

CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATIONS

4.1 Project Effects

4.1.1 Direct Effects

(1) Availability of Passability Throughout the Year

Reduction of difficult travelling days: 30 days → 0 days

	Before Project (atKaratu)	After Project
- Rainy days	59	-
- Difficult travelling days	30	0

(2) Shorter Travelling Time

Makuyuni √ Ngoro Ngoro: 168 minutes → 134 minutes (shortened by 34 minutes)

	Before Project (2000)	After Project (2005)
- Arusha ~ Makuyuni Distance Speed Time	75.9 km 81.3 km/hr 56 minutes	75.9 km 81.3 km/hr 56 minutes
- Makuyuni ~ Ngoro Ngoro Distance Speed Time	78.6 km 42.1 km/hr 112 minutes	78.6 km 59.5 km/hr 78 minutes
- Arusha ~ Ngoro Ngoro Time	168 minutes	134 minutes (-34 minutes)

(3) Reduction of Transportation Cost: Reduction by 28%

	Before Project	After Project
- Transportation cost by passenger car	6,147 Ts/vehicle/day	4,941 Ts/vehicle/day (80%)
- Transportation cost by small bus	8,989 Ts/vehicle/day	5,571 Ts/vehicle/day (71%)
- Transportation cost by large bus	10,870 Ts/vehicle/day	7,948 Ts/vehicle/day (73%)
- Transportation cost by small/medium truck	8,867 Ts/vehicle/day	6,445 Ts/vehicle/day (73%)
- Transportation cost by large truck	13,227 Ts/vehicle/day	9,186 Ts/vehicle/day (69%)

(4) Environmental Improvement Along the Route

Dust: 1.18 µg → 0.11 µg

Noise: 71.4 db → 68.4 db

After finishing the construction, the level of noise shall be reduced from present circumstance because of asphalt pavement.

	Before Project (2000)	After Project (2005)
- Traffic volume (September: peak tourist season)	718 vehicles/day	950 vehicles/day
- Travelling speed	42.1 km/hr	59.5 km/hr
- Dust (BD Study)	1.18µg	0.11 µg
- Noise (BD Study)	71.4 db	68.4 db

(5) Improved Safety

- Eradication of sections with poor visibility due to sharp curves and narrow sections where large vehicles find it difficult to pass each other
- Eradication of the mixed traffic of pedestrians and vehicles and reduction of the travelling speed in urbanised areas
- Reduction of the travelling speed to reduce the number of accidents at animal corridors (where animals cross the road)

	Before Project (1999)	After Project (2004)
- Better visible distance	22 m	40 m
- Separation of pedestrians and vehicles	No pavement along entire route	New pavement at Mto wa Mbu and Karatu
- Speed reduction (urbanised areas)	-	80 km/hr: general section 50 km/hr: urban section
- Speed reduction (animal corridor)	-	80 km/hr: general section 50km/hr: urban section
- Installation of road signs	Speed limit signs in urbanised areas	Speed limit signs and animal crossing signs
- Introduction of bus stops	No clear indication	Clearly indicated bus stops

(6) Improvement of BHN

The access time to a general hospital and fire station, etc. in Arusha will be reduced by 30 minutes.

	Before Project (1999)	After Project (2005)
- Access time to Arusha, a hub city for regional socioeconomic activities	168 minutes	134 minutes (-34 minutes)

4.1.2 Indirect Effects

With the implementation of the Project, traffic flow on the target road will be secured throughout the year and the following indirect effects are expected to result.

- Increased agricultural production due to improved market access and increased transportation opportunities
- Retention of the prices of agricultural products due to a decrease of damage during transportation
- Vitalisation of tourism due to an increased number of tourists
- Increase of the sales of souvenir shops and restaurants along the route

4.2 Recommendations

(1) Response to EIA

Monitoring of the possible negative impacts identified by the EIA conducted by the World Bank will be necessary.

< Main Negative Impacts >

- Water balance and water quality (change of the inflow to Lake Manyara and resulting change of the water quality)
- Changes of land use due to road improvement (enlargement of urbanised areas and others)
- Approach of expanding residential areas towards wild animal habitats

(2) Clarification of Maintenance System

Although road maintenance work is supposed to be conducted by the TANROAD which was established on 1st July, 2000, its status and scope of business have not yet been clearly defined. Further clarification of these points is necessary.

(3) Maintenance Technologies for Mountain Road

The target road has a very steep cliff section between the 35 km point and the 42 km point. It will be important to ensure drainage through the retaining wall and to check any changes of the slope in addition to work to remove loose rocks and to remove sediment from the side ditches. This will make the transfer of the relevant technologies to the Tanzanian side necessary.