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TO OUR READERS

Centuries of tradition sit at the doorstep of cyberspace in Timbuktu, where a satellite dish stands over a nomadic encampment. As the tools of the Information Age multiply in the developing world, the challenge lies in putting them to work for the common good. Telecentres and virtual business corridors — two of the initiatives featured in this issue of Best of Reports — show how people in the South are exploring the potential and power of information and communication technologies.

Similarly, Canada’s International Development Research Centre (IDRC) is becoming increasingly “wired” within its own work environment. Public and private websites, email, and online document-sharing and discussion groups are all part of the Centre’s around-the-clock, around-the-world business day. Reports Online, our electronic flagship, features news, events, interviews, and in-depth stories about IDRC-supported projects and research. Researchers have told us that Reports Online is an important vehicle for sharing their results with scientific colleagues, students, and journalists. Articles have generated comments and requests for information, along with stories in other publications.

Statistics show that the Reports Online site is one of the most popular on the Centre’s website, with an average of 3,000 visits a month. But statistics also reveal another side to the story. Access to the Internet in the developing world, although growing, still lags behind that of Northern countries. In Africa, for example, there is about one Internet user for every 1,500 people; in North America, the ratio is one in every four. Best of Reports, with its selection of full-length feature stories and summaries of articles published on our site during the last year, represents a commitment to readers who rely on the printed word rather than the web. Each story has been updated to reflect new developments since it was first published.

Through Best of Reports, IDRC is doing its best to keep a global readership informed of research that is conducted in the South for the well-being and sustainable development of its communities.

Maureen O’Neil – President, IDRC

Maureen O’Neil – President, IDRC
~ africa ~
Making a simple telephone call used to cost Arnold Yilani a lot of time and money. Yilani’s village of Ndevana in Eastern Cape Province, South Africa had no public telephone. To call someone, Yilani would take a 20 minute taxi ride to King William’s Town. There, he could use a payphone and hope the person he wished to reach was available. For Yilani, a student taking correspondence courses at a technical college in Johannesburg, contacting his lecturer to discuss difficulties with an assignment could turn into a day-long outing.

**PILOT PROJECT**

In March of 1998, Yilani’s life got easier with the arrival of an experimental telecentre. This telecentre is part of a pilot project coordinated by the Universal Service Agency (USA), a national statutory body that promotes and monitors access to phone, fax, and computer services among disadvantaged and underserviced communities. The USA is assisted by two IDRC projects: one supporting the establishment of telecentres; the other tracking the effects and assessing the likely impacts of telecentres on local communities, and evaluating their potential role in achieving universal access.

In 1984, Sir Donald Maitland, Chairman of the Independent Commission for Worldwide Telecommunications Development, identified the lack of basic telecommunications infrastructure as the “missing link” between developing and developed countries. Maitland pointed out that Tokyo had more telephones than the entire African continent. His observation was as true then as it is now. Even in South Africa, which has an overall “teledensity” of 9.5 telephone lines per 100 people, the density in some rural areas and black townships is less than 1, says Ramateu Monyokolo, Manager of the USA’s National Project Support and Partnership Department.

**INFORMATION ELITE**

According to Peter Benjamin, a lecturer at the University of the Witswatersrand in Johannesburg, in many countries the development of a hi-tech computer society has led to the creation of an information elite and another form of deprivation for the poor. South Africa is starting to use telecentres to lessen the inequality. While financial constraints will prevent the installation of a phone line in every home for at least the next 30 years, the government hopes to provide access to telephones within five kilometres — or half an hour’s walk — of every home, over the next decade. Most of the USA’s financing comes from a 20 million rand fund set up following the privatization of Telkom, the formerly state-owned monopoly. This fund is supplemented by a tax on cellular telephone companies and support from organizations like IDRC. By June 1999, 18 telecentres had opened across the country, and the USA expects to have several hundred in operation by the end of 2002, when its mandate expires.

**TOWARD UNIVERSAL ACCESS**

“Hundreds of additional telecentre points may be needed beyond 2002 to make universal access a reality,” says Benjamin, who has also worked as a consultant for the USA. “It is anticipated that the telecentres rollout will be accelerated through partnerships with existing public institutions (churches, schools, health clinics, community centres, etc.) to avoid the logistics, risks, and expense of setting up new institutions from scratch.”

Before opening a telecentre, the USA considers such criteria as the needs of a community and the long-term prospects for economic sustainability. After approving a location, the Agency helps set up a consortium of community groups, which has a financial stake in the centre’s operation. After an initial two-year period, the consortium is given full responsibility for the centre. Each month, the USA monitors its...
growing network of telecentres for signs of success that can be incorporated into future centres.

**Development Tool**

According to Monyokolo, a telecentre is both a means of communicating with family and friends and a tool for education and development. The ultimate aim is to give communities the skills, information, and links they need — including access to political representatives — to uplift people's lives and make them better informed citizens, he says.

Bukelwa Gidi has visited the centre serving Ndevana almost every day since it opened. Like most people, she comes mainly to use the telephone. But the 21-year-old also uses one of its four computers to send résumés which, she hopes, will help her land a job in South Africa's second-poorest province. Once a teacher is found, students from the nearby high school will be brought to the centre to learn how to type and use the Internet.

**Precondition of Development**

The telecentre concept is strongly supported by Jay Naidoo, South Africa's Minister for Post, Telecommunications and Broadcasting. "In the Global Information Society, there is a direct positive correlation between access to telecommunications and socioeconomic development," Naidoo told the Africa Telecom Conference held in Johannesburg in May 1998. "We realize that telecommunications is no longer the consequence of development, rather it is a necessary precondition."

*Alan Martin is a Canadian journalist who was reporting from South Africa on an IDRC-supported Gemini News Service fellowship.*

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www.idrc.ca/reports/read_article_english.cfm?article_num=267
TAPPING INDIGENOUS KNOWLEDGE: ANTIOXIDANTS IN THE TRADITIONAL DIET OF THE MAASAI

The traditional diet of East Africa's Maasai people may contain powerful plant-based antioxidants with the potential to reduce cholesterol levels and provide other health benefits, according to research by Timothy Johns, a Canadian ethnobotanist at McGill University.

The Maasai are cattle-herding pastoralists, about a million of whom inhabit the semi-arid lands of Kenya and Tanzania in an area bordered by Mount Kilimanjaro in the east, the Serengeti Plain in the west, and the Ngorongoro Crater in the south. Dr Johns' study took place near Loliondo, north of Ngorongoro.

Cattle are the basis of the Maasai economy, providing food mainly in the form of milk and meat. The Maasai are well known both for their strongly independent ways and their skill with weapons.

HIGH-FAT STAPLES

They could also become known for the traditional foods and medicinal plants that supplement such high-fat staples of milk, meat and maize meal, Dr Johns reported during a natural products conference held in 1998 in Ottawa. The week-long event, featuring speakers from Africa and North America, was organized by IDRC and l'Université du Québec à Chicoutimi.

According to Dr Johns, up to 66% of the calories consumed in the Maasai diet come from fat, primarily saturated fats — resulting in a total daily intake of more than 2 000 milligrams of cholesterol. Yet, their mean serum cholesterol levels are in the normal to low range. To put this in context, North American dietitians recommend that fats provide no more than 30% of the calories in a typical Western diet.

INDIGENOUS KNOWLEDGE

Dr Johns became interested in this phenomenon through a project funded by IDRC under its People, Land, and Water Program Initiative, which examined the Maasai's indigenous knowledge of local resources. The project involved the McGill University-based Centre for Indigenous People's Nutrition and Environment (CINE), the Korongoro Integrated People's Oriented to Conservation (KIPOC), the Institute of Traditional Medicine, and the Tanzania Food and Nutrition Centre.

Dr Johns said there are several possible explanations for the Maasai's low cholesterol levels including their high fitness level, unknown genetic or dietary factors, their high calcium intake, or their relatively low caloric intake. Alternatively, their cholesterol levels may be influenced by substances found in traditional plant products, such as chew sticks and gums stripped from local plants. For example, some of the chew sticks they use contain saponins, a family of natural emulsifiers.

PLANT PRODUCTS

So far, the research team has identified some 25 plant products used by the Maasai. Among them are latex from the Ficus tree and roots and barks of various plants which are chewed to alleviate thirst. A second plant gum, which may have hypolipidemic (serum cholesterol-lowering) properties, is produced by a species related to the myrrh plant. Myrrh has been valued since biblical times for its medicinal properties.

Another source of antioxidants are species of Acacia, whose bark the Maasai use to flavour their meat soups and milk. Some crude Acacia extracts seem to have stronger antioxidant properties than either vitamin C or vitamin E — the most popular antioxidants sold in the North.

TREMENDOUS POTENTIAL

"I think there is a tremendous potential for the development of these products," he said. "North Americans are obsessed..."
Despite a high-fat diet of milk and meat, the Maasai of East Africa have low cholesterol levels. Researchers think that one explanation may lie in the antioxidants found in plant products consumed by the Maasai, such as bark used to flavour soups.

**IMPORTANT LESSONS**

Dr Johns said his data illustrate the wisdom of the Maasai preserving their traditional way of life. "I think that there are important lessons to be gained from an examination of traditional ways of life, and that there are a lot of behaviours that we need to go back and look at more closely," he concluded.

*Keane J. Shore is an Ottawa-based writer and editor.*

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www.idrc.ca/reports/read_article_english.cfm?article_num=268
USING ALL OF THE OLIVE: TRANSFORMING AN ENVIRONMENTAL PROBLEM INTO AN ECONOMIC OPPORTUNITY

A simple fermentation technique has the potential to help solve three major challenges of concern to rural Moroccans: how to safely dispose of 180,000 tonnes of olive “dregs,” which are cakes formed from crushed olive sediment; how to ensure that animal feed is affordable after the government reduces imports; and how to create opportunities for educated, jobless youth to start their own microbusinesses.

All of these goals can be achieved using a solid state biomass fermentation process to enrich the protein and reduce the cellulose content of olive dregs, thus making them suitable for animal feed and other uses, reported Mustapha Ismaili-Alaoui, of Morocco’s Agronomics and Veterinary Institute (IAV) Hassan II, during a natural products conference held in May 1998 in Ottawa. The week-long event was organized by IDRC and l’Université du Québec à Chicoutimi, with assistance from scientists at Carleton University and the University of Ottawa.

WASTE PRODUCTS
Olive dregs are the waste byproducts of some 16,000 Moroccan “maârsa,” which are small, traditional olive oil extraction mills. Until now, these cakes have had little economic value. Some are burned in boilers or used to heat homes, but most of them are dumped in the environment, where they may be contaminated by fungi or release toxic compounds. As a result, fungal toxins or polyphenol compounds that resist bacterial degradation can leach out, posing a risk to human and environmental health. This is how some water sources such as the Oued Sebou, a 500 kilometer long river, have become polluted.

With funding from IDRC, IAV Hassan II, and other institutions, Dr Ismaili-Alaoui set out to help the farmers who operate maârsa transform olive wastes into useful products. His group already had some experience in the fermentation of bagasse, or sugarcane pulp. The Moroccan team collaborated with Canadian scientists, led by Dr André Morin of the Food Research and Development Centre, who shared their expertise in using fermentation to generate flavour extracts.

FERMENTING OLIVE DREGS
Equipped with a small laboratory incubator, the Moroccans fermented a mixture of olive dregs, locally available bagasse, and a microbial starter culture. The high carbon and nutrient content of the sweet bagasse promotes microbial growth. Their initial experiments showed that with the right microbes, the olive cake mixture could be transformed within two to three days.

Dr Ismaili-Alaoui and his colleagues identified the best performing strains of microbes from IAV Hassan II's extensive collection, which includes organisms isolated from the natural environment and obtained from international collections. Ultimately, three strains were selected based on their ability to increase protein levels and decrease the cellulose content of
the olive dregs — thus improving their digestibility — and also to generate secondary metabolites with commercial potential, such as enzymes and aromatic compounds.

**Commercial Enzymes**

Nutritional measurements showed that the fermented olive dregs contained substantially more protein and were 31% more digestible than the original product. Moreover, the team obtained a variety of enzymes including lipases and esterases, which are used to prepare natural food flavours. In fact, the olive dregs yielded more lipases and esterases than other existing techniques can generate, Dr Ismaili-Alaoui told the conference. Among other applications, these lipases could be used to help reduce the preparation time of traditional Moroccan foods, such as smen (processed salt butter).

Based on a survey of Moroccan maârâa, the team then selected two farms as sites for further experiments. Dr Ismaili-Alaoui’s laboratory provided the microbes needed to start the fermentation process. The farmers also contributed by turning their greenhouses into incubators. They installed a second ceiling made of black plastic film, which acts as a solar blanket to bring the greenhouses up to fermentation temperature.

**Expected Benefits**

If the onsite results match those obtained in the laboratory, “we can expect several benefits,” said Dr Ismaili-Alaoui. For example, the Moroccan government is planning to reduce imports of livestock feed. Although the price of traditional feeds will likely rise, fermented olive dregs should be a more affordable alternative. Moreover, access to a local source of animal feed will make farmers less vulnerable to feed supply fluctuations during periods of harsh climate. Finally, young Moroccan graduates who are now victims of high unemployment rates will have opportunities to create their own businesses by exploiting markets for the enzymatic byproducts of fermented olive dregs, he concluded.

Raymond Laprée is a writer based in Aylmer, Quebec.

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www.idrc.ca/reports/read_article_english.cfm?article_num=286
PREVENTING MALARIA: MIXING PUBLIC HEALTH INTEREST WITH PRIVATE PROFIT

For most African children, the whine of mosquitoes is a familiar sound as they fall asleep. It is a sound with often deadly implications, because chances are high that some of the mosquitoes carry the parasite that transmits malaria, a potentially fatal illness for small children. But when a child's bed is protected by an insecticide-treated net (ITN), no mosquito can reach the child. Indeed, mosquitoes will probably avoid the bedroom because of the deterrent quality of the insecticide. Unfortunately, there are millions of children — and adults — who do not sleep beneath such nets. That fact alone helps explain why over 2.5 million people, mostly young children, die from malaria each year, mainly in Africa.

DISEASE REDUCTION

Studies have shown a 20% to 63% reduction in malaria disease rates following the introduction of insecticide-treated nets. But African governments do not have the resources to provide ITNs to large numbers of their citizens, let alone to entire populations. Nor can they ensure that the nets are retreated every six months with pyrethroid insecticide, a biodegradable material that is safe for humans. But more people could use nets if governments joined forces with selected private-sector partners and donor agencies, according to research done by PATH Canada as part of the Net Gain for Africa program, funded through IDRC. (In a related initiative, IDRC is sponsoring efforts by the Waterloo, Ontario-based Mennonite Economic Development Associates to encourage private sector investment in ITNs.)

Although ITNs are a proven way to reduce malaria risk, many families who need the nets are not using them. One reason is that 20% to 40% of Africans have little or no cash income, explains Catherine Reed, the program coordinator at PATH Canada. Some people will never be able to afford a net. For this group, free or subsidized ITNs should be provided through the work of governments and aid agencies such as UNICEF, suggests Reed.

MODERATE INCOMES

At the other end of the socioeconomic scale is the wealthiest quarter of the African population, many of whom already have nets in their homes, says Reed. In between the richest and the poorest are those with low to moderate incomes, but no nets. People in this category could afford to shift their spending priorities to acquire one or more nets. They include the 50% of Ghanaian families (some 1.6 million families) that spend money on coils, repellents, and sprays — tools that are less effective than ITNs in controlling mosquitoes.

Reed says that the popularity of nets seems to have less to do with a country's wealth than with local traditions. For instance, there is a much stronger tradition of net use in Burkina Faso, a fairly poor country by African standards, than in its more affluent neighbour, Ghana. "Tradition is very important. What we're trying to do is to create tradition," stresses Reed. Or, in the case of Ghana, the goal is to recreate tradition, because a report by PATH Canada notes that nets were used there until the 1970s, a period of political upheavals. But they did not return to widespread use after stability was restored. Similarly, civil strife and war in Uganda during the 1970s and 80s interrupted the tradition of net use there, never to return.
**Draft Proposal**

In January 1999, PATH Canada, in collaboration with BASICS (Basic Support for Institutionalizing Child Survival — a project of the US Agency for International Development), presented a draft proposal to Ghana’s Ministry of Health and other parties to launch a public-commercial partnership for the sustainable marketing of insecticide-treated materials. Three months later, a local Task Force was established, comprised of representatives from the Ministry of Health, donor agencies, the World Health Organization, Ghanaian and international NGOs (including PATH Canada, BASICS, and the Malaria Consortium). The Task Force has since developed a more comprehensive proposal, which is in the process of being funded by USAID. Reed foresees the partnership model serving as a pilot for adoption by the World Health Organization’s Roll Back Malaria campaign and eventually being proposed to other African countries.

The Task Force proposal recommends first that market researchers investigate the tastes and lifestyles of the target consumers. Based on the research results, the logistics of supplying ITN products would be explored with netting and insecticide manufacturers, importers, and retailers. This step could involve major international firms and smaller Ghanaian companies. According to Reed, firms that wish to participate will use existing distribution pipelines to deliver good-quality and affordable products to the marketplace. “The private sector must make a commitment. You expect some contribution from private suppliers if you are helping to create a market.”

**Stimulating Demand**

Simultaneously, the proposal calls on the public sector to create a demand for ITNs and regular retreatment with insecticide. This would require education efforts to inform consumers about the links between mosquitoes and malaria, and the efficacy of treated nets, followed by advertising campaigns to promote ITNs. In Ghana, there are both home-grown and global advertising firms capable of mounting sophisticated mass-market campaigns. These campaigns will complement a sector-wide campaign by the Ministry of Health, which is designed to help all health staff become better advocates of malaria control, especially the use of ITNs.

This project is “the first instance in Africa of a truly ministry-led project [for promoting ITNs] that is going to harness the potential of the private sector and the potential of donor support.”

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www.idrc.ca/reports/read_article_english.cfm?article_num=362
Cover Crops: Improving Soil Fertility in Africa

Soil depletion and degradation are major problems leading to hunger and poverty in sub-Saharan Africa (SSA). The region's population exceeds 500 million people — almost half of whom live on less than US$1 per day — and is increasing by about 3% per year. Since the 1970s, food production across much of SSA has not kept pace with population growth. The results include increased pressure on the land, a decline in soil fertility, and an acceleration of desertification.

In the past, many African farmers maintained soil fertility by practicing shifting cultivation or applying chemical fertilizers and herbicides on their fields. “But conditions have changed rapidly over the last decade,” notes Daniel Buckles, a senior program officer at IDRC. For example, the productivity of traditional shifting agriculture systems has plummeted, while access to subsidized agrochemicals is declining in many countries.

Alternative Strategies

Today, the list of alternative strategies for improving soil fertility includes the use of compost, crop residues, animal manure, biomass, chipped wood, hedgerow intercropping (alley farming), and cover crops — such as legumes. With funding from IDRC’s People, Land, and Water Program Initiative, an information centre based in Benin is helping to spark interest in the latter as a means of halting the decline of African soils.

Launched in 1997, the Center for Cover Crops Information and Seed Exchange in Africa (CIEPCA) is involved in: (i) collecting and disseminating information on cover crops as well as organizations and individuals working with cover crops in Africa; and (ii) identifying, screening, multiplying, and disseminating cover crop seeds. CIEPCA was created in response to an October 1996 workshop on cover crops and green manure, held in Cotonou, Benin. The workshop was coordinated by the International Institute of Tropical Agriculture (IITA), the Benin-based Sasakawa 2000 aid project, and IDRC.

Sustainable Agriculture

“At IITA, cover crops have been recognized for years as being critical to sustainable agriculture,” says Robert Carsky, an IITA agronomist and CIEPCA project leader. “But it’s hard to sell farmers on their benefits because they have to forgo planting food crops in order to grow cover crops.”

When farmers do grow cover crops, “it’s not always for soil fertility reasons,” adds Dr Carsky. For example, more than 10 000 farmers in southern Benin are now using Mucuna pruriens — or velvetbean — a fast-growing plant that densely covers fallow fields, partly because it suppresses the tenacious weed, spear grass (Imperata cylindrica). According to the 1998 IDRC publication, Cover Crops in West Africa: Contributing to Sustainable Agriculture, which is based on the Benin workshop, small-scale farmers are more likely to adopt cover crops when:

- they are grown on land that has few opportunity costs (for example, fields intercropped with food or commercial crops, land left fallow, land under tree crops, or during periods of expected drought, flooding, or freezing);
- their use requires very little additional labour (or saves labour by controlling weeds);
- seed is readily available at no out-of-pocket cost to the farmer; and
- their biomass (seeds, leaves, vines) provides benefits over and above improvements to soil fertility.

CIEPCA

One of the goals of CIEPCA is to promote research and disseminate information on the other benefits of cover crops — such as their potential as food, feed, and fuel.
sources — in order to help encourage their adoption. "Many traditional cover-crop systems involve legumes that are appreciated not only because they maintain soil fertility but also because the seeds or pods can be eaten by people," states Cover Crops in West Africa.

In Africa, Mucuna seeds are occasionally harvested for food and animal feed. Studies have shown, however, that some varieties contain L-dopa — a chemical used to treat Parkinson's disease — and other potentially toxic compounds. In 1989, more than 200 people developed severe neurological symptoms during a drought in Mozambique, after drinking water that had been used to boil Mucuna seeds. And while cattle thrive on velvetbean meal, there are numerous reports of chickens, pigs, and other livestock becoming ill or dying after ingesting Mucuna.

NUTRITIONAL SAFETY

Scientists in Africa and Canada are currently investigating the chemical composition of popular cover crop species to shed more light on their nutritional safety. Studies by IITA researchers, for example, indicate that L-dopa can be reduced to levels that are safe for human consumption if Mucuna seeds are cracked, soaked in water overnight, boiled for 20 minutes, and then soaked overnight again. "However, toxicologists recommend several more toxicological tests for other possible antinutritional factors before the flour is launched for large-scale consumption," states Cover Crops in West Africa. Some of this work is now being done at the University of Ottawa.

Recent experience "leads us to think that cover crops can be viable and highly beneficial components of many cropping systems," concludes Cover Crops in West Africa. "Although the development of food and forage uses of cover crops is probably the most important challenge, it also offers a very important opportunity for soil-improvement practices to contribute to sustainable agriculture."

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www.idrc.ca/reports/read_article_english.cfm?article_num=382

* THE GROWING POPULARITY OF COVER CROPS

"In just the last few years, more than 10 000 farmers in Benin have taken up the opportunity to use Mucuna pruriens to control Imperata cylindrica and improve soil fertility." Farmers in Burkina Faso, Ghana, Guinea, southern Mali, and Togo have also adopted Mucuna. Meanwhile, in Latin America, "more than 125 000 farmers are using cover crops in the state of Santa Catarina, in southern Brazil, and many more farmers in the neighbouring states of Paraná and Rio Grande do Sul are using them too. In Central America and Mexico, more than 200 000 farmers appear to be using cover crops in a wide variety of cropping systems."

From: Cover Crops in West Africa: Contributing to Sustainable Agriculture — full text online at: www.idrc.ca/books/look/852/index.html
"Every day I fear of getting raped," says Soweto resident Lerato Moloi. "I'm sick and tired of living this way."

Last year her teenaged sister, Mpho, joined the growing number of South African women who have fallen victim to perpetrators of sexual violence. While Mpho's rapist remains at large, she has become a recluse, rarely venturing far from the family's two-bedroom house in the district of Jabulani. "She is still not right," says Moloi. "She used to be a very outgoing girl."

**GRIM STATISTICS**

South Africa's rape statistics are grim. More than 50 000 cases were reported to police in 1996. The mere mention of "jackrolling"—also perversely called "recreational rape"—where victims are abducted and repeatedly assaulted, strikes terror in the hearts of township women.

With financial support from IDRC, the Johannesburg Southern Metropolitan Local Council (SMLC), in partnership with CIETafrica, launched a "social audit" in 1997 to investigate the causes of rape and other forms of sexual violence. Within its catchment area of around 1.5 million people lies the central business district, 48 informal settlements, most of Soweto, as well as the more affluent suburbs of Glenvista and Mondeor. Almost all of the country's racial, ethnic, and social groups are represented in this area.

**FIELD WORK**

After months of consultations with community leaders, SMLC-CIETafrica field workers entered some of the most violent areas. The initial research, which took place over a four-month period, involved interviews with more than 6 000 people including ordinary men and women, high school students, police, social workers, public prosecutors, magistrates, district surgeons, and government officials.

Once role players have a chance to address the findings, the field workers, who were chosen from respected community organisations, will return to conduct further interviews, monitor the impact of the project, gauge its progress, and discuss the results with interviewees. Already, this study has amassed the largest and most detailed body of information on sexual violence in Africa. Some of the findings may help communities, police, and social service workers address the problem more effectively.

**NONPERPETRATORS**

Unlike other studies of sexual violence, the CIET study "focuses on neither the victim nor villain, but on a third group—the nonperpetrators, the men who do not rape," says Neil Andersson, Executive Director of CIETafrica. In a culture where sexual violence is common, understanding what makes men not rape is key to changing other men's antisocial behaviour, he explains.

Stiffer penalties and reducing corruption may decrease the violence, but convincing men of the positive value of not being abusive is the root to long term success, Dr Andersson elaborates. "It needs to be started at a very young age. We found young boys not yet in their teens thinking rape is a game, declaring themselves openly in favour of sexual violence."

**URGENT NEED**

"If the economic reconstruction under way in South Africa is to have any meaning for the people living in the area, there is an urgent need for preventive peacebuilding and psychological reconstruction," stresses Shan Naidoo, Strategic Executive for the SMLC's Health and Social Services department.

Although the SMLC initiative does not regard punishing sexual perpetrators as the only—or even the most important—action against rape, the researchers believe that a visibly effective strategy of allowing fewer rapists to go unpunished could be a starting block for real change.
In a study on rape in South Africa, three out of ten women reported being victims of sexual violence. Researchers heard some terrible tales: a priest who raped every girl on his street; a fourteen year old who was raped until she lost consciousness; and women who are so used to being violated that they stop thinking of themselves as victims.

REPORTING RAPES

The social audit has shown that "two out of three rape victims actually did inform the police," notes Dr Andersson. "Prior to this, the conventional wisdom was that women don't report these events, so little can be done about them."

"It seems only a small portion of reported events actually get turned into cases by police, fewer still are referred to court, and a tiny fraction get convicted." In 1997, for every 394 women who were raped, 272 went to the police, only 17 became "cases" of which five were referred to the courts and just one perpetrator was convicted. Cases are being lost not at the reporting stage but in the processing, where inefficiency, red tape or corruption can lead to the "disappearance" of a docket, he comments.

POLICE REACTION

Despite the critical findings, police reaction has been favourable. "We participated in this social audit and we will try our best to ensure a safer future for women and children," says Gauteng provincial police commissioner, Sharma Maharaj.

CIETafrica is currently channelling the results back to local stakeholders, including the police, magistrates, prosecutors, schools, and service workers. During the school feedback sessions, young men and women get an opportunity to share views through role playing and group discussion. "It is good to see guys and girls agree they need to communicate with each other," comments Thamie Mokoena, a field worker and counsellor for the organization, Women Against Women Abuse.

POSITIVE SIGN

While the task of changing men's perceptions is just beginning, one positive sign has already emerged. "A lot of people never talked about rape before," says Mokoena. "Sometimes we interview a group of people and come back an hour later to find them still discussing rape."
The GIFT study focused on men who don’t rape in an effort to identify ways to overcome the culture of sexual violence common in South Africa.

“We have this saying, Umuntu wo muntu ngabantu (a person is a respected person through other people),” adds field worker Tebogo Nkobo. “We have to bring back the culture of respect and unconditional love.”

Alan Martin visited South Africa for Gemini News Service on a fellowship funded by IDRC.

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**ENDING CORRUPTION OVER SEXUAL VIOLENCE CASES**

Three quarters of police respondents (as well as all of the prosecutors and magistrates) who were interviewed by CIETafrica said that corruption can affect rape cases.

Police officers identified three major problems: the alleged perpetrator gives the police money to destroy the case (21%); dockets are stolen, lost, or destroyed (20%); and the prosecutors or court officials are bribed to destroy the case (17%).

**Official position**

The official position is clear: “Strong action is taken against members of the South African Police Services found to be involved in corruption,” says Superintendent Govindsammy Mariemuthoo of the Soweto police. But there is little incentive to prosecute.

“The system leakage in sexual violence cases gives a strong message of the low social value of women, the unimportance of their abuse, and the low price perpetrators pay for sexual violence,” argues Neil Andersson of CIETafrica.

**Zero tolerance**

“Zero tolerance for police abuses, negligence, and bribery in rape cases will lead to increased confidence in the police, more cases registered, faster referrals to court, and higher conviction rates. Each station should establish an early warning system to identify 'at risk' officers, and remove from duty those who commit abuses,” Dr Andersson concludes.
"It's Rude to Say No": Vietnamese Attitudes Toward Smoking

The public attitude toward smoking is one of the main obstacles to tobacco control efforts in Viet Nam, suggests a recent study by Canadian and Vietnamese researchers.

"The former prevailing attitude in North America — that it is rude to tell someone not to smoke — is still the prevailing feeling here in Viet Nam," says Debra Efroymson, a PATH Canada advisor and coauthor of It’s Rude to Say No: Vietnamese Opinions about Tobacco Control, funded by Research for International Tobacco Control (RITC). (Formerly the International Tobacco Initiative, RITC is based at IDRC in Ottawa.)

Reasons for Smoking

Efroymson and her partners, Dr Vu Pham Nguyen Thanh of the Institute of Sociology in Hanoi and Dao Tran Phuong of the Hanoi Research and Training Center for Community Development, based their report on interviews with classrooms of students and with individuals — including healthcare workers, teachers, and tobacco vendors. They found that Vietnamese people smoke "to prevent cold and boredom, to reach out to their friends by offering and accepting cigarettes, because someone encouraged them, to lose weight, to show they’re not stingy, because their job requires it," and for other purposes.

"One of the most common reasons men give for smoking is to be masculine," states the report. "In one group discussion, six out of ten young women agreed that if a man smokes, it makes him look more manly." By contrast, female smokers are generally considered unladylike.

Skeptical Attitudes

Most of the people who were interviewed had heard that cigarettes are harmful, "but they often question that information, or qualify it to the point of erasing all concern." They were also skeptical about the addictiveness of cigarettes, or unsure what addiction means. In addition, the subjects generally viewed tobacco as economically beneficial to Viet Nam. Only a minority believed that the health costs associated with tobacco-related illness could cause long-term economic harm. Many Vietnamese misunderstand the intent of government measures to restrict tobacco use and, in fact, are openly hostile.

"Clearly there is a great need among the population at large — and we suspect among policy makers as well — for better information about tobacco, so people can make informed choices both about whether to smoke and about policies on tobacco control," says Efroymson.

Political Mapping

It’s Rude to Say No grew out of a larger study, which used political analysis software to map the political environment surrounding Vietnamese tobacco policy. The research team used this software to identify key players, their positions and interests, and how tobacco policy affects them. Their results pinpointed opportunities and obstacles for potential antismoking policies, illustrating which ones are most likely to succeed.

Viet Nam was the focus of the RITC study because multinational tobacco firms had only recently entered the country and begun to promote their products. "The contrast between the situation before and after Viet Nam’s economy opened up was dramatic," says Efroymson. "It was also clear that smoking rates in Viet Nam were quite high, that smoking is a big part of the culture, and that tobacco control efforts were weak."

Recommendations

It’s Rude to Say No calls for more extensive public awareness campaigns on the dangers of tobacco, including the effects of secondhand smoke. In addition, "people need to understand more clearly the likely
“Even though a worker has a small income he will have to lose a portion to smoke, he won’t be able to bring all his money home to his wife and children even though he loves his family very much.” A student argues that raising cigarette prices as a strategy for tobacco control would penalize the poor. (From It’s Rude to Say No: Vietnamese Opinions About Tobacco Control.)

economic impact of tobacco consumption on Viet Nam,” as current generations of smokers gradually overburden its health care system.

“Until people better understand the true extent of the harm caused by cigarettes to health and economy, and the motivation behind government measures to control tobacco, any government measures are likely to meet with strong opposition and current educational attempts are likely to fail,” the report concludes.

FUTURE PLANS
The research team is using these findings to plan further activities including a series of reports on tobacco, health, and economies, which are intended to help influence the opinions of Vietnamese decision makers and, ultimately, of the general population. But Efroymson says there is much more to do. “We hope in future to work more closely with policy makers, giving them information and advice on reducing the impact of tobacco on health and the economy,” she stresses.

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www.idrc.ca/reports/read_article_english.cfm?article_num=289
Tackling Deforestation in Viet Nam: Learning from Ethnic Minorities

In Viet Nam, the agricultural know-how of ethnic minorities—a long overlooked source of knowledge—may soon help resolve the country's deforestation problems.

With funding from IDRC, and the Ford Foundation, a team led by Professor Hoang Xuan Ty is assessing the sustainability and effectiveness of traditional knowledge and practices in the management of sloping agricultural land. This study is one of the first attempts by scientists in Viet Nam to learn from ethnic minorities.

Hostile relations

In Viet Nam, relations with ethnic minorities have historically been marked by hostility and paternalism. While the majority of Vietnamese researchers are reluctant to explore the techniques used by local populations, Dr Ty has long appreciated their potential importance and value. Himself a member of an ethnic minority, the director of Viet Nam's Research Center for Forest Ecology and the Environment has been trying for 20 years to combine modern agricultural technology with indigenous knowledge.

"IDRC was the first international agency to recognize the value of local know-how in the protection of forests and the improvement of agricultural and forestry industries," he says. "IDRC support also played a part in persuading the Ministry of Agriculture to support our research."

"IDRC was the first [international agency] to recognize the value of local know-how in the protection of forests and the improvement of agricultural and forestry industries," he says. "IDRC support also played a part in persuading the Ministry of Agriculture to support our research."

Indispensable research

According to Dr Ty, research on local forest management techniques is indispensable to efforts to enrich tropical forests, and stem the erosion and flooding problems that are rampant in northern and central Viet Nam. Published estimates suggest that, since the mid-1960s, the country's forest cover has declined by at least two-thirds, as a result of wars, forest fires, clear cutting, and other human activities. "Erosion and deforestation have worsened since the end of the last war due to a population growth of 3% per year, as well as a large influx of immigrants," he reports.

"In order to better protect the environment, [we] developed a methodology based on consultations in the field with local minorities. To develop the best agricultural and forestry techniques, we have to listen to the locals and learn from them," states Dr Ty. "We must also learn from past mistakes."

Pine tree plantation

For example, several years ago as part of a foreign aid program, a paper mill tried to operate a pine tree plantation with a reforestation plan in northern Viet Nam. The planners failed to realize, however, that this region "is not suitable for such a project" because it gets a lot of rain, he explains. After five years, the pine trees were infected with a fungus and the whole plantation was ravaged. The reforestation plan was a failure.

Dr Ty believes their plan might have succeeded if local villagers had been consulted. The locals "are very familiar with, for example, bamboo planting and harvesting techniques that do not destroy biodiversity." He adds that local bamboo cultivation methods could be improved with modern fertilization techniques, thereby increasing reforestation rates while ensuring economic and food security.
At least two-thirds of Viet Nam's forest cover has disappeared since the mid-1960s. The knowledge of ethnic minorities is critical to protect the country's forests and to arrest the soil degradation that threatens the natural-resource-based economy.

SWIDDEN AGRICULTURE

"Not all of the local techniques are suitable," such as traditional swidden (slash-and-burn) agriculture, admits Dr Ty. Swidden agricultural systems have been successful for centuries. But because of the expanding population, "land is rotated every 5 years now, instead of every 20 years. The forest no longer has enough time to regenerate."

"This will have to gradually change," he continues. Dr Ty's Research Center is trying to help ethnic minorities use their traditional knowledge to improve swidden systems and intensify production in order to better protect the country's forest environments.

A few years ago, "the Vietnamese government was reluctant to endorse my project," he concludes. Today, Dr Ty gives lectures to university scientists on how to work with ethnic minorities. Moreover, the Vietnamese government now recognizes the validity of his research and supports the Research Center's efforts to learn from Viet Nam's ethnic minorities.

Julie Meunier is a journalist for the Montreal-based publication, Réseau Liberté.

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www.idrc.ca/reports/read_article_english.cfm?article_num=296
Promoting Sustainable Agroforestry in Nagaland

Villagers in the mountainous northeast Indian state of Nagaland have practiced slash-and-burn subsistence agriculture for generations. But as a growing population intensifies pressure on the land, the fallow periods are becoming too short to sustain food production for the largely rural populace.

In an effort to reverse this trend, local farmers and scientists are refining and sharing successful farming methods already practiced within different regions of the state. The results include higher crop yields and reforestation of the countryside. Launched in 1994, the Nagaland Environmental Protection and Economic Development (NEPED) project is a five-year-long initiative funded primarily by the Canadian International Development Agency, through the India-Canada Environment Facility. The project is managed by IDRC, which also provides funding.

Village Councils

The 1.5 million people of Nagaland inhabit 1,200 villages, located at elevations between 200 and 2,000 metres above sea level. Much of the state is covered by subtropical or temperate rain forest. While virtually all of this potential farmland is owned by individuals, families, or village chief-tains, its use is coordinated through village councils. These councils decide which forest plots will be cleared for cultivation during each growing season, and which plots will be allowed to rejuvenate through regrowth.

In traditional Naga farming, salvageable items such as firewood are removed from hillsides and the remaining vegetation is slashed and burned — the resulting ash provides nutrients for the cultivated crops to come. Up to 60 kinds of plants, ranging from maize to chilies, are grown — often simultaneously in the same field. Crops are usually planted in an area for two years before the land is allowed to go fallow. Under this system, a total farming-and-fallow cycle of at least 10 years is considered the minimum for sustainability. But in many areas of Nagaland, the length of these cycles has dropped below 10 years over the past three decades.

Erosion Control

To permit more intensive agriculture, the NEPED team is assessing methods of erosion control and planting trees on fallow land. This approach not only retains and adds soil nutrients, it produces trees that may eventually be harvested and sold to markets outside Nagaland.

Each of the 850 villages taking part in this project has been encouraged to dedicate two three-hectare plots — one at high altitude and one at low altitude — for trying the agroforestry methods. “These are not simply demonstration plots, they are test plots. We learn from each other,” stresses Sanchothung (Sancho) Odyuo, a NEPED agricultural engineer from Kohima District. For example, Odyuo notes how scientists recommended that young trees be planted two to four metres apart — one at high altitude and one at low altitude — for trying the agroforestry methods. “These are not simply demonstration plots, they are test plots. We learn from each other,” stresses Sanchothung (Sancho) Odyuo, a NEPED agricultural engineer from Kohima District. For example, Odyuo notes how scientists recommended that young trees be planted two to four metres apart, but then discovered saplings growing less than one metre apart. When questioned, the farmers explained that dense planting encourages young trees to grow straight in order to reach the sun. After the trees establish their posture, some can be cut for uses such as fencing — the remainder continue growing straight and tall.

Alder Trees

Another successful farmer-scientist collaboration has led to the dissemination of nitrogen-fixing alder trees across Nagaland. Although farmers in Khonoma Village and parts of Phek District have enriched the soil for hundreds of years using alders, until recently this species had not been intensively planted elsewhere within the state.
One of the goals of the project is to bring women into agricultural decision making, augmenting their traditional role as farm labourers. In addition to planting their own test plots, women’s groups have established tree nurseries. Despite some concern over this shift in traditional roles, NEPED agronomist Vengota Nakro credits the women with vision: “They foresee the future, and say that the trees planted now will become the harvest in 15 or 20 years.”

**THE YEAR OF PLANTING TREES**

Since the NEPED project began, the concept of planned forest regrowth appears to be catching on with local farmers. It is estimated that independent replications of tested methods now cover more than 30,000 hectares, or at least six times the area dedicated to test plots. These results have impressed the Nagaland government, which declared 1999 The Year of Planting Trees.

Looking to that future, NEPED participants are investigating the marketing of trees and other forest products, as well as the development of micro-based enterprises such as small wood mills. In the short term, more experimentation and information exchanges both within and outside of Nagaland are planned. A workshop to produce a resource book based on the NEPED project is scheduled for the summer of 1999.

“The concept of planting that NEPED promotes is now in people’s minds, so it will continue,” says Vengota Nakro. “This project is Nagaland’s window to the outside world,” he concludes.

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**NEPED: A FIRST FOR NAGALAND**

The NEPED initiative is the first externally managed development program in Nagaland. In the past, difficulties in traversing the state’s rough terrain, the logistics of working with at least 17 major tribes, and the tensions surrounding the state’s long-standing independence movement posed obstacles to development agencies. “We have tried hard to remain apolitical, and we have a strong participatory approach that involves farmers from every region in all aspects of the project,” says Dr Merle Faminow, the NEPED Project Director.
Project Seahorse: Conserving the Oceans' Medicinal Resources

To some people, it's a charming sea creature. But in many parts of Asia, the seahorse is prized for its medicinal properties. Used to cure ailments ranging from asthma to impotence, more than 20 million seahorses are harvested each year to supply the traditional Chinese medicine market. More than 45 countries now trade in dried and live seahorses and with demand increasing at a rate of 10% per year, researchers, fishers, and traders alike have noted serious declines in Asian seahorse populations.

It is only recently, however, that conservation efforts have targeted the seahorse or any other marine medicinals. "Most of the attention with respect to traditional Chinese medicines has focused on the use of charismatic large mammals, such as rhinoceroses, tigers, and bears," says Amanda Vincent, a biology professor at McGill University in Montreal, Quebec. "We have not paid enough attention to the other 11,500 species of plants and animals involved in traditional Chinese medicine."

First Case Study

In 1996, Dr Vincent wrote a report on the seahorse trade that was the first case study of a marine species used in traditional Chinese medicine (TCM). She is also one of the founders of Project Seahorse, a global program for seahorse conservation and research, which is supported by IDRC and other organizations. With funding from IDRC, Project Seahorse hosted a July 1998 workshop in the Philippines on trade in marine medicinal products, which brought conservationists, aquaculturists, and TCM traders together for the first time.

Before the workshop began, participants were asked to prepare lists of marine species that are used for medicinal purposes in their respective countries. One woman from South Africa compiled this information with the help of a questionnaire that she had translated into 38 languages. A Chinese participant brought a list of 410 species. Based on their efforts, Allison Perry, a McGill University graduate with Project Seahorse, is compiling the first known directory of marine animals and plants used in traditional medicine. Such information is critical to understanding the extent and volume of trade as well as the species that are at greatest risk, says Dr Vincent.

Conservation Project

During the workshop, participants visited the world's first seahorse conservation project, an initiative established by Dr Vincent and the Philippines' Haribon Foundation in the fishing village of Handumon. "For some, it was their first exposure to living seahorses and the idea of community-based management," she says.

By the end of the workshop, the participants had created a multistage action plan to improve the sustainability of trade in marine medicinals. Their plan — which involves research, publication of results, aquaculture development, and public education activities — reflects the multidisciplinary, multi-sectoral nature of the meeting. For example, research by the education director of one of the largest global retailers of TCM showed that whole seahorses are rarely used in medicines, but are an essential ingredient in patent medicines made in China to enhance virility. This type of information motivated the entire group to propose creative solutions ranging from reducing the amounts of seahorses harvested to finding acceptable substitutes.

Bolder Measures

"On the last day, several Chinese traditional medicine traders came forward with conservation initiatives that were even bolder than those we had proposed," notes Dr Vincent. She and her colleagues
had been encouraging fishers not to sell pregnant seahorses, but instead to keep them in cages until they gave birth. The traders, however, went one step further by raising the possibility that they might stop accepting pregnant seahorses.

A Project Seahorse member is currently writing the IDRC workshop proceedings, which will be translated into Chinese to ensure wide distribution. The proceedings and action plan were also incorporated into briefing materials for another international workshop on seahorse husbandry, management, and conservation held at the John G. Shedd Aquarium in Chicago from December 7 to 9. This event was linked to the Shedd Aquarium’s special exhibit on seahorses and their relatives.

**Convergence of issues**

“The reason I work with seahorses — apart from the fact that I am besotted with these little fishes and that they are at risk — is that they represent a convergence for some of the most pressing marine conservation issues,” explains Dr Vincent. The seagrasses, mangroves, and coral reefs that form their habitat are all under threat. The declining numbers of seahorses jeopardize the precarious livelihood of the subsistence fishers that catch them. Aquaculture and the creation of marine protected areas offer potential benefits but also pose technical, social, and logistical difficulties. “The seahorse stands as a symbol for many serious concerns, all packaged in an attractive animal,” she concludes.

Jennifer Pepall is an Ottawa-based writer.

### Seahorse Conservation in the Philippines

In Hong Kong, traders in traditional medicines have described potential seahorse sales as “limitless.” Demand is currently exceeding supply, fueled in large part by China’s economic growth. Some traders estimate that Chinese seahorse consumption increased tenfold in the decade between the mid-1980s and the mid-1990s. To meet this demand, subsistence and small-scale fishers are trying to catch more seahorses. The work attracts the poorest of fishers who need only minimal equipment — just a scoop of a hand while swimming or a net dipped from a bamboo raft. Many of them earn most of their annual income from the seahorse harvest.

Given that impoverished people depend on seahorses for their livelihood, Amanda Vincent argues that a trade ban is not currently the best response to overfishing. “A ban is an awfully heavy-handed approach, to be used as a last resort. It’s like treating cancer by chopping off a limb,” she says. Moreover, it creates “confrontations between cultures.” Instead, Dr Vincent advocates a strategy that integrates conservation, resource management, and community development and that recognizes the socioeconomic importance of seahorses to both consumers and producers.

**Decade-long decline**

The world’s first seahorse conservation project in the village of Handumon in the central Philippines reflects this approach. Local fishers had noticed a decade-long decline in their seahorse catch. They were alarmed: half of them earn a substantial proportion of their household incomes from seahorse fishing. So in 1995, Dr Vincent and the Philippines-based Haribon Foundation initiated a project to help villagers sustainably manage their own marine resources.

Several conservation measures were put in place, including “paternity” wards for male seahorses, who carry fertilized eggs in brood pouches. Filipino fishers used to sell the pregnant males indiscriminately. Now, they place them in sea cages until they have given birth, and then sell them to traders. Meanwhile, the young escape from these cages and replenish the depleted reef.

**Marine sanctuary**

As part of this project, Handumon villagers have established a no-take marine sanctuary for all species, which they regularly patrol. They have also started to survey marine ecosystems and record fisheries data, which the project team analyzes and feeds back to them. A core resource management group has been formed to address education, natural resource management, and livelihood options. Based on a gender analysis, the group is also examining issues such as women’s contribution to income generation in fishing villages, which may help villagers reduce their dependency on seahorse collection. In addition, the gender analysis highlighted the villagers’ lack of potable water and limited public health services, such as family planning.

The seahorse conservation project has proven so successful that it has expanded beyond Handumon to six other municipalities, which have a total population of around 150,000 people.
Rosendo Botero, a local research assistant, and Amanda Vincent measure seahorses in Handumon, Philippines — site of the world's first seahorse conservation project.

**Seahorse Aquaculture in Vietnam**

The ongoing Asian economic crisis may have temporarily suppressed demand for the most expensive marine medicinal products. But Dr Amanda Vincent has also heard that demand for traditional Chinese medicines has actually increased in Indonesia because Western medicines have become too expensive for many people. "One doesn't know whether to be hopeful or not," she says.

Early results from an IDRC-funded aquaculture project provide some grounds for optimism. Seahorse farming is difficult because of technical problems with diet and disease. But in their last few attempts, a research team in Vietnam successfully raised 80% of seahorse fry to adulthood — a marked improvement over the industrialized seahorse aquaculture practiced in Western countries. The small-scale, low technology aquaculture methods that are being tested in this project could generate income for fishers and reduce pressure on seahorses in the wild.

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www.idrc.ca/reports/read_article_english.cfm?article_num=298
~ latin america and the caribbean ~
When Peruvian President Alberto Fujimori began implementing structural adjustment policies in the early 1990s — including the privatization of state-owned enterprises and encouragement of foreign investment — one of the major concerns of economic analysts was that any resulting economic growth would not benefit the poorest Peruvians. The government responded in 1996 by launching a program designed to cut extreme poverty in half by the year 2000.

Today, there are 4.5 million Peruvians — roughly a fifth of the total population of Peru — living on less than US$33 per month. To assist them, the government has allotted US$2.7 billion toward its Focused Strategy for Extreme Poverty Alleviation (Estrategia Focalizada de Lucha contra la Pobreza) between 1996 and 2000. But how and where should this money be spent so that it most benefits those living in extreme poverty?

CIUP team

A large part of the success of this program hinges on the ability to identify and measure extreme poverty and its causes, and then to evaluate the impact of relief efforts to determine whether or not they are working. These tasks are being handled by a team of researchers led by economist Enrique Vásquez, of the Centro de Investigacion de la Universidad del Pacifico (CIUP) in Lima. The CIUP team has developed a Well-Being Index (Indice de Bienestar) and a follow-up Monitoring and Evaluation System.

One of their main objectives is to help improve the delivery of short-term aid by the Peruvian government the delivery of short-term aid by the Peruvian government, and by national and international aid organizations. The overall goal is "not only the reduction of poverty but achieving state reform, which means bettering the efficiency and efficacy of public institutions and all those that make decisions about social management," says Dr Vásquez.

Well-Being Index

The key to this project is the Well-Being Index because its design accounts for much more than just basic numerical data about a region’s employment and income levels. This Index is compiled through the HOPE (Hogares en Pobreza Extrema, or Homes in Extreme Poverty) panel-data survey, which gathers household data on the complex social and cultural factors that affect a family’s level of poverty and well-being. Such factors include the demographic structure of the family; and access to medical care, education, small business loans, and food aid programs — variables that have never before been measured in nation-wide indexes of Peruvian poverty.

"It seemed important to us to ask not only questions about employment status, economic stability, health, and so on, but also how the poor feel about poverty," explains Carlos Aramburuc, a consultant anthropologist working on the CIUP team. "How do they themselves feel about their situation? What capacity do they feel they have to solve their problems?"

More precise tool

In the past, the Peruvian government relied on a crude poverty index that measured poverty by administrative-political regions. It could only detect long-term changes, such as those due to macroeconomic factors like gross national product (GNP).
A new index to measure extreme poverty includes such data as access to medical care.

The HOPE survey is a more precise tool that will allow researchers to analyse and assess the impact of short-term poverty alleviation measures implemented by the Peruvian government and nongovernmental organizations.

The survey is being administered in 2,045 households in four of Peru’s 25 departments or provinces, where 45% of those who live in extreme poverty reside. (About 66% of the total sample population live under extreme poverty.) The researchers chose one urban, coastal department, two rural, Andean departments, and a rural, Amazon department to obtain a more comprehensive picture of poverty and its alleviation in the different ecological and sociocultural environments of Peru. The first semiannual survey was conducted in May and June 1998, and research results were presented during an Inter-American Development Bank seminar held in Washington, DC, in May 1999.

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[www.idrc.ca/reports/read_article_english.cfm?article_num=274]
Educational Reform in Latin America: Facing a Crisis

Latin American schools are in crisis — failing both their students and the needs of the region. "Instead of contributing to growth, they are holding children back," claims Argentinian Senator José Octavio Bordón.

"No one disputes that education is vital for economic growth, social advancement, and democracy. Yet most students in Latin America and the Caribbean are deprived of a decent high-quality education," Bordón stated during a conference last fall on educational reforms, hosted by the Canadian Foundation for the Americas (FOCAL). Held in Toronto, the conference received financial support from IDRC's Assessment of Social Policy Reform (ASPR) program and from the Canadian International Development Agency.

According to Bordón, the problem is not access to education, but access to good education. "Enrolment has soared rapidly in the past three decades," he said, "but quality has eroded just as dramatically: language, math, and science teaching is dismal in most places."

GRIM PICTURE
Currently a senior visiting fellow at Inter-American Dialogue in Washington, Bordón is also co-chair of a Latin American task force on education, equity, and economic competitiveness. The task force is part of the Program to Promote Educational Reform in Latin America and the Caribbean (PREAL), funded by IDRC and other donors. The task force is seeing a grim picture, he reported:

- On average, Latin American workers have nearly two years less schooling than workers in other countries with similar incomes.
- Roughly half of the students entering public schools fail the first grade.
- In any year, one-third of students fail whatever grade they are in.
- Half of students don't finish Grade 6.

"More Latin American students are entering school than ever before, but they don't get very far," commented Bordón. By comparison, 95% of students in Korea and Malaysia finish grade school.

ATTENDANCE PROBLEM
"The secondary level is no better." Only one of three eligible students ever attends secondary school, compared with more than 80% in the high-growth economies of Southeast Asia. And "most of those who enter never graduate," he added. "They [leave school] to take jobs, but they lack the language, math, science, and problem-solving skills necessary for success in modern commerce."

"Most of the best schools in the region are private and many of them are on a par with the best schools world-wide," said Bordón. In the private schools, students receive a minimum of 1000 hours of instruction a year, from well-paid and well-trained teachers.

UNDERFUNDED SCHOOLS
However, more than 80% of students are forced for financial reasons to attend underfunded public schools, where they receive between 500 and 800 hours of instruction per year — usually from poorly paid and inadequately trained teachers. The difference "reinforces inequality, poverty, and poor economic performance," he stressed.

Bordón noted that public schools suffer from a range of problems, worsened by control by central ministries of education. "In most [Latin American] countries, the teaching profession suffers from inadequate salaries, low standards, and poor management, which has lead to lowered prestige," he said. Centralized management
has exacerbated these conditions, by depriving teachers and school principals of authority.

**DOMINANT FORCE**

"The combination of centralized administration, inadequate salaries, and low job satisfaction has made teachers' unions one of the dominant forces in Latin American education," he continued. "Unfortunately, they are concerned almost entirely about raising wages."

But the bottom line is that — despite all other problems — "the crisis of education in Latin America is a crisis of investment," said Bordón. On average, countries in the region spend only 4.5% of Gross National Product on education.

**FUNDING NEEDS**

In Argentina alone, "we need $4 billion above the $12 billion we are spending today" and in some other countries the situation is worse. Bordón said it would take US$44 billion more per year for Latin America to match North American standards of education and US$36 billion to match Japanese standards — about 2% more of the region's GNP.

"It's not impossible," he said, "but in some countries it is very difficult" — especially those in which a large percentage of the GNP comes from state enterprises.

**FOUR-PART REMEDY**

Bordón proposed a four-part remedy for the education crisis:

- Devise and use nation-wide standards. In Latin America, "the schools' most important output — learning — is not measured in any reliable way," he said. Such tests would pinpoint deficiencies and, perhaps more important, allow authorities to duplicate schools that are working well.

- Give local communities — teachers and parents — more control over their schools.

- Strengthen the teaching profession by increasing pay, improving training, and making teachers more accountable to their local communities. Teachers need to be trained to "promote critical thinking," he said.

- Increase spending on education. "Good public education cannot be provided at present levels of expenditure," Bordón concluded.

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A task force on education found that half the students in Latin America do not finish Grade 6. By comparison, 95% of students in Korea and Malaysia finish grade school.
Residents of some of the poorest urban areas of Haiti are now using tires, baskets, kettles, pails, and other containers to grow vegetables in confined areas and thereby improve their health, nutrition status, and income.

Under the supervision of CARE-Haiti and other partners, so far more than 400 people from 11 neighbourhoods in Port-au-Prince and Gonalves have attended training sessions on how to establish gardens where space is limited. As a result, many participants are both adding variety to their meals and increasing their number — most Haitian families eat just one or two meals per day.

**FIVE-YEAR INITIATIVE**

The ultimate aim of this project is to reduce the dependency of participating households on purchased food in a nation where the average annual per capita income is less than CA$350. The five-year initiative, which grew out of studies conducted by CARE-Haiti, is jointly sponsored by the Canadian International Development Agency (CIDA), IDRC’s Cities Feeding People program, CARE-Canada, CARE-USA, CARE-Haiti, and various community-based and nongovernmental organizations.

The funds provided by IDRC, CARE-Canada, CIDA, and CARE-USA are specifically helping CARE-Haiti to design, implement, monitor, and evaluate space-confined gardening methods, including technologies tested in other IDRC-sponsored projects. For example, team members have been using email group lists from the Support Group for Urban Agriculture (SGUA) and the Latin American Urban Agriculture Research Network (AGUILA) to obtain information and advice.

**DEMOGRAPHICS**

The Haitian capital, Port-au-Prince, is home to 1.2 million people — 60% of the country’s total urban population — of whom 75% live in slums and only 15% to 20% of adults work regularly. Although food purchases absorb almost 50% of household expenditures, the average resident eats no more than two home-cooked meals per week, relying instead on food from street vendors or small eating houses.

Many Port-au-Prince families live in shanty towns consisting of small houses with metal walls and roofs, although some residents inhabit larger houses with flat concrete roofs. Homes are generally built close to each other — leaving no space between buildings, apart from roads — or on steep slopes. Despite this, urban agriculture has been practiced as a survival strategy in many parts of the city by residents who plant a few crops or a couple of fruit trees next to their house or in available vacant lands. But this is mainly done on a do-it-yourself basis, without any formal support. These resourceful gardeners are often envied by their neighbours, who either lack the knowledge required to manage an urban garden, or the space and water necessary to grow food.

**PARTICIPANTS**

Under the CARE-Haiti and partners initiative, more and more residents are obtaining the skills and resources they need to establish urban gardens. Participants of the training sessions have a variety of occupations, although few have stable or regular jobs. The women include merchants, factory workers, seamstresses, and domestic servants. The men include carpenters, bricklayers, and chauffeurs. Some primary school students and their teachers are also attending the sessions.

During the training period, participants learn how to convert spaces — ranging from backyards and vacant lots to roofs, walls, porches, and verandahs — into garden plots suitable for growing food. (In some cases, participants are sharing their rooftop space with trusted neighbours who lack a solid roof.) One of the most com-
mon strategies involves growing vegetables in recycled containers, particularly old tires because they are easy to find, inexpensive, and durable. As a result, graduates of these sessions have started cultivating amaranth, Swiss chard, tomatoes, eggplant, beets, carrots, Chinese cabbage, lettuce, peas, leeks, peppers, and other produce.

**Benefits**

According to CARE-Haiti officials, “the most visible impact of these gardens is on the nutritional health of the participants.” Although the economic impact is less evident, some people have found larger growing spaces and are beginning to sell their produce. Moreover, the project has resulted in some related income-generating activities such as the launch of two gardening stores, where participants can obtain seeds and other essential supplies. Similar outlets are being planned for other areas of Port-au-Prince.

To make the best use of local resources, two community groups are trying to organize composting at the neighbourhood level. Indeed, some participants are already making their own compost. The project has also helped participants deal with scarce water supplies by sprinkling their gardens with recycled household wastewater. Other resources being put to use include cow and horse manure, and bagasse (sugar cane residue).

**Real Interest**

“This pilot project has demonstrated that there is a real interest in establishing urban gardens among residents of the shanty towns and the organizations that work with them,” states Mildred Delphin Régis, the CARE-Haiti project manager. “It has given participants another image of themselves, by instilling in them the confidence that they can improve their situation by applying their own means and skills. The most important long-term result will be to upgrade human resources, now largely marginalized, so that they can bring about a change in the country’s situation.”

“Our goal is to continue building on the achievements of this project. The opportunities are vast, and there is a need for more in-depth research that cannot be conducted within the time frame of a single project,” concludes Régis. “One priority is to enlist universities and research centres, a task which we are already addressing.”

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**Building Local Capacity for Urban Agriculture**

Under the CARE-Haiti project, a network of organizations involved in the development of urban gardening activities has been established. So far, three formal partnerships have been formed involving: Haiti Gardens/Organisation pour le développement des jardins en Haïti (ODEJHA), Children Aid Direct, Organisation mains contrées pour la vie (OMCL), and Organisation des jeunes étudiants pour le développement d’Haïti (OJEDH)-Fondasyon kole zepol (FONKOZE). Other local organizations are active as well at the various project sites. Their goal is to help keep the movement going by training and organizing urban gardeners.
Virtual Business Corridors: A New Gateway to Latin America's High-Tech Industries

All it takes is access to the Internet and a few clicks of a mouse to make the connection — a business connection with the potential to help high-tech companies in Latin America grow and expand through the development of strategic contacts with other firms. Rather than simply surf the Web, searching for a needle in a haystack, companies in Argentina, Brazil, Chile, and Uruguay now have access to specialized electronic highways — Virtual Business Corridors (VBCs) — that lead directly to the doorstep of other companies in Latin America and Canada.

With funding from IDRC, the new VBCs are the result of a collaboration between business associations in Latin America and the Canadian Advanced Technology Alliance (CATA), a nonprofit, multisector trade association, which manages the electronic corridors. The project is intended to help Latin American industries enhance business communications, increase their level of collaborative research and development, and promote strategic alliances and partnerships.

Industrial Restructuring

During the last decade, most Latin American countries have experienced industrial restructuring, with production and natural resource exports increasing rapidly. But serious doubts have been raised about the economic and political sustainability of development centred on commodity exports. Helping local industries increase their research and development (R&D) activities could provide the basis for more sustained economic growth by encouraging the production of higher value-added products. But R & D expenditures in Latin America still lag far behind what is normal in developed countries, their major trading partners.

Fortunately, the Internet — on which this project is based — is an excellent medium for the exchange of information, providing an incredible opportunity for countries lagging in knowledge to catch up. Participating companies can access Virtual Business Corridors through TechnoGate, an electronic gateway to the advanced technology industry in Canada. The service was originally established as a business development tool for CATA's 2,100 member companies.

TechnoGate

TechnoGate is much more than a website. It has built-in software that provides direct access to a wide range of companies, "including descriptions of what they do, what kind of projects they're working on, what they are looking for in terms of partnerships, and key contacts," says Cal Fairbanks, CATA's Executive Director for Alberta and the Managing Director of TechnoGate. TechnoGate worked so well for Canadian companies, it prompted inquiries to go international. The result: Latin American firms can now benefit from the same technology and information through VBCs established specifically for this region.

"A Virtual Business Corridor is really a window to a particular geographic location, and a connection through that window to the region's high-tech industry," says Fairbanks. "Companies don't want their employees to waste time surfing the Internet. The Virtual Business Corridor brings the information to them. It provides direct access to the people that make decisions in other companies. Most of the legwork has already been done, and CATA ensures the contacts are legitimate people in legitimate companies."
SYMBIOTIC PARTNERSHIPS

For firms in both Latin America and Canada, VBCs can facilitate the creation of symbiotic partnerships. So far, some Latin American companies are using the VBCs as a marketing and development tool — making contacts with Canadian companies, improving their expertise and knowledge, and trying to win contracts. Through these contacts, they are also hoping to attract investment from Canadian companies that need partners to carry out the research necessary to expand into Spanish and Portuguese speaking markets.

"The possibilities for strategic partnerships with foreign firms, or the promotion of Chilean products in foreign markets are greatly enhanced within VBCs," adds Dr German Echecopar, Director of the Department of Economics and Finance at the Universidad de Talca in Chile. "Without this tool, Chilean firms would have been much less able to benefit from growth in the high technology sector."

DISTRIBUTION AGREEMENTS

Although the project is not yet complete, a few deals have already been struck between North and South. According to Fairbanks, two wireless companies in Western Canada recently signed distribution agreements with Argentinian and Chilean partners with whom they will customize their technology.

"The Argentinian companies are very excited because they don't have that technology (wireless communication for remote access)," he says. "Now they have an exclusive arrangement to offer wireless communications in Argentina, to customize the technology to suit their needs, and to potentially develop their own companies."

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<th>PROMOTING STRATEGIC PARTNERSHIPS THROUGH VIRTUAL BUSINESS CORRIDORS</th>
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<td>The new Latin American Virtual Business Corridors (VBCs) are designed to “promote communication between companies in Latin America and Canada toward the development of joint strategic partnerships,” says Cal Fairbanks of CATA. By the time this project has ended, each VBC will contain three types of information:</td>
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<td>- market intelligence, including information on the economic climate, financial community, investment policies, and bilateral trade;</td>
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<td>- business services information; and</td>
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<tr>
<td>- a partnership database, which includes profiles of all the member companies, their products and human resources, their research goals, opportunities for partnerships, and their requirements.</td>
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VBC SOFTWARE

To help participating companies make contact and deals with each other, each VBC features several interacting databases and customized commerce software that makes it easy to link directly to like-minded companies. "They can identify potential opportunities, or switch to a secure mode and talk about new developments and new innovative ideas," says Fairbanks. "They can explore the possibility of research and development grants, or they can participate in chat lines and discussions groups through which they can find mentors to help them do more research. The software can't make the deals happen, but it can get the right people at the table discussing potential partnerships."

Since each Virtual Business Corridor must have a non-profit NGO partner like CATA, the cost to users is minimal. The sponsoring partner pays CA$5 000, which includes all the necessary software and training. Companies that belong to the partner, group or association can log on to Techno-Gate and access the VBCs for free. Companies that are not members of the group pay CA$350.

BUSINESS TOOL

"The goal is to have a self-sustaining, non-profit business tool for all companies on a user-paid system," says Fairbanks. This enables companies large and small to take advantage of the service. And while the VBCs will primarily increase connections between companies in Canada and Latin America, if links are made between Argentina and Chile, "all the better," he concludes.

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ESTIMATING THE IMPACT OF VIRTUAL BUSINESS CORRIDORS ON CHILEAN INDUSTRY

According to German Echecopar, of the Universidad de Talca, Chile's high technology sector was small and growing slowly before the Virtual Business Corridor (VBC) project began. This initiative "will help [our] electronics industry by providing a much broader basis for capturing the new Internet communication and commerce opportunities," he says.

"The possibilities for strategic partnerships with foreign firms, or the promotion of Chilean products in foreign markets are greatly enhanced within VBCs," explains Dr Echecopar. "Just helping entrepreneurs get in contact with the advanced tools available opens their eyes to new sets of business opportunities that were not seen before. Even if these opportunities are nailed down outside this alliance, the impact of the project is large."

"I believe that VBCs may have an even greater impact in areas that are not high technology," he adds. In theory, they can be used to improve communications and promote growth in any other business sector, including the forest products, agriculture, and mining industries.
Rehabilitating the Dnipro River

There's more to rehabilitating a river than cleaning up pollution. It's also a state of mind.

That's one of the lessons from an ambitious program to clean up Ukraine's Dnipro River basin — source of 70% of the country's drinking water. Since the program was launched in 1994, with CA$4.8 million in initial funding from the Canadian Department of Foreign Affairs and International Trade, and the Canadian International Development Agency, it has evolved into a revamp of Ukrainian environmental policy and public attitudes.

First Western Country

In 1991, Canada was the first Western country to recognize Ukraine's independence and to extend an offer of technical assistance. Ukraine is one of the most environmentally degraded republics of the former Soviet Union, with 70% of its population living in areas considered environmentally dangerous, and the Dnipro River is the country's number one environmental priority. The river's main sources of pollution include nuclear fallout from the Chernobyl disaster, toxic pesticides and herbicides used in agriculture, heavy metals and organochlorine compounds from industry, untreated sewage from municipalities, and high levels of air pollution.

Although polluted, the Dnipro is the country's lifeblood. "It's everything for Ukraine: it's life, irrigation, energy supply, drinking water supply, transportation artery, and so on," says Ihor Iskra, a Ukrainian national and liaison officer with the project in Kyiv, which is known formally as Environmental Management Development in Ukraine (EMDU).

Consumption attitude

"This river is really heavily polluted [mainly] because of our historical heritage," Iskra adds. "In the Soviet era, there was a consumption attitude to the river. Maybe slowly, people will start to think more and more about environmental protection. The main problem is to change the mentality, to make people care more about the environment and the rivers."

According to Myron Lahola, Director of IDRC's Kyiv Office, which is managing the EMDU program on behalf of the Canadian government, this initiative involves much more than just cleaning up a river. "That implies that you're out there with shovels or something. We ultimately are concerned with cleaning up the river, but we're doing it more in the policy development, capacity building, and technology transfer type of way."

Capacity building

"The strategy that we've employed is to build on the existing capacity," Lahola explains. "The unique role of IDRC here is to bring together researchers from different institutes," and, as needed, to include international experts in the research team, adds Iskra.

IDRC has encountered significant overlap among Ukrainian institutions. For example, three or more different agencies were conducting essentially identical work, such as measuring water quality, but using different standards, making comparisons impossible. Moreover, data were often hoarded or kept secret, a legacy of the Soviet era.

IDRC's role

In response, the Centre has brought together Ukrainian experts who work independently. IDRC has also helped Ukrainian authorities establish their own management committee to review and prioritize proposals for research projects on the river. Selected projects are then suggested to IDRC for funding. The focus has been on small pilot projects, to demonstrate how "rapidly and at little cost, by introducing new technologies and management technology ideas," improvement can be achieved, says Lahola.
Nearly 20 billion cubic metres of untreated effluent - the equivalent of one-third of the Dnipro River's annual flow — is dumped into the river each year. The river is Ukraine's main source of drinking water.

For example, Lahola's first contact with EMDU was through a 1995 water-metering project in the southeastern city of Zaporizhzhya, done in conjunction with his native Edmonton, Alberta. The recently privatized water utility in Edmonton donated 1 400 reconditioned water meters, provided expertise, and helped to train staff. The pilot project involved installing water meters in select locations to show that as much as 40% of treated water is lost during distribution. This means that the current pricing system, based on the amount of water treated and the number of consumers, is often overbilling consumers and water conservation could be a good alternative to the costly expansion of water treatment plants.

**KEY ACHIEVEMENTS**

One of the program's main achievements to date was its formal recognition in Ukraine's National Environmental Plan, adopted by the country's parliament in February 1998. Another important development was the creation of the Dnipro Renaissance Fund—a non governmental organization with expertise in environmental audits gained through EMDU — to manage funds received from domestic and foreign sources, including the Canadian government. "There was no banking system in the early days," explains Lahola. "Most of the money was carried back and forth in cash as people traveled. It was several years before we could establish a bank account and transfer funds in a normal way."

Phase two of the EMDU program, which began last year with funding from CIDA, involves a wide range of activities. They include municipal water projects, environmental education, training in project and environmental management, transboundary pollution issues, water toxicology, environmental audits and clean manufacturing standards, solid waste and landfill remediation, all working towards the rehabilitation of the Dnipro River Basin.

**BROAD IMPACT**

"In all, the Program has had a very broad impact" for a relatively low cost, stresses Lahola. "We've managed to throw a really broad net with not much money," because EMDU had a specific focus, the Dnipro River, and because it involved local institutions in the work, which led to their "buy-in" through financial and in-kind support for the Program, he concludes.

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Rethinking Municipal Water Tariffs: The Problems with IBTs

Municipal water tariffs are hurting both the poor and the environment in many developing countries, claims a US expert.

According to Dale Whittington, Professor of Environmental Sciences and Engineering at the University of North Carolina, the most widely used water tariff — called the increasing block tariff (IBT) system — is seriously flawed. “Most people setting municipal water tariffs don’t understand the consequences of their actions,” he argued during a workshop hosted by the Economy and Environment Program for Southeast Asia (EEPSEA). EEPSEA is sponsored by IDRC and eight other donors.

“We take a ‘scorched earth’ approach and question every argument that has been made for IBTs as the ‘tariff of choice,’” he said. In partnership with Professor John Boland of the Johns Hopkins University in Baltimore, Dr Whittington has examined how IBTs are implemented in cities across Southeast Asia, Latin America, and Africa.

IBT System

The IBT system sets water charges for up to ten consumption “blocks.” Under this system, customers pay a certain charge per cubic metre of water, until they have consumed a specified volume. Above this amount, they pay a higher per unit charge until they reach a second specified volume, and so on, until they hit the highest block.

In many developing countries, the first block is deliberately set below cost. The idea is to provide the poor with inexpensive water, while charging the highest prices to richer customers and companies — who consume more water. By charging higher prices for high consumption, IBTs are also meant to discourage excessive water use.

Conventional Wisdom

Dr Whittington and Boland became interested in IBTs while studying their implementation in Ghana in 1989. “At the time, we accepted the conventional wisdom that IBTs help the poor,” said Dr Whittington. “But when we looked more carefully at what was going on, we realized they were doing the exact opposite.”

In Ghana, the researchers found that most people live in multifamily units in buildings equipped with only one water meter. This meant that individual households that were consuming modest amounts of water were actually paying the top price for their water. “The poor were being penalized because they were sharing connections,” Dr Whittington explained.

Who Benefits?

So who is benefiting? Most international surveys suggest that a household of five in the South needs a minimum of 4 to 5 cubic metres per month. However, in many developing countries, IBTs are designed to provide urban households a lot more

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water than this at the lowest price, said Dr Whittington.

This means that the very poor, who consume only a fraction of the water covered by the IBTs first block, do not receive the full subsidy and thus cannot fully capitalize on the potential savings. Meanwhile, the middle classes benefit from artificially low water prices and hence have no incentive to conserve water — a disaster in countries where water supplies are becoming scarcer and more costly.

**Other problems**

At the other end of the scale, the researchers question the high cost that IBTs place on firms, which often opt to drill a well and leave the municipal water supply system — further reducing the tariff’s effectiveness at distributing water cost equitably. Another problem is the lack of transparency and over complexity associated with IBTs, which makes it difficult for water utilities to predict revenue targets and optimize delivery.

To remedy matters, the pair recommend a different approach to water pricing, involving a much simpler two-part tariff. This would consist of a single volumetric charge equal to the marginal water cost coupled with a fixed monthly credit or rebate. Their scheme also incorporates a minimum monthly charge to avoid negative bills.

**Alternative approach**

Under this approach, they calculate that most poor households would receive a lower bill than the one they now receive under the IBT system. Meanwhile, a higher percentage of households would face the full marginal cost of the water — thus giving the correct economic signals to encourage conservation. “This is a very do-able tariff system,” Dr Whittington stressed. “We do not think that there [would be] any problem with implementing it and a lot of people would benefit.”

The pair’s proposal is still only a twinkle in their eye. “The conventional wisdom is that IBTs are the way to go and there hasn’t been much change yet.” However, Dr Whittington’s presentation generated a lot of interest at the EEPSEA workshop and several researchers talked about examining the implications of the proposal in their own countries.

Experts who have questioned the fairness of IBTs have recommended a simpler tariff system for water pricing that would reduce the cost of water for poor households in the developing world.

Rufus Bellamy is a Singapore-based writer who specializes in environmental issues.

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www.idrc.ca/reports/read_article_english.cfm?article_num=328
Farmers as Researchers: The Rise of Participatory Plant Breeding

Modern plant breeding stands among the greatest scientific and human success stories of all time. Yet the fruits of major advances in agricultural science, such as those from the Green Revolution, have bypassed hundreds of millions of farmers in developing countries, most of whom operate small farms under unstable and difficult growing conditions. The adoption of new plant varieties by this group has been abysmally low.

For years, this gap has haunted scientists, development workers, governments, donors, and all others with a stake in agricultural progress and the fight against poverty. But, beginning in the 1980s, it also stimulated the creation of a novel and promising set of research methods collectively known as participatory plant breeding (PPB).

Partner in Research

“This has to do with bringing the farmer out of the field as a recipient of technology and into the screen houses, labs, and meeting rooms as a partner in research,” says Jacqueline Ashby, coordinator of the Systemwide Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation, or PRGA for short.

Under the PRGA umbrella, researchers around the world—in universities, national and international research institutes, nongovernmental organizations (NGOs), grassroots organizations, and other groups—are assessing and formulating methods and organizational arrangements for participatory research in the areas of plant breeding and natural resource management. The five-year program, which costs over US$9 million, is funded by IDRC and donor agencies in 10 other countries. The initiative forms part of the research agenda of the Consultative Group on International Agricultural Research (CGIAR), a donor consortium that supports research by 16 international centres.

Objectives

While the principal aims of PPB are to create more relevant technology and equitable access to it, there are often other objectives, depending on the organizations involved. For example, large-scale breeding programs by international or national research agencies may wish to cut research costs. (One financial analysis of on-farm crop variety evaluations revealed a cost of US$0.50 per recorded data point for participatory trials, compared with $0.80 for conventional trials.) Other organizations, such as farmer’s groups and NGOs, may wish to affirm local people’s rights over genetic resources, produce seed, build farmers’ technical expertise, or perhaps develop new products for niche markets, like organically grown food.

One problem with conventional breeding has been the tendency to focus heavily on “broad adaptability”—the capacity of a plant to produce a high average yield over a range of growing environments and years. Unfortunately, candidate genetic material that produces very good yields in one growing zone, but poor yields in another, tends to be quickly eliminated from the breeder’s gene pool. Yet, this may be exactly what small farmers in some areas need. And the resulting “improved” varieties often require heavy doses of fertilizer and other chemicals, which most poor farmers can’t afford.

Farmers’ Preferences

Professional breeders, often working in relative isolation from farmers, have sometimes been unaware of the multitude of preferences—beyond yield, and resistance to diseases and pests—of their target farmers. Ease of harvest and storage, taste and cooking qualities, how fast a crop matures, and the suitability of crop residues as livestock feed are just a few of the dozens of plant traits of interest to small-scale farmers, according to PPB
Farmers study potato varieties in Ecuador as part of a participatory plant breeding program. By involving farmers as full research partners, scientists can better identify plant varieties that meet farmers' needs. The result is more equitable access to the scientific gains of modern plant breeding.

specialists. In Peru, for example, the PRGA plant breeding working group compiled an inventory of farmers' criteria for evaluating potatoes that included 39 different elements.

Despite this wealth of knowledge, in many cases farmers' participation in conventional breeding programs has been limited to evaluating and commenting on a few advanced experimental varieties just prior to their official release. Such token participation means that most farmers don't have any sense of ownership of the research and have not been able to contribute their technical expertise. According to Louise Sperling, coordinator of the plant breeding working group, many of the varieties reaching on-farm trials would have been eliminated from testing years earlier if farmers had been given the chance to critically assess them.

**Chief Engines**

"It is important to remember that farmers — and in many cases, women farmers — have been the chief engines behind crop and variety development for thousands of years, and continue today to actively select and breed most crops, including the so-called 'minor' or 'neglected ones, which are so key for family nutrition," she says.

One goal of the PRGA program is to 'centrally' build on farmers' knowledge, which involves clearly identifying farmers' needs and preferences and the reasoning behind them. So far, more than 80 participatory plant breeding efforts have been documented. The systematic recording of this knowledge, and its application in formal breeding programs, has been one of PPB's major achievements, notes Dr Ashby.

**ICRISAT Study**

In Rajasthan, India, for example, participatory efforts helped scientists at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) understand that farmers prefer a broad genetic mix of pearl millet types, not just one or two varieties. The farmers also made it clear they need millets that thrive in the infertile, sandy soils typical of the region. Such feedback led the institute to alter its variety-testing methods to better mimic farmers' growing conditions.
Farmers who have a stake in the breeding process are more likely to adopt new varieties. In addition to increasing food supplies, the new varieties can generate income for farmers.

Another thrust of the global PRGA program involves examining key issues, some of them controversial. In March 1999, for example, IDRC approved funds for a PRGA study on the rights of those involved in PPB collaboration, including formal breeders and their institutions, farmer breeders, farming communities, and intermediaries. The study will focus on property rights as they relate to plant genetic resources, seed, and technical innovation. It will also explore the mutual obligations of each party within an equal collaborative enterprise — such as PPB aspires to be.

No Agreement

"While the technical issues of PPB are moving ahead, the social, ethical and legal issues are lagging behind," explains Dr Sperling. "People generally recognize the role of farmers in managing and improving germplasm. But there's no agreement yet on how to value the role and research contributions of both the farming community and the formal breeding system. The technical collaboration can flourish only if potential barriers of mistrust are squarely addressed."

"We hope to move the property issue forward," concludes Dr Sperling. "The bottom line is to ensure that plant breeders, both farmers and scientists, have access to the necessary germplasm. But the debate is going to be heated."

Gerry Toomey is a freelance writer based in Chelsea, Quebec.

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www.idrc.ca/reports/read_article_english.cfm?article_num=490
One issue of interest to the PRGA plant breeding working group is the stage or stages of intervention at which farmers can make useful contributions to the formal research process. In some documented cases, such as participatory cassava research in Brazil and Colombia, farmers selected from varieties that had already been screened by scientists for resistance to strains of root rot. In this instance, the division of labour worked well. Scientists were better equipped than the farmers to do the necessary microbiology work, while farmers knew more about the local growing and consumption environment than the scientists.

A key advantage of participatory methods, according to Elizabeth Alvarez, a researcher at the International Center for Tropical Agriculture (CIAT), is that participants become committed to the research and results. "The women [in Colombia] are so happy and so proud to be selecting varieties themselves," she says. Farmers usually share promising planting material directly with friends and neighbours. Thus, the adoption of new varieties tends to happen much earlier, well before the varieties are officially approved for release.

**Earlier phases**

Farmers can also be involved in earlier phases of research, such as making crosses or selecting promising plants from plant populations whose genetic traits aren't yet fixed. In Namibia, for example, a woman farmer named Maria Kaherero planted a promising pearl millet variety called Okachana-i (itself developed using participatory methods) beside other local varieties to allow for cross pollination. Her experiment, begun in 1989, continued for four cropping seasons. Kaherero's patient work produced outcrosses with larger grain heads and thicker stalks, which were considered advantages. In 1992, plant breeders, aware of her breeding success, swooped in on her farm and selected from her outcrosses. These were then crossed with plants from another participatory selection exercise. After three seasons, a new variety, showing traits that were better than local farmer varieties and another variety produced by conventional breeding, was released. The variety, named Maria Kaherero Composite (MKC), has since become a pillar of Namibia's national breeding program.

**Growing trend**

Meanwhile, in Latin America, participatory breeding is a growing trend in agricultural research. Local farmer research committees, operating with advice from professionals and para-professionals, have spread quickly in Colombia, where the idea originated. Their success recently led the country's national agricultural research institute to adopt the model nation-wide. And now the idea is catching on in several other countries.

For one Colombian woman, the success of her community's participatory research efforts with maize allowed her and her family to diversify production and boost cash income, changing their lives in the process. "Thanks to the maize," says Maria Ilia Campo, "we also have fattening chickens and pigs. We mix maize with the pig feed that we buy at the store so it will go further. And we use the chicken manure to fertilize our tomatoes and beans.... I am much happier now because we have more money and we live better."
LAYING A FOUNDATION FOR JOINT MANAGEMENT OF THE ISRAELI–PALESTINIAN MOUNTAIN AQUIFER

The Israeli–Palestinian peace process may have been stalled for several years, but scientists from both sides have continued to work, and have made substantial progress in resolving one of the most divisive issues: the management of shared water resources.

One of the largest freshwater sources in Israel and Palestine is the Mountain Aquifer, a well protected resource that provides about 50% of Israel's drinking water. The geology of this mainly limestone aquifer is complex — water flows in several directions and quite rapidly for an aquifer. But in the main block of the aquifer, the flow is from east to west, which means that the sources are in Palestine and the outlets in Israel. Ninety per cent of the catchment lies under Palestine and 60% to 70% of the storage lies under Israel's pre-1967 borders.

POLITICAL PROBLEM

"The result is an aquifer that would be a political problem if it lay under the border of Ontario and Quebec," notes David Brooks, Research Manager at IDRC and coauthor of Watershed: The role of fresh water in the Israeli–Palestinian conflict. In Israel and Palestine, the situation is that much worse because of a history that is evident to everyone, but that was complicated by the isolation of researchers from one another in the years after 1967. According to Dr Brooks, Israelis living inside the nation's 1967 boundaries consume about three times as much water per person for household uses as Palestinians. (Settlers living outside the 1967 boundaries consume about five times as much water.) Water allocation is even more inequitable with almost 50% of Israeli farms under irrigation compared with less than 10% of farms on the West Bank. "But the real issue over water is not whether the Palestinians will get more water," he says. "Israelis will gradually release more water to them. The question is whether they will share management of the water and particularly of the Mountain Aquifer."

WATER CONFERENCE

In December 1992, almost a year before the Oslo Peace Accord, the First International Israeli–Palestinian Academic Conference on Water was held in Zurich. "It was engineered by a couple of courageous Israelis and Palestinians and coordinated by a joint Israeli–Palestinian NGO," says Dr Brooks, who attended as the keynote speaker. After the meeting, Israelis and Palestinians from a range of disciplines — including law, economics, and hydrology — proposed a study to examine the potential for joint management of the Mountain Aquifer. IDRC and the Charles R. Bronfman Foundation agreed to fund the project. At first, "we were working on this very cautiously and gingerly, but once the peace process got started, it gave us a kind of legitimacy," he says. The work was construed as "academic or third track activity complementing more formal political
Access to water has been an historic source of conflict in the Middle East. Progress in developing shared management models for the Mountain Aquifer, which lies under Israel and Palestine, is laying the groundwork for cooperation between two countries that are traditional adversaries.

bilateral and technical multilateral tracks." Some of the people who participated in the diplomatic negotiations, especially on the Palestinian side, have served as analysts in this study.

**KEY INSTITUTIONS**

The key institutions on the project team are the Truman Institute of Hebrew University in Jerusalem and the Palestine Consultancy Group, which includes representatives from An-Najah National University. Almost all of the leading Israeli and Palestinian hydrologists and water management experts have been involved in some way since 1993, says Dr Brooks. The project has also received guidance from "a large number of international experts on water management and international law officials."

Almost from the start, the Israeli-Palestinian team rejected two management options: separation of management activities between the two parties "because it is physically impossible"; and domination by one side "because it is ethically and politically unacceptable." That left the joint management approach. During workshops, the team explored what this would entail and how it might work.

**BREAKING NEW GROUND**

"There is very little history of true joint management of aquifers, so they are breaking new ground," stresses Dr Brooks. "Various water management arrangements have been worked out in the past [between neighbouring countries], but they didn't involve joint management."

So far, the team has identified which tasks are essential to joint management and the proper order to complete them. In other words, "what do you do first, what has to go together, what can be separated, and what can be left for later. This is all on the social-political-institutional side," he says. The researchers have also developed processes for quality management. In their most recent report, the team also discusses how to deal with severe droughts caused by several successive years of low rainfall, as well as such sensitive issues as water rights. Current work is exploring the opportunity for on-line scenario building that will demonstrate the potential for various forms of collaboration under varying political, economic, and climatic conditions.
**Bigger Battles**

One of the team's conclusions is that “the most controversial issues are sectoral, not national. If Israeli farmers suffer, so too will Palestinian farmers,” explains Dr Brooks. “Both sides face bigger battles over how much water should go to different sectors than how much should go to Israelis versus Palestinians.”

By virtue of the team’s expertise and influence, Dr Brooks says that its recommendations on joint management will go “right to the prime minister level.” Although the plan may be rejected because of bad political timing, “it won’t be forgotten. Indeed, with the likely resumption of the peace negotiations as a result of the elections in Israel, it is more likely that their report will get widely distributed and receive a lot of attention.”

*John Eberlee is the Managing Editor of Reports Online.*

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**Mountain Aquifer Management Models**

When the Israeli–Palestinian team began investigating joint management of the Mountain Aquifer, they soon learned that tough issues such as quantity allocation and water rights could be put aside for the moment; that technical management of the aquifer could be delayed, since it will be required in any case; and that no existing management model from other parts of the world was adequate.

The researchers defined four basic structures for joint management depending upon the function of the agency:

1. **Resource Protection**, to avoid loss of water quality;
2. **Crisis Management**, to respond to both crisis (such as a chemical spill) and drought;
3. **Economic Efficiency**, to emulate the results that would come with a private market; and
4. **Integrated Aquifer Management**, possibly with regulatory powers.

All of these management models include some of the following elements: data collection and monitoring of water flows and water quality, research, short-term water supply augmentation, and a formal system for conflict resolution.

Building on this base, the researchers have modelled each of the four management structures qualitatively. The result was a matrix of 19 functions that might be filled by an appropriate agency, each one categorized by staffing levels, funding requirements, and the degree of cooperation required, among other things.

**Next phase**

In the next phase of this project, which has not yet begun, the team will develop a user-friendly computer model so politicians and their officials can sit down and see how joint management would work: “the optimum cooperative strategies and competitive strategies, assuming two hands on the lever,” says Dr Brooks. “What the model does is trace out the results of various scenarios such as both sides pumping hard or sharing water during times of drought.”

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ARCHIVES

The following are highlights of other articles that appeared in Reports Online in 1998/99. To read the full text, go to the Web address provided for each article. If you want access to the articles using email, follow the instructions on page 56.

AFRICA

Producing Essential Oils in West Africa
by Honoré Blao
To reduce their dependency on imports and increase employment in rural areas, Togo, Benin and Ghana are trying to encourage the creation of small businesses that produce essential oils derived from local crops. With funding from IDRC, a team of West African researchers is helping rural communities acquire the skills needed to extract essential oils from Gambian tea, basil, lemongrass, as well as other native plants. The research team is also investigating local, regional, and international markets for essential oils.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=280]

Transforming Rubber Waste into Plant Products
by Keane Shore
A Nigerian-Canadian research collaboration is transforming a former waste product of Nigerian rubber plantations into a key ingredient for the country's paint industry. With funding from IDRC, researchers at the University of Nigeria and the POS Pilot Plant Corporation in Saskatchewan found that the oil from rubber tree seeds is less expensive than imported linseed oil (a paint drying agent), but it performs just as well.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=282]

Harvesting Red Algae for Senegalese Coastal Communities
by Raymond Laprée
A project designed to help Senegalese coastal communities harvest red algae promises to increase income levels. With funding from IDRC, researchers are cultivating a variety of drifting algae, called Hypnea musciformis, using nylon webs attached to underwater ropes. The algae produce a commercial colloid called carrageenan, which is used in textiles, cosmetics, antacids and other medicines, printing inks, and foods.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=291]

The Economics of Tobacco Control in South Africa
by Mogkadi Pela
The South African government is introducing legislation that would ban all tobacco advertising, including the sponsorship of sports and other public events. The proposed Tobacco Products Control Bill would also prohibit smoking in public places and the sale of cigarettes to anyone under 16 years of age. The Bill's policy foundations are partly the result of studies supported by IDRC and Research for International Tobacco Control, a secretariat housed at IDRC headquarters.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=310]

The War-Torn Societies Project in Eritrea
by John Eberlee
In 1991, following 30 years of war with Ethiopia, Eritrea became the youngest African state. Four years later, the War-torn Societies Project launched an initiative in Eritrea that brought government and external representatives together for the first time to discuss priorities for reconstruction and to conduct action-research. For the Eritrean government, the WSP project provided a much-welcomed forum for explaining its policies to international donors.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=333]
The Oodi Weavers Story: Social Change Through Community Economic Development
by Jennifer Pepall

In 1977, Oodi was a traditional rural village in Botswana. Today, the round thatched huts stand side-by-side with modern cement houses and cattle graze in the shadow of satellite dishes. One constant in the life of the village, however, has been a cooperative weaving project where women and men have crafted beautiful tapestries and blankets that have sold around the world. This project is the subject of the new book, Equal Shares, Oodi Weavers and the cooperative experience, which provides some important lessons about achieving social change through community economic development initiatives.

'Working for Water': Removing Alien Plants in South Africa
by Lois Sweet

In 1995, the Government of South Africa created a conservation program called Working for Water that supports a variety of labour-intensive projects to eradicate invasive alien plants. Approximately 110 non-native plant species are considered 'invasive' because they have no natural enemies and out-compete indigenous species. They spread at alarming rates, impede the growth of natural vegetation, destabilize the ecological balance, and contribute to water shortages. IDRC is supporting Working for Water research conducted by the South African Centre for Scientific and Industrial Research.

Environmental Insecurity and Conflict Resolution in Mozambique
by Lois Sweet

Ecotourism offers potential economic benefits to Mozambique, but it could also threaten the survival and livelihood of indigenous communities. With funding from IDRC, a Swiss NGO is informing people in the Matutuine District about the nature and scope of proposed developments, and their rights to land and natural resources. The project team is also helping people develop a range of commercial ventures, based on natural resources, that will be environmentally sustainable and provide maximum value to the entire community.

The Acacia Initiative: Overcoming Marginalization and Exclusion among Disadvantaged Communities
by Khodia Ndiaye

With the advent of the Internet, the world has truly become a global village. This gigantic communication network has abolished distances between communities and between people. For the first time, thanks to this matchless medium, it is now possible for the under-developed countries of Africa and Latin America to jump aboard the third universal revolution, in real time.

Toward the Commercial Exploitation of Red Algae from Senegal’s “Petite Côte”
by Cheikh Thiam

On Senegal’s “Petite Côte,” as the shoreline south of Dakar near the city of Mbour is known, the sandy beaches are caressed by the waves and fanned by gentle breezes redolent of the sea. Fishing is a major activity, and many people along this coast rely on it for their livelihood. Yet there is one species among the algae littering the beach that could bring them much higher incomes. Along this seafront, conditions are highly favourable for growing red algae for commercial purposes, an activity that could help to create jobs and wealth, generate foreign exchange for the Senegalese economy, and above all produce sizeable and steady revenues for the local coastal populace.

A Crusher for Revitalizing Local Cereal Production
by Khodia Ndiaye

Considered staple foods in rural areas of Senegal, couscous and arraw are rarely consumed by urban dwellers. Yet, these millet-based foods can be used in a variety of protein-rich dishes that, when properly prepared, are very popular among the Senegalese.
ASIA

Investigating an Environmental Disaster: Lessons from the Indonesian Fires and Haze
by John Eberlee
Policy and property rights failures helped cause the Indonesian fires of 1997/98, which burned five million hectares — an area the size of Costa Rica — and affected about 70 million people. About 80% of the fires were set by plantation owners to clear land for palm oil, rubber, and timber. In May 1998, the Economy and Environment Program for Southeast Asia and the World Wide Fund for Nature released a study estimating the total fire and haze-related damages at US$4.5 billion.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=2831]

Preventing Eye Infections in Rural Nepal
by Kari McLeod
In Nepal, eye infections are the leading cause of blindness, after injury. Agricultural workers often get eye infections when they remove wheat and rice chaff, which then hits an eye. With funding from IDRC, a team of Kathmandu researchers has developed an identification and treatment regime, delivered at the local level, and is testing its effectiveness in preventing infections. Nepal’s Ministry of Health has agreed to adopt the program on a national scale if it proves cost-effective.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=360]

A Decade of Reform: Helping China Improve its Science and Technology Policy
by Mike Crawley
In 1997, IDRC published A Decade of Reform: Science and Technology Policy in China, a report by an international team of experts that reviewed China’s science and technology policy. Today, that report is beginning to have an impact. Although the review team did not make specific recommendations, some of its findings have been endorsed at the highest level of government and action is being taken on two of the main issues it raised: innovation and international collaboration.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=391]

Reducing Maternal and Infant Mortality in Indonesia
by Neale MacMillan
In many Indonesian villages, the placenta is seen as a connection between the baby and the powers that protect it for long-term growth and development. The placenta is handled carefully and, in a simple ceremony, buried under the roof of the house.
With funding from IDRC, a team of Indonesian and Canadian researchers studied the cultural beliefs of Indonesian women as a first step towards improving the health of women and mothers. The team examined women's behaviours related to nutrition and infant feeding, determined the nutritional status of pregnant and lactating women, prepared advice on how to avoid nutritional problems, and tested its effectiveness. Their ultimate goal was to help reduce maternal and infant mortality rates.

LATIN AMERICA

Combining Environmental Protection and Poverty Alleviation in Colombia
by Gerry Toomey
When it comes to growing crops and protecting the environment, Pedro Herrera is on top of things — in more ways than one. The small-scale farmer lives in one of the poorest regions of Colombia, in the Andean hills of the province of Cauca. But he and his family are active participants in a bold experiment to conserve natural resources in the local watershed and to help community members improve their standard of living.

Creating Ecologically-Based Businesses for the Maya Biosphere Reserve
by Kevin Conway
Launched by the NGO ProPetén, the Ecoempresas program is designed to help people who live within the Maya Biosphere Reserve of Guatemala develop microenterprises based on value-added forest products and low-impact tourism. These community-based businesses will offer a sustainable alternative to the slash-and-burn agriculture and timber cutting that now threatens forests across the Petén, the country's largest and northern-most department.

The War-Torn Societies Project in Guatemala
by John Eberlee
In January 1997, after decades of bloody conflict, Guatemala took giant steps towards a brighter future when the government and opposition guerilla forces signed the Peace Accords. A few days later, after months of preparation, representatives from government, international agencies, research centres, and other institutions officially launched a 15 month long experiment of the War-torn Societies Project — a global initiative dedicated to helping war-torn societies rebuild.

Transferring Biopesticides to Mexican Farmers,
by Miriam Martinez and Nick Wilson
A group of Mexican universities is working with a small biotechnology company to transfer biological pesticides into the hands of local farmers. With funding from IDRC, the team plans to produce environmentally friendly biopesticides based on different strains of Bacillus thuringiensis, a naturally occurring bacteria that produces a protein which is toxic to certain insects but relatively harmless to other animals, including humans. The idea is to provide farmers with products that are safer to use and are better suited to local crops than the chemical pesticides sold by multinational firms.

Fishing for Less Mercury in the Amazon
by Neale MacMillan
People living along the Tapajós River in Brazil's Amazon Basin know that many of the fish they eat are poisoning them with mercury. But how do you avoid mercury contamination when fish is a large part of your diet? This is the quandary facing local villagers and a team of Brazilian and Canadian researchers, who have been studying the problem since the mid-1990s. In early 1999, a workshop was held in Brasilia Legal — a village of about 500 people — to discuss the best ways to limit or eliminate the threat of mercury exposure.

Testing the Waters: Indigenous Ecotours in Venezuela
by Keane Shore
It was a memorable holiday. The jungle travellers dined on alligator, piranha, cassava, manioc, and other local delicacies. They watched traditional dances and a blowgun competition, traded for local handicrafts, and rafted down rivers. Beth Rohr was sent on the inaugural ecotour operated by indigenous Venezuelan villages on behalf of IDRC. The pilot trip showed that developing ecotourism has potential, primarily with travellers in search of adventure. The Organizacion Regional de Pueblos Indigenas de Amazonas, a cooperative indigenous organization, hopes to bring a sustainable flow of tourists to the Amazonas region.
Stopping Landslides in Rio: Recycling Scrap Tires into Retaining Walls
by Keane Shore
Retaining walls made with recycled scrap tires are helping to raise living standards in the slums of Rio de Janeiro. A team of Canadian and Brazilian researchers has discovered that the tire walls—built for less than one-third of the cost of conventional anchored concrete walls used elsewhere in the city—may be more effective at stopping landslides during the rainy seasons.

Reducing Poverty and Inequity in Latin America
by Ken Eakin
Forty-five percent of Latin Americans live in poverty, earning less than US$2 a day, while the richest 5% of the population earns 55% of the region's income. These grim statistics provided a backdrop for a 1999 workshop on poverty and inequity in Latin America. Hosted by the IDRC-funded Latin American Program on Social Policies, its purpose was to allow experts and policy analysts to share research results and provide input into the World Bank's World Development Report 2000 on poverty. During the event, an apparent consensus emerged that social programs aimed at alleviating poverty must be viable, accountable, and people-focused.

Citizen Participation and Environmental Management
by Lois Sweet
Mexico City— the largest city in the world and the oldest in North America—is one of the great cultural capitals of the Western Hemisphere. But the daunting environmental problems facing its 20 million inhabitants—severe air pollution, a sinking water table, and chronic water shortages—present the government of Cuauhtémoc Cardenas Solorzano with an enormous challenge.

GLOBAL

Estimating the Impact of Global Warming on Agriculture
by Catherine Wheeler
A new study by a team of American researchers suggests that some of the anticipated negative impacts of global warming on agriculture may be unfounded. Ironically, climate change will probably benefit the North, which releases most of the world's industrial "greenhouse gas" emissions, while adversely affecting Southern countries near the equator—those who are least able to bear the burden.

The Global Tobacco War
by Michael Smith
Despite some progress in Canada and in other developed nations, global tobacco consumption is showing no signs of decline, says antismoking activist Rob Cunningham. Every year, about 3 million people around the world die from tobacco-related illnesses and the World Health Organization predicts that if current trends continue, the death toll will rise to 10 million a year by 2025— including 7 million in the South.

Alternative Approaches to Managing Conflict over Natural Resources
by John Eberlee
Community organizations have a pivotal role to play in managing conflicts involving the use
of natural resources, but they need support from external agencies and legitimacy from the state, concluded an expert panel on Alternative Approaches to Conflict Management hosted by IDRC. The event was held in May, 1998 during an international workshop on Community-Based Natural Resource Management in Washington, D.C.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=278]

Clouds on Tap: Harvesting Fog Around the World
by Pattie LaCroix
Six years ago, fog collectors were used for the first time to supplement the water supply of Chungungo, a remote Chilean village. Today, this simple technology has more than doubled the amount of water available in Chungungo, while inspiring similar efforts in other communities around the world. The Chilean experiment was one of the highlights this summer at the First International Conference on Fog and Fog Collection in Vancouver, Canada.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=284]

Global Forum on Health Research: Diverting Resources Toward the South
by Keane Shore
Launched in 1997, the Global Forum on Health Research aims to help correct the "10/90 disequilibrium." Each year, the world spends US$50 to $60 billion on health research and development, of which just 10% is used to study the health problems of 90% of the global population. The Forum is fostering collaboration among a wide range of partners in order to exchange information on health research, reduce duplication in health research and development, and identify and support the most cost-effective health interventions.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=292]

Catching Rooftop Rainwater in Gaza
by Steven Hunt
A roof is not just a means to keep rain off our heads. It can also be used to bolster drinking water supplies. With funding from IDRC, scientists from Canada and Palestine tested 11 rooftop catchment systems in the Gaza Strip — an area plagued by water shortages because of arid conditions, ground water pollution, and political instability. The project looked at their technical and economic efficiency, as well as the social acceptability of rooftop water.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=294]

Access to Water in the Mediterranean: A Cause of Conflict or Source of Cooperation?
by John Eberlee
One of the historic causes of conflict in the Middle East is emerging as a potential instrument for promoting regional cooperation. In the long run, "the common need for water can also serve as an important element in the peace building process," said speakers at a seminar hosted by IDRC and Carleton University.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=297]

Educational Tools for Combatting Micronutrient Malnutrition
by Neale MacMillan
An international research team funded by the Micronutrient Initiative has produced a CD-ROM educational program on iodine deficiency disorders (IDD). Using its interactive format, health professionals can learn the basic biology and biochemistry of iodine and the clinical presentation of IDD. To prepare them for work in the community at large, different sections of the program cover population health issues, approaches to prevention and therapeutic programs, and how to work with government and nongovernmental groups to achieve sustainable programs for the total elimination of iodine deficiency.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=377]

Economy and the Riches of the Poor
by Kevin Conway
Dr Majid Rahmena has spent much of his career thinking about poverty. By his own admission, there was a time when the Iranian scholar was overwhelmed by the issue of poverty and his inability to offer any new insights on the topic. His awakening to a new, more radical view of poverty and the poor began on the streets of Calcutta.

[http://www.idrc.ca/reports/read_article_english.cfm?article_num=285]
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