

# **POVERTY REDUCTION FUND (PRF III)**

**Road Maintenance Groups (RMG)** 

Pilot evaluation (Jan 2018)



### What are RMGs?

- Small groups of 3-10 local people hired to carry out routine maintenance
  - In Laos, women only groups (same in China, Vietnam)
- Basic cleaning and clearing activities + minor repairs
  - Clean and excavate side drains
  - Clean culverts
  - Clear causeways and bridges
  - Control vegetation
  - Remove obstacles and landslides (up to 3m³)
  - Repair carriageway (potholes, ruts, rills)
  - Repair road shoulder (cuts, depressions, banks)
  - Repair retaining walls (erosion, missing stones)
- Average input of 50 persondays per km per year
  - RMG paid a fixed monthly lumpsum
  - Monthly inspection of road conditions
  - Deductions if road conditions do not comply with performance standards

### RMG maintenance activities - Side and mitre drains

Clear drains, excavate new drains and place scour checks if needed



## RMG maintenance activities - Culverts

Clean culvert pipes and inlet/outlets and repair erosion to pipes or headwalls



## RMG maintenance activities - Causeways and bridges

Clear blockages and repair erosion



## RMG maintenance activities - Vegetation

Cut vegetation along road and remove vegetation from roadway



## RMG maintenance activities - Obstacles and landslides

Remove obstacles and landslides and report large landslides and damages



## RMG maintenance activities – Road surface

Repair potholes/ruts/rills and place diagonal drains where needed



## RMG maintenance activities – Road shoulder

Repair cuts and remove banks



### RMG pilot

- Pilot funded from SDC Innovation Fund
  - 2 districts: Viengkham (Luang Prabang) + Sepone (Savannakhet)
  - 50 km of roads (PRF cycles 8-13)
  - 11 roads with 11 RMGs
  - 56 women RMG members from 11 villages
- Pilot design in first half of 2017
  - Road selection from previous PRF cycles
  - Design of RMG approach and procedures
  - Draft Guide/Manual and translation
- Training in June 2017
  - Training-of-trainers in both pilot districts
  - Training of RMGs
- Implementation June-December 2017
  - 2 RMGs started later
- Evaluation in January 2018
  - 2 districts, 5 of 11 RMGs



# Pilot results

## RMG pilot evaluation

- RMG pilot evaluation
  - Both pilot provinces/districts
  - 5 of 11 pilot RMGs
  - RMG members, VIT members, Head of Village, other villagers, PRF staff, OPWT staff













## Road conditions



## Road conditions



### Road conditions



- Road conditions improved in all instances
  - Drainage improvement
  - Vegetation control
  - Obstacle removal
  - Road surface repairs
- Heads of village, VIT members, community members all mentioned improved road conditions and improved access (especially during rainy season)
- OPWT remarked that RMG roads were significantly better than other roads

#### RMG member selection

- All RMG members were women
  - Leave young kids with family members
  - Can involve others (women or men) replaced by family members if necessary
- RMG members were selected from poorest families
  - Registered by Head of Village as poorest families
- Many RMG members were from female-headed households
  - Husbands deceased or disabled
- Most RMG members illiterate
  - Assisted by VIT to fill in and understand forms
- Some RMG members did not speak Lao
  - Ethnic minority languages VIT translation to understand PRF/OPWT staff
- Selection and targeting appears to work well
  - No indications of community disagreement with selection
  - No changes to members
  - May be checked in more detail in cycle XIV replication and impact evaluation

## RMG payments

- RMG payments formed significant portion of household money income
  - Average LAK 2.2 million per RMG member 25%-50% of household income
  - Other sources include livestock, vegetables, bananas, timber, bamboo shoots
  - Other sources mainly seasonal not regular like RMG
  - Depends on location and other household members
  - RMG members mention that they did not have alternative for RMG income
- Women RMG members used payments for:
  - Consumption (food, clothes, etc.)
  - Education (school fees)
  - Health (clinic costs)
  - Home improvements (roof sheets, floors, beds)
  - Livestock (pigs, chickens)
  - Investments (motorcycle, rice mill)
  - Savings (keep money at home)



 Potential to provide complementary assistance in use of income for savings schemes or investment schemes

## Tools and safety equipment

- Tools and safety equipment provided by PRF
  - High transport costs (wheelbarrows)
  - Not always suitable tools (bush knife)
  - Some RMGs insufficient quantities (rake)
  - Some tools broken no tool repair budget

Item	Quantity
Pickaxe	1 per 3 members
Hoe	1 per 2 members
Shovel	1 per 2 members
Rake	1 per RMG
Bush knife	1 per member
Wheelbarrow	1 per RMG
Safety vest	1 per member
Warning flags	2 per RMG



## Tools and safety equipment - Conclusions

- Increase number of some tools (rakes)
- Purchase local bush knives
- Purchase local one-wheel wheelbarrow
- Change warning flags for safety cones
- Include first-aid kit
- Include hats + boots
- Provide budget to VIT and allow RMGs to purchase locally (lower transport costs, suitable types, flexible quantities)
- Need for PRF to check quality
- Also allow use of budget for tool maintenance and repair
- Avoid increasing costs too much (now 10-18% of total RMG costs)

## Safety

- Safety equipment
  - Reflective vest (often not worn)
  - Warning flags to be replaced by safety cones
  - First-aid kit to be supplied in future (bandages, antiseptic, alcoholic wipes)
  - Hats and boots to provide additional protection
- Some minor cuts and injuries
  - One more serious case with child replacing mother who had to get stitches
- Discussions ongoing with Ministry of Health to provide health care coverage
  - Existing programme of free health care for registered poor households
  - RMG members are generally from registered poor households
  - PRF will ensure RMG members receive ID card in future



## RMG training

- Training-of-trainers in June 2017
  - PRF TA team + district engineer + OPWT
  - 2-day training in Sepone + Viengkham
  - Including 1-day practical training of one of the RMGs
- RMG training in June 2017
  - By PRF TA team, district engineers, and OPWT
  - 1-day RMG training
  - ½ day theory + ½ day practical
- On-the-job training during first 3 months (originally planned for 6 months)
  - 2 visits per month (including 1 inspection)
  - Further explanation and demonstration (especially work programming)
  - No deductions during first 3 months
  - This was found to be crucial to improving performance of RMGs
  - Important to ensure this is continued in cycle XIV

## RMG training









## Agreement between VIT and RMG



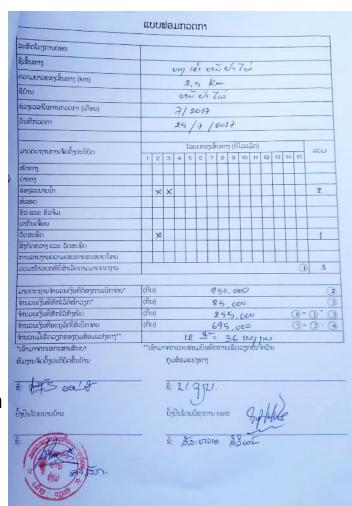






## Inspections

- Inspections carried out every month
  - By OPWT and sometimes PRF
  - Some double inspections in Viengkham
- Inspection forms generally used properly
  - Easy to understand
  - Important to ensure all data is filled in
- Timing of inspections not regular
  - 2-6 weeks between inspections
  - Set fixed intervals for inspections
    - Within one week before/after end of month
    - Agree date with RMG beforehand
- Persondays worked not always entered
  - Provide Workday Record forms to RMGs (VITs)
  - Only copy data (not form)



## Inspections

- In Viengkham the Road Inventory form was filled in each month
  - Road inventory not used suggest to remove completely
- Calculated deductions not always applied
  - First 3 months deductions not applied
  - Other deductions applied flexibly
  - Good practice, but Inspection Form should show all instances of non-compliance, reflect the actual applied deduction and resulting approved payment

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## RMG payment system

#### Designed system

- Inspection defines payment amount (lumpsum deductions)
- VIT authorizes withdrawal by RMG from VIT bank account
- VIT authorizes payment of per diem to OPWT
- VIT to withdraw payments for VIT support
- PRF to certify all withdrawals from VIT bank account

#### Sepone

- VITs no longer had bank account RMG bank accounts opened (LAK 200,000)
- Inspection form authorized payment to RMG
- PRF certifies withdrawal by RMG 2 RMG members as signatories
- RMG also withdrew payments for VIT and OPWT

#### Viengkham

- VIT bank account, but no bank in district bank account in Nam Bak
- PRF withdrew payments (after 3 and 7 months)
- PRF pay directly to RMG, VIT and OPWT

## VIT and OPWT payments

- VIT receive 5% of RMG contract amount
  - Cover costs of fuel/communications and per diem for participation in inspections
  - Amount considered low, especially for short roads or remote roads
  - More administration and more bank visits against smaller payments
  - Consider increasing, or setting minimum amount
  - Ensure that RMGs are responsible for bank withdrawals (from own funds)
- OPWT receive per diem for visits
  - Covers costs of transport and per diem
  - Amount dependent on road location and transport costs
  - VIT/RMG to certify visits took place
  - Payments through VIT (RMG)
  - Significant portion of costs (14%) number of visits may be reduced
    - 2 visits/month for first 3 months (instead of 6 months)
    - 1 visit/month for remainder first year
    - 1 visit/2 months in next year

## RMG monitoring

- District/Provincial monitoring sheet properly used
  - Some errors in sheet to be corrected
  - Some additional functionality to be added
- One sheet filled in for each RMG

Month	Tota	Average	6	7	8	9	10	11	12
Months inspected	7		29-Jun-17	28-Jul-17	28-Aug-17	13-Sep-17	21-Oct-17	20-Nov-17	20-Dec-17
Instances of non-compliance	Tota	Average	6	7	8	9	10	11	12
Carriageway	3	1		1	1	1			
Road shoulder									
Side drains									
Culverts									
Causeways & Bridges									
Retaining walls									
Vegetation	2	1		1		1			
Obstacles & Landslides	1	1	1						
Reporting large damages									
Total number of instances	6	2	1	2	1	2	-	-	-
RMG monthly payments	Total	Average	6	7	8	9	10	11	12
Total deduction (LAK)	₭ 140,000	₭ 15,556				₭ 140,000	₭ -	₭ -	₭ -
Approved payment (LAK)	₭ 6,090,000	₭ 507,500	₭ 890,000	₭ 890,000	₭ 890,000	₭ 750,000	₭ 890,000	₭ 890,000	₭ 890,000
Persondays worked	95	14	20	15	16	12	16	8	8
Supervision and inspection	Tota	Average	6	7	8	9	10	11	12
VIT administration fee	₭ 280,000	₭ 40,000	₭ 40,000	₭ 40,000	₭ 40,000	₭ 40,000	₭ 40,000	₭ 40,000	₭ 40,000
OPWT per diems and transport	₭ 2,660,000	₭ 380,000	₭ 380,000	₭ 380,000	₭ 380,000	₭ 380,000	₭ 380,000	₭ 380,000	₭ 380,000
Tools and safety equipment	Tota	Average	6	7	8	9	10	11	12
Tools and equipment by VIT	₭ -								
Tools and equipment by PRF	₭ 1,810,000		₭ 1,810,000						

## RMG monitoring

- Additional overview sheet for entire district or province
  - Overview by RMG
  - Identify main issues indicated in inspections

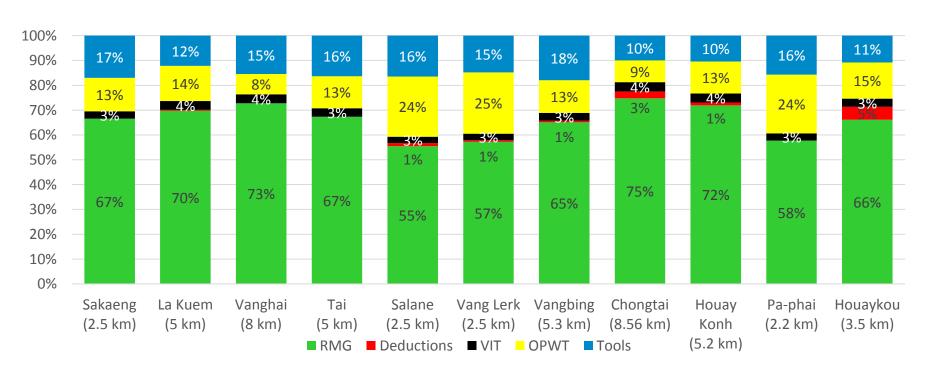
Calculate costs and inputs (persondays) – identify differences between roads/areas

GENERAL DATA	Total	Average	RMG 1	RMG 2	RMG 3	RMG 4	RMG 5	RMG 6	RMG 7	RMG 8	RMG 9	RMG 10	RMG 11
Province	2	provinces	Savannakhet	Savannakhet	Savannakhet	Savannakhet	Savannakhet	Savannakhet	Savannakhet	Luang Prabang	Luang Prabang	Luang Prabang	Luang Prabang
District	2	districts	Sepone	Sepone	Sepone	Sepone	Sepone	Sepone	Sepone	Viengkham	Viengkham	Viengkham	Viengkham
Kumban	11	kumbans	Saeton (03)	Kaeng Laung (13)	Lathor (07)	Sianghom (08)	Salan (12)	Salan (12)	Kaeng Kok (14)	Donkhoun	Meungmouay	Sopheung	Samsoum
PRF subproject	11	subprojects	Sakaeng	La Kuem	Vanghai	Tay	Salane	Vang Lerk	Vangbing				
Road length (km)	50.20 km	4.56 km	2.50 km	5.00 km	8.00 km	5.00 km	2.50 km	2.50 km	5.30 km	8.50 km	5.20 km	2.20 km	3.50 km
Start date	N/	'A	1-Jun-17	1-Jun-17	1-Jul-17	1-Aug-17	1-Jun-17	1-Jun-17	1-Jun-17	1-Jun-17	3-Jun-17	4-Jun-17	5-Jun-17
End date	N/	'A	31-Dec-17	31-Dec-17	30-Jan-18	28-Feb-18	31-Dec-17	31-Dec-17	31-Dec-17	31-Dec-17	31-Dec-17	31-Dec-17	31-Dec-17
Months inspected	7	7	7	7	6	5	7	7	7	7	7	7	7
INSPECTION RESULTS	Total	Average	RMG 1	RMG 2	RMG 3	RMG 4	RMG 5	RMG 6	RMG 7	RMG 8	RMG 9	RMG 10	RMG 11
Carriageway	41	4	3	3	3	1	3	4	1	12	5	1	5
Road shoulder	1	1							1				
Side drains	27	5		1						4	9	6	7
Culverts	9	2	1	1	2					2	1		2
Causeways & Bridges	3	1		1				1	1				
Retaining walls	5	5									5		
Vegetation	26	3			1	1	2	1	3	5	3	2	8
Obstacles & Landslides	5	2				1	1			3			
Reporting large damages													
Total number of instances	117	11	4	6	6	3	6	6	6	26	23	9	22
RMG PAYMENT RESULTS	Total	Average	RMG 1	RMG 2	RMG 3	RMG 4	RMG 5	RMG 6	RMG 7	RMG 8	RMG 9	RMG 10	RMG 11
Standard payment amount (LAK)	₭ 19,090,000	₭ 1,735,455	₭ 890,000	₭ 1,780,000	₭ 2,850,000	₭ 1,780,000	₭ 890,000	₭ 890,000	₭ 1,900,000	₭ 3,430,000	₭ 2,230,000	₭ 950,000	₭ 1,500,000
Deduction per instance (LAK)	N/A	₭ 75,455	₭ 70,000	₭ 70,000	₭ 70,000	₭ 70,000	₭ 70,000	₭ 70,000	₭ 70,000	₭ 85,000	₭ 85,000	₭ 85,000	₭ 85,000
Total deduction (LAK)	₭ 2,290,000	₭ 208,182	₭ -	₭ 70,000	₭ -	₭ -	₭ 140,000	₭ 70,000	₭ 140,000	₭ 850,000	₭ 255,000	₭ -	₭ 765,000
Approved payment (LAK)	₭ 124,930,000	₭ 11,357,273	₭ 6,230,000	₭ 12,390,000	₭ 17,100,000	₭ 8,900,000	₭ 6,090,000	₭ 6,160,000	₭ 13,160,000	₭ 23,160,000	₭ 15,355,000	₭ 6,650,000	₭ 9,735,000
OTHER COSTS	Total	Average	RMG 1	RMG 2	RMG 3	RMG 4	RMG 5	RMG 6	RMG 7	RMG 8	RMG 9	RMG 10	RMG 11
VIT administration fee	€ 6,135,000	₭ 557,727	₭ 280,000	₭ 630,000	₭ 840,000	₭ 450,000	₭ 280,000	₭ 280,000	₭ 630,000	₭ 1,158,000	₭ 767,750	₭ 332,500	₭ 486,750
OPWT per diems and transport	₭ 25,723,000	₭ 2,338,455	₭ 1,260,000	₭ 2,520,000	₭ 1,920,000	₭ 1,700,000	₭ 2,660,000	₭ 2,660,000	₭ 2,660,000	₭ 2,728,000	₭ 2,750,000	₭ 2,720,000	₭ 2,145,000
Tools and safety equipment	₭ 25,285,000	₭ 2,298,636	₭ 1,590,000	₭ 2,160,000	₭ 3,635,000	₭ 2,160,000	₭ 1,810,000	₭ 1,590,000	₭ 3,635,000	₭ 3,080,000	₭ 2,225,000	₭ 1,810,000	₭ 1,590,000
TOTAL COSTS	Total	Average	RMG 1	RMG 2	RMG 3	RMG 4	RMG 5	RMG 6	RMG 7	RMG 8	RMG 9	RMG 10	RMG 11
Total costs	₭ 182,073,000	₭ 16,552,091	₭ 9,360,000	₭ 17,700,000	₭ 23,495,000	₭ 13,210,000	₭ 10,840,000	₭ 10,690,000	₭ 20,085,000	₭ 30,126,000	₭ 21,097,750	₭ 11,512,500	₭ 13,956,750
Total costs per km per year	₭ 3,626,952	₭ 3,626,952	₭ 3,744,000	₭ 3,540,000	₭ 2,936,875	₭ 2,642,000	₭ 4,336,000	₭ 4,276,000	₭ 3,789,623	₭ 3,544,235	₭ 4,057,260	₭ 5,232,955	₭ 3,987,643
PERSONDAYS WORKED	Total	Average	RMG 1	RMG 2	RMG 3	RMG 4	RMG 5	RMG 6	RMG 7	RMG 8	RMG 9	RMG 10	RMG 11
Persondays worked	2,376	216	72	179	328	127	95	108	312	480	335	167	173
Darson days /km /yoar	47	47	20	20	44	25	20	42		F.C	C4	70	40

Separate Excel file for national monitoring (55 RMGs in cycle XIV)

#### Costs

- Average cost LAK 3.6 million/km (range LAK 2.6-5.1 million)
  - 69% to RMG payments including 1% deductions (depends on wage rates)
  - 3% VIT (fixed percentage of RMG payments)
  - 14% OPWT (higher for short and remote roads)
  - 14% tools and safety equipment (higher for short roads)



## Personday inputs

- Design based on 50 persondays/km/year
  - 1 person per km 50 workdays per RMG member
- Practice shows variation
  - More RMG members/km in short roads (Vangbing is exception)
  - Average 47 persondays/km as per design, lower in Sepone, higher in Viengkham
  - Average 6 days per month more at start due to backlog and rainy season
  - Easily combined with other commitments
- Potential need for differentiated costs (inputs) by Province or area
  - We should not underpay (or overpay) RMG members
  - To be determined in cycle XIV road subprojects important to record persondays

	TOTAL	Sakaeng	La Kuem	Vanghai	Tay	Salane	Vang Lerk	Vangbing	Chongtai	Houaykhon	Pharpai	Houaykhou
Road length	50.20 km	2.50 km	5.00 km	8.00 km	5.00 km	2.50 km	2.50 km	5.30 km	8.50 km	5.20 km	2.20 km	3.50 km
RMG members	56	3	5	8	5	4	3	8	8	5	3	4
RMG members /km	1.1	1.2	1.0	1.0	1.0	1.6	1.2	1.5	0.9	1.0	1.4	1.1
Persondays	2,376	72	179	328	127	95	108	312	480	335	167	173
Persondays/km	47	29	36	41	25	38	43	59	56	64	76	49
Persondays /member	42	24	36	41	25	24	36	39	60	67	56	43

## Community contribution

- RMGs in principle responsible for all routine maintenance
- In case of larger damages, villagers can provide support
  - Larger landslides
  - Trees fallen down across road
  - Extensive road surface damage
- This approach appears to work well

## Study tour to Nepal

- Visit RMG experiences
  - Third Rural Access Project (RAP3 funded by DFID)
  - Strengthening National Rural Transport Programme (SNRTP funded by World Bank)
  - Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR)
- RMGs now the standard for district roads in all 75 districts.
  - ILO pilot in 2008/2009
  - Replication in RAP3, SNRTP and other donor projects (most districts)
  - Adoption by government in 2016
  - Now funded by government for all district roads
- Some lessons learned
  - Requirements for replication and scaling up
  - Health care coverage for RMG members
  - Free public transport for RMG members

# Replication

## PRF III - cycle XIV

- RMGs in cycle XIV road subprojects
  - 8 provinces 24 districts
  - 57 roads 360 km
  - 79 RMGs 375 members
  - RMGs to start in June 2018 (after end of the defect liability period)
  - RMGs will work for 18 months (up to December 2019 end PRF III)
- Training-of-trainers
  - Training to take place May 2018
  - 2 trainings (north and south)
  - PRF provincial engineers, PRF district engineers, MPWT provincial staff (20-25)
  - Training district OPWT by PRF engineers
  - Training by PRF TA team + district engineers Sepone and Viengkham
- 3-day training
  - Day 1: General introduction RMGs
  - Day 2: Specific procedures (RMG training, inspections, payments, monitoring)
  - Day 3: Practical training of RMG in subproject road

## Sustainability

- PRF III to further develop and test approach
  - Provide some sustainability to PRF road subprojects
- Full sustainability and scaling-up requires involvement of MPWT
  - Sustainable funding of RMGs
  - Expansion to non-PRF village roads
  - Replication in other roads (district, provincial, national)
  - This will require some adjustments to the approach (systems + RMG responsibilities)
- Example Nepal
  - ILO pilot in 2008/2009 100 km
  - Replication RAP3 all district roads in 10 districts (>3,000 km) by 2014
  - Replication by SNRTP all district roads in additional 36 (of total 75) districts
  - Adoption government standard approach for district roads, funded by government since July 2016
- What can we do in Laos? Can MPWT replicate and sustain the approach?

