Poverty Task Force

Localizing MDGs for Poverty Reduction in Viet Nam:

Ensuring Environmental Sustainability

June 2002

Strategies for Achieving the Viet Nam Development Goals

This report is the result of a consultative process with government partners (MPI, MARD's ICD/FPD/FDD/FIPI/CERWASS, MOSTE/NEA, MOC, Hydrometeorological Services, CEMMA) government departments (sub–FPDs/DARDs, DOSTEs, provincial CERWASS) in Hai Phong and Ninh Binh provinces, the Viet Nam Cleaner Production Center, NGOs (Eco-Eco, CRP), bilateral and multilateral donors active in the environment (JICA, EC, World Bank, UNICEF, UNIDO and UNDP), and the staff of the WWF Indochina Programme.

Earlier drafts of the report were revised after the "Viet Nam Development Targets" workshop in Hai Phong on 17-19 September 2001 (with MPI, UNDP, UNICEF, CRP, CRS, World Bank, DfID, and WWF attending) and a meeting of the government-donor environment working group on 27 September 2001 (with CIEM/MPI, MARD/ICD/CERWASS, MOSTE/NEA, Cleaner Production Center, UNDP and WWF attending). The penultimate draft of the report was reviewed 10-30 March 2002 by a number of government agencies and donors.

Written and verbal comments were received from Ms Nguyễn Thị Thanh Bình and Mr Nguyễn Xuân Hoè (MARD/CERWASS), Mr Vũ Văn Mễ (MARD/ICD), Mr Trần Văn Hùng (MARD/FIPI), Mr Phan Trung Diễn (MARD/FDD), Mr Đoàn Minh Tuấn (MARD/FPD), Mr Bùi Xuân Đoan (MOC), Mr Lê Hoàng Sơn (GEI/MPI), Mr Trần Hồng Hà, Mr Nguyễn Văn Thái, Ms Hồ Thị Vân, Ms Nguyễn Thị Thọ (MOSTE/NEA), Ms Tăng Thị Hồng Loan (Viet Nam Cleaner Production Centre), Ms Nguyễn Thị Kiều Dung (CIEM/MPI), Ms Trần Thị Thanh Phương, Mr Rob Swinkels, Mr Andrew Steer, Mr Patchamuthu Illangovan (World Bank), Mr Henrik Franklin (EC), Ms Nguyễn Ngọc Lý and Mr Klaus Greifenstein (UNDP), Mr Chander Badloe (UNICEF), Mr Koos Neefjes (Oxfam Hong Kong), Mr Chris Gilson (Catholic Relief Services), Mr Phạm Anh Tuấn (Center for Rural Progress), Mr Martin Geiger and Ms Hoàng Phương Thảo (WWF).

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WWF strove to be as participatory and rigorous as possible in the design and drafting of this report. The timeframe for drafting was, however, short, and there may be errors of omission, analysis or fact. The authors would greatly appreciate comments and corrections as readers note them.

Spring days run fast, like swallows darting by	*Ngày xuân con én đưa thoi*
Of ninety days of serene light, sixty had gone by	*Thiều quang chín chục đã ngoài sáu mươi*
Green grass spread verdant far to the horizon	*Cỏ non xanh rợn chân trời*
Boughs of pear trees were starred with white flowers	*Cành lê trắng điểm một vài bông hoa*

Nguyễn Du

FOREWORD BY THE POVERTY TASK FORCE *

This series of papers on the Vietnam Development Goals (VDGs) reflects a collective effort by the Poverty Task Force to propose a set of goals and intermediate indicators, which represent both the core developmental vision of Vietnam as well as the Government's efforts to meet international goals. This analytical work was carried out during 2001 and early 2002 as the Government of Vietnam drafted a Comprehensive Poverty Reduction and Growth Strategy (CPRGS) and was trying to establish a clear accountability framework for monitoring future progress. This process involved looking across the many goals and targets incorporated in key strategy documents (especially the Ten Year Socio-Economic Development Strategy and the ten-year sectoral strategies) to select a small number of goals that could reflect the strong national strategic emphasis on economic growth, poverty reduction and social equity. Although national strategies were used as a starting point, the CPRGS drafting team was also aware that international commitment to achieving important poverty and social outcomes across the globe had intensified – an effort expressed in the Millennium Development Goals (MDGs). The MDGs are a set of goals embodied in the Millennium Declaration, which has been adopted by 189 countries including Vietnam. A report on progress made in Viet Nam towards achieving the goals was prepared by the UN Country Team in July 2001.

The Government wanted to ensure that the CPRGS reflected their commitment to the international targets. For a number of reasons, however, it was important to adapt the MDGs to fit local circumstances rather than adopting them in their original form. First, Vietnam has reached, or nearly reached some of the MDGs. Poverty, for example, has already halved between 1990 and 2000. It makes sense, then, for Vietnam to define a new localized version of the poverty goal in order to motivate policy formulation over the coming years. Secondly, though Vietnam performs well on some of the access targets – for example in basic education – there are urgent challenges associated with improving the quality of those services to international levels. While it is clearly still important to strive for universal primary education, for example, it is also important to make sure that the children in school are attaining standards that are similar to other countries. Thirdly, Vietnam has its own strategic planning cycle with different start and endpoints from the MDGs. It is helpful to align the 25-year cycle of the MDGs with the five and ten year cycles of the Vietnamese planning horizons so that measures and actions can be tailored to outcome targets for 2005 and 2010 which are, in turn, consistent with targets for 2015. Fourthly, there is a call for establishing subnational targets to capture, for example, issues related to ethnic minority development or inequality. Finally, there are areas which are particularly challenging for Vietnam at its current stage of development but which are not covered by the MDGs. As an example, although Vietnam has performed well in delivering basic social services, it has lagged behind in initiating necessary governance reforms which will be crucial to attaining some of the other outcome targets proposed in the national strategies.

This series of papers was prepared to contribute to the Government's thinking on target-setting and monitoring in eight thematic areas:

- Eradicating poverty and hunger;
- Reducing vulnerability and providing social protection;
- Providing quality basic education for all;
- Improving health status and reducing inequalities;
- Ensuring environmental sustainability;
- Promoting ethnic minority development;
- Enhancing access to basic infrastructure ; and,
- Ensuring good governance for poverty reduction.

* The Government-donor-NGO Poverty Task Force has been working collaboratively on poverty analysis (World Bank et al, 1999) and strategic planning since 1999. While the CPRSG was being drafted, the PTF comprises 16 Government ministries, 6 donors, 4 international NGOs and 4 local NGOs.

No separate paper was produced on promoting gender equity for two reasons. First, it was considered important that gender issues were mainstreamed across these eight areas. Secondly important issues outside these eight areas were already being addressed as the Government formulated its Second Plan of Action for the Advancement of Women.

Early versions of these draft papers were discussed at a 3-day workshop held in September 2001 attended by nearly 100 policymakers and practitioners. Government agencies, NGOs and donors have all participated in the working groups established to oversee the production of these documents. Further consultations on the drafts took place with sectoral ministries and agencies over the early part of 2002, the most intensive drafting period of the CPRGS. The CPRGS has been approved by the Prime Minister in May 2002 and outlines a set of goals and indicators which clearly reflect the analytical work and debates that have taken place over the last year. A slightly shortened, summarized table of VDGs (as articulated in the CPRGS) is included at the end of this paper.

Now that these papers are finalized, we hope that they will serve as a useful input for the implementation of the CPRGS, including the preparation of annual action plans.

CONTENTS

ABBREVIATION AND ACRONYMS

5MHRP	-	5 Million Hectares Reforestation Programme
ADB	-	Asia Development Bank
BOT	-	Build-Operate-Transfer
CEMMA	-	Committee on Ethnic Minorities and Mountainous Areas
CERWASS	-	Center for Rural Water Supply and Environment Sanitation (under MARD)
CPRGS	-	Comprehensive Poverty Reduction and Growth Strategy
CRP	-	Center for Rural Progress
CRS	-	Catholic Relief Services
DARD	-	Department of Agriculture and Rural Development (provincial authorities under MARD)
DFD	-	Department of Forest Development (under MARD)
DfID	-	Department for International Development (UK)
EC	-	European Commission
FDD	-	Forest Development Department (under MARD)
FIPI	-	Forest Inventory and Planning Institute (under MARD)
FPD	-	Forest Protection Department (under MARD)
GDLA	-	General Department of Land Administration
GDP	-	Gross Domestic Product
GIS	-	Geographic Information System
GSO	-	Government Statistics Office
HCMC	-	Ho Chi Minh City
HMS	-	Hydrometrological Services
ICD	-	International Cooperation Department (MARD)
IDT	-	International Development Target
IUCN	-	World Conservation Union
JICA	-	Japan International Cooperation Agency
MARD	-	Ministry of Agriculture and Rural Development
MDG	-	Millennium Development Goals (combines IDTs and MGs)
MG	-	Millennium Goals
MOC	-	Ministry of Construction
MOSTE	-	Ministry of Science, Technology and the Environment
MPI	-	Ministry of Planning and Investment
NEA	-	National Environment Agency (under MOSTE)
NGO	-	Non-Governmental Organization
OECD	-	Organization for Economic Cooperation and Development
PTF	-	Poverty Task Force (government, donor, NGO)
UNCED	-	United Nations Conference on Environment and Development
UNDP	-	United Nations Development Programme
UNEP	-	United Nations Environment Programme
UNFPA	-	United Nations Family Planning Agency
UNICEF	-	United Nations Children's Fund
UNIDO	-	United Nations Industrial Development Organization
VND	-	Vietnamese Dong
VNS	-	Viet Nam News Service
WWF	-	World Wide Fund for Nature, Indochina Programme

Poverty and the Environment Links. Though Viet Nam has made tremendous progress in reducing poverty, there has been a general decline in environmental resources. The poor suffer more than the non-poor from this downturn. There are several reasons for this. The first is that the poor are generally more dependent upon natural resources than the better-off. Most of Viet Nam's poor still depend upon subsistence agriculture for survival, and as water and soil quality become degraded, so too do their livelihoods. The poor are also less able to protect themselves from environmental pollution or afford to treat the health problems pollution causes. Furthermore, poor people suffer more from natural disasters because they have fewer resources to help rebuild their lives subsequently.

Fortunately, the environment-poverty linkage goes both ways, and improvements in the environment can help reduce poverty. Improving water supplies, for instance, can improve health and reduce the amount of time spent collecting water, allowing time for other tasks. Reducing the impact of natural disaster on the poor can make livelihoods and food supplies more secure. Improvements in natural resource management can help the poor who are dependent upon natural resources improve their well-being. Thus, general environmental improvements are likely to benefit the poor.

What is the International Development Target (IDT) for the environment? *The implementation of national strategies for sustainable development in all countries by 2005, so as to ensure that current trends in the loss of environmental resources are effectively reversed at both global and national levels by 2015*.

Is the Environment IDT Appropriate for Viet Nam? In short, yes. The IDT mirrors the government's objective to implement a national strategy for sustainable development and fits well with the government's commitment to reversing the loss of environmental resources.

Where Does Viet Nam Stand Today vis-à-vis the Environment IDT? Viet Nam has already achieved the first part of the IDT (implementing a national strategy for sustainable development by 2005), but like most countries, has some way to go on the second.

No single indicator will show when the loss of environmental resources has been reversed because this is a summary target whose achievement would reflect a number of changes on the ground. Thus, to track progress towards the IDT, intermediate indicators are needed, and these indicators have to be appropriate to Viet Nam's development context—they have to be localized. Three intermediate indicators have been selected after wide consultations with relevant government agencies and the donor community.

Percentage of the population that has long-term access to safe water. This indicator measures the number of people with long-term access to safe water as a percentage of the total population. This is a widely used indicator nationally and internationally because it is cross-cutting and simultaneously gives information on the environment, health and infrastructure.

The *National Rural Clean Water Supply and Sanitation Strategy up to Year 2020* notes that the definition of "safe water" is the same as "clean water".

Summary of Intermediate Indicators

Indicator	1990	1995	Latest Value	Current Targets			Source of Verification
				2005	2010	2015	
Percentage of the population that has long-term access to safe water	--	--	53% (2000)	69%	85%	93%	MARD and MOC data
Forest cover as a percentage of total country area	27%	28%	34% (2000)	38%	43%	--	Annual forest cover government 'decision'
Percentage of water and air quality monitoring stations showing improvements over the baseline	--	base -line	58% (1999)	--	--	--	Annual NEA State of Environment Report

Policy Points for the Safe Water Indicator

To ensure long-term access to safe water, more emphasis is needed on protecting watersheds. Increasing forests that protect watersheds is one area that would significantly improve long-term access. While the government already protects watershed forests under its forestry laws, deforestation in watersheds is still a problem.
To ensure water is safe, more emphasis is needed on eliminating pollution points (both domestic and industrial). The National Environment Agency is tasked with regulating environmental pollution but is a relatively new agency with a limited budget. Improvements in monitoring and enforcement of existing water regulations—particularly Article 18 of the Water Resources Law[1]—would have a significant impact on surface water quality.

This strategy defines "clean water" as water that meets the 51 parameters in Ministry of Health Standard 505.

From 1998 to 2000, Viet Nam increased overall access to safe water by 13 percent—an average of 4.6 percent per annum. This is one of the fastest improvement rates in the world. Sri Lanka, Nepal and Paraguay were the countries with the greatest increases in access to safe water during the last decade according to UNICEF data, yet these countries averaged only about 1.7 percent growth in coverage annually.[1] To meet the government's goal of 85 percent overall safe water coverage by 2010 and 100 percent coverage by 2020, Viet Nam needs an average growth rate of 3.3 percent per year from 2000 to 2010 and an average annual growth of 1.5 percent from 2010 to 2020. Achieving these goals is possible provided the government maintains access to safe water as a funding priority for the next 20 years.

There are several low-cost interventions that would improve the data collection system for this indicator. The first is to standardize the definition of "access to safe water". For Viet Nam, using the proxy indicator of "improved water sources" would help to standardize the data collection but would not add many additional costs. Second, training should be provided for data collectors. This can be done through training-of-trainers at the central level, and then using these trainers to reach the province, district and commune levels.

Forest cover as a percentage of total country area. This indicator measures the amount of forested area as a percentage of the total country area. Forest cover is one of the most widely used national and international indicators for the environment. Internationally and regionally, Viet Nam compares favourably in forest cover. Unlike most of its neighbours, Viet Nam has in all probability stopped the decline in its forest cover. Given the current trends and the level of financial support, the government's target of increasing forest cover to 43 percent of the country area by 2010 is attainable.

Policy Points for the Forest Cover Indicator

While the government's Five Million Hectares Reforestation Programme quantity objectives are likely to be achieved, the quality of the resulting forest cover is less certain. Non-native tree species have been widely planted in Viet Nam, and many of these trees are invasive, crowding out native species. Directive No.19/1999/CT-TTG and Decision No.175/1998/QD/BNN/KHCN both promote planting native tree species but neither one goes so far as to support interspersed cropping of natives species in tree plantations. This would encourage more biological diversity in tree plantations.
Another policy issue is that there is a large domestic demand for lumber that is currently being met with imports from many countries (primarily Lao PDR and Cambodia). Eventually, Viet Nam should be self-sufficient in lumber production. To meet long-term demand, Viet Nam will need policies that encourage production forests of fast-growing softwood species and discourage the use of slow-growing hardwoods. Policy options for increasing private-sector participation in production forests should be explored, particularly in conjunction with certified timber operations

[1] This details the requirements for wastewater discharge.

[2] www.oecd.org/dac/indicators 21 August 2001.

Data collection on forest cover could be improved by first agreeing on an official definition of what constitutes forest cover. Second, there should be only one Vietnamese agency collecting forest cover data rather than three (GSO, GDLA and MARD). Third, a scientific yet simple system of forest and forest land classification should be developed. Fourth, the lack of up-to-date aerial photos of forest cover, lack of skilled photo interpreters, and lack of botany and zoology training for young professionals should be addressed.

Percentage of water and air quality monitoring stations showing improvements over the baseline. This indicator measures the percentage of the National Environment Agency's (NEA) air and water environmental monitoring stations that report improvements in four aggregate pollution parameters over the 1995 baseline year (the oldest year for data). This indicator is based on data from NEA's annual *State of the Environment* report and tracks key parameters in water and air pollution.

The indicator shows trends in the pollution levels of five major rivers in Viet Nam and six air pollution monitoring areas in industrial and urban areas. The data collection points are located in the north, center and south of the country in areas that are likely to be among the most polluted. While the majority of water and air quality monitoring stations under NEA are reporting improvement over 1995 pollution levels, the trend for the four parameters measured is negative; each year, fewer stations are reporting better levels than the baseline year.

Data collection for this indicator could be improved by expanding the number of monitoring stations, increasing the frequency of data collection, and adding several other pollution parameters to the aggregate indicator.

Policy Points for the Water and Air Pollution Indicator

From NEA's *State of the Environment Report 2000*:

- develop policies for cleaner production technologies with preferential tax policies for enterprises that import and apply cleaner production technologies;
- promulgate economic instruments supporting the "polluter pays principle" and "users of the water should pay for the water";
- improve data collection quality;
- continue strengthening public awareness of water protection and management;
- implement environmental impact assessment for all socio-economic development projects;
- develop use of liquid natural gas and light oil instead of coal and heavy oil, which have a high-sulfur content;
- encourage biogas in rural areas; and
- develop clean energy from solar, wind and geothermal sources.

Finally, indicators are tools for monitoring change. While there are many environmental indicators that show important changes, only a handful monitor environmental changes that have a direct impact on poverty and the poor. The three environmental indicators chosen all monitor changes that have an impact on poverty and the poor as well as on the environment. It is because of the indicators' environment-poverty links that they are widely used internationally. The three indicators have the added benefit of covering some of the 'green' portion of the environment (forest cover), the 'blue' portion (safe water), and the 'brown' portion (water and air pollution).

1.1 What are the International Development Targets?

In the 1990s there was a series of United Nations conferences to discuss key development issues, including the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992—the "Earth Summit". The results of the Rio conference and other UN conferences[3] were brought together in a 1996 document produced by the Development Assistance Committee of the Organization for Economic Cooperation and Development (OECD).[4] This document contained the first draft of the seven International Development Targets (IDTs).[5] The environment IDT was derived from the Rio conference outputs—mainly "Agenda 21" which sets a global blueprint for sustainable development in the 21st century.

International Development Targets[6]

1. A reduction by one-half in the proportion of people living in extreme poverty by 2015.
2. Universal primary education in all countries by 2015.
3. Demonstrated progress towards gender equality and the empowerment of women by eliminating gender disparity in primary and secondary education by 2005.
4. A reduction by two-thirds in the mortality rates for infants and children under age 5 by 2015.
5. A reduction by three-fourths in maternal mortality by 2015.
6. Access through the primary healthcare system to reproductive health services for all individuals of appropriate ages as soon as possible and no later than the year 2015.
7. The implementation of national strategies for sustainable development in all countries by 2005, so as to ensure that current trends in the loss of environmental resources are effectively reversed at both global and national levels by 2015.

Over the past five years, support for the IDTs has grown. They have now been endorsed by several UN agencies, the World Bank, the International Monetary Fund, the European Union, the OECD, 77 countries as part of the Cotonou agreement, and 191 nations at the September 2000 UN Millennium Summit. The Millennium Summit's Declaration went further still and used the IDTs as a starting point for developing 11 "Millennium Goals" (MGs).[7] The MGs added a number of new objectives and dropped two IDTs: those on reproductive health services and environmental sustainability. To better reconcile the differences between the IDTs and MGs, a third group of indicators is under development. The UN agencies, the World Bank, the International Monetary Fund, and the OECD have drafted the "Millennium Development Goals" (MDGs). These are 7 general goals with 11 specific targets. The MDG for the environment is similar to the environment IDT but two items have been added: "halve, by 2015, the proportion of people without sustainable access to safe drinking water; and by 2020, have achieved a significant improvement in the lives of at least 100 million slum dwellers".[8]

Given the lack of an environment goal in the MGs, the draft nature of the MDGs, and the Terms of Reference (Annex 2), this report focuses on localizing only the environment IDT. Access to safe drinking water is, however, included in the localized environmental IDT.

1.2 One of Many

This report is one of eight thematic reports drafted by separate working groups on localizing the International Development Targets for Viet Nam. The working group for this report was organized by the United Nations Development Programme and consisted of: Ministry of Planning and Investment (MPI); Ministry of Agriculture and Rural Development (MARD); Ministry of Science, Technology and Environment (MOSTE); Committee on Ethnic Minorities and Mountainous Areas (CEMMA); Viet Nam Cleaner Production Centre; Japan

[3] Other UN conferences that contributed to the IDTs were: the Fourth World Conference on Women (Beijing, September 1995); the World Summit for Social Development (Copenhagen, March 1995); and the International Conference on Population and Development (Cairo, September 1994).

[4] Shaping the 21st Century: The Contribution of Development Cooperation, OECD, 1996.

[5] The IDTs are also known as the International Development Goals.

[6] As per http://www.dfid.gov.uk/public/what/strategy_papers/target_strategy.html, 17 July 2001.

[7] Sections 19 and 20 of the UN Millennium Declaration, 8th Plenary Meeting, 8 September 2000.

[8] Tracking the Millennium Development Goals at the Country Level. UN Development Group, 7 August 2001 draft.

International Co-operation Agency (JICA); United Nations Children's Fund (UNICEF); United Nations Industrial Development Organization (UNIDO); United Nations Development Programme (UNDP); and World Wide Fund for Nature (WWF).

WWF was asked to lead the formulation of this IDT report under Terms of Reference agreed by the working group (Annex 2). WWF has worked in the environment sector of Viet Nam since the mid-1980s and has more than 55 staff countrywide focusing on conserving the nation's environment and on sustainable development.

As one of the drafters of the seminal World Conservation Strategy in 1980 that gave currency to the term "sustainable development", WWF has long believed that conservation is not in opposition to development. "Humanity has no future unless nature and natural resources are conserved, and conservation won't happen without development to alleviate the poverty and misery of hundreds of millions of people", notes a recent WWF publication.[9] As an organization, WWF believes poverty and the environment are linked, and that it is possible to both improve the livelihoods of the poor and conserve the environment.

Who Causes Environmental Degradation? A Common Misconception

Many people worldwide believe that poor people cause environmental degradation. Yet there is growing international evidence that while poor people cause some environmental degradation, they are not the primary cause. Poor people generally have limited means of affecting their environment—a hand saw for cutting trees, a small fishing boat, or a household industry. In Viet Nam, as in other countries, it is the economically better-off (often from outside an area) who have the capital to finance tools that affect the environment in a much larger way—chain saws and saw mills, dynamite and cyanide for fishing, and large-scale industry. While the cumulative impact of a lot of poor people making smaller impacts on the environment can add up to significant degradation, it is the medium to large environmental exploiters who in many countries affect the environment the most.

1.3 Poverty and the Environment

While Viet Nam has made tremendous progress in reducing poverty, with the average per capita income more than doubling in the 1990s, poverty is still widespread. Viet Nam is one of the most densely populated agricultural countries in the world,[10] with a population that will double every 40 years at the current growth rate. The country has not yet found a comprehensive solution for its poverty and fast-rising population. One of the consequences is a general decline in environmental resources. Reversing this decline requires looking at the underlying causes, one of which is poverty.

Poverty and the environment are intimately linked; what happens to one affects the other. Improvements in the environment can lead to poverty reductions. A recent joint DfID, EC, UNDP and World Bank study exploring the links between poverty and environment notes that "better environmental management is key to poverty reduction".[11]

The environment and poverty have a two-way relationship: improving the environment can reduce poverty and reducing poverty can improve the environment. Thus there is a need to analyze the poverty-environment links to identify those environmental interventions that help reduce poverty. In Viet Nam, the poverty-environment links are strongest in three areas: health, natural disasters, and forest resources.

Health Poverty-Environment Links

"Up to one fifth of the total burden of disease in the developing world may be associated with environmental factors", according to a recent study.[12] In fact, in developing countries, environmental factors causing disease and disabilities are larger than any other preventable risk factors or disease causes.[13] Globally, the available evidence suggests that water and indoor air pollution are the two most important ways in which environmental factors affect the health of the poor. Among the poorest 20 percent of countries, diarrheal

[9] WWF Celebrates 40 Years of Innovating Conservation. Elizabeth A. Foley, WWF International, August 2001.

[10] Viet Nam is fifth after India, Bangladesh, Rwanda and Burundi. (2001 World Development Indicators for population per hectare and countries that derive more than 30 percent of GDP from agriculture.)

[11] Linking Poverty and Environmental Management, prepared by DfID, EC, UNDP, and the World Bank, Consultative Draft, January 2002. Page xi.

[12] Ibid. Page 8

[13] Ibid.

diseases and respiratory infections are the two leading causes of death.[14]

Reducing indoor air pollution (primarily from cooking fires) would reduce respiratory infections and opportunistic respiratory diseases such as tuberculosis. Improving access to safe water would reduce the instances of diarrhea, dysentery, typhoid and cholera. Access alone is not enough, however. Worldwide experience suggests that the quantity of water is more important that the quality of water for good health outcomes.[15]

When the environmental factors negatively affecting health are not addressed, it is the vulnerable groups in poor areas who suffer most. Poor women are more vulnerable than men if there is indoor air pollution and a lack of safe water because of their social and economic roles. Children also suffer more from unclean water and air pollution because of their physical vulnerability.

Poverty tends to increase environmental health risks, particularly in urban areas. The urban poor often work in jobs with higher health risks, have less access to safe water, and live in more polluted areas.

To better address the negative environmental impacts on health in Viet Nam, the environmental actions need to be strengthened in health sector strategies and programmes. More emphasis needs to be placed on addressing root environmental causes of illness rather than on treatment. Building more health clinics, for example, without investing in environmental health activities is not cost-effective.

Natural Disaster Poverty-Environment Links

Viet Nam is a country prone to natural disasters, particularly typhoons, floods and drought. An average of more than 1 million people need emergency relief each year due to natural calamities.[16] Many of these people are just above the poverty line, and the impact of a flood or typhoon often pushes them back into poverty. The Government's draft *Comprehensive Poverty Reduction and Growth Strategy* notes that one of the primary causes of poverty in Viet Nam is the vulnerability of a large number of poor people to natural disasters.[17] Moreover, the magnitude of natural disasters is becoming greater the world over as more people move into disaster-prone areas and because of global climate change. International experience suggests that the best approach to mitigating the impact of natural disasters is to protect upstream watersheds, provide early-warning systems, and strengthen disaster-response capacity.

Forest Resources Poverty-Environment Links

Overlaying a poverty map of Viet Nam with a forest cover map shows that there is a high correlation between forest cover and poverty. This is not to suggest there is a causal relationship between living in a forested area and poverty. Poverty in Viet Nam's forested areas is more a factor of remote, mountainous, and isolated areas with little access to markets and minimal arable land.

Viet Nam's upland areas contain some of the country's best forests and are also home to a number of ethnic minority groups. While ethnic minorities comprise approximately 14 percent of the population, they represent a disproportionate share of the poor in Viet Nam. Approximately 29 percent of ethnic minorities were below the poverty line in 2000.[18] Many of these ethnic minority groups are dependent upon the surrounding forests for their survival.

Sensitive Ecosystems Can Collapse Quickly

While many ecosystems are quite resilient to human disturbances, several ecosystems in Viet Nam are at particular risk of a sudden collapse. Nutrient-poor farm land, such as in limestone karst areas, can go from productivity to collapse in a very short time due to overuse or soil erosion. Coral reefs can also collapse quickly due to blast and cyanide fishing. People who are dependent upon these resources may find themselves deprived of them in a short time span when they are used unsustainably.

[14] Poverty-Environment Indicators, Priya Shyamsundar, World Bank Environment Department, January 2002. Page 5.

[15] Ibid. Page 6

[16] Section 3, "Causes of Poverty and Factors Contributing to Poverty", Comprehensive Poverty Reduction and Growth Strategy, first draft, January 2002. Page 15.

[17] Ibid.

[18] Section 2, "Poverty Situation in Viet Nam", Comprehensive Poverty Reduction and Growth Strategy, first draft, January 2002. Page 14.

It is forest-dependent livelihoods that form the key link between poverty and the environment in many rural areas of Viet Nam. Those living in forested areas often depend upon forest products such as timber and fuel wood as well as non-timber forest products such as rattan, honey, medicinal plants and wildlife, for their livelihoods. Decreases in forest cover and the unsustainable use of forest resources can lead to a 'poverty pit' for forest-dependent communities.

Forest resources, and hence livelihoods for poor forest-dependent households, could be made more sustainable by increasing land tenure rights for households as stipulated in Viet Nam's Land Law. Land tenure rights, however, need to be flexible enough to include wives as well as husbands in land tenure "red books" and allow for a community, rather than simply households, to hold common lands given that many forest resources are used as common property by upland communities.

Economic growth is a well-known engine for poverty reduction. The quality of growth, however, determines the benefits of growth for the poor and the environment. Policies that are both pro-poor and pro-environment have a magnifying impact on reducing poverty. By focusing on environmental issues that have a disproportionate impact on the poor, such as water and air pollution, natural disasters, and sustainable use of forest resources, Viet Nam's remarkable achievements in poverty reduction are more likely to continue and will certainly be more sustainable.

1.4 Definitions

It is difficult to know when a country reaches a target such as the IDTs unless one first defines key terms. The IDT for the environment is:

> *The implementation of national strategies for sustainable development in all countries by 2005, so as to ensure that current trends in the loss of environmental resources are effectively reversed at both global and national levels by 2015.*

The three key terms above are "national strategies", "sustainable development", and "loss of environmental resources".

National Strategies. The Development Assistance Committee of OECD defines a national strategy as "a strategic and participatory process of analysis, debate, capacity strengthening, planning and action towards sustainable development".[19] This report follows the OECD definition with its emphasis on a process rather than a document.

Sustainable Development. Defining sustainable development is more problematic. The Ministry of Planning and Investment's Viet Nam Capacity 21 Project[20] defines it as "development that aims to meet the needs of Viet Nam today, while conserving its ecosystems on which life depends for the benefit of future generations".[21] In 1987, the Brundtland Commission defined it as "development which meets the needs of the present without compromising our ability to meet those of the future".[22] The Rio Declaration refined the Brundtland definition as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".[23] While the Rio Declaration contains perhaps the best definition, all of the explication fails to say what sustainable development is.

Sustainable development can be characterized as having three "pillars": economic, social and environmental development. Thus, for development

[19] Assisting Developing Countries with the Formulation and Implementation of National Strategies for Sustainable Development: The Need to Clarify DAC Targets and Strategies. DCD/DAC (99), 11 March 1999.

[20] VIE/97/007, funded by UNDP and the Swiss Agency for Development and Cooperation.

[21] Assessing Progress in Sustainable Development in Viet Nam: A Discussion Paper. Viet Nam Capacity 21 Project, MPI and UNDP, February 1999.

[22] Our Common Future. World Commission on Environment and Development, Oxford, 1987, p.43.

[23] Rio Declaration on Environment and Development. UN, 1992.

to be sustainable, there has to be: (a) sustainable economic growth;[24] (b) sustainable social development; and (c) sustainable use of natural resources. For long-term sustainability, the three have to develop in harmony.

The Seventh Generation

The 18th century Iroquois confederation of Native American tribes in the northeastern U.S. used a unique approach to sustainable development. When the Iroquois held a council meeting to decide an issue, one member first spoke this invocation: "In our every deliberation we must consider the impact of our decisions on the next seven generations". A member of the council was then appointed as a representative who spoke specifically for those who would live a hundred and fifty years in the future. The Iroquois were practicing key sustainable development concepts more than 250 years ago and in fact were also practicing an early form of environmental and social impact assessments.

The focus of this report is on the environment. Thus, this report looks at only the environment "pillar" of sustainable development. The other two pillars are covered by separate IDT thematic groups ("eradicating poverty and hunger" and "reducing vulnerability and providing social protection").[25] Yet only by combining economic, social and environmental indicators can one measure progress towards sustainable development. Thus, this report can only be a partial contribution to developing sustainable development indicators.

Loss of Environmental Resources. This means the physical loss or degradation of natural resources. It is the sum of the decline in natural forests, the loss of wildlife, the over-fishing of near-shore areas, industrial pollution, the decline in water quality, the rise in air pollution, etc.—all those things that degrade the environment.

[24] The "deep green" movement disagrees with this belief in perpetual economic growth in a finite world and instead advocates a focus on economic sustainability without growth.

[25] The UN Commission on Sustainable Development adds a fourth pillar: institutional development. This too is covered by a separate IDT thematic group: "ensuring good governance for poverty reduction".

2.1 Is the Environment IDT Appropriate for Viet Nam?

In short, yes. The IDT mirrors the government objective of implementing a national strategy for sustainable development and fits well with the government's commitment to reversing the loss of environmental resources.

2.2 Where Does Viet Nam Stand Today vis-à-vis the Environment IDT?

There are two parts to the environment IDT: (a) implementing a national strategy for sustainable development by 2005; and (b) reversing the loss of environmental resources by 2015.

Viet Nam has already achieved the first part but has some way to go on the second. Those who are more interested in the indicators can skip the section below.

National Strategy for Sustainable Development. By the definition given earlier, Viet Nam has had a sustainable development strategy for more than a decade. In 1988, the government approved the National Conservation Strategy. This document formed the basis for the first National Strategy on Environment and Sustainable Development, 1991–2000, presented by the Viet Nam delegation at the Rio conference in 1992. While it technically met the definition of a national strategy for sustainable development by following a "strategic and participatory process", the process itself was weak. The budget and staff to implement the strategy were less than what was needed. A government agency specifically tasked with protecting the environment was not created until 1994, and environmental resources have often been sacrificed for economic gains.[26]

By the mid-1990s, the environmental trends were becoming worrisome, particularly in forestry. The 327 Programme ("Regreening the Barren Hills") began in 1992[27] and provided direct payments to households in exchange for protecting specific tracts of forest. The State Forest Enterprises were also paid to plant areas of forest. In 1997, the government "closed the forests", effectively cutting state timber production by 80 percent.

By the late 1990s, the government's interest in and ability to address environmental problems were much stronger. The 327 Programme has been followed by the much more ambitious 661 Programme ("5 Million Hectares Reforestation Programme"). Moreover, the number of protected areas was significantly expanded, pollution controls were put in place for some industrial zones, pilot environmental funds began operating in several parts of the country, new laws on environmental protection and water resources management were promulgated, and a host of other advances were achieved—all making the country's environment more sustainable.

Directive No. 36/CP-TW

In 1998, the Politburo issued Directive No. 36/CP-TW. This directive is one of the most important on the environment because it sets the basic policy direction. The directive specifically mentions sustainable development. "Environment protection is the work of the whole Party, People and Army, as an inseparable part of socio-economic development at all levels and sectors; and as the basis for ensuring sustainable development and successful implementation of the industrialization and modernization of the nation".

In 1998, the National Environment Agency began the process of drafting a second-generation national sustainable development strategy. The process was highly participatory with inputs collected from all 61 provinces, 35 government agencies, and more than 200 international development partners. The final version of the National Strategy for Environmental Protection, 2001–2010, was submitted to the Prime Minister's office in July 2000. (The implementation of this strategy is detailed in the government's National Environmental

[26] Several examples of this are: the coal industry in Quang Ninh Province which increased production at the expense of air, water and soil quality; the cutting of hardwood forests by State-Forest Enterprises in important watersheds that led to increased flooding in downstream areas; and the government subsidies for near-shore fishing that precipitated a collapse of coastal fish stocks.

[27] Government Decision No. 327–CP dated 15 September 1992.

Action Plan, 2001–2005, finalized in December 2000.)

The National Strategy for Environmental Protection, 2001–2010, uses sustainable development as a fundamental starting place. "The overall goal of the National Strategy for Environmental Protection is to: protect and improve the environment to enhance the quality of life and health of the people and to ensure sustainable development of the country".[28]

The strategy's authors also recognized that the National Strategy has to be part of the overall socio-economic development strategy or it will fail. "The National Strategy for Environmental Protection should be an integral part of the socio-economic development strategy and not separate from it".[29] Fortunately, this is the case.

Year National Environmental Strategy or Action Plan Began[30]

Malaysia	1991
Viet Nam	1992
Indonesia	1992
China	1994
Lao PDR	1995
Cambodia	1999
Thailand	none

.

Viet Nam's Socio-Economic Development Strategy, 2001–2010, is the macro strategy that provides the road map and the directions for Viet Nam during the next 10 years. The document was drafted by the Party's Central Committee with substantial input from line ministries and provincial governments and incorporates sustainable development throughout. It echoes the three pillars of sustainable development in its chapter on "Strategic Goals and Development Approach", in which it states that the development approach is "rapid and sustainable development by ensuring economic growth, accompanied by social equality and progress, and environmental protection".[31] Thus, Viet Nam clearly has a national sustainable development strategy, and the strategy is a process and not just a document.

Reversing the Loss of Environmental Resources. Meeting this part of the IDT is where Viet Nam, like most countries, faces the toughest challenges. The loss of environmental resources in Viet Nam has been precipitous (see box below). Making it more difficult yet, the government and donors agreed that all the Viet Nam IDTs will be synchronized with government strategies that run from 2001–2010. This means that Viet Nam will now strive to reverse the loss of environmental resources by 2010 rather than 2015.

There is no single indicator that will show when the loss of environmental resources has been reversed because this is a summary indicator (or impact indicator) that reflects a number of changes on the ground. Thus, to track progress towards the IDT, intermediate indicators[32] are needed, and these indicators have to be appropriate to Viet Nam's development context—they have to be localized.

Viet Nam's Environmental Plight

- The country's biodiversity is in peril with over 700 species listed as endangered in the Red Data Book of Viet Nam, and the survival of a third of Viet Nam's mammal species threatened.
- Forest cover is roughly two-thirds of what it was 50 years ago.
- Groundwater is decreasing in both quality and quantity.
- Near-shore fish catches have declined sharply, while the number of fishing boats has grown rapidly.

Urban air pollution is increasing as the number of vehicles and traffic jams increases

2.3 Intermediate Indicators

A. Percentage of the population that has long-term access to safe water.

B. Forest cover as a percentage of total country area (with one sub-indicator).

C. Percentage of water and air quality monitoring stations showing improvements over the baseline.

[28] Section 3.2 on "Goal", *National Strategy for Environmental Protection, 2001–2010,* June 2000 draft.

[29] From Section 3.1 on "Guiding Principles", *National Strategy for Environmental Protection, 2001–2010,* June 2000 draft.

[30] Table 3.14, "Government Commitment", *2001 World Development Indicators*

[31] Chapter II, Section 2.1, *Socio-Economic Development Strategy, 2001–2010*, July 2000 draft.

[32] "Intermediate indicators" are program and project output indicators (e.g., number of people with clean water) that often serve as cost-effective proxy indicators of outcome (e.g., less time spent collecting water) and impact indicators (e.g., reduced instances of diarrhoea among children) which are often more difficult to measure.

Eight initial indicators were chosen by the government-donor environment IDT working group on 10 August 2001. These indicators were revised after the Hai Phong workshop (17-19 September 2001) and a subsequent meeting of the government-donor environment IDT working group on 27 September 2001. The indicators were reviewed and finalized in March 2002. Only a limited number of indicators were requested by the Poverty Task Force in the team's Terms of Reference (Annex 2).

The final indicators were chosen based on the following criteria: (a) results based, measuring outputs rather than inputs; (b) poverty and sustainable development linkages; and (c) feasible, easy to monitor, with data already collected.

Indicators are tools for monitoring change. While there are many environmental indicators that show important changes, only a handful monitor environmental changes that have a direct impact on poverty and the poor. The three environmental indicators chosen all monitor changes that have an impact on poverty and the poor as well as on the environment. The three indicators have the added benefit of covering some of the 'green' portion of the environment (forest cover), the 'blue' portion (safe water), and the 'brown' portion (water and air pollution).

3. PERCENTAGE OF THE POPULATION THAT HAS LONG-TERM ACCESS TO SAFE WATER

3.1 Relevance of Indicator

This indicator measures the number of people with long-term access to safe water as a percentage of the total population. This is a widely used indicator because it is cross-cutting and simultaneously gives information on the environment, health and infrastructure.

To measure this indicator accurately takes nation-wide monitoring of water quality, quantity and access—this is expensive, particularly for a poor country. Thus, several proxy indicators have been developed. The World Bank-compiled World Development Indicators use "improved water sources" as a proxy for access to safe water. The World Health Organization, ironically, focuses not on the "safe" portion of the indicator but on "access". It uses as a proxy indicator, "the existence of a water outlet within a reasonable distance".[33]

The Viet Nam *National Rural Clean Water Supply and Sanitation Strategy up to Year 2020* notes that the definition of "safe water" is the same as "clean water".[34] This strategy defines "clean water" as water that meets the 51 parameters in Ministry of Health Standard 505.[35] Other relevant standards include TCVN 5942-1995 for clean surface water, TCVN 5944-1995 for clean groundwater, and TCXD 233-1999 on selecting surface and groundwater for a water supply system.

Because of the difficulty of checking whether water meets all the government standards, the *de facto* indicator of access to safe water (or "clean water") used in most areas of Viet Nam is "access to improved water sources", meaning water from an inside or outside private tap, a public standpipe, a drilled well with pump, a hand-dug well, spring water with filter system, or rain water. "Access to improved water sources" is the most widely used indicator internationally and is the proposed indicator under the Millennium Development Goals.

UNICEF works intensively with the government to improve access to safe water in rural areas and suggests that a working definition of access to safe water include the following three key parameters: (a) quantity (at least 20 liters/person/day); (b) quality (bacteriological and chemical parameters as well as transparent, colourless, tasteless and odourless); and (c) access (a distance of 200 to 500 meters to safe water).[36] This definition is more comprehensive than most international definitions and would require a more rigorous data collection process but would return higher quality data.

Policy Link.[37] Government policy has a moderately strong link to safe water access. In most areas of Viet Nam, the government provides the primary resources to help communities build long-term, safe water sources. Given, however, how important safe water is to community well-being, this indicator is likely to improve as living standards improve even without policy support.

Equity Impact.[38] This indicator has a strong pro-poor impact. The poor are those least able to afford to buy safe water when it is not readily available. The poor are also the ones who are least able to afford medical treatment for illnesses caused by unsafe water.

3.2 Baseline and Trends

The population of Viet Nam in 2000 was about 78 million, 53 percent of whom had access to safe water (41 million).[39] This is an increase from 39 percent in 1998. The government's goal is 85 percent overall coverage by 2010 and 100 percent coverage by 2020.[40]

[33] A "reasonable distance" is defined in urban areas as being no more than 200 m away and in rural areas as members of the household not having to spend "a disproportionate part of the day fetching water". www.oecd.org/dac/indicators/htm, 18 July 2001.

[34] Annex 1 "Definitions" page 48.

[35] Note that the standards for "clean water" are being revised by the Ministry of Health and will likely include 8 to 10 parameters for chemical and physical standards and 2 parameters for bacteria, according to the water supply experts at CERWASS.

[36] Mr Chander Badloe, Chief Water and Environmental Sanitation Section, UNICEF Viet Nam, per. comm.

[37] For each of the intermediate indicators, the "policy link" is examined to determine the extent this indicator can be changed by policy. If changes in policy would have little impact on an indicator (for example, "number of natural disasters"), there is little point in having it as a development indicator.

[38] "Equity Impact" is examined for each of the intermediate indicators because growing inequality between rich and poor as well as rural and urban people hampers sustainable development and causes social distortions such as social unrest and unofficial migration.

[39] See Annex 1 for details on the data.

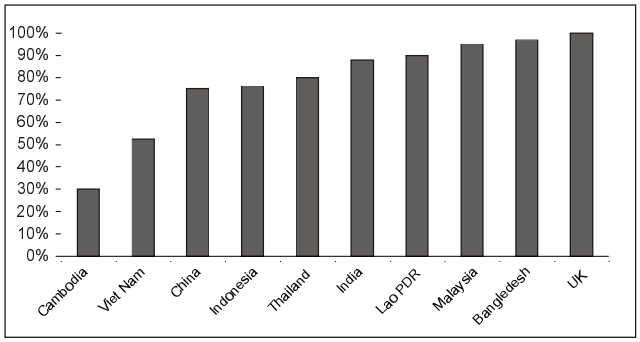
[40] "Immediate Objectives by the Year 2020", National Rural Clean Water Supply and Sanitation Strategy up to the Year 2020, page 10, MOC and MARD, August 2000.

Establishing a baseline is difficult. While data exist for access to safe water for years prior to 1998, there were no standardized methodology or agreed institutions in charge of collecting the data. In 1997, a Danish-funded project unified the various data collection and monitoring systems. Data before 1998 vary widely.[41] The critical difference in the data was the multiplier used to determine how many people could be served by one well. (The Monitoring section below has more on this.) Thus, 1998 is the oldest year for which agreed data exists.

Baseline: 39% in 1998[42]

Viet Nam is on the lower end regionally and globally for access to safe water.

Country Comparison of Access to Safe Water, 2000
(percentage of population)



Sources: Viet Nam from General Statistics Office, September 2000, all others from December 2000 data at http://www.unicef.org/statis.html 20 August 2001

3.3 Key Factors to Achieving the Goals and Related Policies

"Clean water" is the government's third highest priority overall after irrigation and education.[43] Thus, the institutional, financial and policy environments for this indicator are largely in place. The Water Resources Law (No. 8/1998/ 20 May 1998) formulated policies to manage water resources at the watershed level and clearly indicates the government's commitment to improving water supply in rural and urban areas.

From 1998 to 2000, Viet Nam increased overall access to safe water by 13 percent—an average of 4.6 percent per annum. This is one of the fastest growth rates in the world. Sri Lanka, Nepal and Paraguay were the countries with the greatest increases in access to safe water during the last decade according to UNICEF data, yet these countries averaged only about 1.7 percent growth in coverage annually.[44] To meet the government's goal of 85 percent overall safe water coverage by 2010 and 100 percent coverage by 2020, Viet Nam needs an average growth rate of 3.3 percent per year from 2000 to 2010 and an average annual growth of 1.5 percent from 2010 to 2020. Achieving these goals is possible provided the government maintains clean water as a funding priority for the next 20 years.

A primary bottleneck in increasing access to safe water in Viet Nam is that around 35 percent of the rural population get their water from untreated surface sources.[45] It is more difficult to protect the quality of surface water sources. As in many countries, Viet Nam uses surface water for irrigation and disposal of wastes, as well as for drinking. Yet many surface water sources are known to be polluted (see the water and air pollution indicator for more on this). Boiling water to kill microbial contaminates is the most common form of surface water treatment. This does not, however, eliminate many of the environmental pollutants such as fertilizers and pesticides, which are an increasing problem.

Policy Points.[46] To ensure long-term access to safe water resources, more emphasis is needed on protecting watersheds. Increasing forests that protect watersheds is one area that would significantly improve long-term access to safe water. While the government already protects watershed forests under its forestry laws, the evidence suggests that deforestation in watersheds is still a problem.

[41] UNICEF gives a figure of 48 percent overall safe water coverage in 1990 (www.unicef.org/statis.html 20 August 2001) while the General Statistics Office states 25 percent overall coverage for 1991 (GSO, *Basic Data on Water Supply and Sanitation in 1991*, Hanoi, May 1992).

[42] From *National Rural Clean Water Supply and Sanitation Strategy up to Year 2020,* MOC and MARD, August 2000.

[43] Dr. Cao Viet Sinh, Deputy Director, General Economic Department, Ministry of Planning and Investment, plenary statement at Hai Phong IDT workshop, 18 September 2001.

[44] www.oecd.org/dac/indicators 21 August 2001.

[45] From the International Conference on Water and the Environment. Dublin, Ireland, 26-31 January 1992.

[46] "Policy Points" are included for each of the intermediate indicators to help inform the debate on key policy changes that would improve the indicator.

Dublin Statement on Water and Sustainable Development[47]

Viet Nam has adopted the four guiding principles agreed at the 1992 Dublin International Conference on Water and the Environment for its *National Rural Clean Water Supply and Sanitation Strategy*:

- Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment.
- Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
- Women play a central part in the provision, management and safeguarding of water.
- Water has an economic value in all its competing uses and should be recognized as an economic good.

To ensure safe water quality, more emphasis is needed on eliminating pollution sources (both domestic and industrial). The National Environment Agency is tasked with regulating environmental pollution but is a relatively new agency with a limited budget. Improvements in monitoring and enforcement of existing water regulations—particularly Article 18 of the Water Resources Law[48]—would have a significant impact on surface water quality.

3.4 Resource Allocation Implications

The Ministry of Planning and Investment estimates that, given current water consumption levels and population projections, about USD147 million (VND2.2 trillion)[49] in investment capital will be required annually from 1999 to 2020.[50]

Historically, much of the financing for new water infrastructure has come via loans or grants from UNICEF, Finland, Denmark, Australia, the Netherlands, UK, Japan, the World Bank and the ADB. The 1998 Water Resources Law encourages private sector investment in the water sector, but the majority of the need is in rural areas where few economies of scale are possible, and there is little potential for private sector water profits. Urban areas have been more successful in attracting private sector water investment. At least one private sector Build-Operate-Transfer (BOT) urban water supply project is now operational (Binh An Water Treatment Plant for HCMC).

3.5 Monitoring

There are two separate information collection systems for water supply: urban and rural. The urban system is under the Ministry of Construction (MOC), and the rural system is under the Ministry of Agriculture and Rural Development (MARD) (see diagram below). Towns with more than 30,000 inhabitants fall under MOC and those with fewer than 30,000 fall under MARD.[51]

Based on WWF field surveys conducted for this report in Hai Phong and Ninh Binh, local data on access to safe water come from proxy indicators. *This fieldwork should not be taken as indicative of all water data collection techniques in Viet Nam, but it does illustrate some of the data limitations in these two sites.*

In Hai Phong urban areas, the number of households with water meters is used as a proxy for access to safe water. This tends to undercount the number of households with access to safe water because several households can share a water meter and some sources are not metered (informal pipe taps, rainwater reservoirs, public fountains, etc.).

In Ninh Binh province, rural officials at the commune or village level collect the data and include households that have water meters, wells, piped water supply, or rainwater storage facilities. (At least in theory. "In many cases, the number [percentage given in reports] is

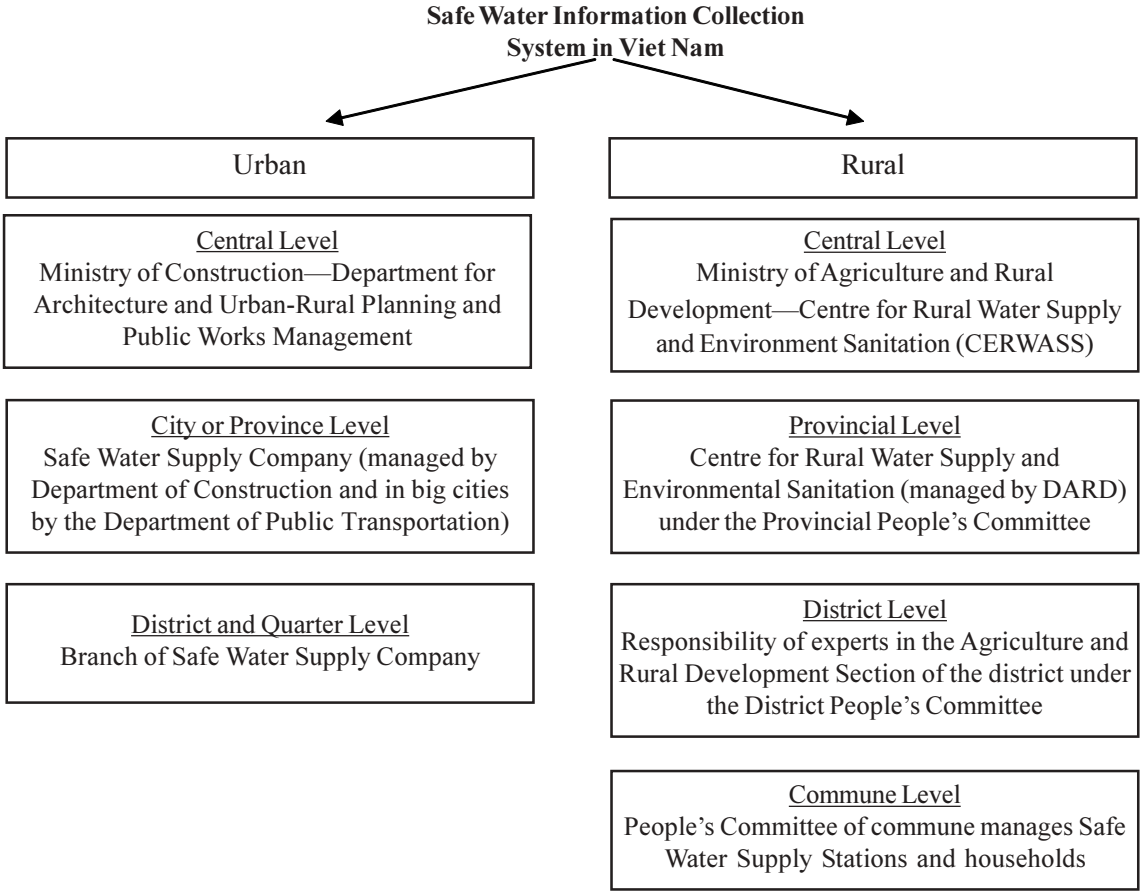
[47] "Existing Situation of Clean Water Supply", *National Rural Clean Water Supply and Sanitation Strategy up to Year 2020*, page 4, MARD and MOC, August 2000.

[48] This article gives the requirements for wastewater discharge.

[49] All exchange rates in the report were calculated using USD1 = VND15,000.

[50] http://www.tradeport.org/ts/countries/vietnam/isa/isar0007.html

[51] The MOC urban water supply experts stated that the dividing line for rural versus urban water supply (and MARD versus MOC responsibility) is now 4,000. This policy has not been formally approved according to the MOC experts. The MOC experts said that this means they are responsible for water supply in 549 towns and cities.



'developed' based on political will", noted a Ninh Binh provincial official.[52])

Both of these data collection criteria fall under the "improved water sources" definition commonly used internationally. While the data do not directly address access or water quality, they are easy to compile and give a relative indication of improvements to water supply.

There is a national water quality monitoring system that covers 46 provinces and urban areas, but the fieldwork found that there are no regular water quality monitoring systems in place in the two jurisdictions visited. Water samples were collected *ad hoc* and checked by the local branches of the Ministry of Health for a cost of about VND400,000-500,000 (USD27-33) each. Other institutions, such as the University of Mining and Geology and the National University of Natural Science, also check water quality, although they do not have the legal power to certify it.

The field data on water sources show that in the rural areas outside Hai Phong city, the most common sources of "safe water" are: rainwater storage (51 percent); hand-dug wells (28 percent); and "UNICEF" wells—the local term for a drilled well (21 percent).

There are two critical assumptions underlying the data on access to safe water: the equivalent ratio and the multiplier 'norm'. The General Statistics Office calculates an "equivalent ratio" for the number of people who have access to safe water. If there are, for example, ten wells in one commune but only eight can be used (due to quantity, quality or access problems for instance), the equivalent ratio is 0.8. This number is then multiplied with a 'norm' such as "one well can serve 100 people"[53]

[52] Director of Rural Water Supply and Environmental Sanitation Centre of Ninh Binh province, Mr Hoang Van Suong, per. comm., 23 August 2001.

[53] There is no agreement among sector experts on what norm is used in practice; the range given by the experts who were asked is from 80 to 100.

and the total number of people with "access to safe water" is thereby determined.

In developing a more comprehensive safe water monitoring system, one has to weigh the costs and benefits of changing the data collection system. An indicator that includes water quality, quantity and access would be more robust but also expensive to do in a country with 78 million, mostly rural, people. In the interim, there are several low-cost interventions that would improve the data collection system. The first is to standardize the definition of "access to safe (or clean) water". For Viet Nam, using the proxy indicator of "improved water sources" would help to standardize the data collection but would not add many additional costs. Second, training should be provided for data collectors. This can be done through training-of-trainers at the central level, and then using these trainers to reach the province, district and commune levels.

4.1 Relevance of Indicator

This indicator measures the amount of forested area as a percentage of the total country area. Forest cover is one of the most widely used international indicators for the environment. It is easily understood, and the economic, social and environmental significance of forests are supported by voluminous scientific work.[54] Changes in Viet Nam's forest cover have been tracked for more than 50 years, and this indicator is noted in the National Strategy for Environmental Protection, 2001–2010, as one of the strategy's key "Performance Indicators".[55]

For a mountainous, irrigated-agriculture country such as Viet Nam, forest cover has a strong impact on sustainable development. As forest cover declines, the trees' tempering effect is lost and peak weather events become more severe (floods, droughts, typhoons, mudslides, saltwater intrusion). The largest floods in the Mekong delta for more than 70 years during 2000, the large-scale flooding of the central provinces in 1999, and the regional droughts in 1998 and 1997 are recent examples of climatic events that were made worse by watershed deforestation.

Such extreme weather events have a disproportionately higher impact on the poor because the poor have few resources to recover. Forest degradation also has a higher impact on the rural poor because they often rely on forest resources to supplement their livelihoods.

An increase in forest cover, on the other hand, helps limit soil erosion, provides a better catchment for rainwater, supplies fuel and building material for local communities, increases job opportunities in forestry, makes timber exports more sustainable, and nurtures a number of non-timber forest products (e.g., honey, rattan, commercially valuable flowers, medicinal plants).

Moreover, for many of the poorest people in Viet Nam—particularly ethnic minorities—nearby forests are a form of insurance. In times of food shortage, a common coping strategy of the poor is to collect edible forest plants and animals as well as forest items that they can potentially sell. Thus an increase in forest cover may also help reduce malnutrition when food is scarce in poor, rural communities.

Given forest cover's linkage to poverty and sustainable development, Viet Nam, like many countries, is actively working to reverse the loss of forest cover. The government's 5 Million Hectares Reforestation Programme and the government-donor Forest Sector Support Programme are two key initiatives to increase forest cover.

Policy Link. Changes in the country's forest cover are quite sensitive to policy changes, as evidenced by the growth in forest cover after the curtailing of state timber operations in 1997 and the impact of the 327 and 661 forestry programmes for reforesting and protecting existing forests.

Equity Impact. The equity impact of increases in this indicator is likely to be pro-poor—particularly pro rural poor—because of the livelihood benefits from more trees (i.e., more resources for poor households and less vulnerability to extreme weather events).[56]

Forest Cover, Poverty and Ethnic Minorities

The Viet Nam Living Standards Survey of 1998 found that the two poorest regions of the country are the central highlands and the northern uplands—both areas with a high proportion of ethnic minorities and forest cover. A 1998 WWF social-environmental study on the areas around Yok Don National Park in Dac Lac province found that those who are most dependent upon forest resources are the ethnic minorities.[57] Increasing forest cover will help strengthen many ethnic minority groups' traditional sources of livelihoods. Furthermore, protecting the forests in the central highlands from unofficial migrants seeking to plant more coffee, cashew and other cash crops on cleared forestland would support social stability in the region.

[54] There are many publications on forest cover as it relates to climate change, habitat for globally threatened species, watershed management, local livelihoods, cultural practices, etc.

[55] Section 4.10 on "Specific Objective 10", National Strategy for Environmental Protection, 2001–2010, June 2000 draft.

[56] This is provided increases in forest cover are not used as a justification for renewed state logging in natural forests.

[57] *Human Migration and Resource Utilisation: Yok Don National Park and the Surrounding Region*, WWF, Hanoi, August 1998.

Forestry sub-indicator

Looking at forest cover alone gives an incomplete picture of forests as they relate to biodiversity and sustainable development. One sub-indicator can help provide a fuller picture: the percentage of country area that is within a "special-use forest" (protected area).

Percentage of country area that is within a special-use forest. Terrestrial protected areas in Viet Nam comprise "special-use forests" (national parks, nature reserves, and cultural and historic sites) but do not include Marine Protected Areas.[58] This sub-indicator measures the area within special-use forests as a percentage of total country area. The percentage is a widely used indicator internationally.[59]

This indicator is relevant given that protected areas have a long-term relationship to sustainable development. They act as the country's reservoir of biodiversity—genetic diversity, species diversity, and ecosystem diversity. Viet Nam's biodiversity has a potentially high economic value.[60] Globally, less than 1 percent of tropic forest species have been examined for their chemical compounds.[61] Yet even from this tiny percentage, more than 120 prescription drugs have originated (e.g., quinine, steroids, muscle relaxants, anti-cancer drugs), and Viet Nam's plants alone constitute a potential wealth of new treatments for illness.

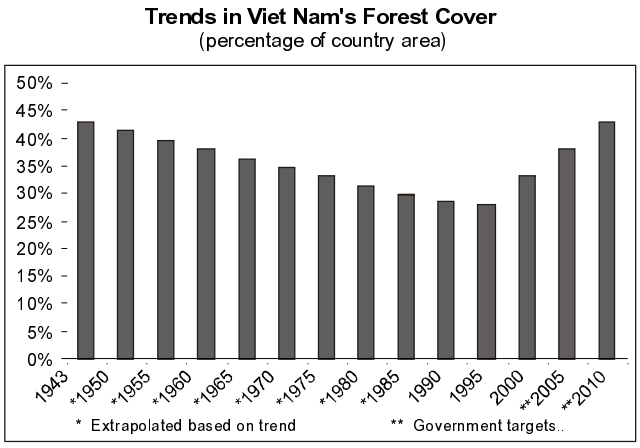
Moreover, protected areas in Viet Nam also act as the country's water filters, catchment areas, and places of natural beauty. They provide homes to some of the world's rarest mammals including the Javan Rhino, the Cat Ba Langur, the Tonkin Snub-Nosed Monkey, and the Sao La—all of which are critically endangered. Viet Nam is a recognized center of origin and diversity[62] for a number of economically important plant species such as green tea, litchi, longan, jute, mung bean, taro root, several species of rice, and a type of orange.[63]

While protected areas generally do not have a large-scale poverty impact, those poor who live around protected areas often benefit because the protected area helps make local development more sustainable and provides new opportunities for income.

4.2 Baseline and Trends

Viet Nam's area is 33 million hectares. In 1999, forests covered 10.9 million hectares (33.2 percent) and in 2000 11.4 million hectares[64] (34.4 percent), according to the 'decisions' issued by the Prime Minister's office.[65] (The Monitoring section below gives a detailed analysis of the quality of the data underlying this indicator.)

Baseline: 27% in 1990[66]



[58] Con Dao and Cat Ba National Parks include marine areas but are classified as "special-use forests". Viet Nam has proposed 24 national Marine Protected Areas, and one (Hon Mon Marine Protected Area near Nha Trang) has been established as of April 2002.

[59] www.oecd.org/dac/indicators/htm, 18 July 2001.

[60] Viet Nam is where two biological realms overlap (paleoartic and Indo-Malayan) and consequently a number of unique species have developed. The country has more than 12,000 plant species with a wide diversity of ecosystems. Viet Nam is also home to domestic strains of rice, taro root, and mung bean that could serve as important geoplasm sources for developing strains well suited to Vietnamese conditions.

[61] The Primary Source: Tropical Forests and Our Future, Norman Myers, New York, 1992.

[62] Viet Nam is one of Nikolai Vavilov's "Centres of Origin".

[63] GEF Agrobiodiversity Project, Institute of Agricultural Genetics, Hanoi, December 2000.

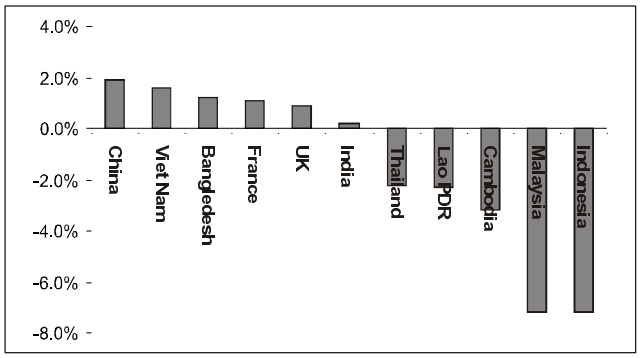
[64] In 2000, "natural forest" comprised 9.7 million hectares (29 percent of total area) and "planted forest" (plantation forest) 1.6 million hectares (5 percent of total area). Annex 1 has more on forest cover data.

[65] Decision 03/2001/QD-TTg of 5 January 2001 gives the 31 December 1999 numbers, and Decision 10/2002/QD-TTg of 14 January 2002 gives the 31 December 2000 numbers.

[66] Updated Description of the National Five Million Hectares Reforestation Programme (1998-2010). Department of Forest Development, MARD, Hanoi, June 2001.

Internationally and regionally, Viet Nam compares favourably in forest cover. Unlike most of its neighbours, Viet Nam has in all probability stopped the decline in its forest cover. The country's total forest coverage also compares favourably with that of almost any other country. The average national forest cover worldwide, according to the *2001 World Development Indicators,* is 29.7 percent.

Percentage Change in Forest Cover, 1990-1999



Sources: World Development Indicators, April 2001 and MARD for Viet Nam 1999.

Forestry sub-indicator

Percentage of country area that is within a special-use forest. Viet Nam has committed itself under the Convention on Biological Diversity (signed in November 1994) to increasing the coverage of the protected areas system. To meet this obligation and its own environmental priorities, the government has been expanding special-use forest coverage, with a plan to double the amount of special-use forests from the current 1 million hectares to 2 million hectares (an increase from 3 to 6 percent of the country's area).

Baseline: 2.7% in 1990[67]

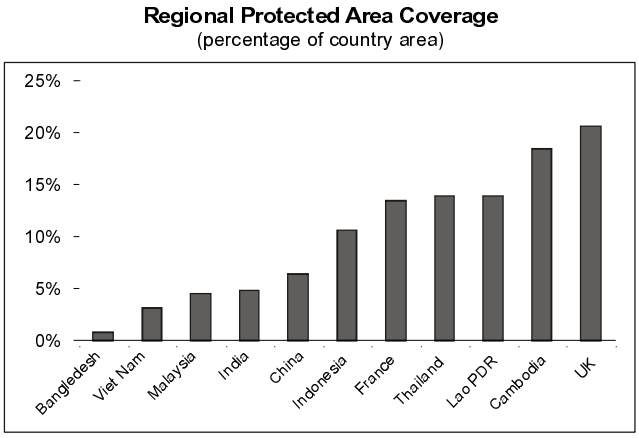
Internationally and regionally, Viet Nam falls short of many other countries in protected area coverage. Worldwide, the average country has 6.5 percent of its total land area within protected areas.

Growth of Viet Nam's Special-Use Forest Coverage

Year	Total #	Area (ha)	Percent of Total Area	Government Decree
1962	1	25,000	0.1%	72/TTg (Cuc Phuong)
1977	11	69,310	0.2%	41/TTg (Ba Be, Ba Mun, Ba Vi, Bac Son, Ban Dao Son Tra, Den Hung, Pac Bo, Rung Thong Da Lat, Tam Dao, Tan Trao)
1978	12	104,310	0.3%	360/TTg (Nam Cat Tien)
1982	13	114,310	0.3%	65/HDBT (Mom Ray)
1984	14	120,310	0.4%	85/CT (Con Dao)
1986	86	889,822	2.7%	79/CT (Cat Ba) and 194/CT (73 sites, of which two were later combined to form Pu Mat; one later became Yok Don)
1991	86	908,022	2.8%	352/CT (Yok Don)
1993	87	916,531	2.8%	unknown (U Minh Thuong)
1994	90	943,631	2.9%	47/TTg (Tram Chim), 4893/KGVX (Xuan Thuy) and 4895/KGVX (Tien Hai)
1996	92	997,566	3.0%	970/TTg (Ke Go) and 791/TTg (Ta Kou)
1998	93	1,002,076	3.0%	1026/TTg (Thanh Phu)

Sources: BirdLife International and the Forest Inventory and Planning Institute (2001).
Note: area refers to area stated in the decree.

[67] From BirdLife International and the Forest Inventory and Planning Institute data.



Sources: World Development Indicators, April 2001 and Government of Lao PDR.

4.3 Key Factors to Achieving the Goals and Related Policies

For the forest cover indicator, the institutional, financial and policy environments are reasonably strong. Compared to other areas of the environment, the forestry sector is one of the few that is likely in the short term to have a positive impact on sustainable development.

Achieving the goal of an increase in forest cover is largely a matter of planting more trees and natural forest regeneration. Given the current trends and the level of financial support, the government's target of increasing forest cover to 43 percent of the country area by 2010 is attainable.

The 43 percent target was chosen because this was the forest cover at independence in 1945. The question remains, however, why 43 percent? Perhaps 35 percent or 25 percent of well-managed forests would be sufficient to meet the country's needs. There has been no analysis of what level of forest cover is optimal for sustainable development, and given Viet Nam's increasing population pressure, a balance will have to be found between forest cover and farmland.

Regardless of what the target is for forest coverage, many of the basic policies and programmes for improving this indicator are already in place. The ongoing 5 Million Hectares Reforestation Programme (5MHRP) enjoys a large amount of support from government and donors alike. This is the primary programme to increase forest cover in Viet Nam. The 5MHRP activities are still being refined, but a recent analysis suggests that for the programme to be sustainable (and hence forest cover to be sustainable), several issues should be addressed:[68]

- the classification of forest land should follow standard criteria under a single agency;
- the forest land allocation process needs to be improved so that more people have a long-term interest in conserving the forest;
- land-use planning needs to be better, particularly regarding the balance of agricultural uses with forestry uses in a densely populated country with rapid population growth;
- private sector participation in forestry should be increased so Viet Nam can tap new sources of plantation forestry financing and technology;
- capacity building in forestry training, research and education has to be strengthened; and
- a monitoring and evaluation system for the 5MHRP needs to be designed and implemented.

To meet the above needs, the government and donors have agreed upon a long-term Forestry Sector Support Programme Partnership that will address the macro environment within which the 5MHRP is being implemented.

The 5MHRP and Sustainable Development

The objectives of the 5 Million Hectares Reforestation Programme mirror the sustainable development pillars of economic, social and environmental development. The 5 Million Hectares Reforestation Programme takes a sustainable forestry management approach that specifically includes these three interconnected aspects of sustainable development.

Policy Points. While the programmes' quantity objectives are likely to be achieved, the quality of the resulting forest cover is less certain. Non-native tree species have been widely planted in Viet Nam,[69] and

[68] From the Five Million Hectares Reforestation Programme Partnership, Synthesis Report. MARD and the 5MHRP Partnership Secretariat, February 2001.

[69] The two primary non-native trees are eucalyptus and acacia from Australia.

many of these trees are invasive, crowding out native species. Directive No.19/1999/CT-TTG and Decision No.175/1998/QD/BNN/KHCN both promote planting native tree species but neither one goes so far as to support interspersed cropping of natives species in tree plantations. This would encourage more biological diversity in tree plantations.

Another policy issue is that there is a large domestic demand for lumber that is currently being met with imports from many countries (primarily Lao PDR and Cambodia). Eventually, Viet Nam should be self-sufficient in lumber production. To meet long-term demand, Viet Nam will need policies that encourage production forests of fast-growing softwood species and discourage the use of slow-growing hardwoods. Policy options for increasing private-sector participation in production forests should be explored, particularly in conjunction with certified timber operations.

Forestry sub-indicator

Percentage of country area that is within a special-use forest. Of the 93 special-use forests that have been decreed by the national government, 65 have management boards (70 percent). Management boards have also been established for a further 22 special-use forests which have been approved at the ministerial, provincial or district level but have not been decreed by the national government. Increasing the number of official management boards for special-use forests would reduce the number of "paper parks".

4.4 Resource Allocation Implications

The costs of reforesting 5 million hectares are substantial. The official estimate of the cost to the government for the 5MHRP is USD314 million (VND4,717 billion) over 12 years (1998-2010).[70] This would be about USD26 million (VND393 billion) annually. Of this amount, approximately 53 percent will fund "plantations of special-use and protection forests", 21 percent will fund "natural regeneration supported by additional planting", and 11 percent will fund "protection of special-use and protection forests".[71] The remaining 15 percent will fund infrastructure, project management, research, issuance of land tenure certificates, etc.

The government's 2001 allocation for the 5MHRP is about USD23 million (VND344 billion). As the National Five Million Hectares Reforestation Programme updated description notes, "there is no guarantee of long-term financing from the state, so the allocation of funds [will] depend on the budgetary situation each year".[72]

Much of the money to finance the 5MHRP is expected to be provided as loans from multilateral and bilateral sources. Donors have pledged about USD70 million (VND1,050 billion) per year in support of the forestry sector.[73] Strengthening the forest sector to make the gains in forest cover sustainable will add to these costs considerably.

Cost norms fo.r reforesting range from USD6.67 / hectare (VND100,000) for assisting natural regeneration to USD1,060 /hectare (VND15.9 million) for production cinnamon trees.[74]

Forestry Sub-indicator

Expanding the protected area network by 2 million hectares, as planned under the 5MHRP, is estimated to cost from USD167 to USD267 (VND2.5 million to VND4.0 million) a hectare, plus project management fees, infrastructure costs, nursery costs, land allocation, research, and extension training, as well as the cost of the overall public forestry administration, including research, training and educational institutes.[75] Funding for this portion of the 5MHRP is expected to come primarily from government sources supplemented by grants from bilateral and multilateral sources.

[70] "Table 5: Estimates of State Grants Required", National Five Million Hectares Reforestation Programme (1998-2010), MARD/FDD, Hanoi, June 2001, page 32.

[71] Ibid.

[72] Ibid.

[73] Section 3.4.3.1. "Resource mobilisation",

Five Million Hectares Reforestation Programme Partnership, Synthesis Report. MARD and the 5MHRP Partnership Secretariat, February 2001.

[74] Ibid.

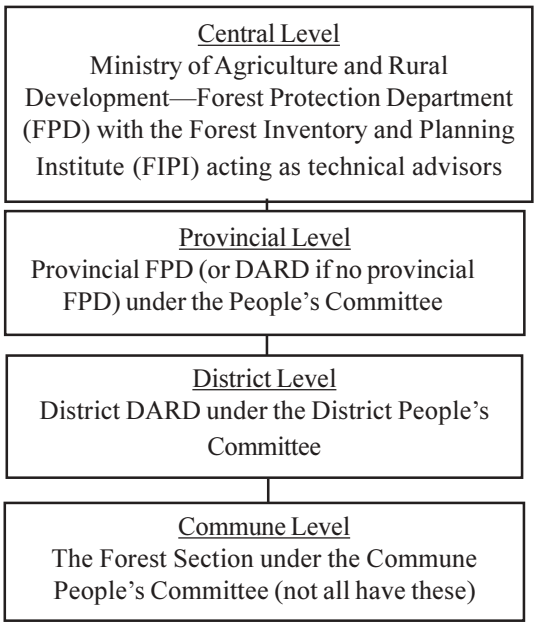
[75] Ibid.

4.5 Monitoring

Prime Ministerial Decision N° 245/1998/QD-TT, dated 21 December 1998, assigned the responsibility for monitoring and inventory of forest resources to the Ministry of Agriculture and Rural Development (MARD). In Directive N° 32/2000/CT-BNN-KL, dated 27 March 2000, MARD assigned its Forest Protection Department to carry out forest resources monitoring and inventory. MARD's Forest Inventory and Planning Institute assists the Forest Protection Department with technical advice and data analysis.

Government Decision N° 286/TTg dated 2 May 1997 details the forest resources inventory programme for the country. The first outputs under this programme has been approved by Government Decision N° 03/2001/QD-TTg, dated 5 January 2001, published in the beginning of 2001 under the title *Results of Forest Inventory of Viet Nam, 1999*. The 2000 forest cover data were publicized in Government Decision N° 10/2002/QD-TTg, dated 14 January 2002.

Forest Cover Information Collection System in Viet Nam



Under the forest inventory programme, forest cover data are aggregated at the provincial level by the Forest Protection Department of the provincial Department of Agriculture and Rural Development (DARD)[76] on a 1:100,000-scale map. In most cases, data sources include information on the three general forestland types ("forested, barren and other") and forest area as determined by aerial photographs and old forest cover data (with a ±5 percent re-check on the old data). Where photos or old data do not exist, opposite hillside and parallel inventory transect methods are used.

Once the provincial forest cover maps are completed, the data are cross-checked with old forest cover maps to note the difference, and field checks are made on any wide variations. Forest cover area is then cross-checked with known commune areas to see if there are errors in the forested area calculation for each commune. There cannot be more forested area in a commune than land. At the smallest scale of "commune blocks", the error rate must be no more than 1/50.[77]

The quality of the forest cover data is largely dependent upon the quality of local data collection, the age of the aerial photos, and the skills of the aerial photo interpreters.

There was a large jump in forest cover, according to government statistics, from 1997 to 2000 (28 to 34 percent or a net gain of 2.1 million ha in three years). This might be explained by the use of new forest inventory methodologies and the results of government reforestation programmes.[78]

There are several areas in which forest data collection could be improved. First, there is no agreed definition of what constitutes forest cover or forested land. Second, MARD is not the only agency that collects

[76] Who are not under the authority of the national Ministry of Agriculture and Rural Development but under the Provincial People's Committees.

[77] Forest cover report for WWF by Mr Vu Van Dung, Vice Director emeritus of Forest Resources and Environment Centre within FIPI, August 2001.

[78] Several donors have noted that it might also be explained by the need to show increased forest coverage given the relatively high levels of government resources allocated to reforestation.

forest cover data. The General Department of Land Administration and the Government Statistics Office both collect forestry data. The General Department of Land Administration recently developed forest cover maps ranging from 1:25,000 to 1:5,000 in some provinces. Each agency uses a different method of data collection with the result that there are differing numbers for forest cover. The MARD methodology appears to be the most robust and reliable. Third, the forest type classification system lacks detailed criteria, so it is difficult, for example, to distinguish between deciduous forest and semi-evergreen forest types using the current system. Fourth, there is a lack of up-to-date aerial photos of forest cover, a lack of skilled photo interpreters, and a lack of botany and zoology training for young professionals.

Thus, there are several recommendations on how this indicator could be improved:[79]

- establish an official definition for forest cover and forested land;
- develop a scientific yet simple system of forest classification;[80]
- improve inventory of high-quality aerial photos and GIS equipment; and
- train professionals in forest resources inventory methods.

Forestry Sub-indicator

Percentage of country area that is within a special-use forest. This indicator is monitored by the Forest Protection Department within MARD. There are problems, however, with the quality of the data. The decreed areas of many special-use forests are inaccurate when compared to digitized maps of aerial photos. For some protected areas, the variations in area are more than 10 percent. A standardized methodology for estimating special-use forest area needs to be devised and updated estimates developed.

[79] Forest cover report for WWF by Mr Vu Van Dung, Vice Director emeritus of Forest Resources and Environment Centre within FIPI, August 2001.

[80] The recent ADB Forest Sector Review report gives good recommendations on forest classifications.

5. PERCENTAGE OF WATER AND AIR-QUALITY MONITORING STATIONS SHOWING IMPROVEMENTS OVER THE BASELINE

5.1 Relevance of Indicator

This indicator measures the percentage of the National Environment Agency's (NEA) air and water environmental monitoring stations that report improvements in four pollution parameters over the 1995 baseline year (the oldest year for data). This indicator is relevant because it monitors pollution levels and thus the general health of the environment as well as pollutants with negative health impacts. The causal relationships between air and water pollution and negative health consequences are well known.

This is an aggregate indicator that combines two common pollution parameters for water, Biological Oxygen Demand (BOD) and nitrogen compounds ($N\text{-}NH_4$), with two common pollution parameters for air, sulfur dioxide (SO_2) and dust. While there are many other water and air quality parameters,[81] these four are the primary ones chosen by NEA for monitoring water and air quality in Viet Nam.[82] These parameters are relevant because BOD is a main indicator for water contaminated by sewage, $N\text{-}NH_4$ is a primary indicator of water contaminated by fertilizer, SO_2 is a main contributor to acid rain, and dust is a primary cause of respiratory ailments.

This indicator includes water quality measurements in five major rivers of Viet Nam: the Red River (Hanoi), the Cam River (Hai Phong), the Han River (Da Nang), the Huong River (Hue), and the Saigon River (Ho Chi Minh City). In many countries, major rivers serve as waste removal systems for industry and households. Thus, measuring pollution levels in major rivers serves as a proxy for measuring harmful effluent discharge by industries and urban areas.

This indicator also includes air quality measurements in six areas of Viet Nam: the Thuong Dinh industrial zone in Hanoi, the Tan Binh industrial complex in Ho Chi Minh City, the cement plant area in Hai Phong, the rolled-steel plant area in Da Nang, the Bien Hoa I industrial zone in Bien Hoa, and Ly Quoc Su street in Hanoi. This is a representative sample of likely air-polluted areas in the north, center and south of the country.

Policy Link. There is a policy link between changes in water and air pollution and government policy. Policies can create the incentive structure and regulatory environment necessary for decreasing pollution outputs, but there is no single policy 'pressure point' because water and air pollution sources come from many different sectors (agriculture, industry, transportation) and the number of individual behaviour changes needed is large in a country such as Viet Nam.

Equity Impact. This indicator has a strong pro-poor impact. The poor suffer most from water and air pollution. They are the ones who often live in the marginal areas where pollution levels are highest, and they are the ones who can least afford medical care for pollution-related ailments or the loss of livelihood due to illness caused by pollution.

5.2 Baseline and Trends

Data for this indicator come from NEA's annual *State of the Environment Report.*[83] Using the same methodology since 1995, NEA collects water and air quality information through designated monitoring stations for water and air quality in the north, center and south of the country.

Baseline: 1995 data[84]

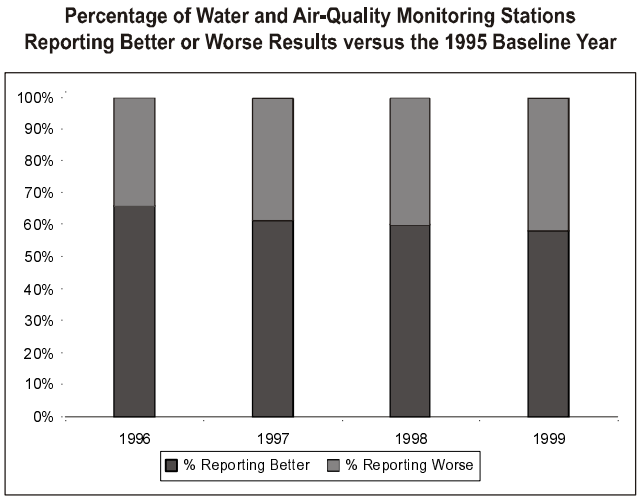
While the majority of water and air quality monitoring stations under NEA are reporting improvement over 1995 pollution levels, the trend for the four parameters measured is negative; each year, fewer stations are reporting better levels than the baseline year. The trend is not surprising given Viet Nam's rapid growth in pollution-causing activities in industry, agriculture and transport. If the negative trend continues, the gains made in reducing pollution from 1995 to date are in danger of being lost.

[81] NEA also collects data on BOD5, COD, NO3-N, PO4-P, CL, coliform, CO, and NOX.

[82] These four were chosen, according to Dr. Ho Thi Van of NEA's State of the Environment and Monitoring Division, because they are the ones most in danger of exceeding standards.

[83] See Annex 1 for details.

[84] Data from NEA's State of the Environment Report 2000, chapters 4 and 5.



Source: Data from the State of the Environment Report 2000 by NEA.

Government standards exist for the four pollution parameters, and with the exception of dust, the data are on average below permissible limits.

A feasible goal for the government would be to keep the pollution levels at or below 1995 levels, and in the case of dust, to reduce the levels to less than the national standard of 0.2 mg/m^3.

Sources of Water and Air Pollution[85]

The primary sources of water pollution are (in rough order): industries, urban households, and agriculture. For air pollution the primary sources are: industries, vehicles, and power generation.

5.3 Key Factors to Achieving the Goals and Related Policies

For the water and air pollution indicator, the institutional, financial and policy environments are not strong. One problem is that there are other government agencies that also track water and air quality. The Hydrometrological Services' Water and Air Quality Centre monitors surface water quality in rivers and lakes as well as urban air quality. There are also municipal air quality monitoring systems in several major cities, including Ho Chi Minh City and Hanoi. NEA has the mandate for monitoring pollution, but there is little cooperation between the parallel water and air monitoring systems. Additional problems are that the regulation for protecting water and air quality are insufficient, enforcement of existing regulations is weak, and the incentive structure for curtailing polluting activities is minimal.

The government has made progress, however, in improving urban air quality. Prime Minister Decision No./24/2000/CT-TTg, dated 23 November 2000, eliminated lead in petrol for non-military vehicles starting 1 July 2001.

Policy Points. The *State of the Environment Report 2000* notes several "appropriate policies and strategies for sustainable water management":[86]

- develop policies for cleaner production technologies with preferential tax policies for enterprises that import and apply cleaner production technologies;
- promulgate economic instruments supporting the "polluter pays principle" and "users of the water should pay for the water";
- improve data collection quality; and
- continue strengthening public awareness of water protection and management.

For air pollution, the same report notes a need to:

- develop cleaner production technologies for air-polluting enterprises;
- implement environmental impact assessment for all socio-economic development projects;
- develop use of liquid natural gas and light oil instead of coal and heavy oil, which have a high-sulfur content;
- encourage biogas in rural areas; and
- develop clean energy from solar, wind and geothermal sources.

5.4 Resource Allocation Implications

Water Pollution. Cost estimates for improving this indicator are difficult because of the multi-sectoral nature of the pollution sources. Improving surface water quality

[85] Derived from Chapters 4 and 5 of the *State of the Environment Report 2000*, NEA, draft of October 2001.

[86] Section 4.1, Chapter 4, State of the Environment Report 2000, NEA, draft of October 2001.

will require improvements in urban sewage collection and treatment,[87] improvements in wastewater treatment by industry,[88] and a reduction of fertilizer and pesticide runoff.

Air Pollution. NEA is preparing a national and local Clean Air Act which will cost about USD50,000 (VND750 million). Between 2001 and 2005, NEA plans to establish ten automatic air monitoring stations, two mobile air monitoring stations, and two analytical laboratories. The cost of these improvements will be about USD3.9 million (VND58.0 billion).

5.5 Monitoring

This indicator is new to Viet Nam, and it has both strengths and weaknesses. The indicator is useful because it gives an overall view of the trends in water and air quality, but the indicator does not show relative changes (changes in magnitude) year-to-year. It is also useful in that when new monitoring stations are added or data from one station are not available, the indicator will not be affected because it measures a percent of the total data available. The number of data points supporting the indicator, however, is limited. There are only five river water quality monitoring stations (albeit with multiple sampling points) and six air quality monitoring stations. The indicator also suffers from measuring only two parameters each for water and air. There are a number of important parameters that are not included in the indicators, such as chemical oxygen demand, mercury, chromium, phosphates, and pH for water and lead, ozone, and carbon monoxide for air.[89] Additionally, the air quality data are only daily averages from the four weeklong monitoring cycles each year. Thus, if a major pollution source is not emitting during a measurement week, the average for the year will be up to 25 percent less.

There are eight NEA automatic air quality monitoring stations now in operation (four in Ho Chi Minh City, three in Hanoi, and one in Hai Phong). Two mobile air quality monitoring stations were purchased in 2001 (one for Ho Chi Minh City and one for Hanoi). Data from these systems are not yet publicly available.

The frequency of the water sampling in the five rivers is six times per year. In years with less rainfall, such as 1997, water pollution concentrations increase. Thus, wet and dry years can cause the data to vary significantly. Daily sampling of water and air quality would give a more robust data set.

1995 is used as the baseline because that is the first year for which data are available. In that year, there could have an aberration in any one of the four parameters due to weather patterns or data collection techniques. The monitoring expert at NEA, however, stated that 1995 was a good baseline year because there were no unusual events that she knew of which transpired.[90]

The indicator's main strengths are that the data are collected regularly and systematically, the data are published annually in the publicly distributed *State of the Environment Report*, and the indicator shows the trends in water and air pollution from sites in the north, center and south of Viet Nam. While the indicator is not without problems, it does provide policy-makers with information on trends in water and air pollution. This indicator will need to be revised as more public data sources and other pollution parameters become available.

[87] Less than half of Viet Nam's urban households are connected to a centralized sewage collection system, according to the GSO.

[88] It costs about USD2,000 (VND29 million) to treat a cubic meter of waste at a water-treatment facility, based on the capital investment costs of two recently purchased industrial zone wastewater treatment plants in Viet Nam.

[89] All of these parameters are currently collected, but the data are not publicly available.

[90] Dr. Ho Thi Van, SoE and Monitoring Division, NEA, 28 March 2002 personal communication.

Annex 1: Sources and Data for Indicators

Note that all the graphs in the Word 97 version of this document have the underlying data and calculations included. Double clicking on any graph will open the embedded Excel spreadsheet. For those who do not have the Word 97 version, all the data and the sources for the indicators are presented here.

1. Percentage of the Population that has Long-Term Access to Safe Water

Data Sources

General Statistics Office publishes annually *Số Liệu Về Sự Biến Đổi Xã Hội ở Việt Nam Thời Kỳ Đổi Mới* [*Figures on Social Development in "Doi Moi" Period in Viet Nam*]. It is available at the General Statistics Office in Hanoi at 98 Thuy Khue. Tel: (84-4) 845-7814.

Data on rural water are collected by the Centre for Rural Water Supply and Environmental Sanitation (CERWASS) under MARD (Trung Tâm Nước Sinh Hoạt Và Vệ Sinh Môi Trường Nông Thôn thuộc Bộ Nông Ngiệp và Phát Triển Nông Thôn) at C10 Nguyen Hong Street, Hanoi. Tel: (84-4) 835-8732. Email: cerwass@fpt.vn

Data on urban water are collected by the Department of Architecture and Urban-Rural Planning and Public Works Management under MOC (Vụ Quản Lý Kiến Trúc — Quy Hoạch Và Công Trình Công Cộng) at 37 Le Dai Hanh Street, Hanoi. Tel: (84-4) 976-0271 (-433) Fax: (84-4) 976-2153.

The data for this report were gathered from: (a) the Government Statistics Office's "Phân Tích Kết Quả Điều Tra Đánh Gía Mục Tiêu Thập Kỷ Về Trẻ Em Việt Nam" [Analysis of Research and Evaluations of a Decade of Vietnamese Children: Targets and Outputs], Statistics Publishing House, September 2000 page 135, Table 8.1 "population with access to safe drinking water by urban/rural area and region"; and (b) from tables given to the author by CERWASS/MARD and MOC on historic and current water supply coverage.

Data for Indicator

Population from April 1999 Census (from GSO)	76,324,753
Average annual growth rate 1990-1999 (from UNFPA)	1.85%
2000 population estimate (1999 x growth rate)	77,736,761
Rural water supply in 2000 (CERWASS/MARD)	29.4 million
Urban water supply in 2000 (MOC)	11.7 million
Total population with clean water in 2000	41.1 million
Percentage with clean water in 2000	53%

2. Forest Cover as a Percentage of Total Country Area

Data Sources

Updated Description of the National Five Million Hectares Reforestation Programme (1998-2010) published in June 2001 by MARD's Forest Development Department is available in both English and Vietnamese and provides comprehensive data on forest cover and annexes with all relevant government decrees on forestry up to the publication date. All the historical forest cover data comes from this publication. Copies are available from MARD's International Cooperation Department at Room 101, A9, 2 Ngoc Ha Street, Hanoi. Tel: (84-4) 733-7913. Email: 5mhpart@hn.vnn.vn

Annual forest cover data is given in Prime Ministerial decisions generally in the beginning of each year. Theses decisions are published in the *Official Gazette* (*Cong Bao*) produced in English by "Vietnam Law and Legal Forum" at 33 Le Thanh Tong, Hanoi. Tel: (84-4) 824-8670. Email: vllf@vnagency.com.vn For the 2000 forest cover data, this is given in Decision 10/2002/QD-TTg of 14 January 2002 published in the *Official Gazette* dated 8 and 15 March 2002 (issues number 9 and 10) (page 63).

Data for Indicator
Viet Nam's total area is 33 million hectares.

Historic forest cover data comes from the *Updated Description of the National Five Million Hectares Reforestation Programme's* "Table 2: Changes in Forest Cover in the Entire Country" (page 2) for 1943 to 1999. For 2000, the data comes from Decision 10/2002/QD-TTg.

Forest cover	*Percentage of total area*
1943	43.0
1976	33.8
1980	32.1
1985	30.0
1990	27.2
1995	28.1
1999	33.2
2000	34.4

As of 31 December 2001, the total forest area in Viet Nam (as per the government definition) was 11,314,626 hectares, of which 9,675,700 was classified as "natural forest" and 1,638,926 hectares as "planted forest" (plantation forests).

3. Percentage of Water and Air Quality Monitoring Stations Showing Improvements over the Baseline

Data Source
The annual *State of the Environment Report* from the National Environment Agency under MOSTE. Available from: www.nea.gov.vn or from NEA at 67 Nguyen Du Street, Hanoi. Tel: (84-4) 822-9728. Fax: (84-4) 822-3189.

Data for Indicator
This is a compound indicator using data from four pollution parameters. The data for the four parameters are given as well as the calculations for the indicator itself.

BOD in five key rivers

Year	Red (Hanoi)	Cam (Hai Phong)	Huong (Hue)	Han (Da Nang)	Saigon (HCM City)	# that Improved
1995	15.00	11.20	7.10	--	20.60	Baseline year
1996	6.40	11.20	7.20	--	5.25	2
1997	14.90	29.20	2.60	--	6.50	3
1998	9.49	11.30	10.60	--	--	1
1999	9.89	10.67	11.20	--	--	2

N-NH4 in five key rivers

	Red (Hanoi)	Cam (Hai Phong)	Huong (Hue)	Han (Da Nang)	Saigon (HCM City)	# that Improved
1995	0.34	0.98	0.78	0.03	1.38	Baseline year
1996	0.16	0.41	0.20	0.11	0.55	4
1997	0.18	1.25	0.30	0.11	1.91	2
1998	0.10	1.58	0.39	0.24	0.03	3
1999	0.78	0.70	1.40	0.23	--	1

Dust in six key areas

Year	Hanoi industrial zone	HCMC industrial complex	Hai Phong cement plant area	Da Nang steel plant area	Bien Hoa 1 industrial zone	Hanoi Ly Quoc Su street	# that Improved
1995	0.866	0.920	0.950	0.660	1.050	0.130	Baseline year
1996	0.470	0.450	0.720	0.740	0.640	0.280	4
1997	0.330	0.350	0.500	0.410	0.610	0.330	5
1998	0.365	0.490	0.550	0.320	0.510	0.256	5
1999	0.364	0.400	0.546	0.380	0.490	0.325	5

SO2 in six key areas

Year	Hanoi industrial zone	HCMC industrial complex	Hai Phong cement plant area	Da Nang steel plant area	Bien Hoa 1 industrial zone	Hanoi Ly Quoc Su street	# that Improved
1995	0.050	0.272	0.360	0.160	1.020	0.013	Baseline year
1996	0.100	0.140	0.270	0.120	0.170	0.050	4
1997	0.154	0.158	0.407	0.062	0.107	0.089	3
1998	0.055	0.391	0.192	0.061	0.145	0.024	3
1999	0.127	0.132	0.222	0.238	0.142	0.074	3

Aggregate Indicator

Year	Total # that improved (a)	Total % reporting improvements (b)	Total % reporting worse (c)
1995	Baseline year	Baseline year	Baseline year
1996	14	67%	33%
1997	13	62%	38%
1998	12	60%	40%
1999	11	58%	42%

This table: (a) adds the total number of reporting stations that show an improvement in the data over the baseline year of 1995; (b) counts the total number of data points and divides by the total # that improved (a); and (c) subtracts the total % reporting improvements from 1.

Annex 2: Terms of Reference for Localizing the Environment IDT

Revised after first meeting on 12 July 2001[91]

Background

The International Development Targets come from the agreements and resolutions of the various world conferences organized by the United Nations in the first half of the 1990s. These conferences provided an opportunity for the international community to agree on steps needed to reduce poverty and achieve sustainable development. Each of the seven goals addresses an aspect of poverty. They should be viewed together because they are mutually reinforcing. Higher school enrolments, especially for girls, reduce poverty and mortality. Better basic health care increases enrolment and reduces poverty. Many poor people earn their living from the environment. So progress is needed on each of the seven goals.

Goals cannot be imposed—they must be embraced. Each country must identify its own particular goals, its own path to development, and make its own commitment through dialogue with its citizens. Viet Nam, like many other countries, has committed itself to working towards the seven International Development Targets (IDTs). Viet Nam signed the Millennium Declaration at the Earth Summit in September 2000 together with 180 other countries. An initial report was prepared with the assistance by UNDP early 2001, covering in brief presentations the current status vis-à-vis the seven IDTs for Viet Nam. The report shows that on average Viet Nam is doing well on these targets. In fact, it is likely to surpass several targets before the time limit is reached. It is also agreed that if Viet Nam's progress on human development indicators would be disaggregated by for example geographical region and ethnicity the data could show that average progress hides local stagnation. Furthermore it is recognized that these IDTs do not express Viet Nam's own ambitions. This has led the Poverty Task Force of Viet Nam to take the initiative and support the localization of the IDTs by developing papers for eight selected sectors,[92] which are Education, Health, Infrastructure, Economic Opportunity, Social Protection, Environment Ethnic Minorities and Governance. The development process of each of the papers will be coordinated and facilitated by members of the Poverty Task Force. The individual papers have to be presented by the end of August 2001. The reports are then discussed and synthesized in order to present them mid-November 2001 at the Consultative Group Meeting in Tokyo.

UNDP has taken over the responsibility to facilitate the work for the IDT on Environment. The Earth Summit held in Rio de Janeiro in 1992 spawned the IDT for the environment, which states:

> *Implement national strategies for sustainable development by 2005 so as to reverse the loss of environmental resources by 2015.*

At present the Vietnamese Government has developed the National Environmental Strategy 2001 – 20100 and the Environmental Action Plan for the next five years. The documents identified three strategic objectives including: (1) to prevent and control pollution (2) to protect, conserve and sustainably use natural and biodiversity resources (3) to improve environmental quality in urban, industrial and rural areas. The documents also identified 13 specific goals and 8 cross-cutting objectives. Concrete targets are also set up under each of the objectives.

The IDTs are long-term and general. Thus, more specific, intermediate indicators are needed to measure progress towards the target.

Within Viet Nam, the government-donor Poverty Task Force had drafted overall Terms of Reference (TOR) on how to localize the IDTs by, among other things, defining intermediate indicators.

As per the overall TOR, each IDT will have a working group to guide the process of drafting a report on localizing an IDT. The crux of this report will be

[91] Participants were Maurice Dewulf, Nguyen Ngoc Ly, Tran Thi Thanh Van (UNDP), Martin Geiger, Hoang Phuong Thao (WWF Indochina Programme), Dau Quoc Anh (ECO-ECO), Marrku Kohonen (UNIDO), Amatsu Kuniaki (JICA).

[92] In the meeting of the Poverty Task Force on June 5, 2001 the participants added the theme on Ethnic Minorities.

recommended indicators for Viet Nam to track the progress towards the IDT.

To make the IDTs more relevant to the Vietnamese context, the IDTs have been grouped into themes or sectors. For the environment IDT, the theme, sector and IDT are the same.

Each theme or sector has been assigned a lead agency to organize the drafting of an IDT report. UNDP is the lead agency for the environment theme/sector/IDT. This TOR follows the main points of the Poverty Task Force's IDT TOR.

Objective

To use a participatory process to recommend intermediate indicators that are appropriate to Viet Nam for the environment IDT, review process indicators, and discuss key actions needed to improve the indicators.

Outputs

1. Formation of an **Environment IDT stakeholders working group**.
2. A **draft report** (of about 20 pages) that will include, *inter alia*:

- Answers to the outline given by the Poverty Task Force and the guiding questions.
- Overview of the main targets of the Government that are specific to environment and presentation of the main policy, investment and institutional development challenges for achievement of these targets.
- Progress towards these targets, what the trends are and how these trends compare internationally.
- Three to five suitable intermediate indicators for the Environment IDT that are consistent with the government's Socio-Economic Strategy and National Environmental Strategy.
- A review of the process indicators (action plans, studies, laws) for the national Environmental Strategy.
- A discussion of key public actions needed to improve the intermediate indicators.
- Proposals for improving monitoring of indicators and data collection, including responsibilities and potential funding sources.

3. A **revised draft report** based on input from the working group and other interested parties to be submitted to the Poverty Task Force by 31.8.2001.
4. Contribution to a **workshop** in the second half of September on all the IDT indicators.

Tasks and drafting process

1. Determine the members of the environment IDT working group based on expressed interest government agencies, donors and NGOs.
2. Draft work plan. (See timetable below)
3. Convene first meeting of working group and review: (a) how the environment IDT fits with government strategies; (b) possible indicators for the IDT; (c) what key indicators are already tracked; (d) other stakeholders that should be consulted; and (e) the proposed work plan.
4. Revise work plan and budget as needed.
5. Draft the report following the guidance provided in the Poverty Task Force's *Localizing IDTs for Viet Nam TOR*, the 8 May 2001 *Minutes of the Poverty Task Force Meeting*, the 6 June 2001 *Suggestion from NGOs*, the above mentioned *National Environmental Strategy, 2001–2010*, the *National Environmental Action Plan, 2001–2005*, and the *Socio-Economic Development Strategy, 2001–2010*.
6. Submit the draft report to the working group members and other interested parties for comments.
7. Revise the draft report as needed.
8. Contribute to a workshop, as requested by UNDP, on all the IDT reports.

Timetable and preliminary work plan

- Draft report to be completed by 17 August 2001.
- Revised report to be completed by 31 August 2001.

The following table describes the steps and time frame for the development of the report:

[NB: this timetable was delayed because the indicator were not chosen by the working group until 10 August 2001.]

Annex 3: Outline of Viet Nam Development Target Papers

I. INDICATOR(S)

More than one indicator can be selected and the discussion which will take place in September will help narrow down among the options. Indicators should be based on an analysis of:

- International Development Targets or "International Best Practices" if IDTs are not available (e.g. in governance, infrastructure)
- Viet Nam's Sector Strategies, with a focus on those targets and goals which are more closely related to poverty reduction

II. BASELINE AND TRENDS

Trends should be projected based on current policies. The projections can then be compared to the targets to indicate if they are likely to be achieved. Projections should:

- Provide data for the following dates:
- 1990s (it may be 1990 or 1995, or it may be 1993 and 1998 if VLSS data need to be used) 2000, 2005, 2010
- Give some international comparisons (Asian countries comparable by situation or income level, e.g. Indonesia, China, India)
- Disaggregate wherever possible by: urban/rural, seven regions, income or expenditure quintiles, gender, and ethnicity.

III. KEY FACTORS TO ACHIEVE THE GOALS AND RELATED POLICIES

Highlight what will be required to achieve the targets, and especially what changes in approach may be needed if there is a gap between trends and targets

- Factors that will be needed to achieve the goals (e.g. clean water and immunizations to reduce child mortality; school facilities and teachers to universalize lower secondary education)
- Main policies required to ensure that those factors are in place (including changes needed to reach unserved groups)

IV. RESOURCE ALLOCATION IMPLICATIONS

The objective is to give a first indication of the implications of achieving the targets in terms of public budget allocations (capital and current), role of the private and public sector, use of external assistance

- Cost of the required policies (rough order of magnitude)
- Sources of funding best suited to meet these costs
- Compatibility of the budget implications with existing budget
- Expenditures (are shifts needed? Of what nature?)
- Revenues (are additional or different revenue sources needed?)

V. MONITORING

- A few intermediate indicators linked to above policies (e.g. teacher/student ratios for quality education)
- Existing data sources and gaps. Recommendations on how gaps could be filled

Papers should not exceed 30 pages in length including tables and figures. They can also be considerably shorter if so decided by the respective working group. Attempts should be made to cover (in a qualitative way, if quantification is impossible) all sections. This will be easier for some papers than for others.

Annex 4: Working Group Ranking of Potential Indicators

The environmental IDT Working Group meeting of 10 August 2001 ranked all potential indicators into three groups and then voted on the highest priority indicators to be included as the proposed environment IDT intermediate indicators.

Those present at this meeting were:

1. Ms Dagmar Schumacher, UNDP
2. Mr Chander Badloe, Chief of Water and Environment Sanitation Section, UNICEF
3. Pham Minh Thoa, Department for Forestry Development. MARD
4. Mr Tran Quoc Bao, Head of Conservation Division, FPD
5. Nguyen Van Truong, Eco-Eco Institute
6. Mr Le Minh Duc, Deputy Director, Dept. for Science, Technology, Environment & Education, MPI
7. Ms Bui Thi Thu Hang, UNIDO
8. Mr Nguyen Binh Thin, Director, Science and Technology Department, MARD
9. Mr Tran Duy Binh, Director, Hydrometeorological Services
10. Mr Le Kim Khoi, Deputy Director, General Department, CEMMA
11. Mr Klaus Greifenstein, UNDP
12. Mr Kuniaki Amatsu, JICA
13. Mr Tran Van Nhan, Viet Nam Cleaner Production Centre
14. Martin Geiger, WWF Indochina
15. Cao Chi Hung, WWF Indochina

High relevance for the IDT Environment (the first four indicator have the highest priority)

Medium relevance for the IDT Environment

1. Population growth rate
2. Change of population density/quality of population
3. Air quality
4. Percentage of urban population using mass transit
5. Pesticide and fertilizer use per kilo of produce or per hectare of farm land
6. Percentage of Industry meeting international quality standards - ISO 14000 – (received one vote even though it was agreed just to vote from the list of the highly relevant indicators)
7. Number of chemical or oil spills
8. Percentage of marine area which are effectively protected
9. Area covered by concrete in urban zones

Low relevance for the IDT Environment

There were no potential indicators considered as being of low relevance.

	Indicator	*Votes*
1.	Percentage of the population that has long-term access to safe water & water quality in rivers and lakes	6
2.	Public expenditure on environment/GDP or per capita	6
3.	a) Forest Cover b) Percentage of the country area that is within a special use forest c) change in forest quality and d) the representation of species	4
4.	Percentage of industry that has waste water treatment facilities and waste treatment facilities	3
5.	Number of government line ministry strategies and action plans that explicitly incorporate environmental concerns	2
6.	Number of cases of industrial pollution accidents	2
7.	Land and soil degradation	2
8.	Percentage of solid waste disposed of in a sustainable manner	
9.	a) Sustainable fishing methods applied b) change in quantity of fish caught per unit of work expended c) change in the size of fish caught	
10.	Percentage of households with sustainable management of sewage (e.g. central sewerage system with treatment facilities)	