



**Presentation for  
Delegation of Bangladesh Civil Servants for  
Mid Career Training Programme in Field  
Administration**

**On  
Prime Minister's Rural Roads Programme  
(PMGSY) in India**

**(By A.K. Dinkar, Chief Engineer, URRDA, Dehradun)**

11/19/2015

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## *Out line of Presentation*

### *Section 1*

#### *Overview*

### *Section 2*

#### *Connecting India through Prime Minister's Rural Roads Programme*

### *Section 3*

#### *PMGSY – Socio Economic Impact*





# *Section 1*



## *Overview*

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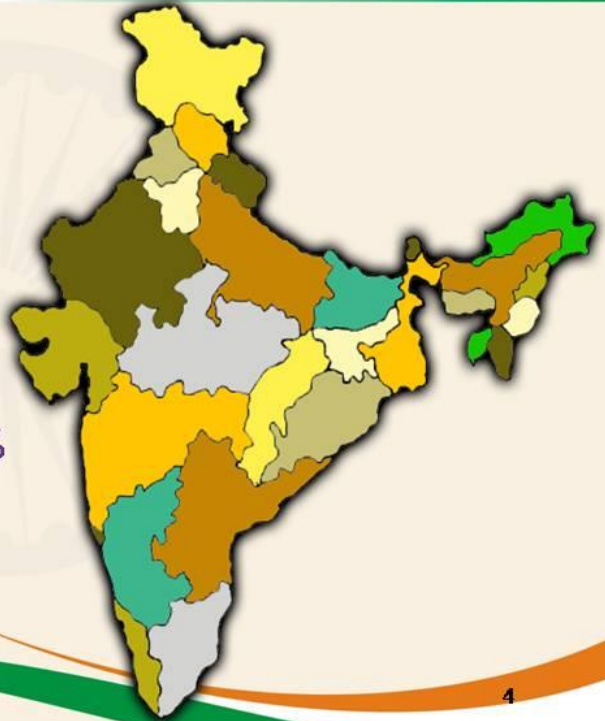
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# India – A Fact Sheet



- ⦿ India is a Union of 29 States
- ⦿ Population of India 1.21 billion
  - 587 million females -624 million males
  - Rural population is 68.84%
- ⦿ Population density - 382 per sq. km



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## Ministry of Rural Development

### Our Vision

Sustainable and inclusive growth of rural India

### Our Mission

Sustainable and inclusive growth of rural India through a multi-pronged strategy for eradication of poverty and improvement of quality of life in rural India.



# Ministry of Rural Development

## Our Objectives

- Enhancement of livelihood security of households in rural areas by providing at least 100 days of guaranteed wage employment in every financial year to every household through MGNREGA.
- Providing livelihood opportunities by effective implementation of National Rural Livelihood Mission (NRLM).
- Provision of all-weather rural connectivity to unconnected rural habitations and up-gradation of existing roads through PMGSY.
- Providing basic housing and homestead to BPL households in rural areas through IAY.
- Providing social assistance to the elderly, widow and disabled persons through Pension Scheme.
- Capacity Development and Training.
- Promote Voluntary Action.
- Increase transparency and accountability through Social Audit.



# Ministry of Rural Development

## Implementation Mechanism

### Department of Rural Development

- Formulates policies and program
- Release funds

### State Government

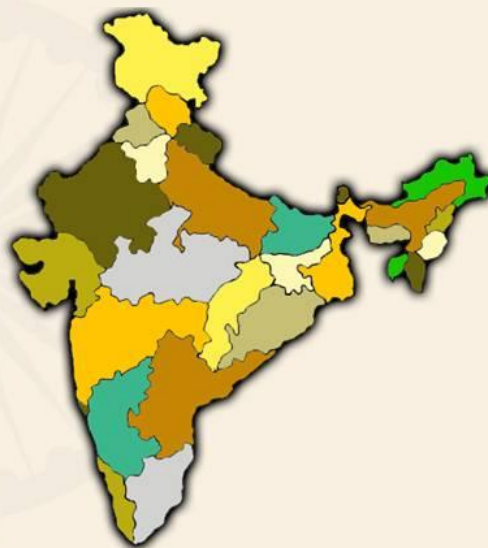
- Facilitates implementation
- Monitors Program

### District Administration

- Prepares district perspective plans
- Implements the program

### Panchayati Raj Institutions

- Plans at the grass root level
- Selects works/beneficiaries and implements the programme.





## *Section 2*



*Connecting India through  
Prime Minister's Rural Roads Programme*

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## Rationale for Rural Connectivity Programme



- ⊙ Investments in rural infrastructure are more effective than safety nets which reduce the incidence of rural poverty but may not remove it.
- ⊙ Rural infrastructure programmes have a lasting impact on rural development, creating both on-farm and off-farm employment, in period after period due to Multiplier, Accelerator and Super multiplier effects, for inclusive growth.
- ⊙ Hence the Prime Minister's Rural Roads Programme - PMGSY.





## Status of Road Network in India

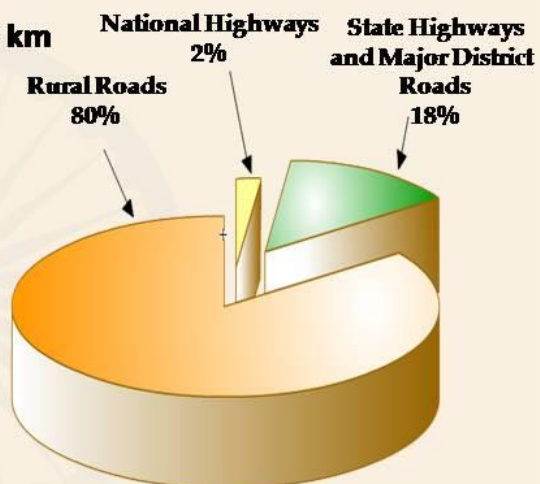


- **Total length of road network in India : 33 Lakh km**

- **National Highways : 79,443 Km (2%)**

- **State Highways & Major District Roads : 5,99,662 Km (18%)**

- **Rural Roads : 26,50,000 Km (80%)**



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Source: MoRTH, MoRD

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## Rural Connectivity Prime Minister Gram Sadak Yojana (PMGSY)



- Provision of all-weather road connectivity to all the habitations with population of 500 or more in normal areas (250 in special areas).
- Upgradation of existing Through Routes.
- 100% financing by Central Govt.
- Maintenance by States.
- National Rural Roads Development Agency (NRRDA) for Technical and Operational Management Support.
- Dedicated implementing machinery at State and District level.
- E-procurement.
- Strong quality assurance mechanism
- Full Transparency- Online Monitoring System.
- Ensuring Quality Standards in construction.
- Five year maintenance with same contractor.





## Funding



- ⦿ Budgetary Support from Government of India.
- ⦿ Fuel Cess (Rs. 0.75 per litre) on Diesel.
- ⦿ Internal Borrowings– NABARD Loans.
- ⦿ Externally Aided Projects.
  - ⦿ Asian Development Bank.
  - ⦿ World Bank.



# Transforming Rural Lives



**Increased access to market, health and education.**

**"Investment of One Million Rupees enables 165 poor people to move above poverty line".**

*International Food Policy Research Institute (IFPRI) Research Report 110, 1999*

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## PMGSY - Current Implementation Status



### PMGSY-I

#### A. Physical (Up to Jun'15)

Activity	Total Eligible	Projects Cleared	Achievement
Habitations (in Nos.)	1,78,184	1,45,041	1,10,933 of eligible (62%)
New Connectivity (km.)	3,67,673	3,61,174	2,83,194 of cleared (78%)
Up-gradation (km.)	3,74,844 2,24,906 UG 1,49,938 Renewal	1,86,527	1,62,807 (72 %)

#### B- Financial (Upto Jun'15)

Value of project proposals cleared	:Rs. 1,80,394 Crore (Central share) Rs. 3,320 Crore ( State share)
Funds Released	Rs. 1,24,029 Cr. (i/c Interest- 558.115 Cr )
Expenditure	:Rs. 1,33,012 Crore (Central share) :Rs. 1,217 Crore ( State share)

PMGSY – II	Total Eligible	Projects Cleared	Achievement
Upgradation	50,000 km.	11,234 km.	2,198 Km





# Management Strategy

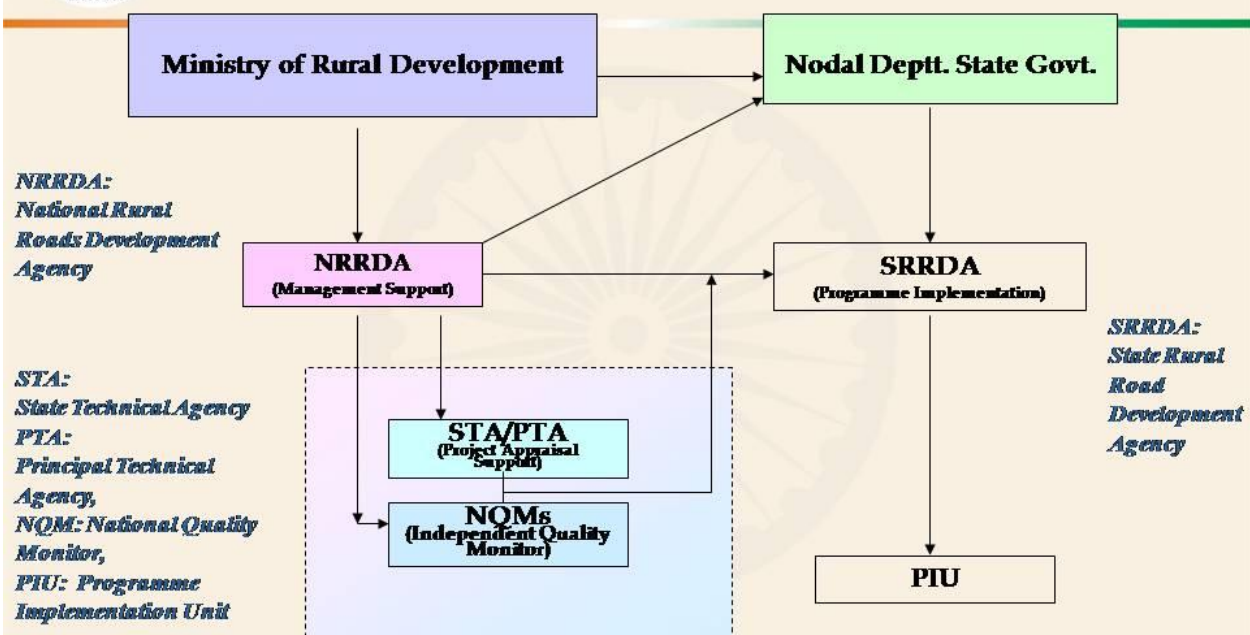


**Management strategy aimed at embedding quality awareness in all processes of implementation put in place for PMGSY.**

- ⦿ Appropriate Institutional Architecture.
- ⦿ Systematic Network Planning.
- ⦿ Structured Project Preparation and Selection Process.
- ⦿ Setting Standards and Specifications.
- ⦿ Standardization of Bidding Process – e procurement.
- ⦿ Rigorous Quality Monitoring.
- ⦿ Need Based Training, R & D.
- ⦿ Web based Monitoring Mechanism.



# Institutional Architecture





# Institutional Architecture

- Deviating from conventional fully in-house implementation, dedicated institutions developed under PMGSY. Third party independent interventions introduced for various processes.
- At the National level, Ministry of Rural Development is responsible for implementation of PMGSY.  
*Functions: Overall Programme Management, Policy Guidelines and Funding.*
- National Rural Roads Development Agency (NRRDA) constituted as professional body.  
*Functions: Technical and Programme Management Support.*



# Institutional Architecture

- At the State level, Nodal Department responsible for implementation of PMGSY.  
*Functions: Programme Implementation and Financial Management.*
- State Rural Roads Development Agency (SRRDA).  
*Functions: Planning, Project Preparation, Procurement of works, Execution, Quality Monitoring, Financial Management, Maintenance Management and Data Management.*
- Programme Implementation Unit (PIU) for field level implementation.  
*Functions: Field level Planning, Survey, Investigation, Project Preparation, Contract Management, Quality Control, Maintenance and Data Management.*





# Institutional Architecture

- Engineering Institutions of repute (IITs/NITs), Central Road Research Institute (CRRRI) identified as independent Principle Technical Agencies (PTAs).  
*Functions: Support on technical matters, research and capacity building.*
- State level Engineering Institutes of repute (NITs and Engineering Colleges) designated as State Technical Agencies (STAs).  
*Functions: Technical support on project scrutiny and capacity building etc.*
- Quality Monitoring- State level through independent individual monitors and independent institutions.  
National level through independent National Quality Monitors.





## Systematic Network Planning



- A District Rural Road Plan (DRRP) for every Block & District of India prepared.
- Core Network (*Network to ensure one single connectivity to target habitations*) has been extracted from DRRP.
- This forms the basis for selection of project roads.



## Programme Management features based on International Best Practices

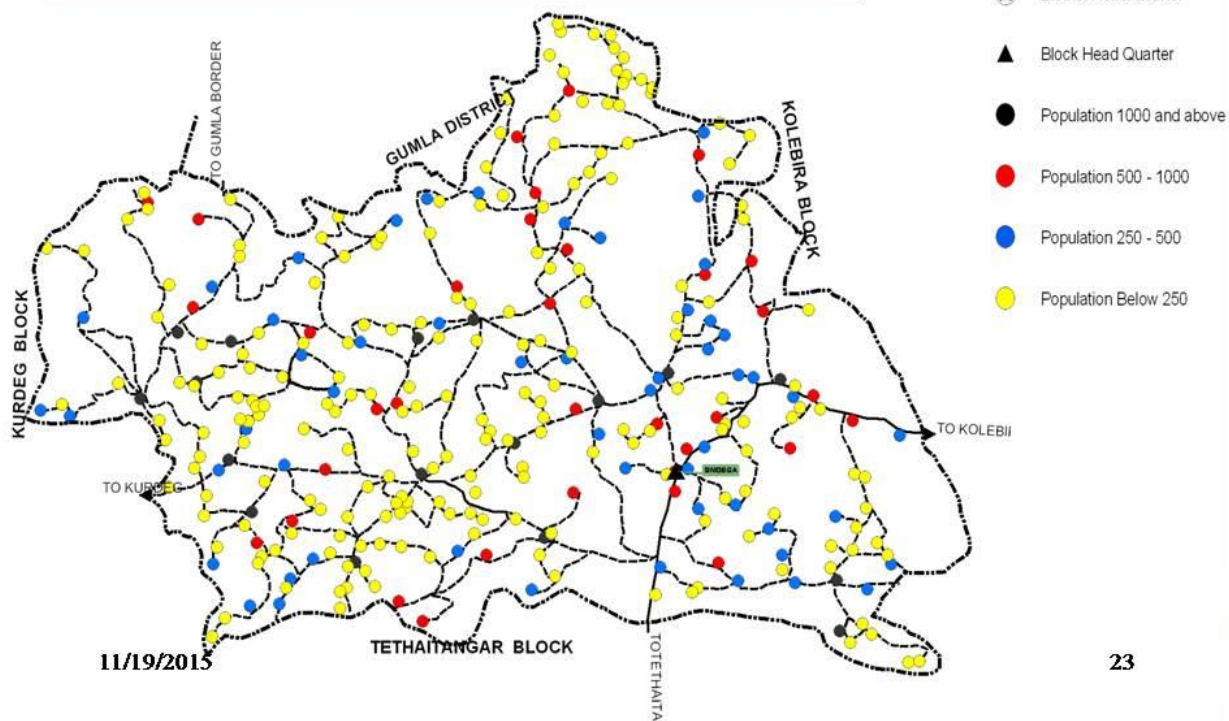
- **Planning and Project Preparation:**
  - Core Network for Planning of New Connectivity and prioritization for up-gradation.
  - Community supported **"Transact Walk"** for finalization of alignment.
  - Provision of Environmental Management mainstreamed. New DPR Template provides for Environmental Management.
  - Independent scrutiny of DPRs through academic institution.
  - New DPR Guidelines provide for photographic record of existing condition/alignment.
  - Mainstreaming of new materials and technologies.



## Programme Management features based on International Best Practices

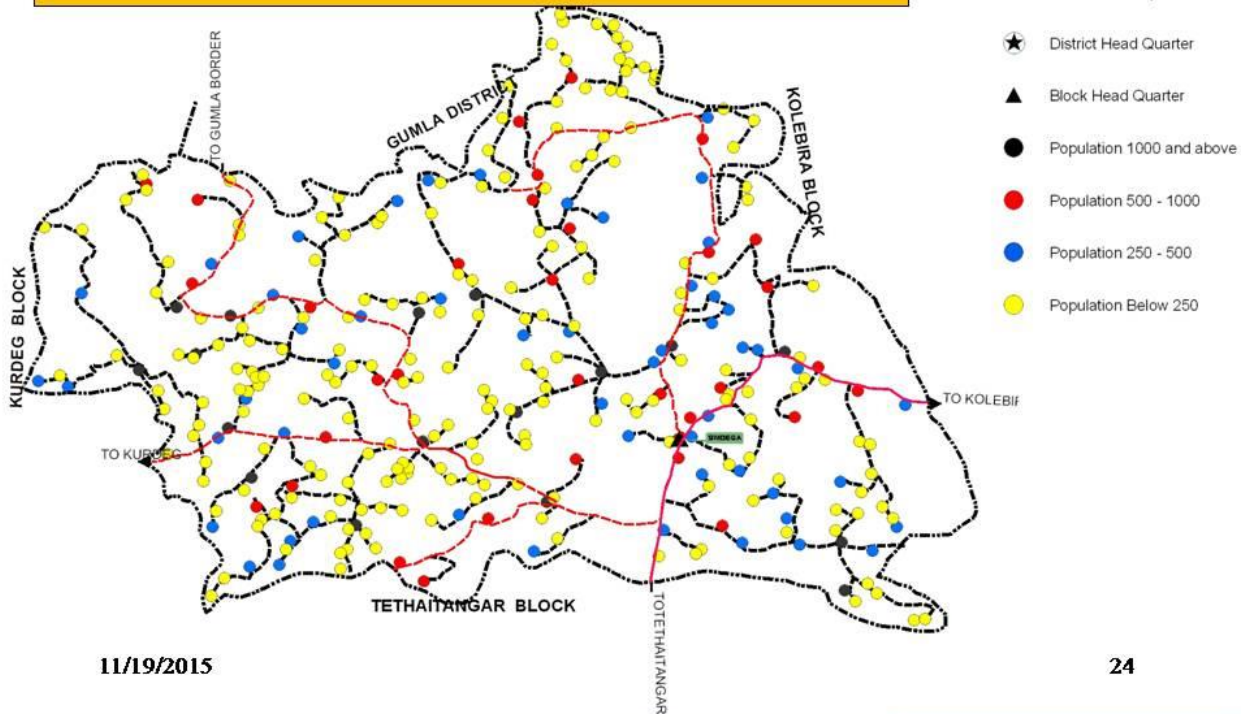
- **Execution:**
  - Standard Bidding Document (SBD) developed.
  - Electronic Tendering.
  - In-house Quality Control and Independent Monitoring.
  - Digital Photographic recording of construction quality.
- **Routine Maintenance:**
  - 5 years defect liability clubbed with routine maintenance.
  - Monitoring of funding and implementation of routine maintenance.
- **Web based Programme Management and Monitoring.**
  - OMMAS for Planning, Project Scrutiny, Quality Monitoring and Programme Monitoring.
  - Web based Financial Management.
  - Management of Present Condition Data.

## Typical DRRP at Block Level





## Typical Core Network at Block Level







## Technical Standards for Rural Roads



Standard setting with the help of Indian Roads Congress (IRC):

- Rural Roads Manual, 2002.
- Standard Data Book and Specifications for Rural Roads, 2004.
- Design of flexible and rigid pavements for low volume roads.
- Gravel Road Manual.
- Standards for Steel Bridges.
- Quality Assurance Handbooks.



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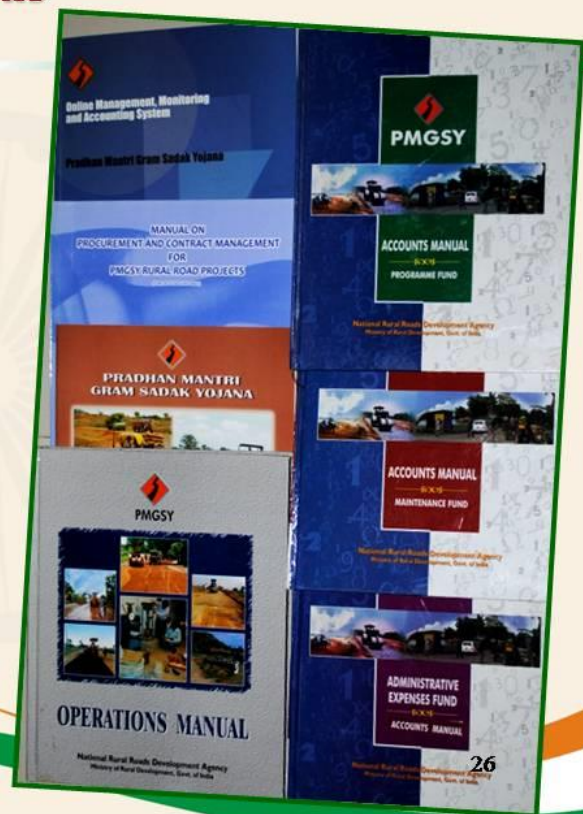
# Programme Management Standards for Rural Roads



## Programme Management Standards by NRRDA:

- Operations Manual, 2005.
- Accounts Manuals, 2005
  - Programme Fund Manual.
  - Administrative Fund Manual.
  - Maintenance Fund manual.
- Procurement and Contract Management Manual, 2012.
- Online Monitoring, Management and Accounts System Manual.

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## Rural Road Designing

- **Geometric Design:** 7.50 m Road-Way and 3.75 m Carriage-way. Indian Roads Congress (IRC) (*Road standard setting body of India*) standards adopted.
- **Pavements:** Generally Flexible Pavement provided for roads passing through un-inhabited areas. Rigid Pavement of Cement Concrete provided in Built-up areas.
  - IRC has published Code for design of Flexible Pavements for Rural Roads. Roads up to 1 MSA are generally treated as Low Volume Roads.
  - IRC has published Code for design of Cement Concrete Pavements on Low Volume Roads.
- **Cross Drainage Works:** Hume Pipe culverts, Vented Causeways, Flushed Causeways, Box Culverts and Slab Culverts are commonly provided. If required, high level bridges are also covered under the Programme.





## Project Preparation and Scrutiny

- **Surveys:** After selection of the road alignment through the process of transect walk, detailed topographical survey, traffic count, soil and material investigations are carried out.
- **Designing:** Designing is based on relevant IRC codes.
- **Detailed Project Report:** DPR consists of detailed report on connectivity status, traffic composition and volume, soil and material details, designs, drawings and estimates.
- **Scrutiny:** Over 50 Institutes of Technology having faculty on Highway and Geotechnical Engineering (*Termed as State Technical Agencies STAs*) are responsible for scrutiny of DPRs.
- **Project Clearance** is by Government of India after scrutiny by NRRDA.





## Standard & Transparent Procurement Process

- Transparent bidding through Standard Bidding Document developed for PMGSY.
- e-Procurement of works fully institutionalized
- Impact Assessment of e-Procurement has shown better participation of contractors leading to competitive prices – Savings.



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*A Symbol of Quality & Sustainability*



## Quality Assurance

- ⊙ A three tier quality management mechanism institutionalized under PMGSY.
  - **First tier-** Quality control at Programme Implementation Unit (PIU) level. Objective - process control through mandatory tests on material and workmanship at the field laboratory.
  - **Second tier-** Regular and structured independent quality monitoring at State level.
  - **Third tier-** Independent National Quality Monitors deployed for inspection at random. Objective-guidance and monitoring of quality by a senior independent professional.
- ⊙ For better results and sustainable quality, quality mechanism is continuously reviewed and refined.



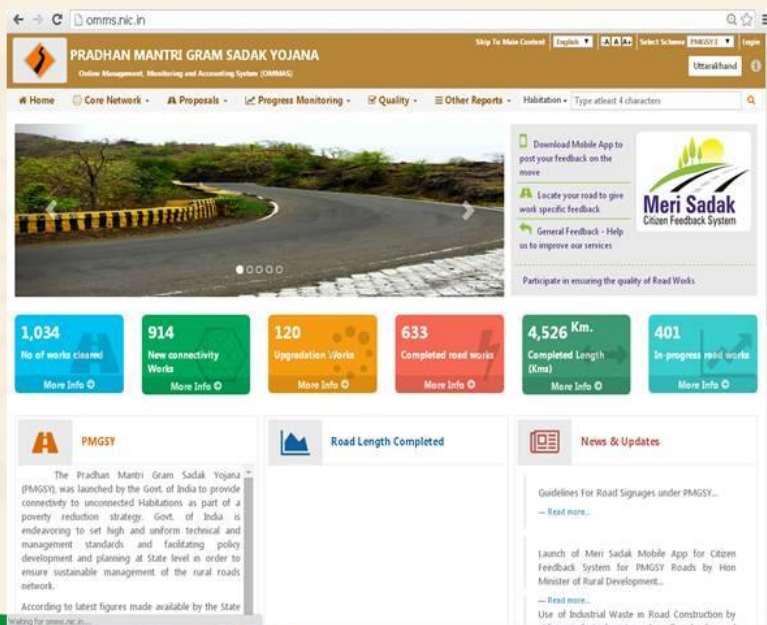
# Online Monitoring System

● A  
Online  
System.

Web-based  
Monitoring

● Embedded Decision  
support systems.

● Data Base in  
Citizen's domain.



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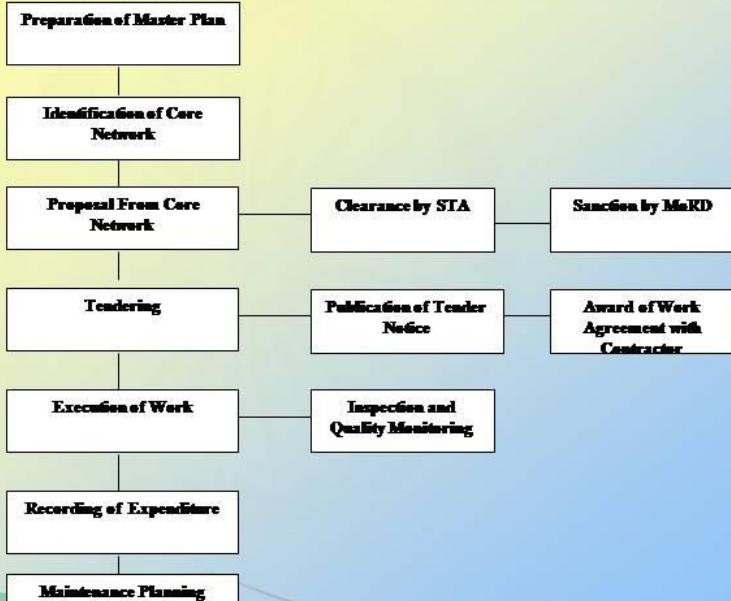
# OMMAS- Synchronized with PMGSY



## OMMAS



## Process Flow in PMGSY..



Security And Administration





## Transparency & Community Participation

➤ Citizen Information Board in local language showing Quantity of material in each layer.

➤ Provision for periodic joint inspection of field level officers and public representatives.





# Transparency and Citizen Monitoring



Every work is required to display

- Citizen Information Board – Quantity of material in each layer
- Work information



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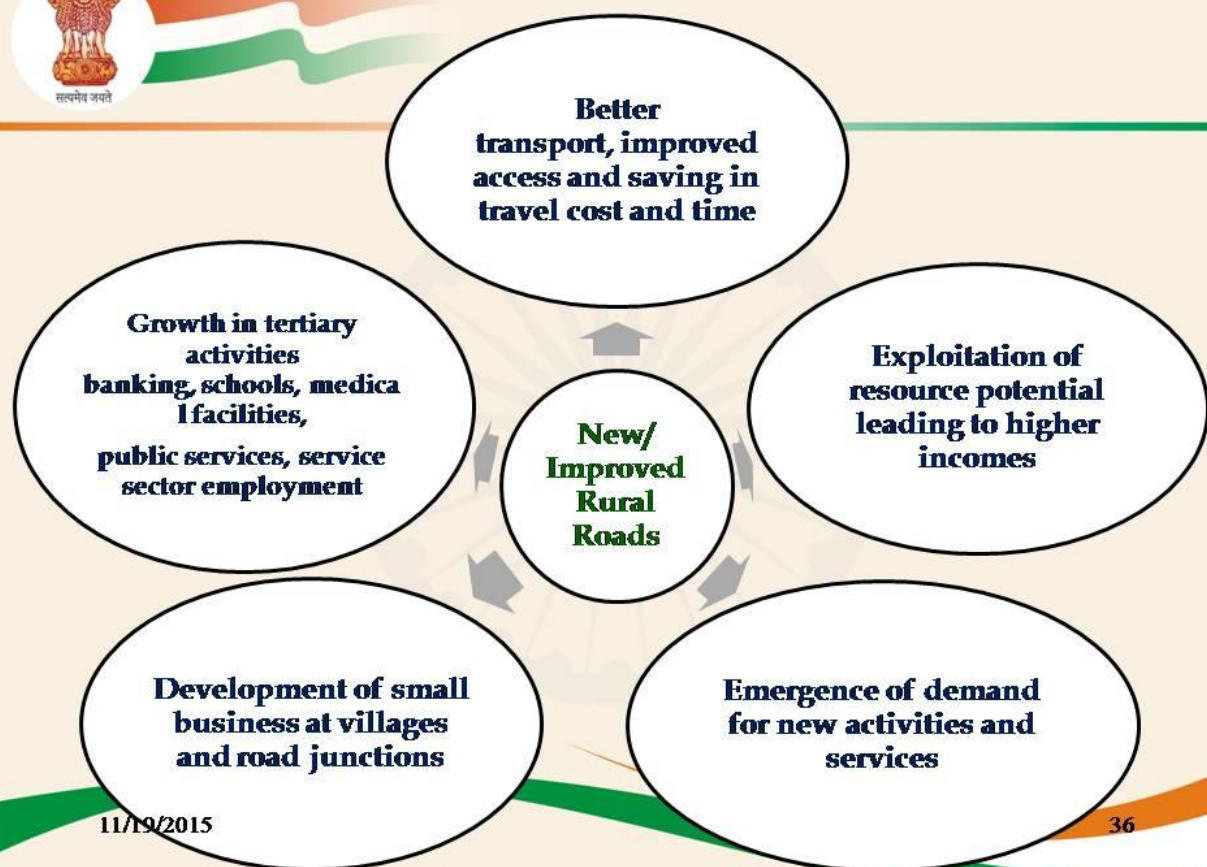


## Section 3



### *PMGSY – Socio Economic Impact*









# Socio Economic Impacts



**Agriculture.....Livelihoods.. .. Income...**



**Tamil Nadu**





## Evaluation Study on Rural Roads

**By: Programme Evaluation Organisation, Planning Commission. May, 2010**  
**To Achieve of Millennium Development Goals through PMGSY:**

- Reduction in poverty through increase in incomes:
  - Increase in income of cultivators - 15.12% increase in income.
  - Agriculture workers and others 7.89% and 13.45 % increase in income respectively.
  - Overall agriculture income increased by 17.6%. Income from non-farm activities increased by 12.11%.
  - Access to social services (Post office, banking, Health centres, education centres, bus stand and railway stations, etc.) improved.

Source:

11/19/2015

[http://planningcommission.nic.in/reports/peoreport/peoreport/eva\\_bhar0106.pdf](http://planningcommission.nic.in/reports/peoreport/peoreport/eva_bhar0106.pdf)

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# **Socio-Economic Impact Assessment and Road Users' Satisfaction Survey of PMGSY-2012**

*Prepared by - M/s LEA Associates South Asia Private Limited*

## **Benefits accrued from road connectivity:**

- Services provided by Health Workers improved - increased frequency of visits.
- Directly benefited schooling of children especially of girls.
- Connectivity has offered a safe and easy travel to educational institutions.
- Artisans benefited as their business flourished with the advent of roads.
- Many villagers make a livelihood in non-farm employment avenues .
- Farmers benefited with transporting agriculture produce to distant market .
- Farming more economical with use of better fertilizers and pesticides.

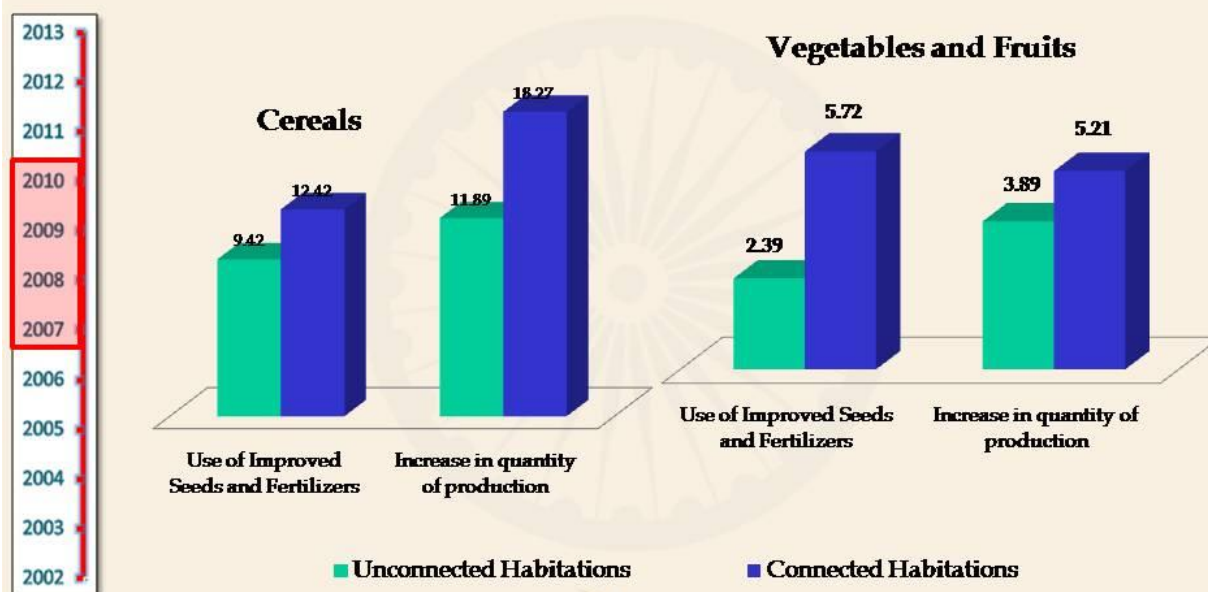
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## Use of Improved Seeds Fertilizers and Quantity of Production ( % Households)

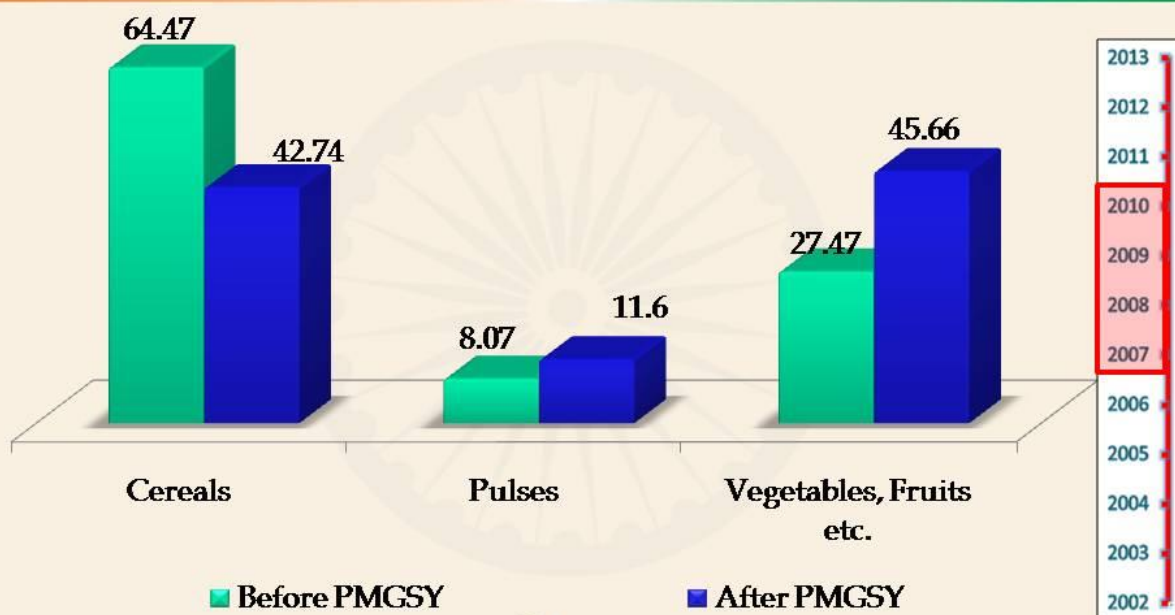


Study 2007- 2010, 17 States, 50 Districts, 748 Habitation, ( 3 years prior &after ): Publication 2011, 11/19/2015  
CMI Social Research Centre, New Delhi, Ministry of Rural Development 40





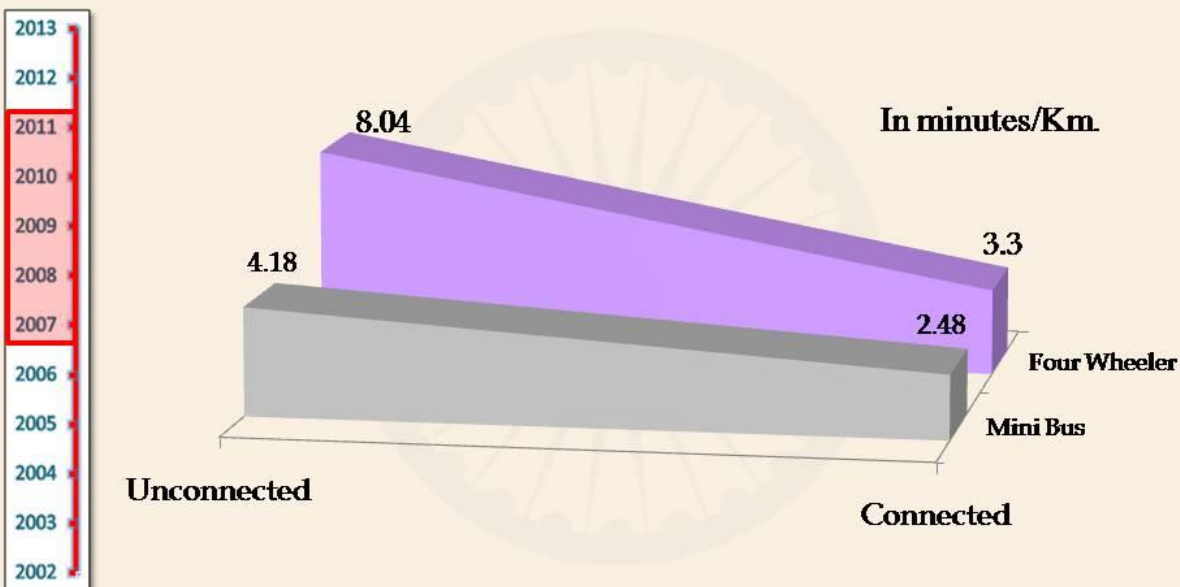
## Change in Cropping Pattern Cropped Area ( % Households)



Study 2007-2010, 17 States, 50 Districts, 748 Habitation. ( 3 years prior & after ). Publication 2011, CMI Social Research Centre , New Delhi , Ministry of Rural Development



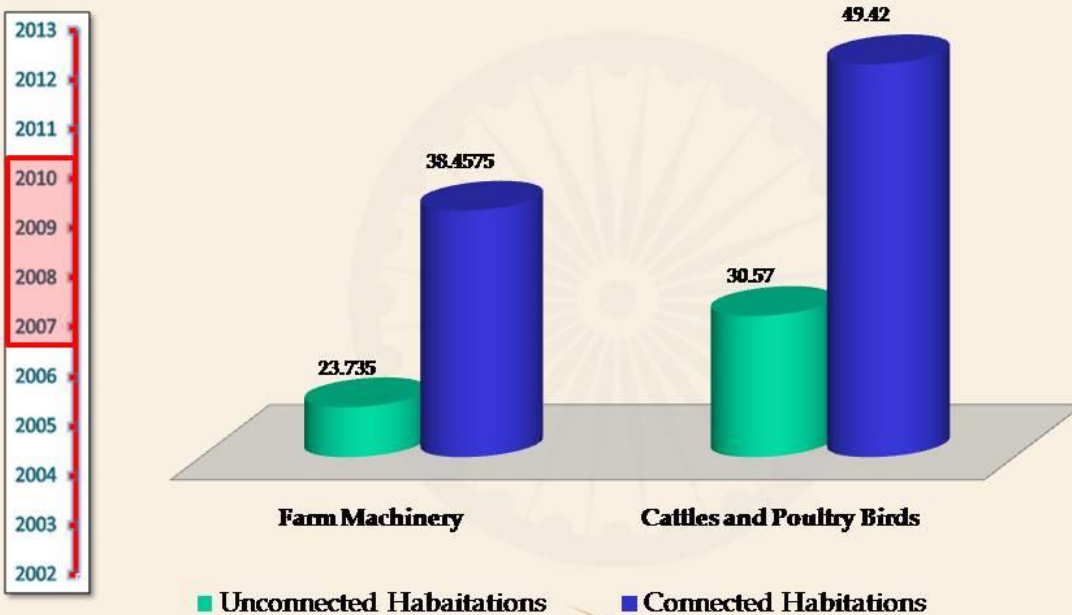
## Access to Agriculture Market



Study 2007-2011, 10 States, 33 Districts, 750 Habitation, 11,490 Households Publication 2012, LEA Associates SA, New Delhi, Ministry of Rural Development



## % Households Acquired Assets Post PMGSY

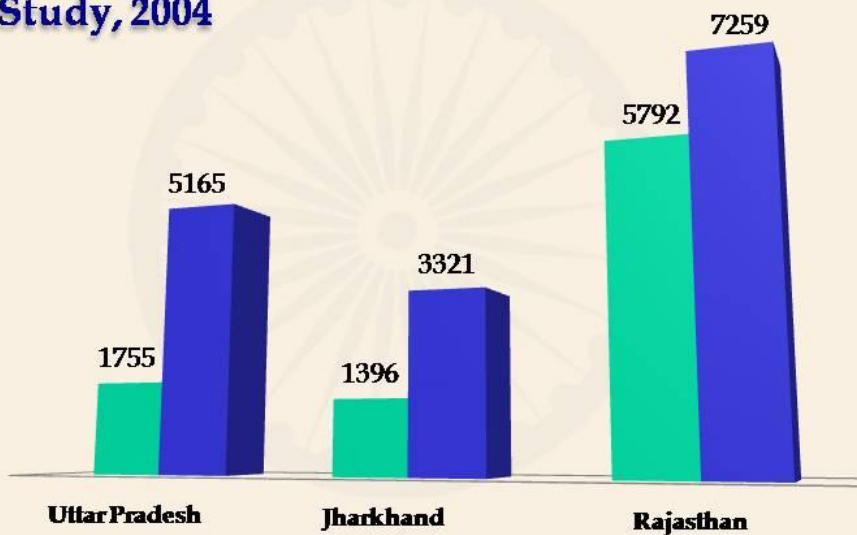


Study 2007-2010, 17 States, 50 Districts, 748 Habitation (3 years prior & after): Publication 2011,  
CMI Social Research Centre, New Delhi, Ministry of Rural Development



# Agricultural Production Rs./Capita

World Bank  
Study, 2004



■ Unconnected

■ Connected

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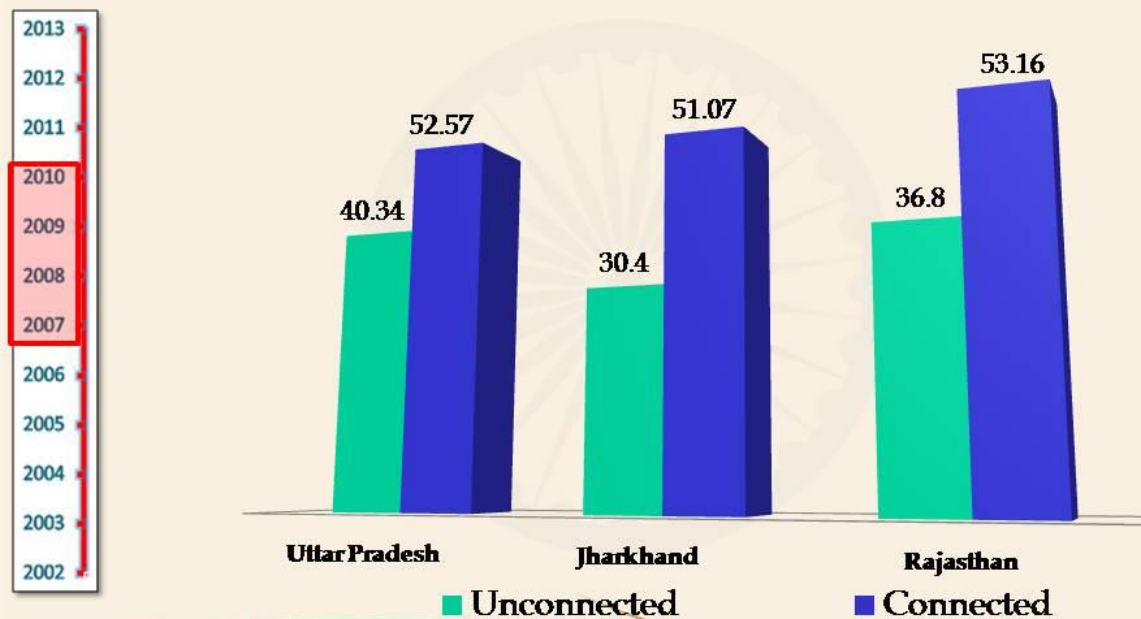
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Study Published- 2004, 40 villages in the states were selected.





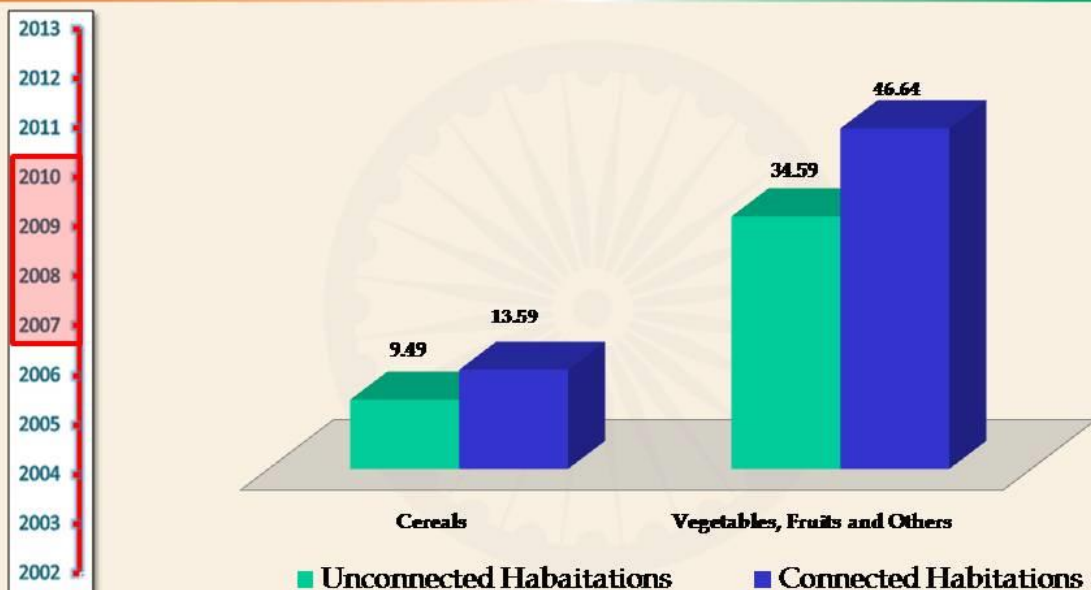
## Increase in days Employed ( % households)



Study 2007-2010, 17 States, 50 Districts, 748 Habitation (3 years prior & after): Publication 2011,  
CMI Social Research Centre, New Delhi, Ministry of Rural Development



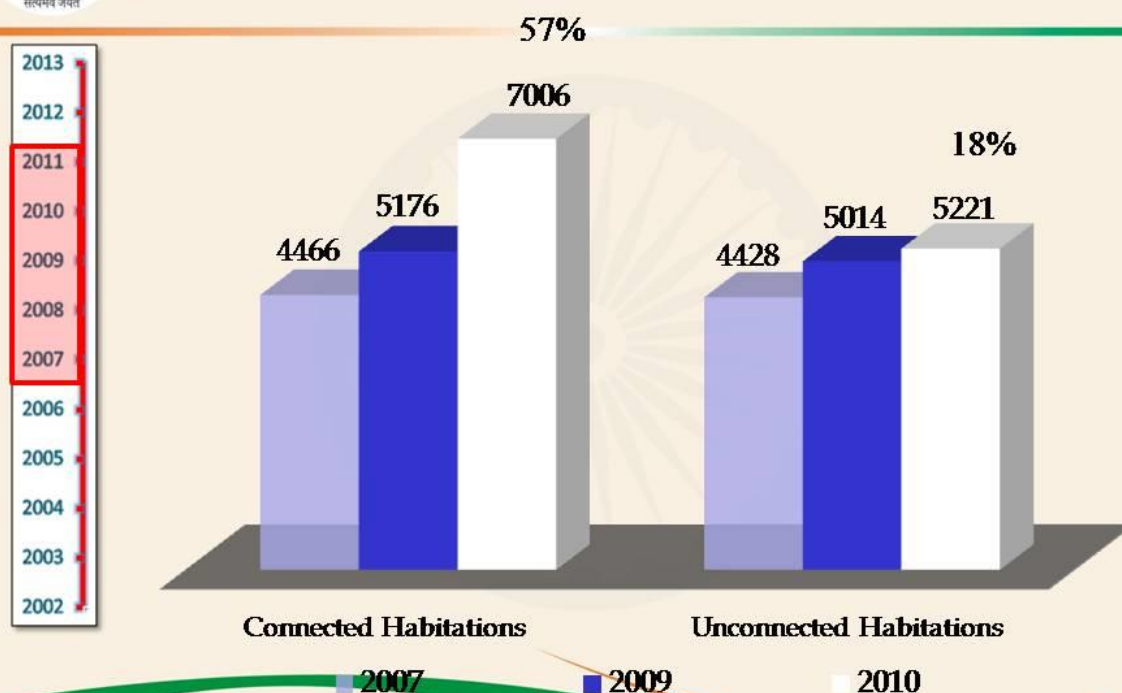
## % Households Reported Increase in Realized Prices of Agriculture Products



Study 2007-2010, 17 States, 50 Districts, 748 Habitation (3 years prior & after ) : Publication 46  
2011, CMI Social Research Centre, New Delhi, Ministry of Rural Development



## Status of Household Income (in Rs.)



Study 2007-2011, 10 States, 33 Districts, 750 Habitation, 11,490 Households Publication 2012, LEA Associates SA, New Delhi, Ministry of Rural Development

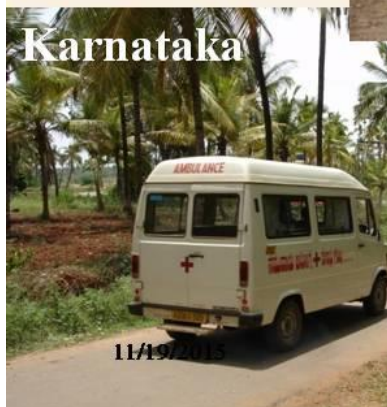


# Socio Economic Impacts

## Health Services



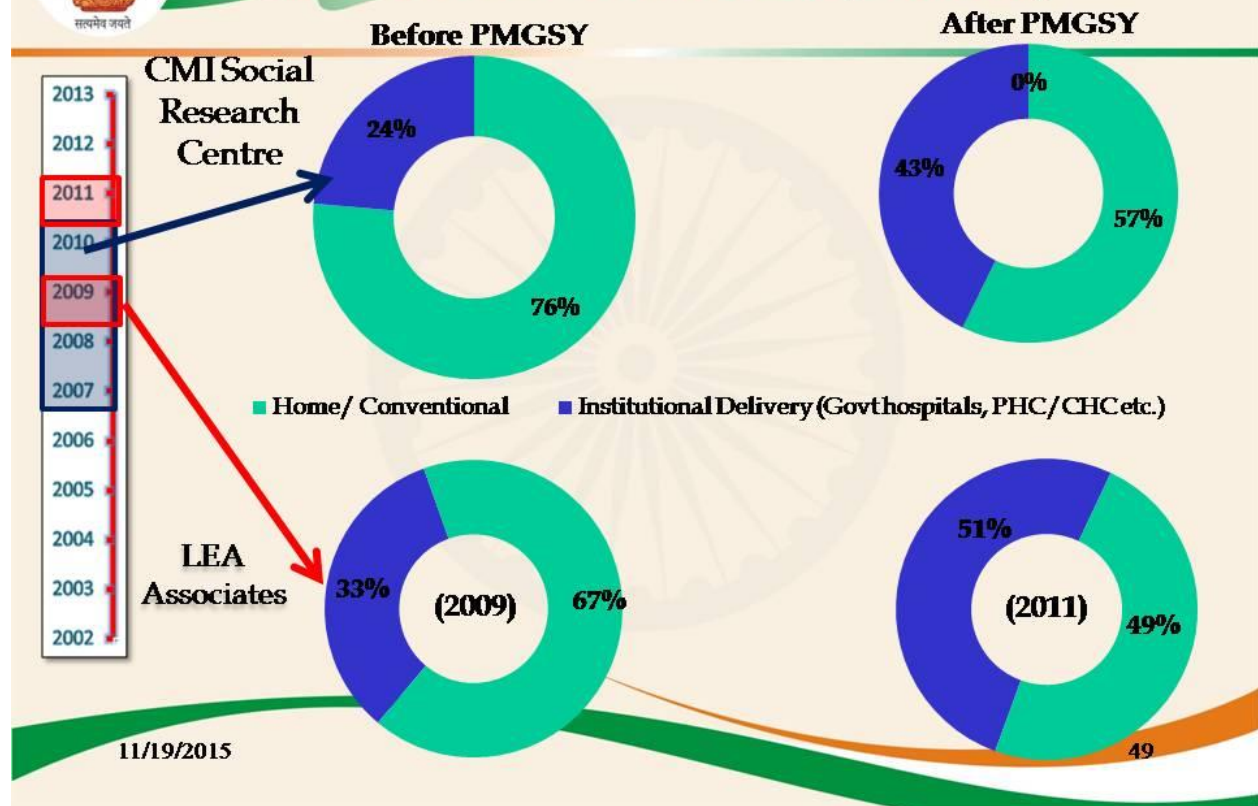
Karnataka





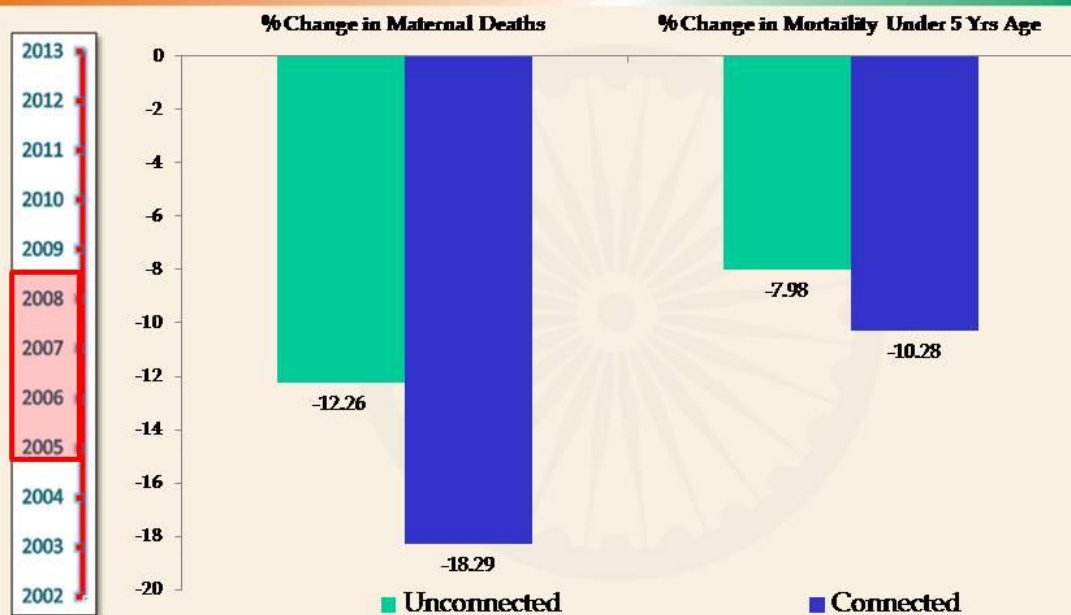


# Healthcare Institutional Deliveries (Child Birth)





# Maternal Deaths and Infant Mortality

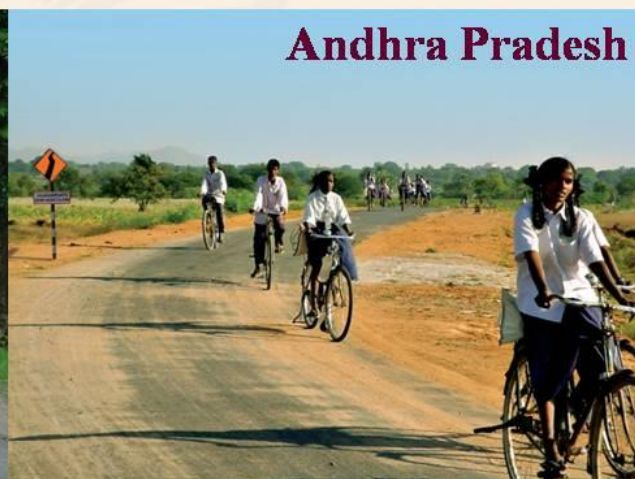


ADB Study-2005-06 to 2007-08, Madhya Pradesh and Chhattisgarh, Connected road- length of 550 km and serves 82 habitations.



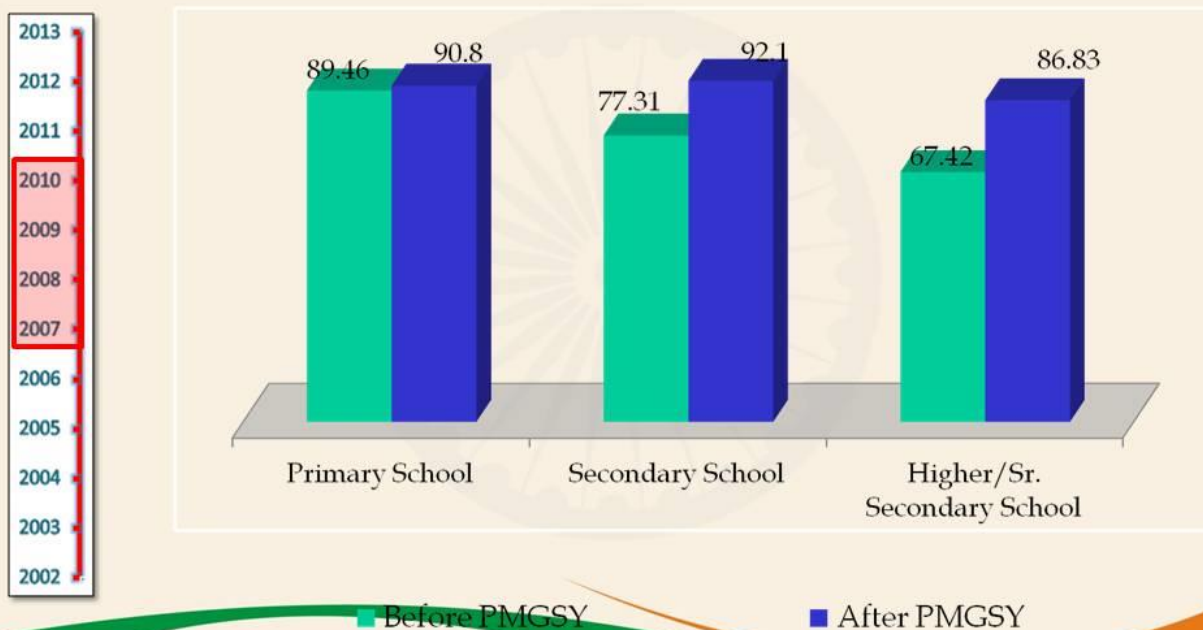
# Socio Economic Impacts

## Education





## % Females Enrolled in Schools

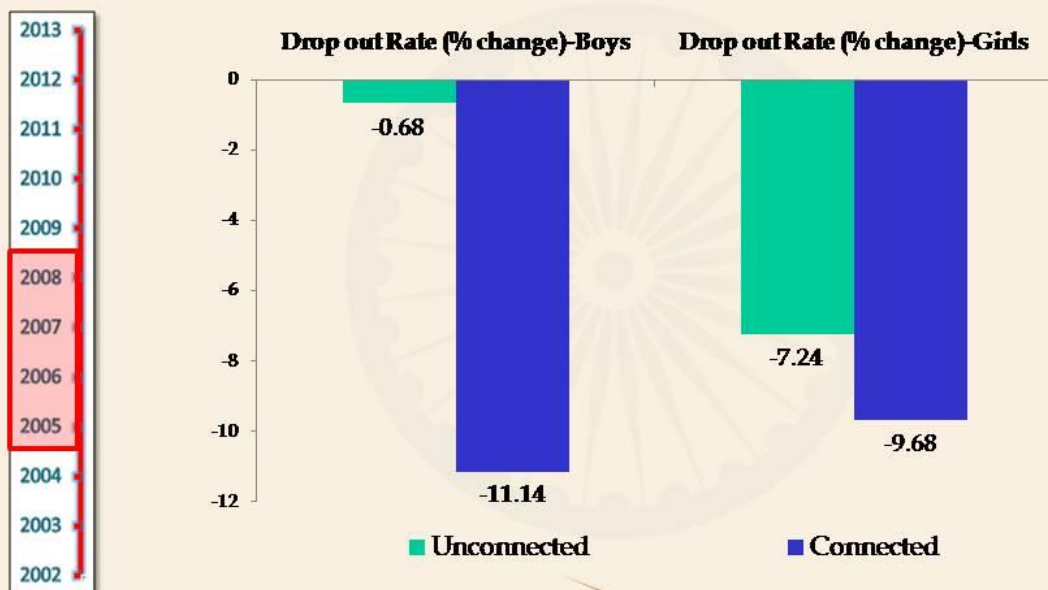


Study 2007-2010, 17 States, 50 Districts, 748 Habitation (3 years prior & after): Publication 2011,  
CMI Social Research Centre, New Delhi, Ministry of Rural Development





# Post-primary Dropout Rate



ADB Study-2005-06 to 2007-08, Madhya Pradesh and Chhattisgarh, Connected road- length of 550 km and serves 82 habitations.



# Socio Economic Impacts

## Other Impacts

Gujarat



Bihar



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## Evidence from National Studies

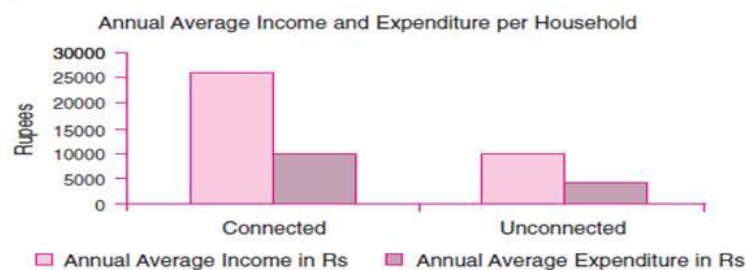


Fig. 5.1 Comparative Average Income and Expenditure of Connected and Unconnected Villages



Fig.5.2 Goods Transportation Cost on Different Types of Roads



## Evidence from National Studies (Contd...)

Impacts of Improvement on Roads

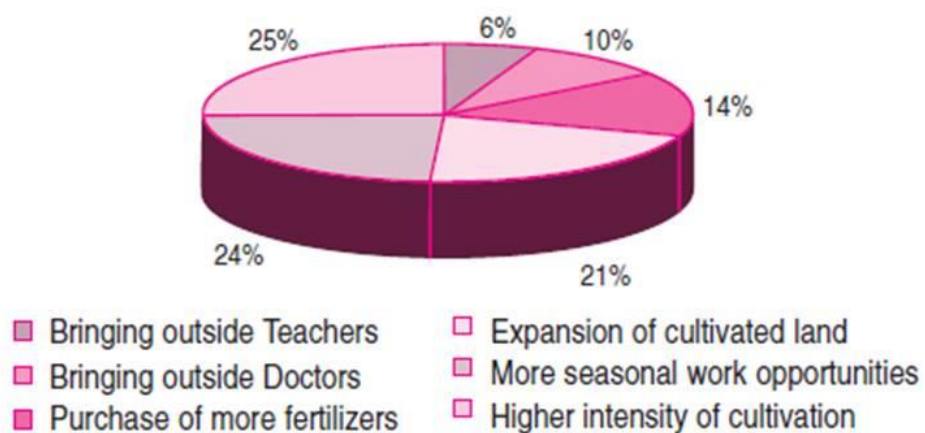


Fig. 5.3 Impact on Standard of Living from Improvement on Roads





# Outcomes of PMGSY

## ◎ Human Resource Outcomes

- Health -Access improvement, IMR fall
- Education – Higher attendance, Lower school dropout
- Poverty alleviation -through opening up of markets for better farm and non-farm activities leading to better livelihood opportunities and higher incomes



# Outcomes of PMGSY

## ◉ Sectoral Outcomes

- Use of advanced Engineering techniques
- Optimal use of Resources e.g. scarce aggregates
- Improved Planning techniques
- Technological Initiatives e.g. Geo-textiles, cold mix etc.
- Mainstreaming of Maintenance Management
- Community mobilization for Planning, Execution and Management (transect walk, community based maintenance) and views of affected persons internalized
- VOC- Lowering of Vehicle Operating Costs

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# Outcomes of PMGSY

## ◎ Positive Externalities as spin-off outcomes

- Use of technology for on-line management (OMMAS)
- Use of GIS
- Knock on effect in the States for other schemes
- Strengthening of Engineering Officials for other purposes
- Mainstreaming of maintenance as a concept
- Online accounting systems
- Transparency, disclosures

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## Beyond PMGSY.....

- ⦿ Sustainable poverty reduction demands sustainable connectivity.
- ⦿ Substantial new connectivity for basic access and up-gradation ensured under PMGSY
- ⦿ Essential to ensure that assets already created are maintained and yield services as originally envisaged
- ⦿ Consolidation of the existing rural road network with identification of appropriate sustainable connectivity of Growth Centres and Hubs and bring it to an acceptable standards to ensure more efficient transportation.





## PMGSY-II



- Consolidation of rural road network through up-gradation of major links and through routes for sustainable connectivity and enhanced mobility.
- Selection of Through/ Link routes with the objective of identification of *rural growth centres* and other critical *rural hubs and rural places* of importance, synergy with State Livelihoods Missions.
- Cost sharing between Centre and States/UTs on 75:25 basis in Plain areas and 90:10 basis in Special areas.
- Funding resources : Cess on High Speed Diesel. Plan assistance and borrowings from multilateral agencies.
- NABARD funding available to meet State share.



## Features of PMGSY-II



- ⦿ Bridges also to be upgraded as an integral part of the Programme.
- ⦿ Road Safety to be an integral component in each project.
- ⦿ **GIS based Management of District Rural Road Plan.**
- ⦿ Guidelines and Manuals to be evolved for upgradation, maintenance etc. and involvement of Road Users and Road Safety stakeholders.
- ⦿ **50,000 km during 12<sup>th</sup> Five Year Plan (2012-17).**



## Issues and Challenges

- Developing a transparent and acceptable methodology for selecting projects, and finalizing assignments with public participation.
- Creating capacity in the engineering organization to be able to prepare need based DPRs keeping in view traffic and site requirements.
- Developing external institutional support for planning, DPR scrutiny and technical HR capacity building.
- Contractor development by improving quality of contracts, developing contracting capacity.
- Creating a quality control system with responsibility of contractor and accountability of PIU, with independent monitoring.
- Improving project management skills by ensuring institutional development, creating monitoring tools and laying down clear SOPs and enforcing them.
- Involving local Government and Civil Society Organizations during the planning, execution and utilization phases and interaction with local development processes.





## Issues and Challenges

- Creating maintenance consciousness, increasing dedicated funding for maintenance and helping create maintenance management systems and practices including community based maintenance.
- Creating processes to incentivize innovation and R&D in road construction including use of local and marginal materials and development of cost effective need based designs.
- Creating close knit stakeholder community among academic institutions, governmental organizations, professional bodies, industry and others for sectoral development.
- Road Safety issues in design, execution and operation and linking road safety features with local context.
- Enabling the creation of a broad acceptance of the importance of all weather access for inclusion and sustainable socio-economic development.





**Maharashtra**

## **Increased Market Access for Farmers**



**Tamil Nadu**



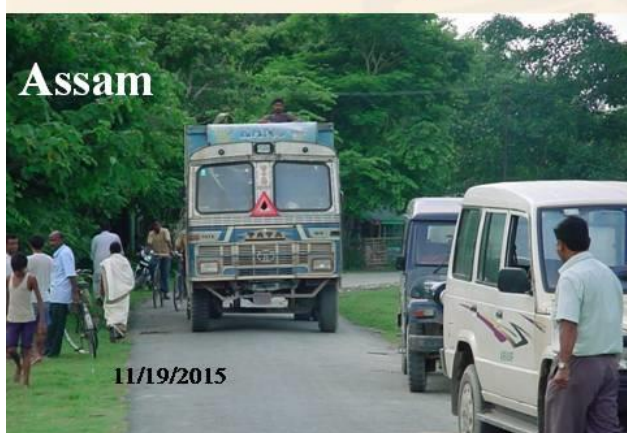


Gujarat



Bihar

## Improved Transport Services



Assam

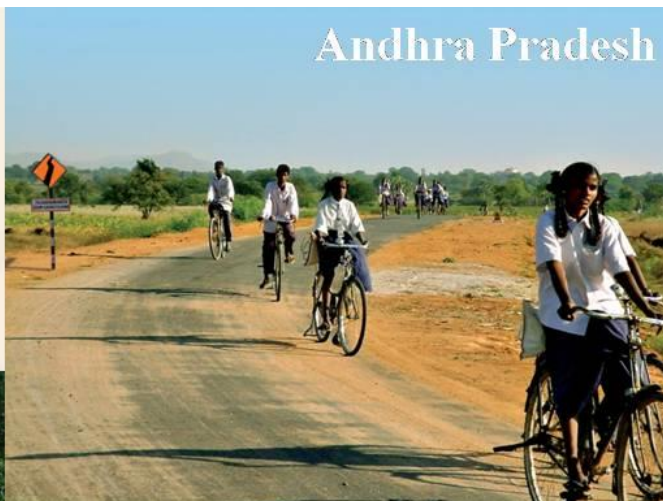
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## Improved Access to Schools





Karnataka



Kerala



Improved Access to Health Care



Gujarat

Creating Livelihoods



**Roads Built in Forest Areas**





## Field Laboratories





## Machinery & Equipments in PMGSY





## Field Quality Checks



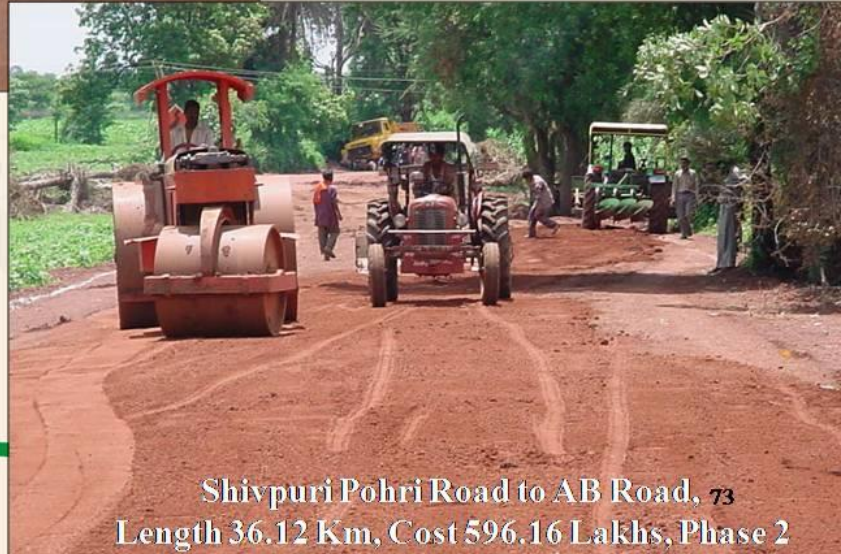




## Earth Work in Plain Terrain

Madhya Pradesh

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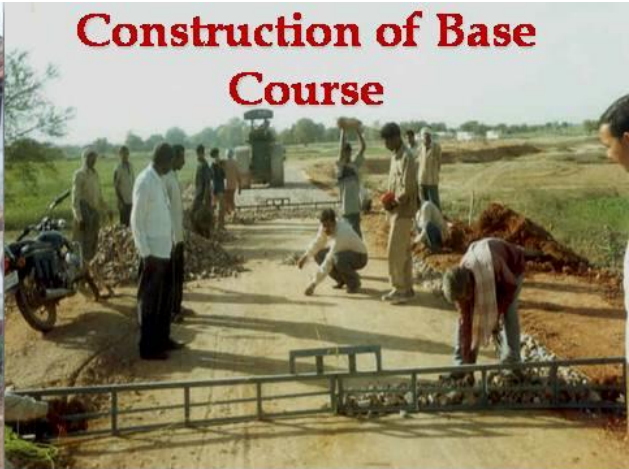


Shivpuri Pohri Road to AB Road, 73  
Length 36.12 Km, Cost 596.16 Lakhs, Phase 2



## Hill Cutting in difficult terrain Arunachal Pradesh









## Bituminous Layer Construction



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## Rural Access before PMGSY and After



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## Rural Access before PMGSY and After



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## Rural Access before PMGSY and After



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RCCP- Karnataka



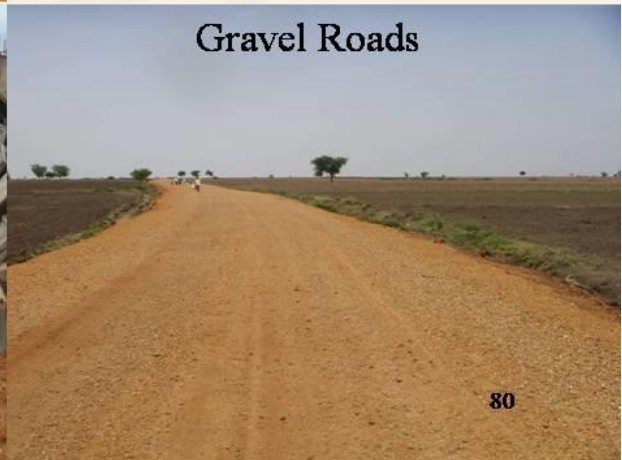
## INNOVATIONS

Water conservation along CDs



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Gravel Roads



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## Developing Growth Centres



11/19/2015

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# Developing Growth Centres



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# Thank You