

# **Performance-Based Contracts for Management and Maintenance of Roads (PMMR)**

**Case Study 3  
PMMR for routine maintenance  
using micro-enterprises in Latin  
America**

# Overview of Presentation



- Introduction
- Types of Micro-Enterprises
- Types of Contracts Used
- Cooperative Micro-Enterprises
- Road Management Enterprise
- Other Micro-Enterprises
- Lessons Learned

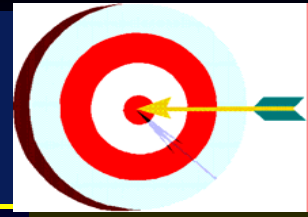
# Overview of Presentation



## □ Introduction



# Main Objectives



- Guarantee that all activities of routine road maintenance will be done in a timely and effective manner**
- Make efficient use of the financial resources assigned to road maintenance**
- Create jobs and improve living conditions of the members of the micro-enterprises**
- Created local contracting capacity**
- Make people conscious of the need to preserve their roads**

# Overview of Presentation



- Introduction
- **Types of Micro-Enterprises**



# Execution of Road Maintenance

- Force account/ own labor
- Contract
  - Big construction/maintenance company
  - Micro-Enterprise
    - Single owner
    - Cooperative

# Overview of Presentation

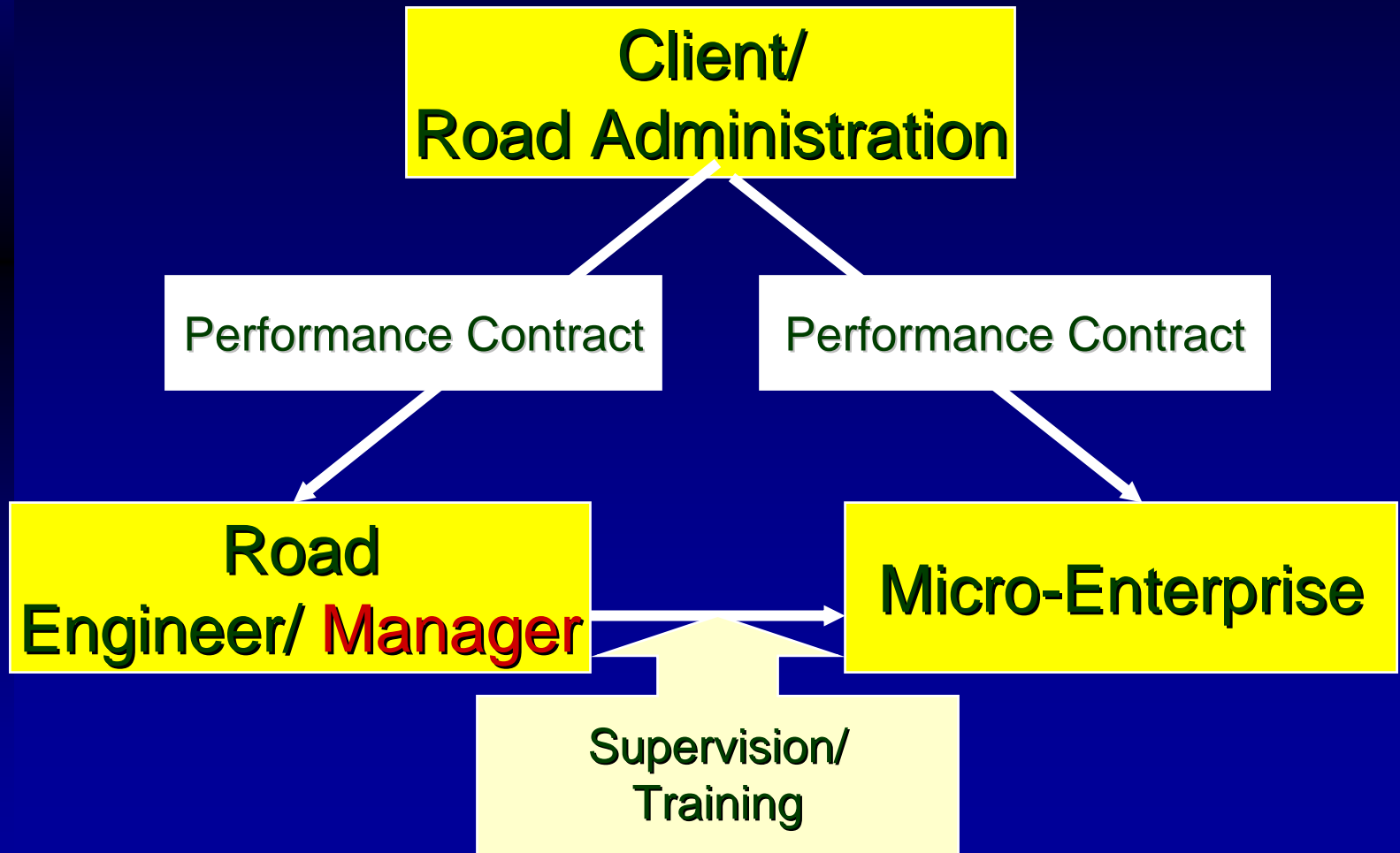


- Introduction
- Types of Micro-Enterprises
- **Types of Contracts Used**

# Type of Contracts Used

- Unit price contract (admeasured)
  - Unit rates for work items
  - Payments are based on quantity of completed work
- Lump sum contract
  - Definition of total work
  - Payment based on single price for total work
- Performance based contract
  - Performance Standards or Service Quality Criteria
  - Fixed monthly payments if service level criteria are complied with
- Hybrid contract
  - Mixture of performance contract and unit price contract

# Contractual Relationship



# Overview of Presentation



- Introduction
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- **Cooperative Micro-Enterprises**

# Implementation of Pilot Projects for Cooperative Micro-Enterprises

- **Planning and design**
- **Securing of financing**
- **Promotion**
- **Creation**
- **Training**
- **Consolidation and monitoring**

# Contractual Arrangement with Cooperatives

- Form of contracting: Direct
- Responsibilities: To comply with simple performance standards
- Advance payment: Up to 20% of contract value to allow for purchase of tools and safety devices and living expenses during the first month
- Duration: One year
- Form of payment: Monthly within the first 5 calendar days
- Deduction for non-compliance

# Typical Calculation of the Monthly Contract Value

- **Minimum wage**
- **Pension fund contributions**
- **Personal and third party insurance**
- **Food allowance**
- **Transportation allowance**
- **Allowance for tools, work clothes, and safety devices**

# Documents Forming a Contract

- ❑ Legal constitution of the cooperative
- ❑ Document describing the legal obligations of the road management firm and the cooperative
- ❑ List of activities, including performance standards
- ❑ Technical manual for routine maintenance
- ❑ Environmental manual
- ❑ Technical information and inventory of the road
- ❑ List of tools and safety devices

# Training Programme

- How to work as a team
- Characteristics of a micro-enterprise
- Problem solving techniques
- Efficient use of the human, physical, financial, and natural resources at hand
- Management of the micro-enterprise
- Road maintenance and road safety
- Experiences from other countries

# Maintenance Activities and Performance Standards (1)

<b>Cleaning and repairing of culverts and inlets</b>	<b>Culverts and inlets have to be structurally sound to allow for the free flow of water</b>
<b>Cleaning and repairing of surface drainage structures like ditches and channels</b>	<b>Surface drainage systems have to be structurally sound and clean to allow for the free flow of water</b>
<b>Cutting of grass and weed</b>	<b>Vegatation should not exceed a height of 30 cm</b>
<b>Trimming, cutting, and removal of trees</b>	<b>No trees should obstruct traffic or pose a safety hazard</b>
<b>Planting of trees and shrub and seeding of grass</b>	<b>Compliance with planting and seeding program</b>

## Maintenance Activities and Performance Standards (2)

<b>Cleaning of roadway and right-of-way</b>	<b>Road way and right-of –way should be free from litter, debris, and road kill</b>
<b>Patching of potholes in the pavement and shoulders</b>	<b>No potholes</b>
<b>Sealing of cracks</b>	<b>Cracks more than 3 mm wide are sealed</b>
<b>Sealing of joints</b>	<b>Joints are sealed</b>
<b>Cleaning of bridge structures</b>	<b>Bridge structures are clean</b>
<b>Cleaning and painting of bridge railings</b>	<b>Bridge railings are clean and painted</b>

## **Maintenance Activities and Performance Standards (3)**

<b>Cleaning of riverbeds</b>	<b>Riverbeds are clean 100 meters from the edges of the roadway</b>
<b>Removal of minor landslides</b>	<b>No obstructions of the roadway</b>
<b>Cleaning of road and traffic signs</b>	<b>Road and traffic signs are clean</b>
<b>Maintaining of milestones</b>	<b>Milestones are complete, clean, and visible</b>
<b>Cleaning, repairing, and painting of guardrails</b>	<b>Guardrails are complete, clean, and visible</b>

# Maintenance Activities and Performance Standards (4)

<b>Cleaning of road markers, road markings and horizontal road signs</b>	<b>Road markers, road marking, and horizontal road signs are complete and clean</b>
<b>Responding to emergencies and traffic accidents</b>	<b>Emergencies and traffic accidents have be responded to in a timely manner</b>
<b>Removing of billboards</b>	<b>No billboards in the right-of-way</b>
<b>Participate in training activities</b>	<b>Each member of the road maintenance micro-enterprise attends the training courses conducted by the road manager or road administration</b>

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- **Road Management Enterprise**

# Road Management Enterprise

Road management enterprises are small enterprises in charge of the management of approximately 200 kilometers of roads, which includes almost all management activities normally performed by the road administration with regard to road rehabilitation and maintenance to keep the road in good and safe condition and to satisfy the road user.

# Responsibilities of the Road Management Enterprise (1)

- Operate a comprehensive information collection system
- Conduct studies and prepare documents in order to keep the road in good and safe conditions
- Plan, program, coordinate, and supervise the road maintenance micro-enterprises as well as other contractors working on the road
- Conduct training programs for micro-enterprises

## Responsibilities of the Road Management Enterprise (2)

- Respond to emergencies and traffic accidents
- Maintain good relations with the communities alongside the road
- Execute programs to control erosions and to protect the environment alongside the road
- Assist the road administration in the preparation of the road rehabilitation and maintenance budget related to the roads under management

# **Contractual Arrangement with the Road Management Enterprise**

- Contracting: Tendering procedure**
- Responsibilities: Based on performance standards (include a quality assurance program)**
- Personnel and equipment:**
  - **1 civil engineer with extensive experiences in road construction, rehabilitation, and maintenance with good management and communication skills**
  - **1 resident engineer**
  - **1 or 2 inspectors**
  - **1 driver**
  - **1 secretary**
  - **1 office close to the center of the road**
  - **Adequate communication equipment and other equipment and vehicles required to perform the contract**

# Road Management Enterprise

## Examples of Performance Standards and Penalties

<b>standard</b>	<b>Penalty</b>
<b>Resident Engineer or supervisor present</b>	<b>120 US\$ first instance, Termination of contract for second absence</b>
<b>Monthly report to be presented no later than on the fifth day of the following month</b>	<b>240 US\$/day</b>
<b>Notices are not given or penalties are not being applied to micro-enterprise in case of non-compliance</b>	<b>240 US\$/day</b>
<b>Present results of the traffic counts at specified dates</b>	<b>240 US\$/day</b>

# Evaluation and Feedback System for Road Managers

- ❑ Evaluation based on predefined performance criteria
- ❑ Reporting on activities performed, road and bridge conditions, satisfaction of road users and communities, and problems encountered
- ❑ Evaluation and improvement of information collection system
- ❑ Evaluation of maintenance activities and adjustment of priorities
- ❑ Improving the management and technical skills of the road manager

## Road Maintenance Micro-Enterprises in Latin America (12/2001)

Country	No.	Km total	duration (years)	Aver.cost USD/km
Colombia (MEC), National roads	280	11487	1	1.500
Colombia (MEC), Popayán	5	308	1*	1.050
Guatemala	130	4.200	1*	1.700
Honduras (MEC)	36	1.670	1*	1.000
Nicaragua (MEC)	27	1.250	1*	1.000
Uruguay	9	1.768	2*	3.600
<b>Total</b>		<b>&gt;22.000</b>		

# Colombia

## Municipality of Popayán



- 15 micro-enterprises (173 persons)
  - 9 urban and 6 rural
  - 1 nursery (22 women)
- 580 km with 300 km in urban areas
- Cost: **US\$ 1034 per km and year**
- 6 road management firms
- Cost: **US\$ 600 per km and year**
- Extensive training program



# Implementation of Pilot Projects for Cooperative Micro-Enterprises

- **Planning and design**
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# PSMC - Uruguay



# Pilot Project Uruguay

## Deadlines, Payments, and Sanctions



- Contract period is 2 + 2 years
- Deadlines to comply with performance standards:
  - 2 months for potholes
  - 6 months for other defects on main roads
  - one year for all roads
- The contractor is being paid a fixed monthly fee per kilometer and type of road surface.
- Sanctions for non-compliance

# Micro-Enterprises Uruguay

## Improvement in Road Conditions



Micro-enterprise	Year	Very good	Good	Regular	Bad
A	1996	0%	60%	40%	0%
	1998	25%	60%	15%	0%
B	1996	23%	13%	64%	0%
	1998	37%	46%	17%	0%



Miembros de la Cooperativa Fuente de Vida y Esperanza, R.L.  
luego de haber recibido el Diploma del curso de cooperativismo con  
una duración de 40 horas.













*Apertura en roca sobre cuneta revestida, para permitir el paso del agua*



*Retiro de rocas de cuneta revestida*















SAN ROQUE – BOSCONIA. REPOSICION DE LETRAS Y NUMEROS DE LAS SI  
JULIO 8 DE 1997. HORA 7:30 AM











# Micro-Enterprise in Guatemala









**Don't  
Litter**  
*Road Fund*

**NO TIRAR  
BASURA  
FONDO VIAL**

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# Lessons Learned (1)

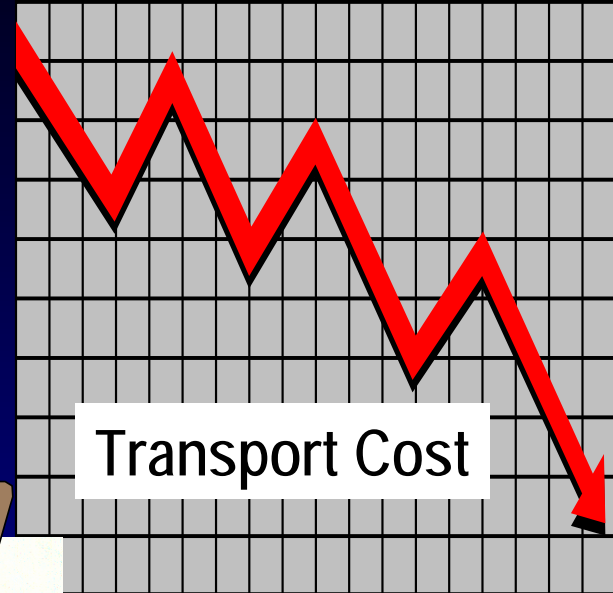
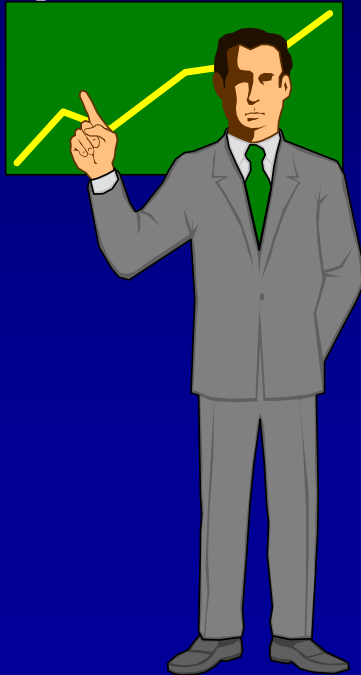
- ❑ **Securing sufficient and timely financing is crucial.**
- ❑ **Micro-enterprises are a viable option to create local contracting capacity, especially in remote areas.**
- ❑ **Cooperatives seem to have an edge over single owner micro-enterprises.**
- ❑ **Careful selection and good training of the cooperative members is important.**
- ❑ **Micro-enterprises provide an excellent opportunity for road agencies' staff to start a business.**

## Lessons Learned (2)

- The qualification of the road engineer heading the road management enterprise is crucial for success.
- The creation of road maintenance cooperatives have initiated a new spirit of entrepreneurship which goes beyond the scope of work originally contracted.
- Performance based contracts produce better results than unit price contract.

# VISION

Business Opportunities





International Road Federation (IRF)

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

Economic Commission for Latin America and the Caribbean (ECLAC)

## Financial and Institutional Reform of Road Conservation in Latin America and the Caribbean

Technical Cooperation Program  
of the Federal Republic of Germany



### Program Description

Since June, 1994 the International Road Federation (IRF) has been cooperating with the Government of the Federal Republic of Germany and the German Agency for Technical Co-operation (GTZ) as well as the United Nations Commission for Latin America and the Caribbean (ECLAC) in the execution of a program entitled "Financial and Institutional Reform of Road Conservation in Latin America and the Caribbean".

The most important elements of this reform concept are:

- Creation of autonomous and user controlled road conservation funds financed by road user charges, and
- introduction of performance-based road asset management and maintenance contracts, whereby payments are based on pre-established performance criteria of roads rather than on work executed.



Your comments are appreciated

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### Contents



English

- [Program](#)
- [Documents](#)
- [Presentations](#)



Español

- [Programa](#)
- [Documentos](#)
- [Presentaciones](#)
- [Boletines](#)



Português

- [Programa](#)
- [Documentos](#)
- [Apresentações](#)



Français

- [Documents](#)
- [Présentations](#)

[Links to other websites](#)

### What's New

- [Boletín 12](#) (2/2001)
- [Fundo de Conservação Rodoviária de Estado do Paraná - FUNCOR](#), 25 de dezembro de 2000. (12/2000)
- [Ley del Fondo de Conservación Vial - FOVIAL de El Salvador](#), Decreto No. 208, San Salvador, 30 de noviembre de 2000. (12/2000)
- [Fundersut](#): Financiamento inteligente para as rodovias, Eng°. Rogério Wallbach Tizzot, Dezembro de 2000. (12/2000)
- [Contrato para Microempresas Asociativas](#), Municipio de Popayan, Colombia 1999; [Estatutos de una Microempresa](#). (10/2000)
- [Ley Creadora del Fondo de Mantenimiento Vial de Nicaragua](#), Junio de 2000. (9/2000)
- [Asset Preservation Plan for the District of Columbia National Highway System](#), Federal Highway Administration, U.S. Department of Transportation and District of Columbia Department of Public Works, Nov. 1999. Download as [exe.file](#) or download as [PDF-File](#). (8/2000)
- [Cutting Cost and Improving Quality through Performance Specified Road Maintenance Contracts](#). (7/2000)