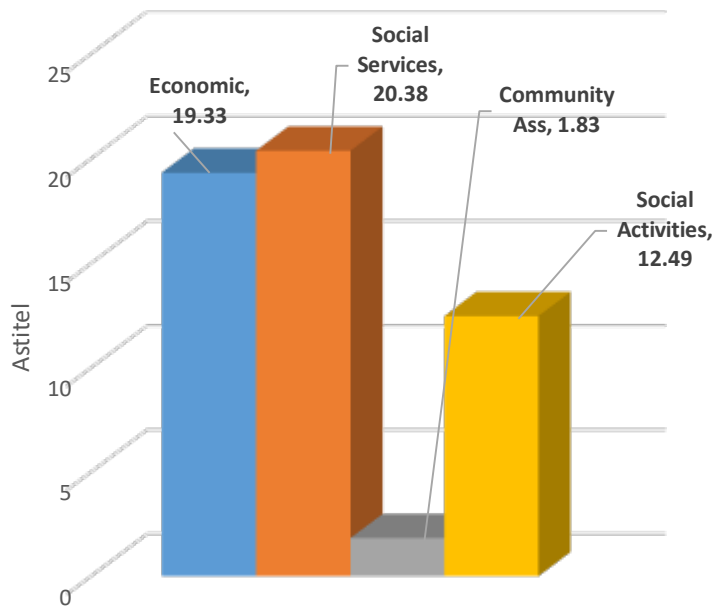


Fig 3: Average monthly distance travelled by trip purpose

The dominant form of travel in the rural area is social services mainly education and health, followed by economic activities which includes travel for market, agricultural activities and travel for employment



Access to markets: apart from connectivity cost of transport is a main factor



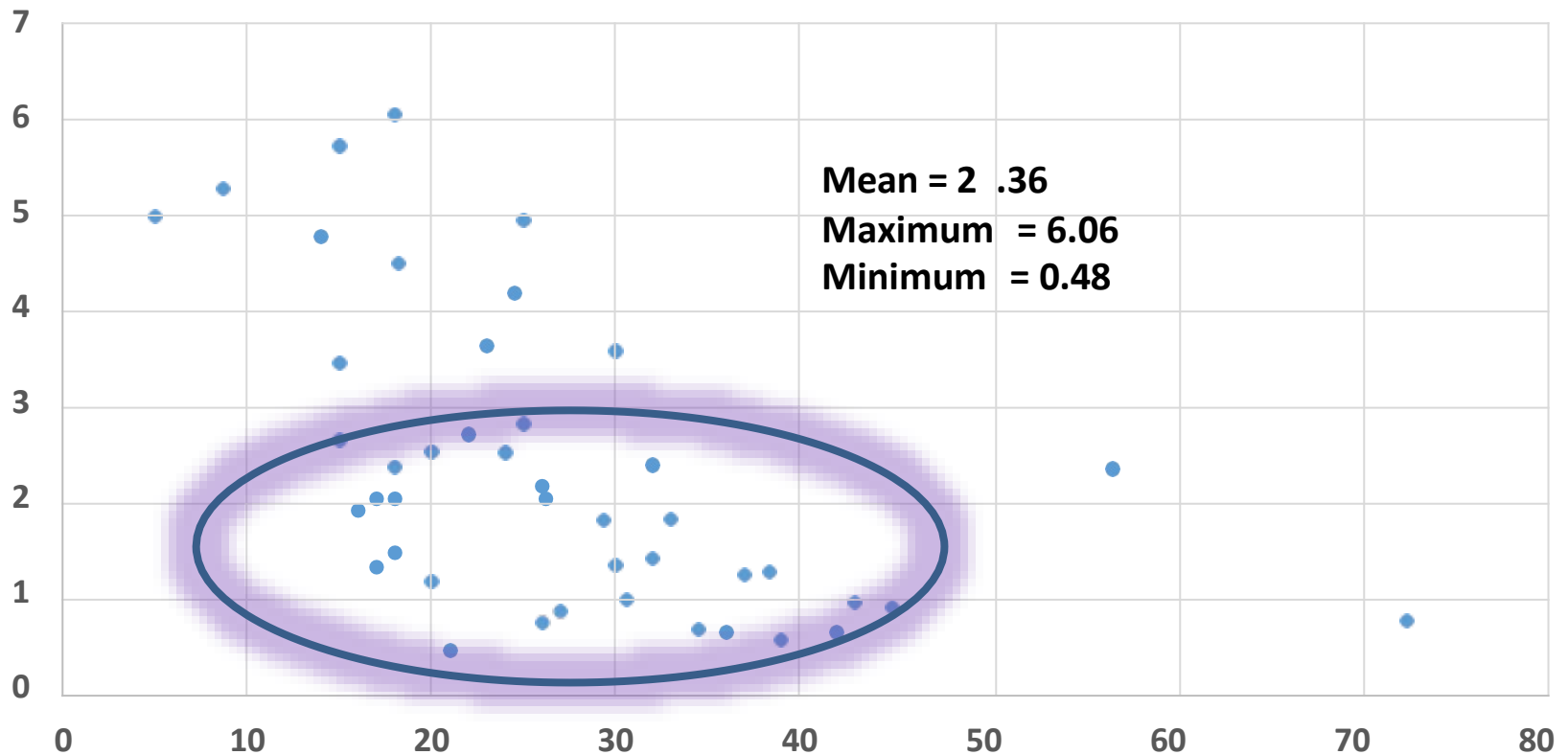
Market access and distance to road

- In developing countries, transport cost constitutes more than half of the marketing costs.
- More than three fourth of respondents in surveys revealed an increase in marketing of agricultural products after road construction
- More negotiation-minded – have more options

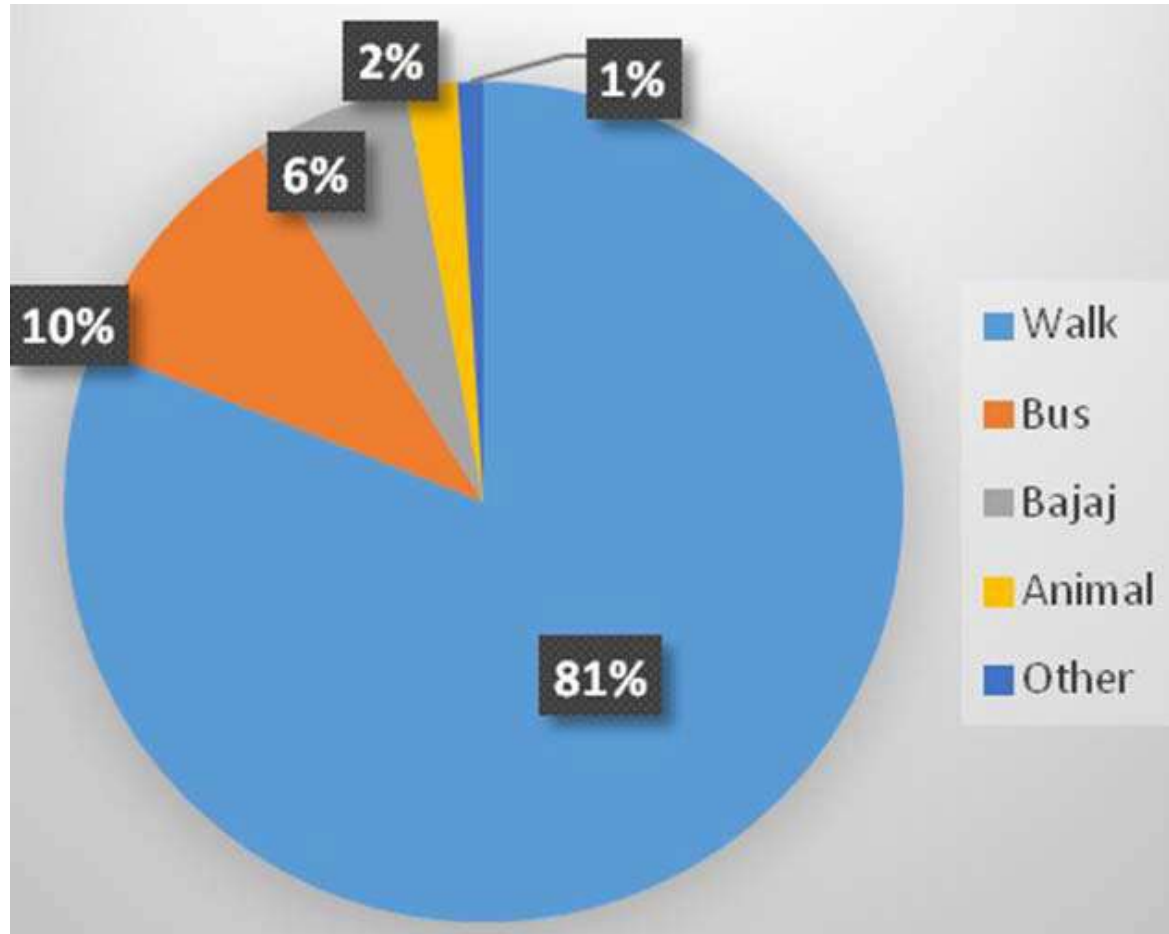
Product type	Changes in sales			Changes in sales attributed to road	
	Increase	Decrease	No change	All of the change	Part of the change
Cereals	69	3	28	24	74
Vegetables	81		19	34	66
Fruits	81		19	35	65
Other products	87	2	11	34	64

Yet on feeder roads it is also the traffic that matters: some roads have little traffic

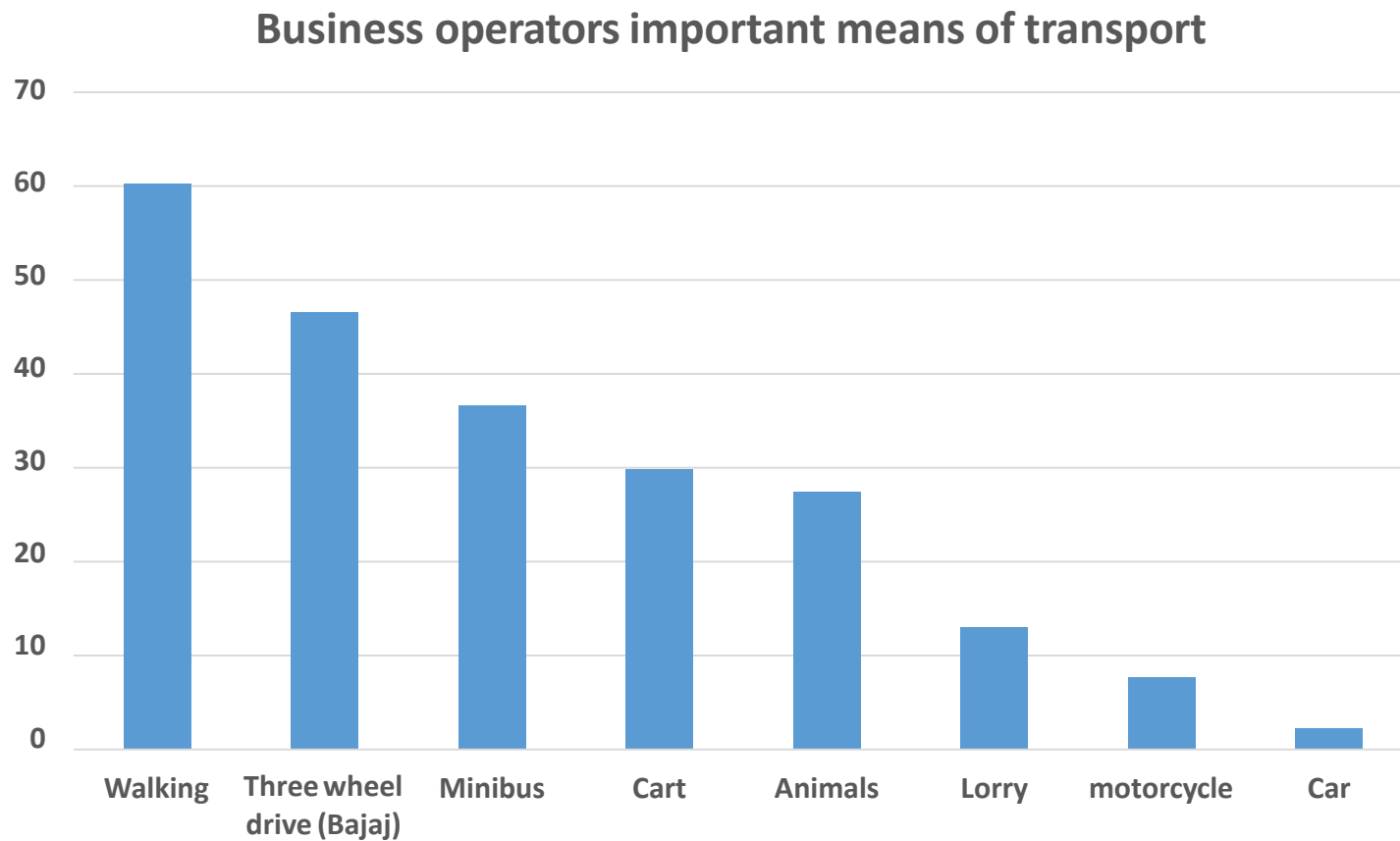
Average Daily Traffic per km



Sometimes walking remains the most important means of transport



Business operators' means of transport



(2) Direct employment opportunities: incl capacity building



Table 1: Working Places of Feeder Road Workers

Workers categories	Within the project site (%)	Elsewhere /Outside (%)
Feeder Road Workers		
Skilled construction worker(builder)	59.7	40.3
Unskilled wage labourer	100	0
Sub-contactors	30.2	69.8
Building material suppliers		
Sand	61.4	38.6
Concrete materials	47	53
Stone	62.2	37.8

Source: Authors compilation, 2016

(2) Direct employment opportunities

		As Skilled workers					As Unskilled workers				
		Mean Days worked	Mean DWR	Level of satisfaction of the work (%)			Mean Days worked	Mean DWR	Level of satisfaction (%)		
				WR	WC	TD			WR	WC	TD
Employment Modality	Daily base	349	98.6	60	61.5	61.5	333.6	71.6	74.4	70.9	65.1
	As a foreman	755.5	41.7	50	50	50					
Construction activities	Land clearing						173.8	21.6	52.9	70.6	68.8
	Earth work	60	7	100	50	50	126.7	64.4	70.4	55.2	48.3
	Culverts/ditches	336.7	45	33.33	66.67	66.67	59.9	40.7	50	50	33.3
	Minor maintenance						475.7	57.2	58.8	62.5	64.7
	Major maintenance						100	107.5	100	100	100



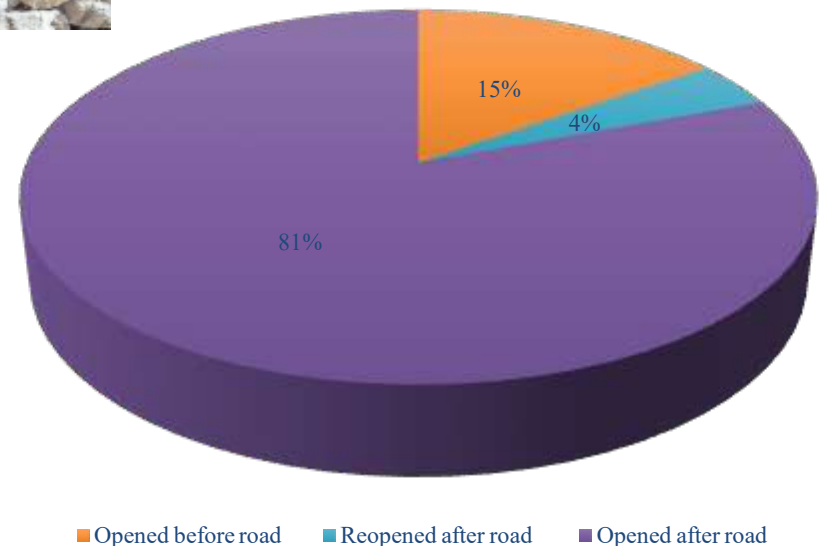
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(3) Creating new business opportunities

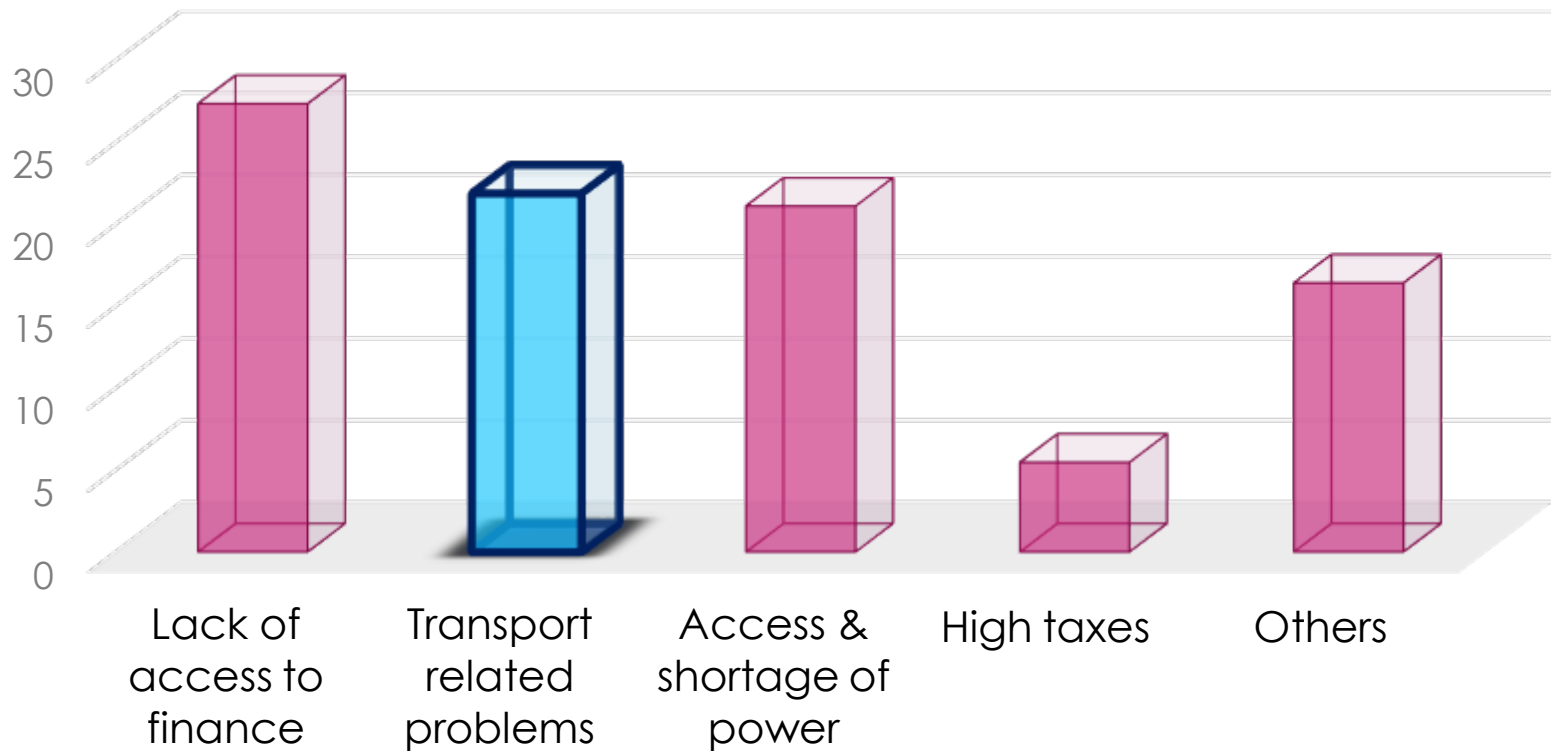


Feeder roads are major boost for new business (81% of business)
Because of:

- Open connectivity
- Bundling of customers and commodities
- Capitalization of economy
- New orientations



What are the primary constraints for non-farm business operations and growth?





Revolving: promote regenerative agriculture

FROM LINEAR TO PRODUCTIVE CIRCULAR AGRICULTURE

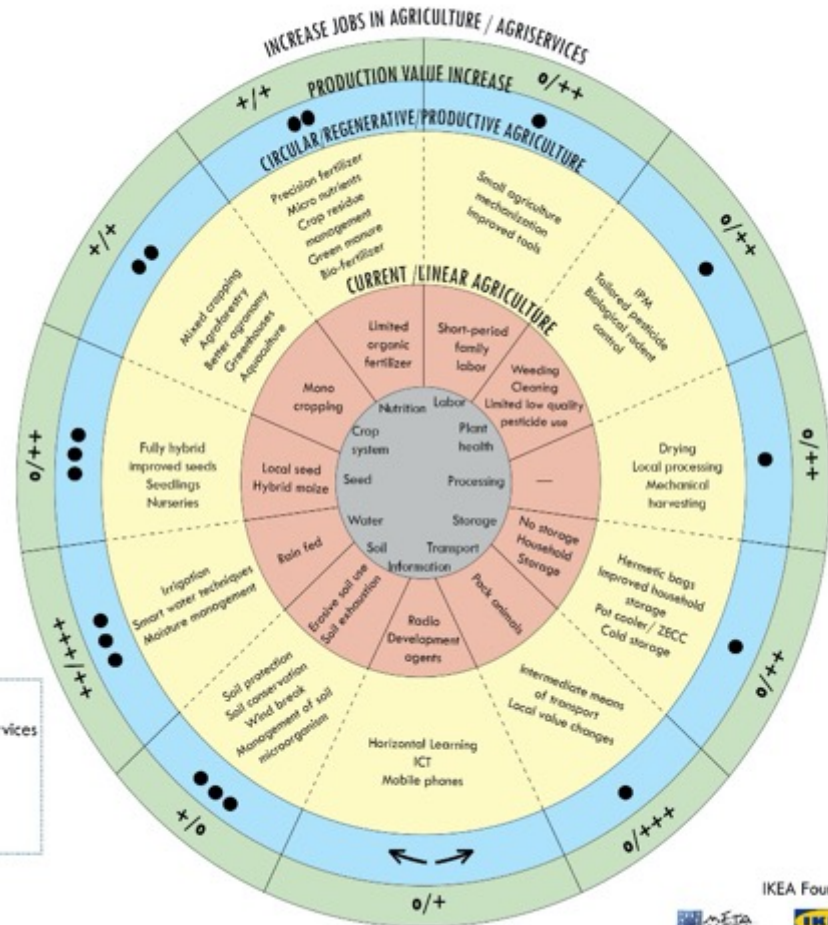
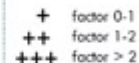
- ➔ HIGHER PRODUCTIVITY, BETTER QUALITY
- ➔ MORE SUSTAINABLE LIVELIHOODS IN AGRICULTURE AND AGRIBUSINESS

Legend

Production value increase (estimates)



Increase jobs in agriculture/ agriservices



IKEA Foundation

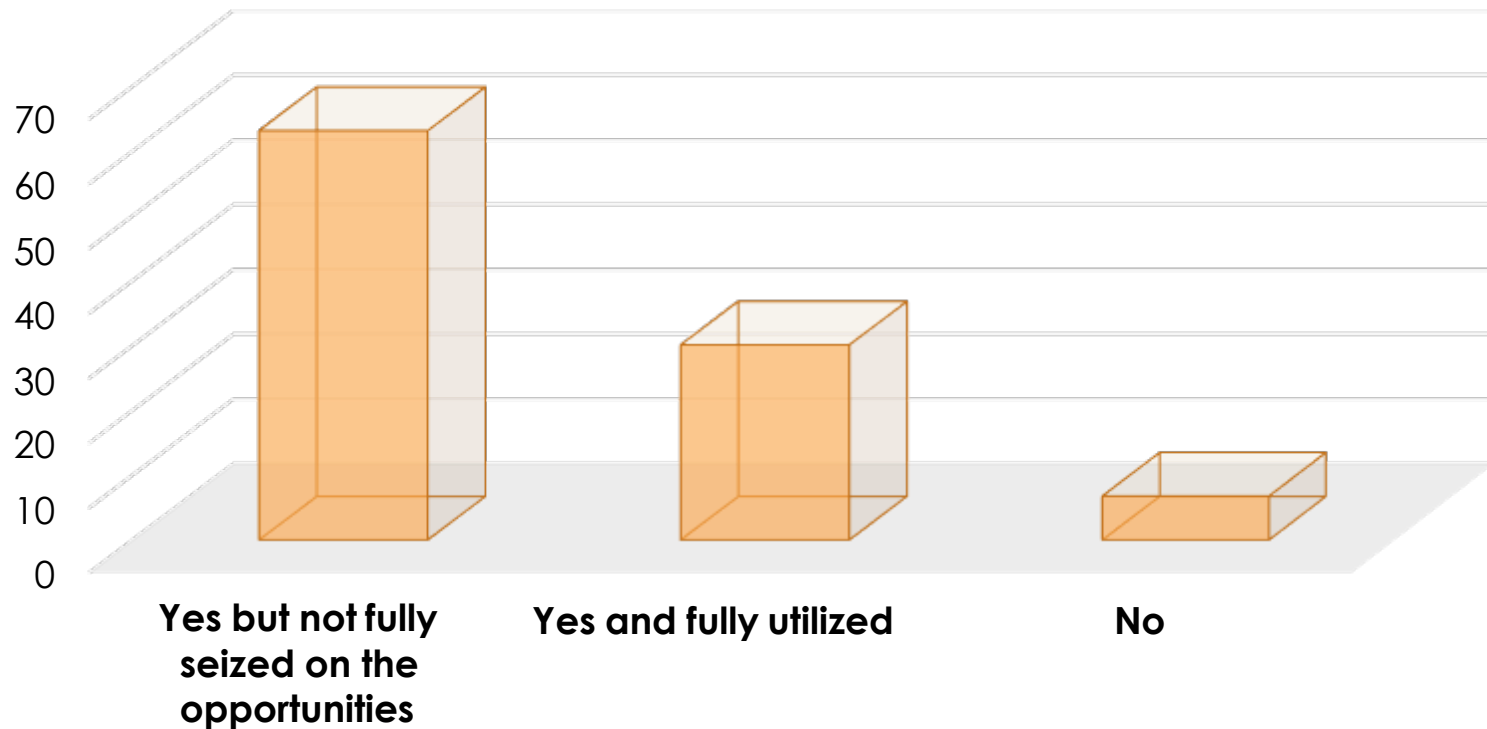


Are new activities diversified?

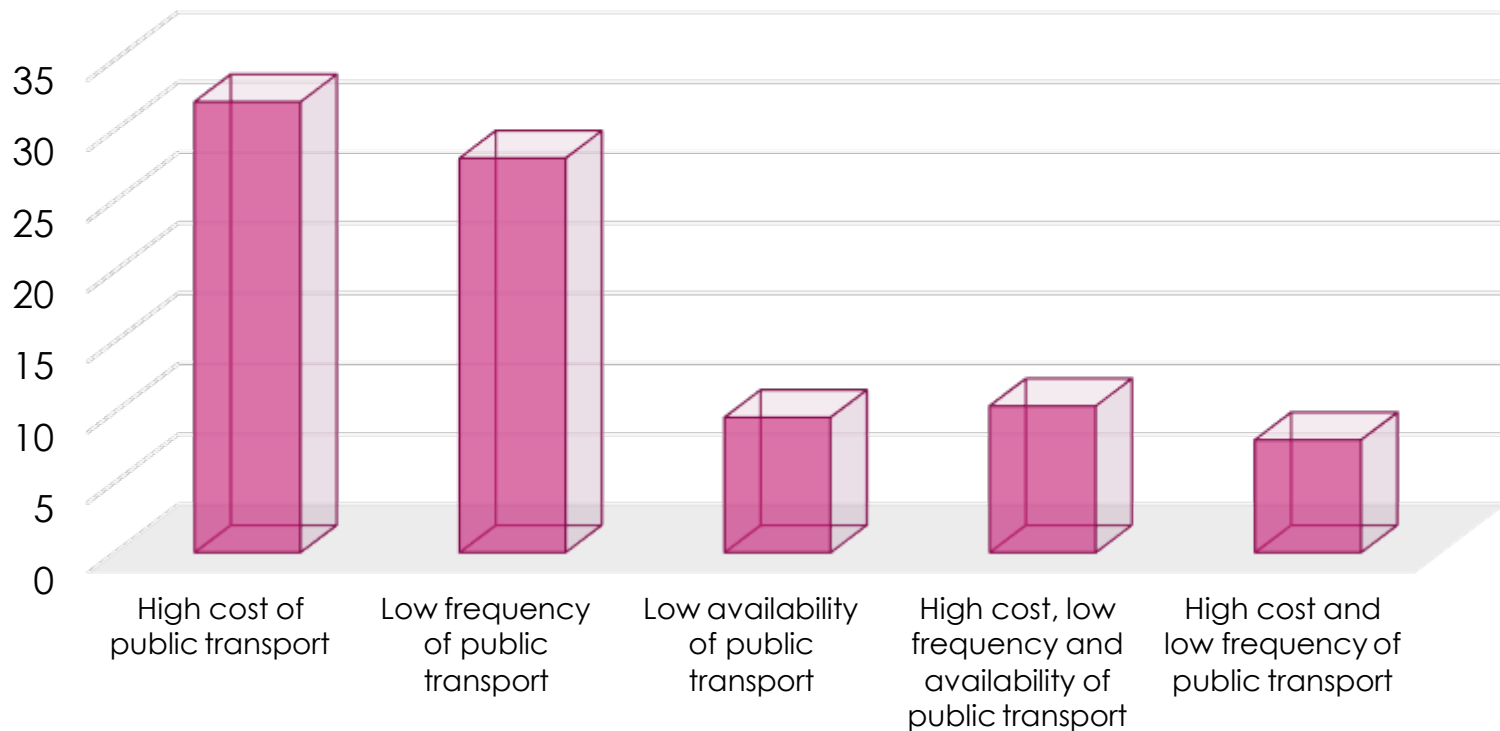
Economies as a circular flow of activities?



Has the road created new opportunities for your business?



Issues affecting business related to the use of the road network



(4) Effect on land, water and air

Roads can have unwanted environmental consequences that affect the livelihood of rural communities

Effects of roads	Frequency	Percent
Flooding	179	34
Water logging	61	12
Erosion	153	29
Sediment deposition	95	18
Dust	229	44
Weeds	47	10

The environmental consequences of roads in the order of number of respondents are:

1. Dust
2. Flooding
3. Erosion
4. Sediment deposition
5. Water logging
6. Weeds

Total observations = 525



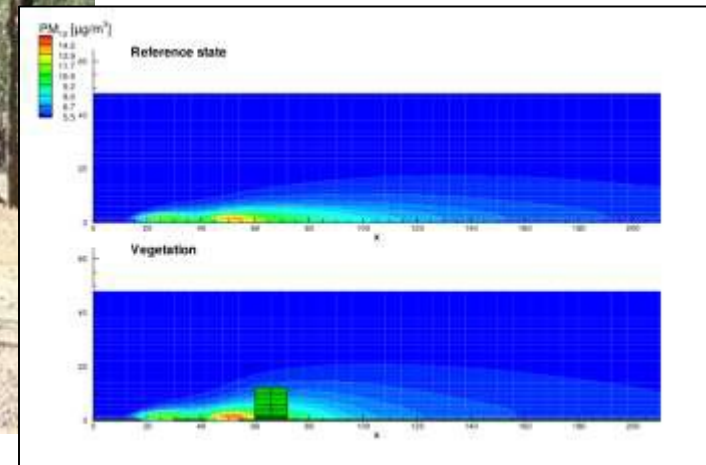
Unpaved roads contribute almost 40% of all dust. Long-term exposure to traffic-generated dust has been known to contribute to 1.5-2 million deaths annually

Layering of dust on crops in road-adjacent fields is known to affect photosynthesis, respiration, transpiration, and to lead to an increase in fungal spots on several crops. Impact of dust from the estimated 13 million km of unpaved roads worldwide is estimated to affect around 26 million hectares of productive land, and lead to a reduction in agricultural revenue to the tune of USD 260 million

Affects:

- Human health
- Animal health
- Crop production

Promote road side tree planting





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**How can
road infrastructure planning, road
development, and transport
be more inclusive and greener
so that benefits accrue to a larger section of
rural
societies?**

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