



The law and roadside vegetation

This Chapter outlines the law pertaining to the ownership and management of roadside vegetation at the time of publication of this manual. Interpretations are supported by accurate references to specific clauses in the relevant laws.

The following areas are covered:

- roads and their ownership (4.2);
- the ownership of trees in the road reserve (4.3);
- power delegation (4.4);
- disposal of forest products (4.5);
- removing trees on land adjoining the road reserve (4.6);
- disputes relating to trees (4.7);
- how to go about removing trees (4.8).

Note that some aspects are covered by implication rather than by specific mention in the law. Laws are constantly under review, and therefore the reader should check whether changes have been enacted since this manual was written.

4.1 INTRODUCTION

The Department of Roads is charged under the Public Road Act 2031 with the construction and maintenance of roads. It is therefore required to undertake this in any way that serves the public interest.

Four main documents cover the laws and regulations for the position of the Department of Roads regarding trees and other forest products. These are as follows:

- Constitution of the Kingdom of Nepal 2047;
- Land Acquisition Act 2034;
- Public Road Act 2031; and
- Arthik Prashasan Sambandi Niyamharu 2042 (incorporated into Arthik Ain Niyam Sangraha 2052).

This guide aims to provide a simple reference to those laws, as far as they cover the planting and removal of vegetation in roadside areas. This is not a legal document, and if the reader is in any doubt, he or she should seek further advice.

Vegetation in roadside areas must be managed as part of routine, recurrent and periodic maintenance operations. The main reasons for this are to maximise the bio-engineering potential of the vegetation, to ensure that trees do not become too big and destabilise the slopes on which they are growing, and to give useful products.

The removal of trees from road reserves is a good thing if it is for one of the reasons above and if it is done properly. Trees are normally managed for economic reasons and there is no point in planting them if they are not cut down and used later. However, if a tree is cut, it should normally be replaced by a number of new plants. It is essential that a good vegetation cover be maintained in the road reserve.

4.2 ROADS AND THEIR OWNERSHIP

The roads of the strategic network (*i.e.* Rajmargs or highways, and feeder roads) belong to His Majesty's Government of Nepal. The Department of Roads is responsible for all activities regarding the construction, maintenance and management of the roads, unless overridden by a higher authority (either the Cabinet or the Ministry of Works and Transport).

His Majesty's Government may acquire land for public property (*e.g.* roads) only if it is in the public interest.

Constitution of the Kingdom of Nepal 2047, Article 17(2)

Compensation must be paid on the acquisition by His Majesty's Government of any privately owned land.

Constitution of the Kingdom of Nepal 2047, Article 17(3)

The processes of acquisition and compensation are given in a special law.

Land Acquisition Act 2034

A 'public road' is any road that is not owned or used privately. The definition of a 'public road' includes everything associated with it, such as bridges, culverts, footpaths, *etc.*

Public Road Act 2031, Section 2(A)

The 'road boundary' is defined. It includes the road itself and the areas to right and left.

Public Road Act 2031, Section 2(B) Section 3

His Majesty's Government can classify any road as a Highway, Feeder Road, District Road or Urban Road. It may fix the boundary to a maximum of 31 metres on either side. It can also change these boundaries on account of topography or habitation.

Public Road Act 2031, Section 3

In practice, 'His Majesty's Government' means the Cabinet. Once the Cabinet has decided on a road and the width of the road boundary (or road reserve), this land becomes the responsibility of the Department of Roads. If the road crosses Government forest land, then this decision effectively means the land has been transferred from the Department of Forests to Department of Roads. From this point, Department of Roads has authority over everything within the boundaries of the road. This includes the use of trees and forest products on that land.

Where the ownership of roads is not registered with the Department of Roads, the Division Road Office should take all steps to get it registered. This will entail close collaboration with the local offices of the Department of Land Survey (Nappi Bibhag) and the Department of Land Revenue (Malpot Bibhag).

4.3 THE OWNERSHIP OF TREES IN THE ROAD RESERVE

Laws applying to trees generally cover all other 'forest products' as well, unless they are covered by another specific law. So under the same heading as 'trees' come grasses, shrubs, fruits, *etc.*, grown as a perennial (*i.e.* long term) crop rather than as an annual agricultural crop.

The Department of Roads may plant trees along the sides of the road, on land within the road reserve.

Public Road Act 2031, Section 16(1)

In areas around road boundaries (but not within the road reserve) the appropriate Village Development Committee or Municipality has the duty of protecting trees. Public Road Act 2031, Section 16(2)

The Department of Roads is responsible for the thinning or removal of trees that create an obstacle to traffic.

Public Road Act 2031, Section 16(3)

The Department of Roads can delegate all powers to plant, protect and cut trees in the road reserve to any person or institution.

Public Road Act 2031, Section 16(4)

The Department of Roads can allow a Forest User Group to plant and manage trees on road reserve land. However, only the Department of Roads can use the products from that land. It cannot allow User Groups to use forest products (see under *Disposal of forest products*, Section 4.5).

The law governing forests states that other laws prevail over matters not otherwise mentioned in that Act. There is no mention of trees on road reserve land in the Forest Act. But there is in the Public Road Act. Therefore the Public Road Act applies to all matters relating to trees on road reserve land.

Forest Act 2049, Section 73

Public Road Act 2031, Section 16

All forest land other than that which is private, is owned by His Majesty's Government. However, once it is defined as part of a road, that land and everything on it is transferred and becomes the responsibility of the

Department of Roads. All trees and forest products must be managed by the Department of Roads (unless it was stated at the time of transfer that they will be managed by the Department of Forests).

Forest Act 2049, Section 67

Public Road Act 2031, Sections 2 & 3

4.4 POWER DELEGATION

The delegation of power is essential to allow work to be undertaken by the Government. There is provision for any civil service officer to represent the Government in actions taken under the law.

His Majesty's Government may delegate any or all power of the Department of Roads to any authority. This authority can be a Division Chief or any individual officer.

Public Road Act 2031, Section 32

4.5 DISPOSAL OF FOREST PRODUCTS

Trees and their products within road boundaries belong to the Department of Roads. Being the owner of such forest products, the Department of Roads can either use them itself or sell them. There is no provision under the Public Road Act for the disposal of forest products. Therefore the normal procedures of His Majesty's Government apply.

As a branch of the Government, the Department of Roads must use the standard regulations and procedures for disposing of property. So it must complete the full process of Government tendering. Arthik Ain Niyam Sangraha 2052

4.6 REMOVING TREES ON LAND ADJOINING THE ROAD RESERVE

If a person has left or thrown anything on a public road, the Department of Roads may issue an order in that person's name to remove that thing from the road. If the concerned person does not remove it, the Department of Roads may take that

thing into its own possession and has the power to remove it from the road.

There is also provision for the Department of Roads to remove trees that obstruct traffic.

If any tree or its branches on land adjoining the road reserve disturbs traffic, the Department of Roads may issue an order for them to be removed within a reasonable time. If the order is ignored, then the Department of Roads may remove them. Public Road Act 2031, Section 18

If any tree or its branches on Government forest land adjoining the road reserve disturbs traffic, the Department of Roads may write to the Department of Forests requesting them to be removed within a reasonable time. If the order is ignored, then the Department of Roads may remove them. Public Road Act 2031, Section 18

4.7 DISPUTES RELATING TO TREES

The general rule is that the land owner has the full right to use his land as he wishes. This means that the Department of Roads has full authority over the planting and felling of trees on road reserve land. This cannot be interfered with by other bodies, even those empowered to acquire land in the public interest. Land acquired by the Government cannot be transferred to another purpose.

However, the Department of Roads should also respond in a reasonable way to requests from other branches of Government or national suppliers of services (*e.g.* the Nepal Electricity Authority) for permission to remove trees.

The law prohibits the construction of access roads from public roads, or digging to make drains or build houses or sheds, or do anything on the public road boundary without the permission of the Department of Roads. Action can be taken to stop these activities and remove anything constructed. Public Road Act 2031, Section 19

There is provision of punishment by fine for the violation of Section 18 and for the cutting of trees planted under Section 16 (of the

Public Road Act). The fine may be up to Rupees 2,000 for cutting trees. Public Road Act 2031, Section 18

As a branch of His Majesty's Government, the Department of Forests has no right over the planting or felling of trees in the road reserve, without the permission of HMGN. This applies to all Government Departments as well as to individuals or national institutions, such as the Nepal Electricity Authority.

The Nepal Electricity Authority (NEA) is not a branch of the Government. As a Corporation, it has the status of a legal person. The Department of Roads can give the authority of planting or felling trees on road reserve land, with terms and conditions, to the NEA. But only the Department of Roads can sell the products.

Public Road Act 2031, Section 16(4)

In cases of timber theft from road reserve land, the Department of Roads should treat it as a criminal case and inform the police. There is no provision for this under the Public Road Act, and so the general laws are followed. The Department of Roads should issue a First Information Report to the police. This would include the nature and date of the crime, the amount of loss and, if possible, the name of the suspect and any other relevant information. It is then the duty of the police to investigate further.

4.8 THE PROCEDURE FOR REMOVING TREES

Trees and their products within road boundaries belong to the Department of Roads. Therefore the Department has absolute power over the use of all trees within legally defined road reserves.

The process of removing a tree is straightforward but each of the steps below should be followed carefully in order to avoid misunderstandings.

- 1 The tree(s) to be removed should be identified. There must be a valid reason for removal. Such reasons might be as follows.
 - The tree is dead and may fall down.
 - The tree is obstructing traffic or drivers'

sight lines.

- The tree is surcharging a steep slope.
 - The tree is too big and unstable for the slope on which it is growing.
 - The tree needs to be cut as part of a recurrent maintenance thinning programme. This will allow more light to penetrate and help the understorey grow.
 - The tree needs to be cut so that coppice shoots will come from the stump.
 - The tree needs to be cut to allow widening of the road.
- 2 A letter should be sent to the local District Forest Office. This will inform the DFO that Department of Roads is felling a tree or trees. It is not a legal requirement, but may help to avoid misunderstandings with the Department of Forests. An example of such a letter is given in the box opposite.
 - 3 All necessary action should be taken to fell the tree. This will normally be done either by direct labour or by contract. In any case, normal HMGN procedures must be followed. The DFO can advise on this if necessary.
 - 4 At the time of felling, ensure that all necessary safety requirements are in place. If in doubt, request the Traffic and Engineering Safety Unit for advice.
 - 5 Have the tree felled and cut into sections. Store the products safely in the nearest Department of Roads camp.
 - 6 Either use the products (*e.g.* as firewood for melting bitumen) or dispose of them according to normal HMGN procedures (Sections 39 to 41 of the Arthik Prashasan Sambandi Niyamharu 2042). This should be done within six months of felling. After this time, the products deteriorate and lose value.

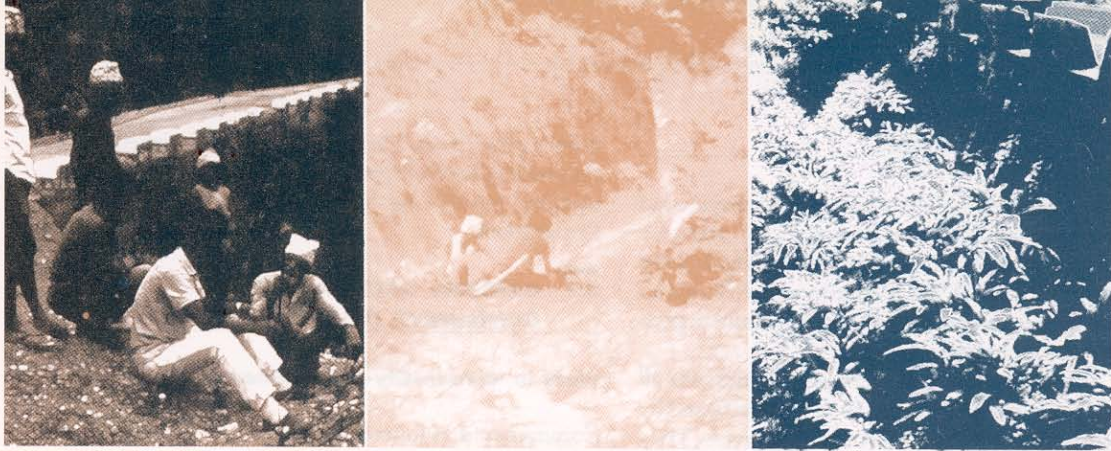
Example of a letter to the Department of Forests informing the local District Forest Officer of the intention to fell a tree.

Felling of sal (*Shorea robusta*) tree by the Department of Roads.

There is a sal (*Shorea robusta*) tree situated on top of the road cut slope at km 72 (from Kohalpur) of the Ratna Rajmarg. The tree is dead and of no value as timber. It is giving rise to a weight surcharge to the slope in the vicinity of the southern anchorage point of the Bheri suspension bridge. There is a serious danger that the tree or part of it may fall into the road, and so it forms a hazard to road users. It is also contributing to slope instability. It lies within the legal right of way of the Ratna Rajmarg.

The Department of Roads, Mid Western Region Division Road Office Number 4 (Chhinchu) will remove the tree and dispose of it in accordance with the laws and regulations of His Majesty's Government of Nepal within the current Fiscal Year. In removing the tree, the Department of Roads is fulfilling its obligations under Sections 16(3) and 16(4) of the Public Road Act 2031, which is applicable in this case as stipulated in Section 73 of the Forest Act 2049. The wood from the tree will either be used by the Department of Roads for its own requirements or will be disposed of in accordance with Sections 39 to 41 of the Arthik Prashasan Sambandi Niyamharu 2042 (as incorporated in Arthik Ain Niyam Sangraha 2052).

The purpose of this letter is only to inform the Department of Forests of the intended action by the Department of Roads, to avoid any misunderstandings. Please also be informed that in this Fiscal Year, Chhinchu Division Road Office will be planting more than 100,000 grass plants and over 10,000 shrub and tree seedlings in the road reserves under its bio-engineering programme.



Road neighbours and roadside vegetation

Most roads in Nepal run through rural areas. These roads affect almost all of the land uses on the slopes they cross, and are in turn affected by them. They cannot be successfully maintained if they are treated as if isolated from other land uses.

This Chapter suggests ways in which the Department of Roads (and its associated consultants and contractors) can co-operate with rural road neighbours to mutual benefit. This is based on extensive research and trials on a number of roads. Many of the principles also apply to work with bazaar and urban road neighbours.

This is beyond the normal scope of bio-engineering but is included in this manual because of the importance of improving roadside maintenance operations; and the indistinct boundaries between many bio-engineering sites and neighbouring farm and forest land. The inherent instability of many hill slopes in Nepal means that successful road construction and maintenance is not possible in isolation.

The following topics are covered in this Chapter.

- General background on community development (5.2);
- the reasons for working with rural road neighbours (5.3);
- community initiatives in the road sector (5.4);
- guidelines on how to collaborate with road neighbours (5.5).

A Code of Practice concerning Roads and Other Land Uses is given in the *Site Handbook* (page 125). This should be followed in all cases to ensure a high standard of professional conduct, whether there are plans for specific work with road neighbours or not.

5.1 INTRODUCTION

It is important that the roads of the strategic road network are managed in ways that promote development, both locally and nationally. It is the responsibility of the Department of Roads to ensure that its operations are not harmful to people or the environment.

Road neighbours is a term used to describe all people living near roads. As they are affected by roads, they are stakeholders¹ in the roads. They have an interest in how the roads are managed and maintained.

These guidelines deal only with road neighbours in rural areas, not in towns or commercial bazaars. Rural road neighbours are usually known as 'local people'; they are mainly farmers, living either in scattered farm houses or in villages with an agricultural economy.

The relationships between the Department of Roads and rural road neighbours are often strained by conflicts. This is usually because the Department has built a road through a rural area without paying enough attention to the people who live there and the way in which they use the land. Roads are a relatively new feature in the landscape and they do not always fit well. Few have been built with proper consideration for the local economy of the terrain which they cross.

Also, many rural communities are experiencing a good deal of change even without the coming of roads. Populations are rising fast in rural areas, and the fertility of the land is declining. This has led to over use and increased pressure on many agricultural areas.

Environmental degradation is therefore caused both by roads and by people living in rural areas. If this trend is to be halted, then the Department (as a body of central government) must take the initiative to halt it.

The strategic roads cannot be managed by rural road neighbours. The Department of Roads must manage them. However, there are often conflicts of interest on the slopes adjoining roads. This is where there is scope for joint work between the rural road neighbours and the Department. There follow some considerations to bear in mind when working with rural road neighbours and some practical guidelines on how staff of the Department of Roads might move forward.

At this stage, the involvement of rural road neighbours in the management of roadside land

is not a policy issue. These guidelines are designed only to help staff in specific situations where this option would be advantageous to the Department.

5.2 GENERAL BACKGROUND ON COMMUNITY DEVELOPMENT

What is 'community development'?

Community development is the involvement of people in development activities at the local level. It is a general term covering many procedures. People may be involved in organised groups or as individuals. This section looks only at the use of rural resources by communities.

The use of community approaches in development has been very successful in many cases. It works by raising awareness among people of what development initiatives can offer, and by giving people responsibility for improving their own living conditions. These are often the triggers required to enable people to work positively for change.

Background

Over the past 20 years or so, community approaches have contributed to many successes in rural development. Mostly, these have built on traditional community structures for the management of local resources. Often they have been more successful than the original management systems because they have involved a wider range of people than were traditionally involved in management (such as low-caste groups). They have reversed a number of failed attempts at management by central government.

The main areas where these community initiatives have been successful are in forestry, agriculture, irrigation and, to some extent, local roads. All of these are involved in resource management at the village level; normally on a ward level, rather than a VDC level.

A number of major requirements appear to be needed for a successful community management initiative. These are as follows:

- A vested interest for the community in managing the resources;
- Resources of a scale and type that can be managed at the village level;
- Appropriate legislation and government support at all levels;

¹ A stakeholder is any person, group or institution that has an interest in the activity in question. It includes both beneficiaries and those who lose out, as well as those involved in or excluded from decision-making processes.



Road neighbours can benefit from community management of roadside plantations. Members of this forest user group share the firewood from a roadside plantation

- An agency supporting and enabling the communities in their work;
- Stability of the system to allow long term vision and investment by the community.

Example of community forestry

The forest sector is often considered to be one of the most successful in this area. In order for community forestry to be undertaken on a broad scale, a completely new Forest Act was required; the Department of Forests had to re-train a large number of staff and completely revise its working practices; as a result, communities with the right scale of forests nearby have been able to manage their own resources.

Community forestry aims to meet the basic needs of all rural people for forest products. Forests that are mismanaged become degraded: these are a familiar sight in Nepal. They are usually 'controlled' by certain local people (the more powerful individuals in the area). These people do not have the capacity to manage the forest properly. If a rapid attempt is made to set up a Forest User Group, only these 'controllers' are represented. The unrepresented people will continue causing the mismanagement, which led to degradation in the first place.

Therefore, it is necessary to identify all actual and potential users, who must then be brought together into the Forest User Group. This entails consulting every household in the area. It is often necessary to bring people together in the Forest User Group who have never co-operated before. Successful Forest User Groups are frequently entirely new to the area in terms of their composition of people. They are all the people interested

in the forest, irrespective of caste, wealth or status. In many cases, the establishment of a Forest User Group represents a big assault on existing local power relationships.

Under the Department of Forests, the process of extension depends entirely on the Forest Rangers. These staff had to be re-trained and re-oriented into their new jobs. In many areas, the success of community forestry relies heavily on the skill and interest of these people.

General principles of working with communities

There is no prescription for working with communities, but some facts are now well established.

- A positive, sympathetic approach yields better results than one based on conflict and negativity.
- A government authority must be beyond reproach if it is to convince the public to be positive towards it. This means that it must fulfil its legal obligations and should be reasonably transparent in its operations.
- Public-funded bodies should be humble (*e.g.* 'we are here to serve you') while still retaining authority to manage public works in the national interest.
- The more communication there is between stakeholders, the better is the relationship. Communication should not just be started when there is a problem.

Limitations

Not all resources can be managed by rural communities. There are many forest areas, which cannot be, for example. There are few examples of successfully established community roads; and for those which exist, doubt remains over their long term sustainability.

All community development initiatives require large inputs by specialised staff. Without an understanding of the process, or time to build up the relationships that are required, or continuity of involvement, efforts in this direction may be wasted.

For the Department of Roads, the provision and maintenance of the strategic roads will always be a function of central government. But rural road neighbours can be involved in managing the fringe areas, such as the vegetation on slopes close to roads.

5.3 WHY WORK WITH RURAL ROAD NEIGHBOURS?

Roads and their neighbours do not always exist in harmony. Often the activities of one affect the other.

Problems caused by roads to rural road neighbours

The construction and subsequent operation of roads through rural areas in steep terrain have considerable effect on the people living beside them. These include the following:

- loss of land (sometimes with no compensation paid);
- damage to agricultural and forest land by construction;
- debris falling on to agricultural land, sometimes covering it completely;
- interruption of irrigation systems;
- re-activation of gullies and landslides by alterations to slope stability and drainage;
- interference to drinking water supply systems;
- noise, dust and social pressures.

Problems caused by rural road neighbours to roads

Particular problems identified on mountain roads are:

- extensive over-grazing of roadside slopes resulting in removal of vegetation and physical damage to the slope surface;
- cultivation, without terracing, on steeply sloping terrain (up to 40° slopes);
- cultivation to the very edge of terraces and cut slopes;
- uncontrolled quarrying of stone from road cut slopes;
- construction of houses on unstable land immediately above the road;
- poor construction and maintenance of leats (irrigation channels), allowing large amounts of water to seep into slopes adjacent to road cut slopes.

All of these practices can damage the road under certain conditions. At the least, they add to the burden of road maintenance. They are caused by one or more of the following:

- lack of interest in the maintenance of public property;



- absence of choice to use better practices in marginal situations;
- ignorance of the risks of careless practices to the environment;
- deliberate neglect of public property in the pursuit of short term gain.

Heavy grazing seriously inhibits vegetation re-colonising bare surfaces

This scenario is not in anyone's interest. Things can be improved if there is better understanding between each interest group (*i.e.* between the staff of the Department of Roads and the rural road neighbours). This requires communication on the basis of mutual benefit. It can lead to a sharing of responsibility for the problem, rather than a continuation of blaming each other.

The stability of roadside slopes will only be improved when the Department of Roads works with local people towards better land management.

5.4 COMMUNITY INITIATIVES IN THE ROAD SECTOR

Experience from the Koshi Rajmarg

A series of projects has maintained the Dharan-Dhankuta-Hile-Basantapur roads from 1984 until 1996 and 1997. Among the innovative approaches tested to find the best ways of improving slope stability and slope protection, was an 'extension programme'¹.

The project extension effort consisted of a small programme run over a number of years. Only two to four staff were employed. Their job was to raise awareness among the rural road

¹ An extension programme is a planned process of raising awareness of a certain topic over a wide area. In rural development, this approach is often used to extend understanding of particular subjects or opportunities.

neighbours of the issues concerning the Department of Roads. They encouraged the farmers to manage their land in ways that reduce erosion and shallow landsliding. They distributed grass slips and tree seedlings from the bio-engineering nurseries for planting on land that can be improved. They assisted the people to tap the development resources available to them, for example through the Departments of Forestry and Agriculture.

A study of this work in 1996¹ showed that the programme had been successful in many ways. For example:

- The road, drains and slopes above and below the roads were found to be well maintained throughout the section.
- A large number of trees and grasses were seen planted in both the road reserve and the road corridor (the wider area affected by the road).
- Many local people appreciated the project's efforts for roadside slope protection with the collaboration of road neighbours.
- The extension programme seemed to be successful in making the road neighbours aware of the mutual advantages of roadside slope protection by planting vegetation in the road reserve and road corridor.

The programme operated on the Koshi Rajmarg seemed to have been successful in helping to meet the project's objectives. It enhanced the condition of the slopes significantly. This reduced the costs of road maintenance while assisting the farmers.

5.5 HOW TO COLLABORATE WITH ROAD NEIGHBOURS

What areas of land?

Any areas of marginal (*i.e.* uncultivated) land in, or close to, the road reserve.

Any land that needs improved vegetation cover for better erosion protection and stability.

Very steep and unstable areas should be maintained only by the Department of Roads using standard procedures.

What might be achieved?

Working with road neighbours could eventually

lead to:

- respect for public property and therefore and end to damage caused through thoughtlessness or contempt for the 'establishment'.
- exclusion of grazing animals from steep roadside slopes.
- careful community management of vegetation in the road reserve.

Ideally, people should manage their own land carefully where it adjoins the road reserve. This means, for example, very careful management of leats (kulos) and irrigation water; no cultivation on steep slopes, but only on well maintained terraces; large grasses (*e.g.* amliso, khar and babiyo), small trees and other perennial crops used wherever possible, especially on terrace edges and risers; no throwing of debris down slopes on to roads; no excavations just below roads.

Farmers should ideally benefit from their proximity to the road. They should gain from developmental inputs and their ease of reaching markets. If they can be helped to manage their land better, it would almost certainly help the Department of Roads as well. In general, long-term profitable forestry and agriculture benefit everyone. This is because they use careful and sustainable methods of cultivation.

Who should take the initiative?

The Department of Roads must take the initiative in establishing a working relationship with rural road neighbours.

To do this means committing a considerable input of staff time and energy.

What criteria must be met?

If the Department is to work with road neighbours, then all of these criteria must be met.

- The area of land must be clearly defined and agreed.
- Full agreement on the management of vegetation must be made, in a way that is acceptable to all parties to the agreement.
- All users of the area must be represented. Influential people may resist the involvement of disadvantaged groups. However, success will not be achieved unless everyone using the area is involved. The interests of the poorest section of the community must be

¹ Road Neighbours Case Study (1996) commissioned by the Bio-engineering Component of the Road Maintenance Project, Department of Roads.



Informal discussions with road neighbours are essential in building good relationships (left)

Amliso grass (*Thysanolaena maxima*) planted extensively as a cash crop close to a road (right)

especially safeguarded.

- The Department of Roads' interest in the area must be clearly stated. Once agreed, the course of action must be followed according to plan. Clear rules for compensation must be agreed, in case the Department of Roads has to cancel the agreement: for example in the case of road widening requiring the re-cutting of slopes.
- There must be clearly defined reasons for the rural road neighbours to be involved in any joint work.
- There must be clear benefits for all of the parties involved.

How to approach local people

Use a friendly approach. Be humble, not authoritative.

Involve everyone. Do not take the word of local leaders that all people are involved without double checking.

Follow the *Code of Practice Concerning Roads and Other Land Uses* (given in the *Site Handbook*, page 125): behave well and consistently.

Utilising the Department of Roads' resources

Distribute plants from Department of Roads bio-engineering nurseries.

If they can be justified for maintenance reasons, carry out civil works to assist the needs of the road neighbours.

Utilising the resources of other agencies

Encourage the rural road neighbours to find out what is available for them from agencies such as:

- Department of Forests;
- Department of Soil Conservation;
- Department of Agriculture;
- Department of Horticulture;
- Agricultural Inputs Corporation;
- research centres;
- projects and NGOs.

Check these agencies yourself to see what they offer. Discuss their policies of working close to roads as opposed to remote areas. Ask them to support your plans if this is appropriate.

Examples of good collaborative work with rural road neighbours

In this section are given some examples of good work by rural road neighbours in support of slope protection and stability. In many cases they were assisted by a road project, but in some cases the initiative was entirely by the road neighbours themselves.

- Planting of large clump grasses on road cut slopes to provide useful products. Common examples are amliso, khar, babiyo and napier (respectively: *Thysanolaena maxima*, for brooms; *Cymbopogon microtheca*, for thatch; *Eulaliopsis binata*, for fibres; and *Pennisetum purpureum*, for fodder).
- Planting of fodder trees seedlings on terrace edges above the road. Fodder trees are lopped

- regularly and so do not surcharge the slope.
- Planting of a mixture of trees and grasses along road cut and fill slopes, and on terrace edges above the road. Examples are: utis and napier (*Alnus nepalensis* and *Pennisetum purpureum*); rai khanyu and kikiyu (*Ficus semicordata* and *Pennisetum clandestinum*); khayar and babiyo (*Acacia catechu* and *Eulaliopsis binata*); nebharo and amliso (*Ficus auriculata* and *Thysanolaena maxima*); and many more combinations are possible.
- Farmers protect roadside vegetation in exchange for using the grass and fodder (ghans and dale ghans).
- Cultivation of utis and alainchi (*Alnus nepalensis* and cardamom) on steep slopes adjoining roads.
- Establishing plantations of sisau on embankments and other roadside areas.
- Seeding of khar on former gravel quarries to establish khar bars.
- Planting large bans clumps along kulos (irrigation leats).
- Planting napier (*Pennisetum purpureum*, a fodder grass) on old tip sites to provide 'banks' of fodder grass.
- Planting banana trees on gentle cut slopes.
- Establishment of Forest User Groups to manage forest areas adjoining the road reserve as community forests. This is usually done in conjunction with the Department of Forests or through the Department of Soil Conservation.
- Establishment of other User Groups to promote different aspects of development (e.g. rabbit farming) in roadside areas, with one stated aim being the improvement of

agricultural land use. This is usually done in conjunction with other line agencies.

- Planting kimbu (mulberry, *Morus alba*) trees on roadside slopes to provide foliage for sericulture.

These are only some of the examples known from the road sector. Other sectors of development have numerous good examples of different activities, which help to strengthen and protect steep slopes.

Khar
(*Cymbopogon microtheca*)
sown as part of
a programme
to rehabilitate
a gravel quarry

