# A summary of preliminary assessments of environmental and biodiversity impacts of MRDP, and key points in the MRDP environment strategy

*Maria Berlekom*
*Environment and Socio Economy Advisor*

November, 2001

Ministry of Agriculture and Rural Development
Vietnam Sweden Mountain Rural Development Programme 1996 - 2001

# Contents

# Brief description of the Mountain Rural Development Programme (MRDP)

The Mountain Rural Development Programme (MRDP), under the Ministry of Agriculture and Rural Development (MARD) has worked with supporting rural development and poverty alleviation in 18 districts in five provinces in northern Vietnam from 1996 to 2001. The programme has been supported by the Swedish International Development Cooperation Agency (Sida). A map of the programme area is shown in Figure 1 below.

The overall vision of the programme has been to:

***In order to alleviate poverty amongst poor households*** "the programme should contribute to the re-establishment of green productive uplands that are managed in a sustainable way by healthy farmers having secure land tenure, maintaining the ecological, economical, social and cultural diversity of the area"**.**

Relating to the overall vision the following two End Results for MRDP were defined:

- **End Result 1:** Improved livelihoods and income opportunities for rural people in the programme communes and villages including equitable opportunities for poor people, women and men.

- **End Result 2:** Improved land use practices and natural resources management in the programme communes and villages contributing to environmental stability in the uplands.

This means that MRDP both strived to improve the socio economic conditions and peoples livelihoods, as well as improve land use and environmental stability. To do this the programme supported a variety of activities in the five provinces, including e.g. agriculture & forest extension, rural finance, and business development.

**Figure 1: Map of the programme area**


This map is an illustrative map without any legal territorial significance

# 1. Background

To get a better understanding of how MRDP effect the environment in positive and negative ways, the programme has undertaken several different environment studies. This paper summarises three documents:

1. A study from 1998, identifying possible environmental impacts of MRDP, and suggesting methods and scope for environmental monitoring[1].

2. A study on MRDP and biodiversity, from 1999/2000[2].

3. The draft environment strategy for MRDP from 2000

The first study, was similar to an Environmental Impact Assessment (see Box 1), and identified environmental issues more generally. The second looked specifically at biodiversity issues (see Box 2), and discussed these in detail.

**Box 1: What is an EIA**

The usual purpose of Environmental Impact Assessments (EIA) is to identify likely environmental impacts of an activity **before it starts**, and suggest how negative impacts could be minimised. This usually includes impacts on land, water, air quality, health, and biodiversity. In most countries (including Vietnam), EIAs are compulsory for activities that are likely to have big negative impacts on the environment - eg. major road constructions, hydro - electric dams, or establishment and/or expansion of industries. EIAs are then required to give better background material for the decisions, and also to identify environmental factors that should be monitored if the project is approved.

EIAs can also be undertaken of other development activities, such as forestry programmes, agricultural programmes and health programmes. In these cases an EIA can help to identify both negative impacts and positive impacts, and suggest how the latter can be increased. Main environmental issues to look at in agriculture and forestry programmes are land/soil, water, and biodiversity.

[1] MRDP, 1998 "Environmental Monitoring - A Preliminary Assessment of Impacts And Proposals for Future Environmental Monitoring"

[2] M. Berlekom, 2000 "Biodiversity In A Diverse Programme - A case study on biodiversity - mainstreaming, from the Sida-supported Mountain Rural Development Programme (MRDP) in Northern Vietnam", for the Swedish International Development Cooperation Agency (Sida)

**Box 2: What is biodiversity?**

Biodiversity, or biological diversity, is the variation among all living organisms, both plants and animals. This variation can be found at three different levels:

a) Variation within a species, e.g. different kind of varieties of maize and rice. Variation within a species is very important for both crops and livestock, to ensure that a broad base of different characteristics remain, and a good foundation for continued breeding. It is therefore a big problem when traditional varieties disappear.

b) Variation within an eco - system, like number and types of species in a fishpond, a homegarden, a wetland area, or a bamboo forest.

c) Variation within the landscape: How many, and what types of ecosystems can be found within a landscape (e.g. within a river basin, or a valley)

Maintaining biodiversity has several benefits:

a) Many species, and varieties within species, are directly important for different kind of human utilisation. This includes e.g. use of crops and livestock for food production; use of Non-Timber Forest Products (NTFPs) by local communities for food, medicine and making different products; and more large scale extraction of timber for commercial purposes. Maintaining biodiversity is a way of ensuring that present and also future possible uses of different plants and animals will be available.

b) Biodiversity also provides “services”, like watershed protection, and nutrient recycling in soils.

# 2. General findings

The environment study from 1998 identified **water as the most important environment issue for MRDP** (see Table 1 below).

**Table 1: Most important environment questions - and activities they relate to**

| Environmental issue | Type of MRDP - activities |
|---|---|
| **1. Water** | • Forestry/watershed protection,<br>• Irrigation/agriculture,<br>• Livestock/fishponds,<br>• Drinking water/health,<br>• Local institutional ability to manage water resources and water conflicts on water use |
| **2. Land/soil** | • Farming systems (household land use); particularly land use on sloping lands<br>• Watershed management,<br>• Livestock/grazing,<br>• Land allocation |
| **3. Vegetation, landscape and biodiversity** | • Dissemination of new varieties of crops, fruit trees, fodder species, livestock, and fish.<br>• Reforestation activities (household level, community level, and large-scale reforestation)<br>• Utilisation and marketing of Non Timber Forest Products (NTFPs); e.g. honey, rattan, tea etc.<br>• Local institutional ability to manage forest resources e.g. Community Based Forest Management (CBFM) |

The study also found that are very many factors that lead to environmental changes in the villages. These includes new and changing government polices during the last 1-15 years (on e.g. land allocation and economic renovation), support from other programmes, and developing marketing opportunities. This means that even if clear changes can be seen in the villages, one cannot automatically assume that they are only - or even mainly - a result of MRDP support.

The study therefore concluded that changes and increase in forest cover could be the one field where one might find statistical

differences between MRDP supported and non - supported areas[3]. This is because both MRDP, and even more its predecessor FCP has focused a lot on forestry related activities.

The 1998 study noted that other important factors one need to think of when monitoring and assessing environmental effects of MRDP include:

1. Impacts and changes are very local, and can vary a lot – even between villages in the same commune. This is because conditions in the area are very diverse, e.g. for:
   a. availability and types of land,
   b. rainfall and climate,
   c. land use
   d. traditions, language & culture, and
   e. access to markets, roads and other infrastructure.

2. The role of local organisations, both formal and informal, in managing natural resources of common interest (like water, forests and land ) need to be given proper attention.

3. Environmental changes are very closely related to changes in land use. And land use is very closely linked with changes in livelihood and socio-economic development. It is therefore important to link environmental monitoring, with socio-economic monitoring, and undertake the environmental monitoring as part of the programmes participatory village - level monitoring.[4]

4. The village level participatory monitoring then need to be complemented with indepth studies on specific topics; eg vegetation changes, impact of land allocation, and utilisation of Non Timber Forest Products (NTFPs)

[3] Studies on changes in forest cover in MRDP areas were therefore undertaken for MRDP by the Forest Inventory and Planning Institute (FIPI) in 1999/2000. The FIPI-reports as well as a short summary has been printed and are available from MRDP.

[4] During 2000/2001 more than 30 PRA based village level monitoring studies were undertaken, that combined socio-economic and environmental topics. Province-level reports and a summary are available from MRDP

# 3. Likely positive and negative impacts on the environment and biodiversity

Tables 2-4 summarise the most important links noted between programme support and likely positive and negative environmental effects. It is clear from this overview that most MRDP activities can have both positive and negative environmental impacts, and that the potential negative impacts should not be underestimated.

**Table 2: Support to forestry activities**

| **Programme activities** | **Main environmental impacts** | |
|---|---|---|
| | **Positive** | Negative |
| Includes supporting:<br>a) Promoting household tree planting in home & forest gardens<br>b) working with trials on community based forest management<br>c) some larger reforestation efforts (managed by district, and province levels)<br><br>Activities include:<br>• Training at village & commune level<br>• Technical advise<br>• Supply of forest and trees seedlings to households<br>• Forest land allocation and forest land use planning - at household and community levels<br>• Demonstration models at household level (e.g. fruit trees, SALT models)<br>• Credits | **1**. Some **indigenous timber species are promoted** (Styrax spp. Mangletia spp.)<br><br>**2**. Reforestation promotes **return of some wildlife and non timber forest products**<br><br>**3.** Improved watershed protection, and **increased water availability** during the year | **1. Reduced availability of grazing areas**, particularly communally grazed areas<br>↓<br>**Feeding patterns for large livestock changes**, and controlled grazing and/or stall feeding become common.<br>↓<br>Changes in workload, and division of labour between men and women. This leads often to **more work for women.**<br>↓<br>**2**. **Some forest plantations lack good ground cover** (often the case with e.g. Eucalyptus)<br>↓<br>High run-off of water on the surface, and **erosion risks** |

**Most likely positive environmental impacts:**

- Contribute to reforestation
- Forest based production systems and land use become more diverse - i.e. the "managed" parts of the landscape (ie areas without indigenous forest cover) become more varied. This includes e.g. development of both home gardens and forest gardens.
- Reduced surface run-off and increased infiltration of water occur when slopes are properly managed - which is particularly likely for home and forest gardens with a good ground cover.
- Natural regeneration/enrichment planting may also be beneficial for watershed protection of larger areas, and contribute to return of some wildlife, vegetation and birds.

**Table 3: Support to intensified agricultural production**

| **Programme activities** | **Main environmental impacts** | |
|---|---|---|
| | **Positive** | **Negative** |
| • Training<br>• Technical advise,<br>• Providing new varieties and fertilisers - through direct support and/or credits<br>• Models at household level; e.g. new maize varieties, SALT - models | **Higher production** and increased yields from paddy land<br>↓<br>Less need for hill cultivation; **reduction in shifting cultivation**<br>↓<br>**Reforestation**, and /or permanent vegetation on slopes<br>↓<br>Better watershed protection and **increased water availability** | **1**. **Increased water use**, with more intensive cropping<br>↓<br>**Less water for downstream** users (households and villages)<br>↓<br>**2**. **Decrease of traditional varieties of rice and maize**<br>↓<br>**3**. **Water pollution** from increased use of fertilizers and pesticides/insecticides.<br>↓<br>**Fish diseases & problems with health of animals** drinking polluted water |

**Most likely negative environmental impacts**:

- Water pollution through increased use of fertilisers and pesticides/insecticides.

- Fish diseases spreading through the water system, due to the increase of fish ponds which are interlinked with the irrigation systems.

- MRDP supports introduction of higher yielding varieties of e.g. rice and maize. This is also the general trend in Vietnam, and traditional varieties are rapidly declining (Box 3). MRDP has also supported introduction of fruit trees species, which sometimes have led to over production of one particular fruit or spreading of diseases.

  *In Lao Cai province a large number of plum trees have been distributed by MRDP and other projects, and plum trees are now found all over the place. A main problem now is lack of markets for the plums.*

  *In Bac Quang District, Ha Giang, farmers mainly grow one type of oranges, which is an important income source. But many farmers experience problems with the so called "greening disease".*

- Reduced availability of open access grazing areas.

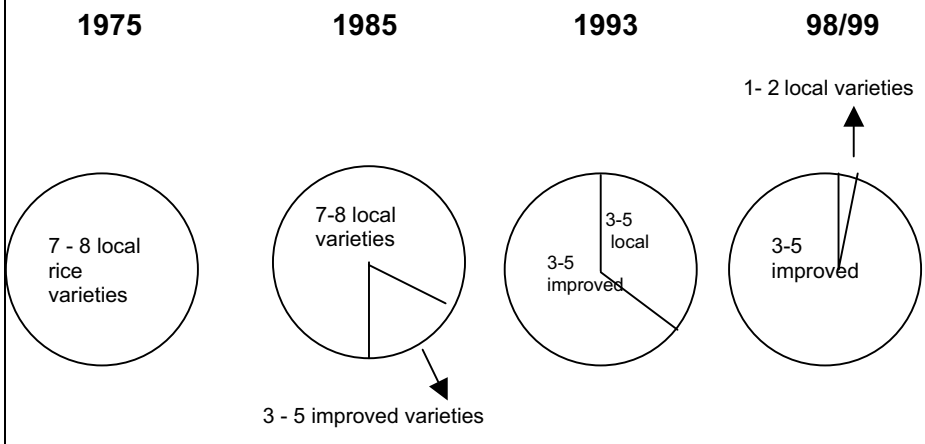
- Increased water use, which may result in decreasing water availability downstream (from expanded fishpond systems, irrigation and extra cropping season, due to wider spread of faster maturing HYV).

  *In upland areas people are also often more dependant on rain water for cultivation than in mid lands and along river valleys. With less water and lack of irrigation systems cultivation is more difficult. Remote upland villages, e.g in Quan Ba district in Ha Giang there is often lack of water for daily use (drinking and cooking) part of the year, and a lot of time is spent on collecting water.*

| Table 4: Support to intensified livestock production | | |
|---|---|---|
| **Programme activities** | **Main environmental impacts** | |
| | **Positive** | **Negative** |
| Training: livestock keeping, veterinary services<br>Technical advise<br>Providing improved varieties of e.g ducks, pigs, fish - through direct support and/or credits<br>Models at household level; fish-ponds, pigs, cross-breed cows<br>Trials and applied research; e.g. fodder trials | Diversified production and more income<br>↓<br>Less need of hill cultivation<br>↓<br>Reforestation and watershed protection | 1. Ponds and irrigation systems are developed and connect with each other, linking many households (or even villages)<br>↓<br>Fish diseases spread more easily through the water system.<br><br>2. Wild fish populations decrease, mainly due to diseases<br><br>3. Increases in mainly small livestock (.eg. pigs, chickens, ducks)<br>↓<br>Increases in animal sickness. |

**Box 3**: **Decline in genetic variation (agro-biodiversity) in Than Thon, Ham Yen district, Tuyen Quang province (Source: PRA undertaken March 1999**)

The trend in many areas - like Than Thon commune - is that new rice varieties are increasingly being used, and local varieties are disappearing. The pie chart shows the changes in area grown with different types of rice (improved or local).



# 4. Summary of suggestions for MRDP environment strategy

The MRDP vision makes it very clear that the poor mountain population, men and women, are the ultimate beneficiary and target group of the programme.

It is equally clear from the overall vision of MRDP and from the Programme End Results that this focus on poverty alleviation shall be based on an environmentally sustainable utilisation of resources. The strategy for MRDP should therefore be to:

- Actively aim at optimising the possible positive environmental impacts of all programme activities.
- Where negative impacts cannot be avoided they should be minimised.

To achieve this it is suggested that the programme should work with environment in the following four fields:

1. **Village level support and models & trials should consider environmental aspects, and MRDP should promote a sustainable use of natural resources** (see Box 4). Applied research & trials, as well as village and household level model need to consider both environmental and social aspects more carefully.

2. **Monitoring** of environmental changes should be done, through both participatory village level monitoring and in-depth studies.

3. **Training should include environmental aspects, and it is important to increase environmental awareness at all levels**. This should include both specific environmental training, like on environmental health & sanitation, and integrating environmental considerations in ongoing training and events, like pest management & horticultural techniques.

4. **Policy development** is an important part of MRDP (see the third programme objective). It is therefore important that learning on environmental issues can be adequately translated into relevant policies and sector programmes. Examples of areas of interest for MRDP in this field include **promoting alternatives to high input[5] agriculture in**

[5] Hybrids, agrochemicals etc.

**upland areas**, and optimising **environmental benefits from reforestation and forest management.**

**Box 4: Recommendations for models & trials, and input support**

A variety of models and trials is (and have been) set up with support from MRDP. Some of these are very simple, e.g. introduction of a shorter maturing maize strain, a more productive fish species, new fodder species, or exotic fruit trees species. Other are more complex, e.g. VAC systems, or SALT models. Whatever the type, it is necessary to consider the environmental impacts. Important factors to consider in relation to models & trials are:

Environmental considerations

***1.*** Minimum and proper use of **chemical fertilisers and pesticides**. Models with no (or low) use of chemical fertilisers and pesticides should be promoted. IPM methods should be actively encouraged. Organic production systems should be explored.

***2.*** **Soil erosion control and water retention.** On sloping land, land use models need to be efficient from a soil conservation point of view. The most important thing is to ensure a permanent and good vegetation cover. This can include perennial crops (e.g tea), fodder grass, and tree/forest combinations.

***3.*** **Water use and availability**. Models requiring intensified water use (irrigation, fish ponds) need to consider availability of water, and consequences of increased water use in the area.

***4.*** Effect on genetic diversity of introduction of **new varieties and species.** Care should be taken when new varieties (of crops, livestock/fish, fruit trees, fodder species) are introduced to an area. Indigenous species should be favoured, and introduction of exotics avoided.

Socio - economic considerations

**1.** **Labour demand** and intensity is important. Some models may be too labour demanding to be economically worthwhile in upland areas. This includes looking at effects and **requirements on women´s labour and time**, as well as labour (able bodied persons) available in poorer families.

**2.** Marketing **opportunities.** Access to markets, and opportunities to sell products at a fair price is very important

3. **Suitability for poorer households and areas.** This includes looking at labour availability, type and quality of land, inputs and resources required, and access to markets in poor and remote villages.