

# Impact Evaluation of the Cervantes-Mankayan-Abatan Road Project

## EXECUTIVE SUMMARY

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### 1. The Cervantes-Mankayan-Abatan Road Project: A Brief Description

- a) Project Name: Rehabilitation/Improvement of Cervantes-Mankayan-Abatan Road
- b) Project Objectives:
  - Provide a more efficient, faster, safer, and reliable means of transportation in the rural areas;
  - Enhance the socio-economic activities within the municipalities of Mankayan, Benguet and Cervantes, Ilocos Sur;
  - Benefit vehicle operating cost generated by traffic;
  - Generate Savings on maintenance cost of transportation equipment; and
  - Facilitate ease of transport of agricultural products.
- c) Project Cost: Ninety-one Million Pesos (Php 91,000,000.00)
- d) Executing Agency: Department of Public Works and Highways (DPWH)
- e) Road Alignment: East-west link between Region 1 and CAR, starting at Abatan Junction Km. 333 in Buguias, Province of Benguet and terminating at Cervantes Junction, Province of Ilocos Sur
- f) Total road length: 33.34 kilometers
- g) Implementation Period: February 2008 to October 2010

### 2. Study Objectives

- a) To determine the extent to which the project attained its objectives/intended impacts;
- b) To assess whether the intended impacts, granted that these have been attained, are at the level of best possible outcomes given cost and other constraints;
- c) To ascertain the number of years that the road project would last with proper maintenance, and the decisions and arrangements that the government took to guarantee this
- d) To examine the changes in the bio-physical environment that transpired after road improvement that can be directly or indirectly attributable to the road project

### 3. Summary of Findings & Conclusions

#### 3.1 Up to what extent did the project attain its intended impacts?

The findings reveal that the improvement of the Cervantes-Mankayan-Abatan road delivered its promise, to a general degree. Its foremost objective of improving accessibility—to/from the Ilocos region, to/from the rural areas, between and among growth centers—are generally being met. In the process, it was able to stimulate positive socio-economic changes as expressly intended in the project design.

- a) On the objective of lowering the vehicle operating and maintenance costs, the drivers and operators within the road zone of influence (ZOI) generally find the savings on transportation cost to have largely improved. Measuring the vehicle operating cost against the daily minimum wage yields an incremental net income of about Php250 to Php450 per day for PUJ drivers within the road ZOI.
- b) As a western lateral road, data on the average annual daily traffic (AADT) indicate that the road is well utilized as an alternate route from east to west (Abatan to Cervantes) towards Ilocos and Mountain Province. The improvement of the Cervantes-Mankayan-Abatan road reduced the travel time by about one hour. Because of this, vehicle traffic along this route increased by 69 percent when comparing the AADT for the five years prior to road improvement and five years after.

- c) The road project resulted to positive outcomes along its objective of improving interconnection of growth centers through an upgraded, improved and expanded backbone of networks of roads. Abatan and Cervantes are the growth nodes that are directly within the road zone of influence. The improvement of the road that connects this two nodes expanded the economic activities between them that radiated further to the localities around them via secondary trading routes. Cervantes now trades with municipalities in Mountain Province specifically Tadian, Bauko and Sabangan via the Cervantes-Sabangan road which effectively widens the economic network among the growth centers in these parts.
- d) The road project was able achieve its objective of providing a more efficient, faster and reliable means of transportation in the rural areas. Options on mode of transport have increased which spurred the demand for better modes of public transport that was met with the corresponding private investments. Furthermore, the option to shift to the comfort and convenience of private mode of transport is also now open to more people. Road safety, however, is a continuing concern with landslides, inadequacies in traffic control devices, lack of sidewalks and road obstructions posing travel hazards along the Cervantes-Mankayan-Abatan road.
- e) On the intention of enhancing the socio-economic activities within the municipalities of Mankayan, Benguet and Cervantes, Ilocos Sur, the shorter travel time and improvements in the modes of transport translated into lower transportation cost, faster travel, and lesser opportunity and search cost. These positively affected the socio-economic conditions of the communities within the road ZOI.
- *Agriculture.* The development of the Cervantes-Mankayan-Abatan road increased agricultural trading. This, in turn, encouraged more farm production.
  - *Small Scale Mining.* The improvement of the road contributed to increased income from small scale mining in Mankayan through improved access to market information and additional savings from lower transportation and transaction costs.
  - *Large Scale Mining.* The net effect of the road project on the Lepanto Consolidated Mining Company can be described as neutral. Lepanto would have continued maintaining the road if the government did not implement the road project, hence its mining operations would have proceeded in its present course.
  - *Trading.* The faster mobility of people and goods resulting from the road project propelled the growth of trading and other economic services within the road ZOI. Livelihood activities spread from farming to trading and mining to trading, and a combination of agricultural activities with trading and employment.
  - *Tourism.* Tourism is yet to emerge as a major industry within the road ZOI. The Cervantes-Mankayan-Abatan road is mainly used as gateway and exit to well established tourist destinations in the Cordillera and the Ilocos region. Nonetheless, the road exposed the scenic and historical appeal of Bessang Pass to travelers, and has now become a favorite stop-over.
  - *Employment.* The road project created new job opportunities for the household. Households who are along the Cervantes-Mankayan-Abatan road vein may be earning lower income from individual occupation compared to those in the interior barangays, but because the former can engage in several occupation/livelihood activities, the total household income is greater than in the latter.
  - *Health.* The road project has the most significant impact on access to health services. The improvement of the road meant that health needs can be responded to on time because health services are more accessible to households and the means of transport are more available now than before the road was improved.
  - *Education.* The improvement of the road encouraged more travels to schools. The general rise in household income that resulted after road improvement increased opportunities for access to better schools which are usually located in the town centers and urban areas.
  - *Housing.* The improved road lessened the hauling cost of construction materials for housing. This resulted in the construction boom within the road ZOI using studier materials, particularly for concrete-made houses.

### **3.2. Granted that the project attained its intended impacts, are these at the level of best possible outcomes given cost and other constraints?**

- a) Some efficiency issues surfaced that made accessibility outcomes less than optimal.
  - Motorists avoid the Cervantes-Mankayan-Abatan route during times of heavy rains because of safety issues, particularly the regular occurrence of roadside landslides caused by inadequate drainage facilities and slope protection measures
  - Other highway safety concerns arise from the inadequacy of traffic control devices, lack of sidewalks and road obstructions
  - Incursions into RROW, especially in the town center of Mankayan and at the road entry point in Abatan, are effectively reducing the carriage width of the road, thereby restricting mobility
  - Lack of terminals for public utility vehicles in the town centers contribute to RROW issues, and reflects the gap in the transport system borne by the failure of local land use plans to support accessibility and mobility.
- b) The road project rates positively on matters of economic efficiency with the increasing traffic for goods utility, considered a high value trip. Passenger vehicles are also being used for the transport of goods which reduces inefficiencies in the fuel consumption for low-occupant vehicles.
- c) In terms of space-efficiency, the notable shift of mode preference from public transport to private transport after the road improvement is not a major concern at present because the level of service of the road is very high—traffic is generally free-flowing from end to end. The road’s designed carriage width of two-lane, two way is sufficient to carry the projected AADT even up to year 2050.

### **3.3. How many years should the road last with proper maintenance? What decisions and arrangements did the government take to guarantee this?**

- a) The DPWH adopted a 230 mm pavement thickness for the Cervantes-Mankayan-Abatan road, above the 200 mm minimum standard, which is over the design life of 20 years. This study finds that the volume of 2-axle and 3-axle trucks projected over the next 20 years, including those from Lepanto mines, will not be heavy enough to cause serious structural damage on pavements as planned, even until year 2050. To achieve a lifespan of 20 years, a yearly maintenance of the wearing surface is needed.
- b) At present, damages to pavement are not caused by trucks but by the lack of drainage facilities and slope protection measures. This is a concern that the DPWH is now addressing through the implementation of a road rehabilitation program for the Cervantes-Mankayan-Abatan road with a budget of Php 46.726 million.

### **3.4. What changes in the bio-physical environment of the road ZOI transpired after road improvement that can be directly or indirectly attributable to the project?**

The findings on the socio-economic impacts of the Cervantes-Mankayan-Abatan road project indicate that the expressed economic objectives of the project have been attained in varying degrees. However, sustainable development remains a nominal objective; many economic activities trailing the road are still manifestly unsustainable.

- The expansion of built-up areas, especially near the road, is leading to congestion that caused RROW incursions and is driving residential areas further up forested lands.
- Agricultural areas near the road shrunk with the growing pressure of urbanization.
- Forest areas are receding as feeder roads made these accessible to cultivation, which in turn intensified the risk of biodiversity loss.

- The likelihood of increased cyanide concentration in Abra River is higher now with the expansion of small scale mining activities in Mankayan that resulted with improved accessibility
- Siltation may have worsened because of erosion and landslides at the roadside and from other areas affected by ground movement and rain-induced landslides.
- River siltation most likely intensified the occurrence of flooding in the lowlands of Cervantes.
- The road project facilitated the exposure of more people to the natural hazards that affect the road ZOI, particularly with the influx of workers for small scale mining in Mankayan.

## **4. Recommendations**

### **4.1 Optimizing the Socio-economic Benefits of the Road**

- a) Further expand employment opportunities by developing small-medium enterprises that support the needs of logistic industries
- b) Develop the tourism potentials within the road ZOI
- c) Develop a comprehensive plan for warehouses and transport support in strategic places
- d) Undertake studies on lessons learned from previous mining operations and their impact on the environment, including the labor and migration diaspora of people of host communities, to help direct programs and projects towards more sustainable mining and quarrying.
- e) Support agro-processing enterprises through direct investments for capital accumulation in the form of business assets such as buildings, factories, infrastructures, technology, equipment and other physical capital.
- f) Spread the benefits of improved roads through properly planned spatial distribution of households, businesses and even government offices

### **4.2 Recognizing and Planning for the Negative Environmental Impacts**

- a) Clarifying environmental objectives in the design and planning phase of road projects. This shall guide the EIA preparation stage to generate an expanded list of environmental characteristics that are susceptible to impacts and present a full picture of the environment to which the project will be situated.
- b) Strengthening of local land use planning to more effectively address the inextricable relationship between road development and land use/land cover.
- c) Integrating related aspects of Disaster Risk Reduction and Management and Environmentally Critical Areas.
- d) Undertake Natural Resource Accounting as an adjunct to an EIA

### **4.3 Inter-agency Convergence in the Development of Road Projects**

- a) The purpose of the inter-agency convergence is to deliberately and decisively direct these developments towards more sustainable outcomes. This can be done in two ways:
  - Designing and implementing interventions to control and manage the risk of negative impacts on the environment that may result from the road project.
  - Designing and implementing developmental activities that will engage communities to shift to more sustainable technologies in their livelihoods and widen ecologically-sensitive options for income-generation.
- b) *Road zone of influence as the unit of convergence.* The road ZOI will set the physical boundary of convergence. It clarifies the impact areas where agencies can be called upon to engage in the convergence efforts.
- c) *Negative-impact areas as the focus of convergence.* Characterize the ZOI to determine specific locations and extent of vulnerabilities/risk of negative biophysical changes that may result from the road project.
- d) *Enabling local government support towards an efficient transport system.* Providing the LGUs with crucial information as well as technical and other support to enable them to plan and allocate resources to manage road use and rights of way and ensure ease of mobility within their respective localities, particularly at the town centers/urban areas.