



Practitioner's Guide:

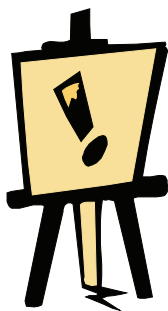
Method:

Rural Road Construction Strategy



Rural Road Construction Strategy

Brief Description



Conventional road construction approaches are usually capital and technology-intensive. In contrast, this method proposes a strategy for labour-intensive construction of environmentally sound rural roads, which is a good alternative for many developing countries. Accompanied by additional support measures (e.g. agricultural extension services, business creation training), the construction of rural roads can serve as a “backbone” of socio-economic rehabilitation and development in areas which lack assets, due to their remoteness, adverse environmental conditions, or the impacts of on-going or recently ended conflicts.

The Rural Road Construction Strategy fosters socio-economic development in the project area:

- ▶ by providing large-scale employment during road construction and maintenance activities in the short-term, and
- ▶ by improving accessibility of target areas and populations in the medium and long-term.

The proposed method is strongly influenced by the “Green Road”, which has been jointly developed and continuously improved by Swiss and German development cooperation in the Himalayas since the 1970s. It aims at constructing low-cost, but technically appropriate rural roads, which are built using participatory, labour-intensive methods and have the lowest possible environmental impact. “Green roads” are low-volume, fair-weather earthen roads, which are adapted to local environmental conditions and can easily be maintained by local road users.

Using Food-for-Work (FfW) and/or Cash-for-Work (CfW) opportunities, the labour-intensive method fits perfectly into on-going international discussions on large-scale and labour-intensive public works schemes especially in the context of integrated development and food security approaches. In (post-)emergency situations, the strategy helps to strengthen the links between relief, rehabilitation and development activities (LRRD). It can easily be adapted as a job-creation measure for groups of demobilised combatants and other conflict-affected parts of the population, thus fitting into the context of disarmament, demobilisation and reintegration programmes (DDR).

This method includes lessons learned and best practices of three projects implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) in Mid- and Far-Western Nepal:

- ▶ Food Security and Rehabilitation Project (FSRP), Rukum & Rolpa Districts (2004-2008)
- ▶ Reintegration and Reconstruction Project (ReRe), Rukum & Rolpa Districts (2008-2010)
- ▶ Improvement of Livelihoods in Rural Areas (ILRA), Bajhang & Baitadi Districts (2009-2012)

This method is accompanied by two examples, which provide more detailed information on lessons learned from Nepal.

These examples are:

1. “Community-Based Road Construction in Times of Conflict in Mid-Western Nepal”
2. “Community-Based Road Construction for the Improvement of Livelihoods in Far-Western Nepal”

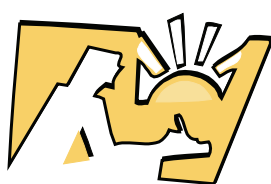
Rural Road Construction Strategy

Proposed Main Users

Development agencies, government authorities, non-governmental organisations (NGOs), community-based organizations (CBOs)



Purpose of the Method



The target population of labour-intensive rural road construction measures are generally poor households who suffer from food insecurity and a lack of income opportunities, both chronic and in the context of complex emergencies. The road construction process itself provides them with short-term employment. In the long-term improved accessibility promotes the creation of additional social and productive assets as well as access to markets within the target areas. Because the construction process is largely implemented by the community-based organisations (CBOs) of the target population, the Rural Road Construction Strategy supports self-help capacities and socio-economic empowerment of the beneficiaries. Ethnically and socially marginalised groups can especially benefit, when they are appropriately addressed by a socially inclusive approach. In detail, objectives of the strategy are as follows:

Short-term objectives (direct impact):

- a. Enable large numbers of people in food deficit areas to meet their minimum daily needs by providing supplementary income and food during road construction.
- b. Enable beneficiaries to save and purchase new assets by providing immediate (off-farm) employment opportunities.
- c. Reduce out-migration of unemployed, young men, and thus decrease the workload of women.

Medium-term objectives (direct impact):

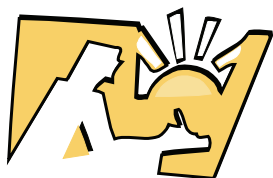
- a. Improve the nutritional status and stabilise the socio-economic conditions of target beneficiaries by improving market access, decreasing transportation costs, and time savings.
- b. Improve access to existing public and private services.

Long-term objectives (indirect impact):

- a. Promote long-term socio-economic development in target areas through improved access to market centres and services.
- b. Create new enterprises and small market centres along the road, which offer additional off-farm employment and income opportunities.
- c. Increase productivity of land through improvements in and diversification of agricultural production, contributing to additional farm employment and income.
- d. Develop decision-making capacities of marginalised and disadvantaged groups promoted by active participation and social inclusion approaches applied during road construction.
- e. Extend the geographical outreach of government and private sector services to remote areas.

Rural Road Construction Strategy

Purpose of the Method



For the achievement of the medium and long-term objectives a timely completion of the construction work is essential. Therefore, a reasonable and not overly ambitious project time and scope should envisage completion of a road within three years. As beneficiaries must be able to maintain the road with local means for several years, it is of major importance to select an alignment that avoids unstable areas prone to landslides and erosion processes. In order to stimulate and sustain the long-term impacts, road construction should be seen as a “backbone” intervention. It should be accompanied by support measures such as agricultural extension services, non-farm income generation activities, market-based vocational, life skills or business creation training. Rolled out as supplementary micro projects, these activities further strengthen the creation of additional livelihood opportunities and assets, and the empowerment of target groups.

Advantages



Environmental Advantages

- ▶ The method promotes a construction approach, which prevents large damages to the traversed landscape. Disruption of vegetation cover along the road is avoided and excavated material is transformed into construction material. The use of heavy building equipment and explosives is minimised so that destabilising disturbances of the slopes are reduced.
- ▶ Unavoidable disruptions are directly rehabilitated through bio-engineering techniques, which reduce the risk of future road destruction by erosion and landslides.
- ▶ Phased construction over a period of three years supports self-compaction of the road and reduces damages caused by erosion and landslides.

Economic and Technical Advantages

- ▶ A road project may employ large numbers of skilled and unskilled labourers, who earn food and/or cash to improve their food security and livelihoods.
- ▶ The strategy works directly through CBOs (e.g. User Committees) instead of outside contractors. Therefore, project resources directly reach the grass roots level where they contribute to improving the local economy.
- ▶ Re-utilisation of excavated material and maximum use of local construction materials (stones, gravel, etc.) reduce costs.
- ▶ Integration of indigenous knowledge in alignment planning and construction, and on-the-job training of road builders enable local maintenance of roads in the future.
- ▶ Avoiding heavy equipment helps to promote locally produced tools (e.g. chisel, hammer) which can be produced and repaired by local blacksmiths, who get opportunities to earn extra income.
- ▶ Skills acquired by local workers during road construction (e.g. bio-engineering, masonry) can be used for own beneficial projects (e.g. proper maintenance of terraces, house construction).

Rural Road Construction Strategy

Advantages



Social Advantages

- ▶ The self-targeting strategy followed for the selection of workers guarantees that poor people benefit from their participation in construction work.
- ▶ Involving people who are living near the construction site helps to develop a feeling of ownership and responsibility for the roads.
- ▶ CBOs established during the project operate through democratic processes and norms. This indirectly helps to establish community-level institutions which can also address social issues in a democratic manner.
- ▶ Members of CBOs gain the opportunity to attend various training/orientation courses, which broaden their knowledge base and improve their decision-making and self-help capabilities.
- ▶ Members of poor households and disadvantaged groups get the chance to take leadership positions in worker groups. This helps develop them as leaders in their respective communities.

Limitations



Technical Limitations

- ▶ “Green roads” are simple earthen roads which require frequent maintenance. This is more costly shortly after the completion of the road, than in the course of regular operation.
- ▶ To avoid major rainfall-related damages the fair-weather roads should be closed for vehicle movement during periods of intense rainfall (e.g. monsoon).
- ▶ “Green roads” are designed for being used by light vehicles like jeeps and minibuses only. Plying them with heavy trucks and buses must be prevented.
- ▶ Due to utilisation of light and non-mechanical equipment, the progress of the road building is comparatively slow.
- ▶ Especially in hilly and mountainous terrain, “mass balancing” as defined by the “Green Road Approach” is not always possible.

Socio-Economic Limitations

- ▶ The project can offer only limited and short-term employment. In view of a generally high demand for unskilled and long-term labour opportunities, the effect of this approach is rather limited in a larger poverty alleviation context.
- ▶ It is challenging to involve particularly vulnerable groups (e.g. single parents with small children, orphans, old citizens, and differently-abled people) in road construction activities.

Rural Road Construction Strategy

Limitations



Budgetary Limitations

- ▶ Funds provided by the project and generated by target groups are usually not sufficient for large numbers of accidents (if any) during the construction phase. They will not be big enough to secure future livelihoods of a seriously injured victim's family.
- ▶ The funds are also insufficient in cases of large-scale damage to the road. Therefore, it is crucial to select an alignment which avoids areas prone to landslide and erosion and to define clear responsibilities with the concerned government agency.
- ▶ Constructing a rural road in line with the "Green Road Approach" may require higher initial investment than following conventional construction techniques. Experiences from the Himalayas have shown that about 12,000 person days (1 PD = 8 working hours) are required per kilometre. These higher initial investments are compensated by comparatively low maintenance costs of 200-300 PD per kilometre a year.

Natural Hazards and Risks

In fragile mountain environments road construction almost inevitably increase landslide hazard and risk (see Figure 1):

- ▶ Roads destabilise mountain slopes and increase the probability of landslides along their corridor.
- ▶ Roads are magnets for settlement development. If they cross hazard-prone areas, construction of houses and shops along the road increases exposure of people and their assets towards natural hazards, which results in higher risk.

Therefore, it is of utmost importance to minimise destabilising effects of roads as far as possible and prevent haphazardous settlement development in hazard zones.

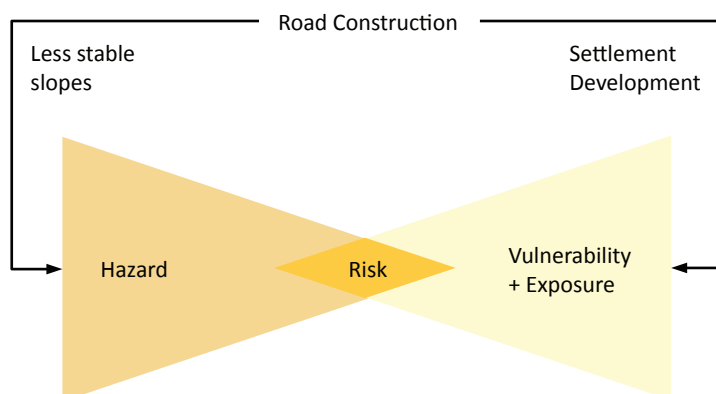
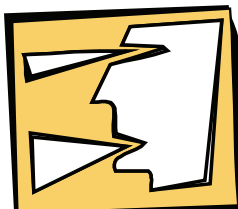


Figure 1: Impact of road construction on landslide risk

Rural Road Construction Strategy

Principles & General Procedures



The target population and their CBOs primarily implement the construction work themselves. This section aims to guide technical and social mobilisation staff in how to initiate, facilitate and supervise the construction of rural roads by the beneficiaries.

In situations of general food insecurity in the project area, the road construction approach can rely on different means of income transfers (see Figure 2): Food-for-Work (FfW), Cash-for-Work (CfW) or any combination of both approaches. Payments are generally based on standard outputs defined by the work norms of the respective government. Men and women receive the same payment for the same work outputs.

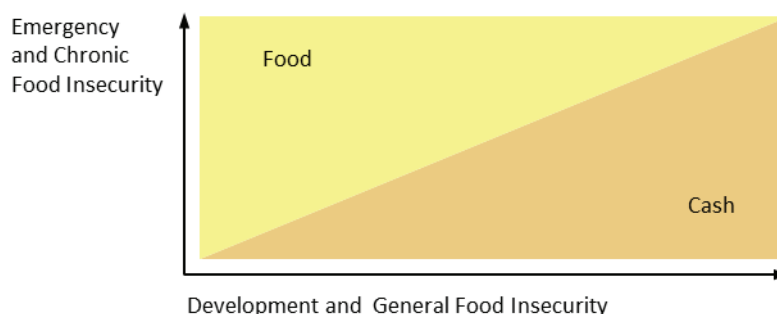


Figure 2: Food security and means of income transfers



Basic Principles of Green Road Construction

Technical Principles

- ▶ Construction during agricultural slack season: This enables target groups to work on construction sites and gain additional off-farm income.
- ▶ Phased construction: Roads are constructed in three different phases over the course of three years. These phases are interrupted by the rainy season (e.g. monsoon) during which work is stopped. During the first phase a 2 m wide track is opened. This is widened to 3.5 m in a second and to 4.5 m in the final phase.
- ▶ **Sectoral construction** (see Figure 3): The road is divided into several 5 to 10 km long sections with relatively independent construction management and work units. As a result, construction can start simultaneously along the entire alignment. This assures participation of large numbers of beneficiaries and speeding-up of a comparatively slow manual labour-based construction process.

Rural Road Construction Strategy

Principles & General Procedures

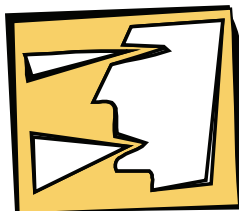


Photo 1: Roads are built in three different phases. Often traditional trails are widened to tracks and roads.

- ▶ **Staged construction:** Roads are initially constructed for low traffic-volumes. In case of increasing traffic needs they can later be upgraded by the beneficiaries if resources are available and the environmental conditions favour a widening of the initial road.
- ▶ **Mass balancing:** Reduces the volume of excavated material, which makes its disposal in safe places easier. It is achieved by applying a “cut-and-fill” approach in spite of conventional “box-cutting”.
- ▶ **Payment based on standard outputs:** Workers receive food and / or cash according to accomplished outputs rather than a fixed daily rate. This helps to accelerate the work progress and rewards committed hard working groups of beneficiaries.
- ▶ **Alignment planning:** Road alignment should make maximum use of supportive natural processes. The road should be exposed to sunlight so that it dries up quickly after rainfall and is less exposed to frost, which may cause destabilising cracks in the ground. The alignment should avoid areas near active landslides, erosive rivers and gullies. Where appropriate, alignments should be preferred against valley-bottom ones and one should refrain from building narrow serpentine-type switchbacks. Nevertheless, the road gradient should not exceed 12 degree. As the alignment defines who benefits most from the road and who has to bear its costs (e.g. loss of land), it is usually highly contested. Field staff should be prepared to handle pressure from different stakeholders. New roads will certainly alter settlement patterns in the area, as people will move to the roads to seize economic opportunities. Special attention should be paid to areas where such settlement development might lead to encroachment of hazard zones (Photo 2).

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Principles & General Procedures

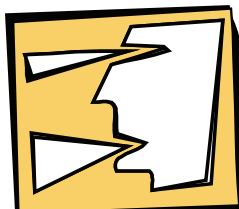


Photo 2: Settlement encroachment along roads in hazard-prone areas should be prevented

- ▶ **Use of indigenous knowledge:** Road alignments often follow traditional routes local people are familiar with. They can usually contribute extensive knowledge on areas where soils are soft and unstable or where marshy areas indicate high groundwater tables, which might induce landslides.
- ▶ **Dispersed water management:** The “Green Road Approach” aims at dispersed drainage of water run-off. In hilly terrain, the cross section of the road should therefore slope slightly outwards so that water is led away from the mountain side.
- ▶ **Bio-engineering:** After road completion, adjacent slopes should be rehabilitated by planting vegetation. Plants chosen for re-vegetation should grow well under the local conditions and have deep roots so that they serve as sub-surface anchors and reduce erosion and landslides. At best, the plants chosen should provide additional value (e.g. livestock forage) to the local population.
- ▶ **Supportive structures:** At some locations roads must be protected by retaining structures (e.g. walls of gabion boxes, Photo 3). Local workers need to be trained to construct these structures adequately.

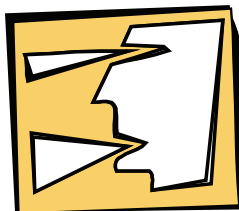


Photo 3: A gabion structure fortifies the lower side of the road, where the soil and groundwater is soft and heavy rain-falls cause erosion

- ▶ **Use of local materials and equipment:** This reduces costs of purchasing and transportation and assures that workers are easily able to handle both.

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Principles & General Procedures



- ▶ **Labour-intensive technologies:** Using manual construction tools and peoples' workforce provides employment for a large number of people and ensures user-friendly construction (Photo 4). Minimised utilisation of explosives and heavy equipment reduce destabilisation of slopes. Small contract work assignments are used only for more complex structural works, which require specific professional knowledge or external equipment.



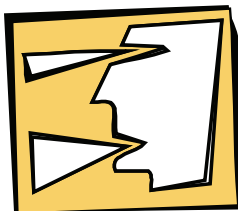
Photo 4: A worker group widens a track using simple tools

Socio-Economic Principles

- ▶ **Participatory planning:** Decisions are made within the framework of the program in a bottom-up manner through consensus. This strengthens involvement, decision-making power and responsibility of the beneficiaries. Additionally, it assures integration of indigenous knowledge into the project (e.g. through participatory hazard mapping during alignment planning).
- ▶ **Social empowerment and inclusion:** The project encourages women and members of socially disadvantaged groups to actively participate in decision-making and construction works. Special quota and criteria for the composition of CBOs are set.
- ▶ **Trainings and capacity development:** Labour-intensive and manual construction techniques promote self-help mentality and capacities, local skills development and local ownership of beneficiaries. Social mobilisation support and the provision of training on various levels throughout the project are crucial.
- ▶ **Pooling of funds:** "Green roads" depend on a high degree of local resource mobilisation. Ideally, the overall fund for road maintenance is provided by pooling of local, regional and – if possible – national government funds. Additional financial support should come from the road users themselves, in the form of road taxation and tolling systems. Local funds should cover about 50 % of routine and periodic maintenance expenses.
- ▶ **Transparency and accountability:** The utilization of funds and information on the project progress is discussed in public audits. Clear rules for conflict-resolution are developed in a participatory manner and adhered to throughout the project implementation. Payments for accomplished work take place in public.

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Principles & General Procedures



- ▶ **Voluntary contribution of land:** One of the most common reasons for conflict is loss of (agricultural) land during road formation. However, land is regarded as a contribution in-kind by the landholders because the expected economic opportunities along the road will certainly increase land value considerably. However, in areas which are prone to natural hazards people should be discouraged to sell and develop land along the road.

Implementation Principles

- ▶ **Implementation through CBOs:** In order to build long-term organisational and institutional capacities, CBOs are trained to manage construction and maintenance of roads (see Figure 3). The organisations and their respective general responsibilities are as follows:

User Committees (UCs) are formed for each road section to manage construction works. The committee members are appointed during a general meeting of all beneficiaries (i.e. potential road users), who also have the right to exchange UC-members if they do not fulfil their tasks properly. UCs distribute tools and materials, and divide work among worker groups. Based on an evaluation of the quality and quantity of work conducted, they provide payment (food/cash). They are also responsible for settling conflicts in their respective section.

Worker Groups (WGs) are established by the UCs. They usually consist of 10 to 15 workers and are assigned a certain sub-section of the corridor, in which they conduct construction work.

A **Road Federation (RF)** is formed by all the UCs along a road. Its major responsibility is to manage the resources of a Social Security and Maintenance Fund (see Box 1) and to organise maintenance work. The federation also supports the UCs in dealing with land-related conflicts.

- ▶ **Limited project contribution:** The project delivers remuneration (cash/food) for work undertaken as well as tools and materials not available locally. In addition, it provides training, capacity development and technical assistance. To avoid dependency on the project, technical and social support is provided primarily during the construction period, and phased out once the road is completed and a proper maintenance system established.

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Principles & General Procedures

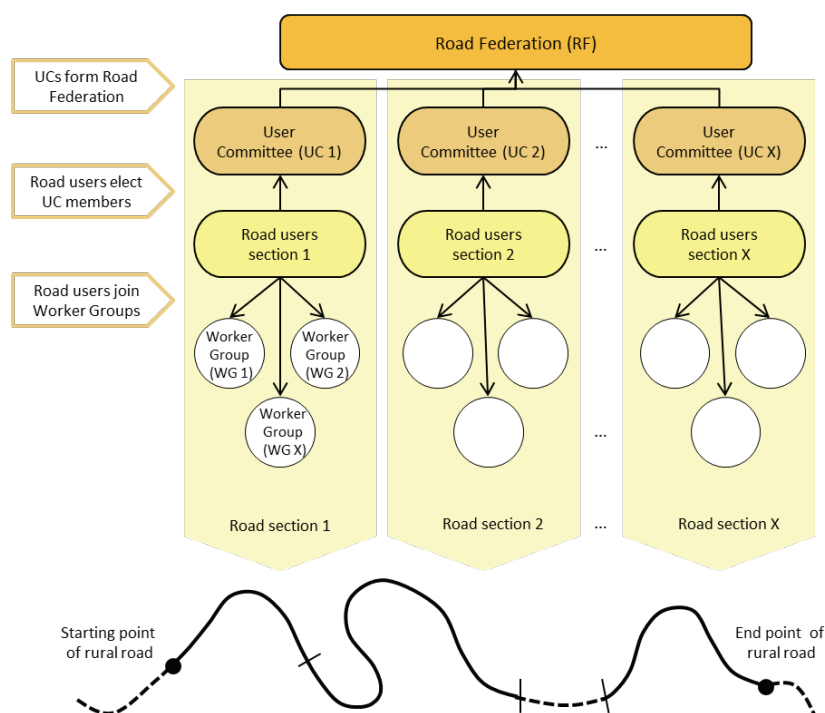
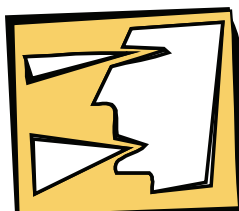


Figure 3: Community-based organizations in the context of rural road construction

- **Decentralised project management:** Especially in remote areas with difficult communication CBOs have to be supported by the project through a decentralised project management structure. The following structure has proved very effective:

A central **project management** is responsible for the overall management of financial and human resource issues, and for coordination with partner government and other donors.

A **local project** team facilitates road construction in the respective project area. It supports UCs in coordinating construction work, and ensures supply of food / cash for payment of workers as well as tools and materials. In order to ensure smooth project implementation the project team should live directly in the project area. Especially in conflict-situations it is important to have field offices that are accessible for members of all conflict parties. Headed by a district coordinator and supported by accounting staff, the team comprises basically two types of staffs:

Technicians: trained civil engineers preferably experienced in rural road construction and on-the job trained technical supervisors. They are responsible for technical surveys and provide construction skills training to the workers. Technicians are supported by local supervisors in monitoring the quality of work progress. To fulfil this task they are trained in construction principles of the “Green Road Approach” and basic measurement methods.

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Social mobilisers: They support UCs in managing construction work in their respective road section. They train UC members in management capacities (e.g. record keeping, financial accounting) and support UCs in facilitating public audits and conflict-resolution throughout the project.

Constructing a “Green Road” Step by Step

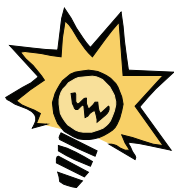
Phase I: Preparation

- Step 1 The project area is identified by the project team based on discussions with partner authorities and other donors, secondary data, and field verification.
- Step 2 The project team provides basic orientation of potential beneficiaries about project objectives and approaches and discusses potential problems in a participatory manner.
- Step 3 The project management coordinates with relevant government authorities and other donor agencies to establish cooperation.
- Step 4 Beneficiaries, project team and other stakeholders jointly prioritise and select a road project based on existing transportation master plans, hazard maps, donor criteria, discussion with beneficiaries and field verification.
- Step 5 The selected road project is initially approved by the project management to permit more detailed studies.

Phase II: Planning

- Step 6 Supported by beneficiaries, the project team conducts a pre-feasibility study which evaluates economic, technical, and social viability of the road as well as hazard potential.
- Step 7 The project management approves the pre-feasibility study for further processing.
- Step 8 In a general meeting, which is facilitated by social mobilisers, beneficiaries form UCs for each road section. UC members are in line with the social empowerment and inclusion approach.
- Step 9 A field survey is conducted to determine the concrete alignment of the road. This survey is done by the project team with the help of the local population, who contribute their indigenous knowledge. Besides, technical details, potential natural hazards, economic opportunities and social benefits are assessed. In addition, the survey elicits potential conflicts due to loss of agricultural land and other private property. These are to be solved by UCs applying standardised and transparent procedures and policies. The survey is completed by creating the road design and estimating the total costs.
- Step 10 The road project is finally approved by the central project management which allocates financial and human resources.
- Step 11 Before any construction works are started, the project team establishes a Social Security and Maintenance Fund (SSMF) (see Box 1)

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Box 1: Procedures to institutionalise a Social Security and Maintenance Fund (SSMF)

The SSMF is needed in case workers are injured or even killed during road construction. The fund is built up by the project, which allocates a certain amount of money per kg of rice distributed to a basic insurance for the workers. The compensation provided should not be a full compensation but only a topping-up of support to the victim or his/her family. After project completion the remaining fund forms the financial basis for future maintenance of the road.

Conditions for financial project support:

UCs must be federated into a RF and have an established bank account. Project contributions to the fund are directly deposited to this account. Initially, the project team becomes a signatory of the fund. This task is transferred to local authorities after the project has been phased out.

Roles and responsibilities of the Road Federation in managing the SSMF:

- ▶ develop policies and criteria for utilising the fund (e.g. amount and type of compensation) with the consent of the users
- ▶ maintain proper records of the fund, keep receipts of payments, and ensure that funds are not misused
- ▶ assess condition of victims in case of accidents
- ▶ make participatory decisions regarding compensation as per the fund policy. Amounts should be fixed in the very beginning!
- ▶ declare the fund's status (collection, utilisation, and balance) in periodic public review meetings

Conditions for compensation:

- ▶ UC and WGs have applied sufficient precautions to minimise the possibility of accidents.
- ▶ The accident occurred at the project site and the victim was injured from being involved in construction work.



Phase III: Implementation

- Step 12 The project team provides management training to UC members
- Step 13 UCs and project team sign a project agreement
- Step 14 Social mobilisers facilitate the formation of worker groups by beneficiaries and UCs representing them. Group composition has to follow the principles of social inclusion and self-targeting.

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- Step 15 Some members of the target communities are appointed local supervisors. They receive training in construction and measurement methods by technicians.
- Step 16 UC members responsible for record keeping are trained in accounting techniques by social mobilisers.
- Step 17 Technicians and UC members allocate jobs and working areas to WGs. They start construction following "Green Road" principles under guidance of technicians and local supervisors.
- Step 18 Supported by local supervisors and social mobilisers technicians conduct qualitative and quantitative evaluation of works on a regular basis. This forms the basis for subsequent food and/or cash payments by the UCs.
- Step 19 Supported by social mobilisers UCs conduct periodic public audits. Target groups are informed about utilisation of funds and progress of implementation. Audits also provide an opportunity to discuss further steps and create a sense of ownership for the road from the very beginning.
- Step 20 UCs federate into a RF whose members receive management training by social mobilisers.
- Step 21 The SSMF is built up according to the progress of the construction work (see Box 1).
- Step 22 The road is officially inaugurated in a ceremonial act. By this the responsibility for the road is finally completely transferred to the local communities.

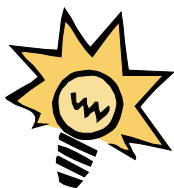


Phase IV: Operation and Maintenance

Overall responsibility for operation and maintenance (O&M) lies with the beneficiaries, who are expected to provide immediate information on damage to or misuse of infrastructure to the RF. In addition, they are expected to contribute voluntary labour to maintain the road and to repair damages caused by vehicle movement, erosion and landslides. To support beneficiaries in their maintenance efforts sufficient funds for purchasing required tools and materials and an institutionalised operation and maintenance system are needed (see Box 2). To minimise maintenance, the road should be closed during rainy seasons (e.g. monsoon) and used only by light vehicles with a maximum weight of 10 metric tons.

- Step 23 Social mobilisers support the RF in establishing a maintenance system (see Box 2).
- Step 24 The RF maintenance committee and worker groups are trained by social mobilisers and technicians to perform their duties. The project provides the worker groups with a minimum of necessary tools and materials.
- Step 25 The RF maintenance committee carries out regular monitoring of the road status, especially right after the rainy season. It plans required maintenance activities which are carried out by worker groups.

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Box 2: Procedures to institutionalize a maintenance system

Remaining resources of the SSMF form the financial basis for maintenance works. The RF seeks to complement these basic resources by contributions from potential local donors such as government authorities, and other district level organisations. In addition, it collects a toll tax from vehicles moving on the road. Before the project is phased out, the signatory mandate of the project team should be transferred to a local authority which supports the RF in managing road maintenance.

The RF forms a sub-committee for managing required maintenance work after the road is completed. Its major roles and responsibilities are to:

- ▶ carry out regular fund raising activities and collect funds (e.g. toll tax) from the road users
- ▶ guarantee that the road is closed during rainy season and used only by light vehicles
- ▶ keep transparent records of funds and maintain the bank account
- ▶ plan and monitor required maintenance activities carried out by beneficiaries who voluntarily contribute unskilled
- ▶ pay for necessary skilled labour and purchase materials as decided by the committee
- ▶ organise mass meetings for the purpose of public audits at least twice a year, making the fund use transparent (income, expenditure, and balance), and providing an opportunity for discussion on problems related to operation and maintenance



Monitoring and Reporting

The project team, UCs and local supervisors are responsible for participatory monitoring of the work progress on a regular basis as outlined below:

Work Supervision Activities

- a. Daily (routine) supervision: Local supervisors oversee work according to "Green Road" principles and alignment planning.
- b. Daily record keeping: UCs maintain records of work materials used, materials requirement, and daily labour used.
- c. Quality control: Technicians control the quality of accomplished work according to the design and specification of jobs, materials and methods to be used.

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Regular Monitoring Activities

- a. Bi-monthly traffic survey: Local supervisors count road users (people, vehicles and others such as mules) during the end-phase of construction and after road completion. This data serves to plan future road extension. During the survey they also make sure that roads are closed during rainy season and only used by light vehicles.
- b. Periodic checks: Local supervisors check inventory of tools, materials, and work progress.
- c. Regular work evaluation: Technicians evaluate the quantity and quality of construction work as well as the inputs of resources.
- d. Check of resource flow: The project team ensures resources (personnel, materials, tools, etc.) are supplied "on time".
- e. Bi-monthly monitoring: The project team inventories the social composition of WGs and the distribution of cash and food. In addition, it calculates the person-day inputs for work accomplished.
- f. Public auditing: Public audits are carried out after each payment by the respective UC facilitated by social mobilisers.
- g. Checks of road condition and protective structures: The RF maintenance committee conducts periodic checks of damages to roads and protective structures. These checks are intensified during and right after the rainy season.

Impact Monitoring:

Participatory impact monitoring is carried out on a yearly basis at the UC-level by project staff. Opinion surveys are used to obtain the perception of users regarding:

- a. social changes that are taking place in the life of beneficiaries and respective family members,
- b. economic changes in terms of income opportunities of the beneficiaries and their financial reinvestment patterns,
- c. food sufficiency, changes in nutritional and health status on household level, and
- d. settlement development and the possibility of increased encroachment of hazard-prone areas (unintended impact).

Rural Road Construction Strategy

References and Sources Used



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Links to Related Methods and Examples

- ▶ Agricultural Income Promotion in Food Insecure Remote Rural Areas in Nepal (Food For Work – FFW)
- ▶ Certifying Community Mobilisation – Learning Centres in Nepal
- ▶ Community-Based Road Construction for Livelihood Improvement in Far-Western Nepal
- ▶ Community-Based Road Construction in Times of Conflict: Lessons learned from Rukum and Rolpa, Mid-Western Nepal
- ▶ Development Funds
- ▶ Participatory and Conflict Sensitive Impact Monitoring (Peace and Conflict Impact Assessment – PCIA)
- ▶ Participatory Needs Assessment: Nutrition Food Security
- ▶ Participatory Planning
- ▶ Social Inclusion
- ▶ Social Inclusion in Development-oriented Emergency Aid in Nepal