

THE IDB

Inter-American Development Bank • August 1997

Water strategies



*Enough for
everyone?*

**The information imperative ■ Ingenuity saves Honduran dam
Partial vs. hemispheric integration ■ Does education really pay?**

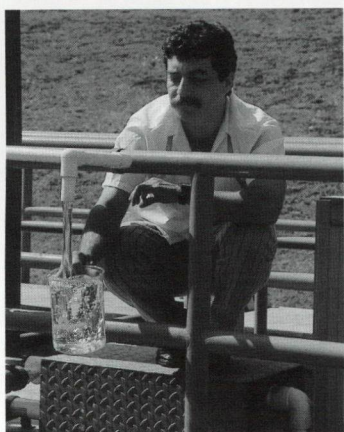
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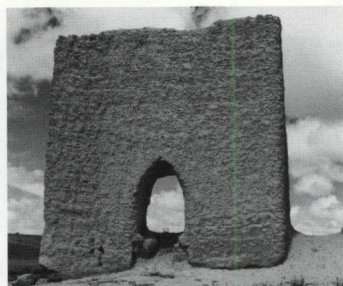
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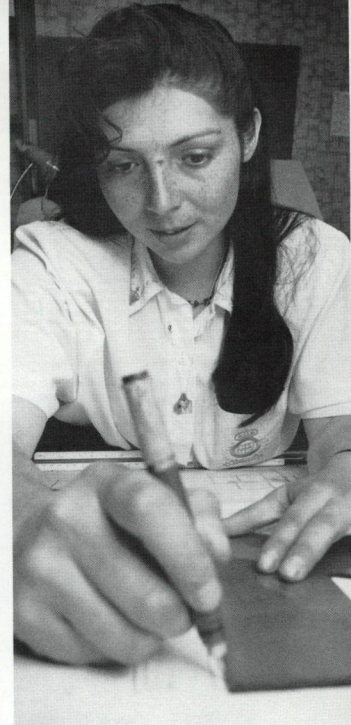
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An IDB-supported program is helping Guatemalan weavers to find a market for their work.

COVER PHOTO

Enough for everyone?

Students at the primary school in Panabajal, Guatemala, wash their hands at a faucet installed by an IDB-funded water project in 1989. Access to potable water is just one of the issues water resource managers must consider. (IDB photo by David Mangurian).

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The Bank at a glance

The Inter-American Development Bank is an international financial institution established in 1959 to help accelerate economic and social development in Latin America and the Caribbean. The Bank has 28 member countries in the Western Hemisphere and 18 outside of the region.

In its 36 years of operations, the IDB has helped to finance projects that represent a total investment of more than \$206 billion. The Bank has also fostered a more equitable distribution of the benefits of development and has been a pioneer in financing social projects.

Questions? Comments?

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An electronic version of *THE IDB* is available under "Press Services" on the IDB's Internet home page at <http://www.iadb.org>. The electronic version includes automatic links to related Bank press releases, project summaries and policy papers.

The information imperative

Beneath the overheated publicity surrounding the Internet and all things digital lies a cold economic fact. Information infrastructure—the fusion of telecommunications networks, computers and information—is quickly becoming a ruthless discriminator in the international struggle for competitiveness.

Traditional types of infrastructure—roads, telephone lines, electricity grids and airports—still form the bedrock of a nation's productive capacity. But among the industrialized nations where that physical infrastructure is already well developed, dominance of information technology increasingly separates the best from the merely competent.

Despite the complexity of the microprocessors that run today's ubiquitous personal computers, the chief benefit of a good information infrastructure is simple: it allows nations to obtain greater returns from their existing investments. Universities that offer students instant access to the latest scientific and technical information produce more capable graduates. Manufacturers become more efficient when they coordinate logistics with specialized software. Hospitals improve service when patient records are stored and distributed via digital networks. Banks and government agencies reduce document processing times when they conduct transactions electronically.

On the surface it may seem that Latin American and Caribbean nations are keeping up with the imperatives of the information age. Brazil hosts what has been called the world's largest annual PC trade show. Computer magazines can be found on urban newstands in every country. Digital editions of dozens of regional newspapers appear on the World Wide Web. And recently privatized telecommunications com-

panies are racing to lay the wires that will allow millions of people to get on-line.

But these developments still benefit only a tiny minority of wealthy Latin Americans. The overwhelming majority of people in the region still lack access to a telephone, let alone a computer. According to a recent report by market researcher International Data Corp./World Times,

prove Latin America's information infrastructure. By some estimates the region would need to invest at least \$10 billion over the next five years in order to meet basic information infrastructure needs. But since public spending is already largely committed to filling the large gaps in the region's physical infrastructure, most investment in information technology will have to come from the private sector.

In February of this year the IDB launched Informatics 2000, an initiative to assist the region in planning and coordinating these investments. Working with governments, companies and civic groups, the IDB will identify emerging issues, highlight risks and opportunities, and organize working groups to study the information needs of particular sectors. Working groups on education, health, investment funding, electronic commerce, the environment, banking and access to information are currently preparing reports that will be presented at a conference at IDB headquarters in September. The IDB will use those reports to craft a lending and technical support strategy for future information infrastructure projects.

Speaking at a recent meeting with the Global Information Infrastructure Commission, an industry group that has agreed to cooperate with the Informatics 2000 initiative, IDB President Enrique V. Iglesias said that "the Information Age... makes it imperative for the region to use in-

formation technology as a tool to match global productivity levels." But along with the focus on competitiveness, Iglesias said the region should make sure that this technology is used to improve the efficiency, effectiveness and reach of services to the poor, "so that they have affordable access to the information and services central to an information-based economy."

—Paul Constance



As the sign says, a short walk down the main street of Flores, Guatemala, can put you in touch with the world.

"No Latin American country is currently in a strong position to capitalize on the Global Information Revolution." The United Nations Development Programme recently concluded that the region's information technology infrastructure is "woefully inadequate."

These stark assessments are prompting governments, educators and development experts to examine what exactly should be done to im-

RESOURCES

New currents in water resources management

Water managers can no longer go with the flow

by Roger Hamilton

When Latin America's population was smaller, when few of its cities numbered more than a million people, and when its industries were in their infancy, conflicts over water were relatively infrequent. There was generally plenty to go around. When more water was needed, be it for agriculture, energy, residential or other uses, the solution was fairly simple: build more infrastructure to increase supplies.

But Latin America has changed. Its rapidly growing population, burgeoning cities, fast-paced industrialization, and advances in agricultural technology are now straining water resources. The available annual volume per capita is dropping in many cities and in some countries. In Peru, for example, available water has decreased from about 4,800 cubic meters per person in 1955 to about 2,100 in 1990, and is expected to fall to about 1,050 cubic meters by the year 2025.

In South America, estimated infrastructure investments of \$100 billion between 1990 and 2025 are expected to increase water withdrawals some 70 percent. The biggest consumer will continue to be agriculture, followed by municipal use and industry.

As different users vie for the same scarce resource, efforts to supply more water to some will mean less for others. As such, investments to increase water supplies cannot on their own solve the region's long-term water problems. Nor can isolated conservation efforts or measures to increase efficiency, though both can help.

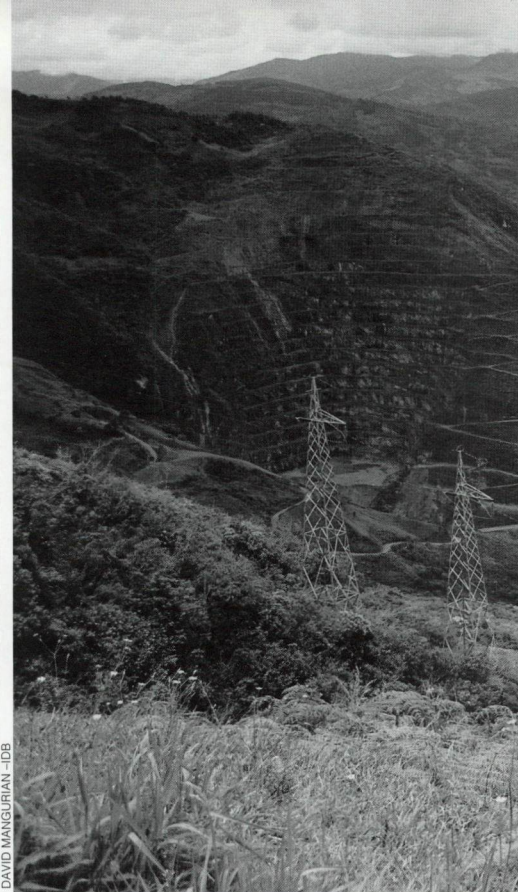
A consensus is growing that Latin

America and the Caribbean must make a fundamental change in how water is managed, a paradigm shift that has political, economic, social and environmental implications. The countries must replace their fragmented and piecemeal approach to dealing with water resource issues with an integrated management framework. Only in this way can increasingly scarce resources be allocated among groups of users and natural ecosystems so that the region can avoid future conflicts and environmental degradation.

Policy confluence. Change is now the order of the day in Latin America. Countries are redefining what government does and giving more power to the private sector and civil society.

This spirit of reform has given the region's water managers opportunities to test new approaches. Responding to these changes, the IDB is now developing an integrated water resources management strategy that aims to change the way the Bank supports its member countries. Instead of focusing on individual projects to increase water supply, the strategy recognizes that new investments should only be made as part of a comprehensive examination of the social, economic and environmental values of the resource. Moreover, affected communities and the private sector need to participate in making decisions on water resource management.

The process of developing the strategy has included internal and external consultations as a basis for a background document that will provide elements for a strategy proposal to be considered by the Policy Committee of the IDB's Board.



DAVID MANGURIAN - IDB

In adapting and promoting new thinking in the area of water resources, the IDB reaffirms its traditional role as a major player in this field in Latin America. The Bank's very first project was for potable water in Arequipa, Peru, and the Bank is now investing nearly \$1 billion annually in water-related projects. IDB financing has helped the region's countries to make impressive gains in water supply and sanitation, energy and food production. But the unmet needs remain enormous: only an estimated 78 percent of the region's population has access to safe water, and only 69 percent have sewerage services.

A new strategy must rest not only on dams and aqueducts, but on changes in policies and legislation as well. Many countries currently lack the institutions they need to make integrated water resources management work. Or if institutions do exist, they are ineffective. Hence the aim is not to produce a plan based only on hydrological, engineering and economic analyses, but rather to examine ways of removing institutional bottlenecks as well. The challenge is to change existing institutions so that they can plan and apportion water resources among various user groups in an efficient and equitable manner.



A reservoir and power generation station in the mountains near Ubala, Colombia.

For a number of practical and sometimes political reasons, that is more easily said than done. Existing public entities with expertise in the field are precisely those that have a vested interest in preserving the water use priorities of large and powerful constituencies. It would be unreasonable to expect these institutions to take a neutral approach to allocating resources among the different user groups. IDB technical specialists must consequently deal with the reality that water is first and foremost a political issue.

Independent watchdogs. To help reduce potential conflicts, the IDB strategy advocates the creation of decentralized, autonomous entities that will regulate the application of previously agreed-upon resource allocation policies and mechanisms. Because they act as designated "referees" on previously defined rules, such entities are in a better position to withstand pressures from special interests who could distort the resource allocation process.

For obvious reasons, government agencies with a stake in the water sector will not be eager to cede some of their power to the new regulatory bodies. As the IDB background strategy paper observes, "custom, habit, bureaucratic inertia, organi-

zation structure, professional specialization and political advantage all weigh on the side of business as usual."

Nevertheless, the new approach has received a good reception from water specialists at recent meetings organized by the IDB in Costa Rica and Trinidad and Tobago. Another is set for later this year in Brazil.

Even as the new strategy is completed, the IDB is helping regional countries to revitalize water management. In El Salvador the Bank is providing technical and financial support to a government program to create water regulatory agencies. A small, densely populated country, El Salvador faces severe environmental pressures exacerbated by serious water shortages. As part of a broad government modernization program that has already led to a significant restructuring of the energy and telecommunications sectors, El Salvador is now seeking to rationalize water management.

IDB project team members working with Salvadoran officials say the government has a clear idea of what needs to be done to make sure the solution to water management issues is not hindered by natural political turf battles. After water regulatory agencies are up and running, the government will use the IDB fi-

Tools for water management

Although the IDB strategy cannot dictate what actions countries must take in developing integrated water management plans, it can set forth a number of goals that should be considered as part of the planning process.

- ▶ Recover the costs of an investment project to achieve financial sustainability.
- ▶ Build institutions and train human resources to provide the foundation of reform.
- ▶ Involve stakeholders in the design of water management strategies.
- ▶ Decentralize the process of decision making.
- ▶ Provide for a significant private sector role so that water will flow to the most economically valuable uses.
- ▶ Consider the use of tradable water rights while taking steps to safeguard the environment.
- ▶ Establish river basin councils as a management tool.

nancing to strengthen their capacity and to draw up a set of water resource policies that will form the basis for its long-term strategy. IDB loans will also finance the rehabilitation of water supply and sanitation systems.

The IDB's efforts complement a number of other water management initiatives in the region. The World Meteorological Organization is coordinating a feasibility study in 13 regional countries to improve water forecasting. Officials in Argentina and Paraguay are talking about water resource master plans. Costa Rica, Jamaica and Brazil are interested in creating river basin commissions. Peru and Ecuador are discussing the option of privatizing water management. And in Central America, countries are making detailed assessments of the status of water resources and management.



Honduran geologist Jorge Flores and IDB engineer Rolando Yon-Siu stand atop El Cajón after it was repaired.

HONDURAS

Ingenuity saves dam

Toy balls and unconventional thinking prevent collapse

by David Mangurian

Three years ago, Honduras' Francisco Morazán hydroelectric project, the country's main source of electricity, was on the verge of collapsing into a \$775 million pile of rubble. "Water was leaking everywhere," recalls the Inter-American Development Bank's William Large, who was sent to Honduras on an emergency mission to see how the IDB could help save the project it had originally financed. "Without a doubt, it looked like the powerhouse would flood."

Some of the world's leading specialists had spent two years trying to contain the leaks, but without success. No one imagined engineering history was about to be made with 8,650 plastic and wooden balls, 25,000 feed sacks and some very unconventional thinking.

The dam, completed in 1985, was the largest civil engineering project

ever carried out in Honduras. It took nearly two years to pour the concrete to span the narrow box canyon that gives the dam its popular name, "El Cajón." Its 226-meter-high double curvature arch dam is the sixth tallest in the world.

With a capacity of 300,000 kw, El Cajón was to provide 70 percent of the country's electricity and produce a surplus that could be sold to neighboring Nicaragua.

But problems became evident as soon as the reservoir filled up in 1986. Engineers were alarmed to discover that the tremendous weight of the water caused tiny cracks to form in the cement grout curtain behind the dam. Water had begun seeping through and eroding pockets of clay in the limestone under the dam.

Hydraulic engineers always expect some leaking as a result of the pressures created when huge amounts of water are impounded. A large sump was excavated at one

end of El Cajón's powerhouse to gather leaking water and pump it outside. But by 1993, water was pouring in at the rate of 1,600 liters per second. Even more alarming, the water was discolored with clay, indicating that the fissures and karsts (cavities in the limestone bedrock) were getting larger. If the leaks were not plugged, the powerhouse would eventually flood, and even the dam itself would be threatened as the limestone under it became more porous.

To the rescue. The World Bank loaned Honduras \$12 million to finance a rescue operation. Conrodio, a European consortium and a world leader in grout injection, was contracted to handle the daunting job.

Special drilling and injection machinery had to be designed to withstand the tremendous pressure produced by the high head of water behind the dam. Hundreds of holes, up to 250 meters deep, were drilled from the dam base into the limestone and many tons of different combinations of cement, sand and gravel grouting were injected. But most of it just ran through and ended up in the powerhouse sump.

Nothing was working, and time and money were running out.

Then, on April 24, 1994, a power surge knocked out electricity throughout Honduras. The sump pump in the powerhouse stopped, the water started rising, and the emergency generators wouldn't start. "It was tense," recalls Jorge Flores, El Cajón's chief geologist. "The water nearly reached floor level." The powerhouse was on the verge of being flooded when the turbines finally started up, producing power to drive the pump.

Had El Cajón's powerhouse turbines flooded, the hydroelectric plant would have become an enormously expensive white elephant, literally leaving the country in the dark, crippling business and the economy. Honduras was already rationing electricity, because a two-year drought combined with the leaks had lowered El Cajón's reservoir and cut its generating capacity in half.

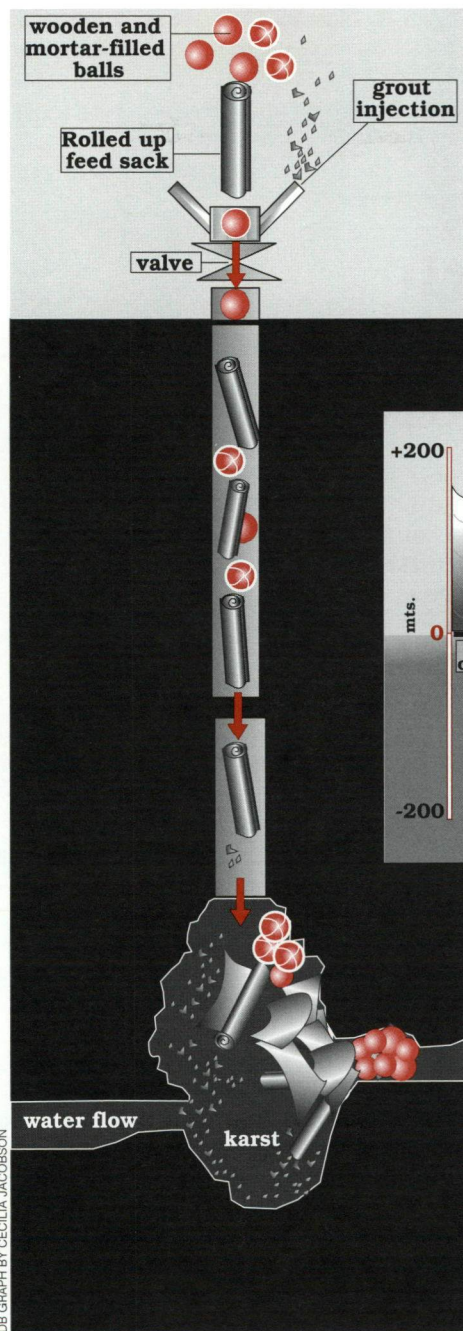
But while the immediate crisis was over, the leakage continued to worsen. "It was demoralizing to work so hard without seeing any results," recalls Flores.

Toward the end of 1994, the World Bank money was nearly gone. The IDB quickly approved a \$37 million emergency loan that included up to \$5.14 million for the El Cajón problem.

Geologists and engineers decided they needed to inject larger objects (about 5 to 7 cm.) that would stick inside the fissures and karsts and prevent the grouting from passing through before hardening. But there was no well sorted, round gravel of this size anywhere nearby. Flores then came up with a bizarre idea: plastic balls sold for toys were just the right size and could be filled with concrete. So his staff went to every store and market in the region and bought balls by the hundreds.

"We told [shopkeepers] the fish at El Cajón needed soccerballs," Flores says.

It was a crazy idea, but it began



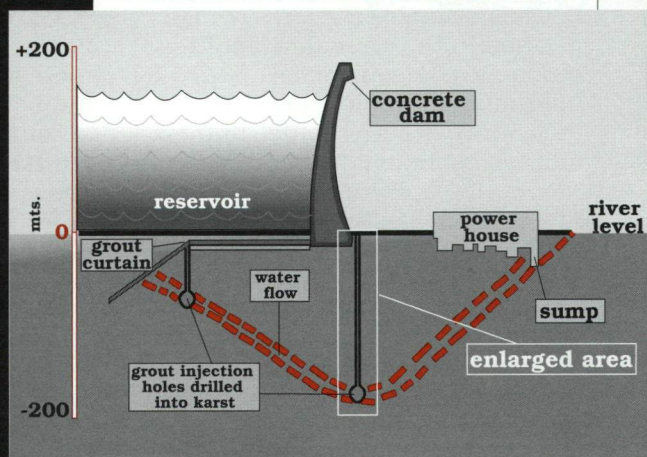
IDB GRAPH BY CECILIA JACOBSON

to work. The engineers also needed something that would float to plug holes at the top of the karsts. They tried filling the plastic balls with dried corn kernels, but everything ran through to the sump. Next they tried balls made of wood. That worked. Altogether, the engineers injected 8,650 plastic and wooden balls into the hundreds of karstic flow holes they had drilled into. But while the balls remained in place, they didn't hold back enough of the cement grout material injected to plug the cavities.

Flores came up with another bizarre idea: rolled up polypropylene feed sacks injected into the drill

How El Cajón was saved

Holes were drilled down from the dam base to reach fissures and karsts. Cement grout was then injected under high pressure from the sides of the drill holes, creating a vacuum that sucked down wooden and mortar-filled balls and rolled-up feed sacks inserted from the top. The balls plugged flow holes and the feed sacks unrolled inside the karsts, creating a mesh that retained the grout until it filled the cavities and hardened.



holes might spread out like mesh inside the cavities, and in this way prevent the cement grout from passing through. Finding sacks in an agricultural country was easy, and during the next six months, 25,000 feed sacks were injected into the limestone cavities under the base of El Cajón, followed by the grout mixture. By April of 1995, leakage had been reduced from 1,600 to less than 100 liters per second. Hydrostatic pressure under the dam was cut by 60 percent.

Today, El Cajón's reservoir has nearly refilled to capacity, and the powerhouse is again generating at full capacity. The grouting so far has withstood the tremendous weight of the filled reservoir. This spring, the story of how the \$775 million hydroelectric project and the economic life of a country was saved by plastic and wooden balls and 25,000 polypropylene feed sacks was presented as a scientific paper at the International Congress of Large Dams by Jorge Flores and engineers from Conrodio.

"What we learned at El Cajón," says Rolando Yon-Siu, the IDB specialist who supervised the rescue work, "may someday save a dam somewhere else in the world."

An economy with a split personality

■ Chile occupies a relatively high position in the annual rankings on economic competitiveness issued by international think tanks. But when the country's performance in these indexes is broken down into its constituent parts, Chile


Chile looks to the future shows a stunning dichotomy. In terms of macroeconomic variables and market freedom, Chile ranks among the top 10 countries in the world. But judged against several business productivity variables, it ranks closer to the bottom 10.

"Now that the country has a solid macroeconomic floor, the challenges of technological innovation, training, management capability and financial sector efficiency become more apparent," Chilean Economy Minister Alvaro García said in a recent presentation at the IDB.

According to García, his country's private sector does not invest enough in technological innovation and training. "The state must help to finance these activities," he said, "but always together with the private sector, so there is a commitment from them. It is the private sector that should decide what has to be done in these areas and who has to do it."

He further called for strengthening and continually updating the country's regulatory framework and institutions to ensure smoothly functioning markets. He cited the example of the highly competitive Chilean telecommunications industry. Telecommunications companies have approached the government several times over the past few years asking not for less regulation, which would have been the case in years past, but rather for more rules to improve transparency in a cut-throat, free-for-all market.

García stated that meeting this microeconomic challenge through a more active collaboration between public and private sectors must be accompanied by continued insistence on macroeconomic soundness.

 For an introduction to information about Chile available on the World Wide Web, visit www.reuna.cl.

The risks of partial integration

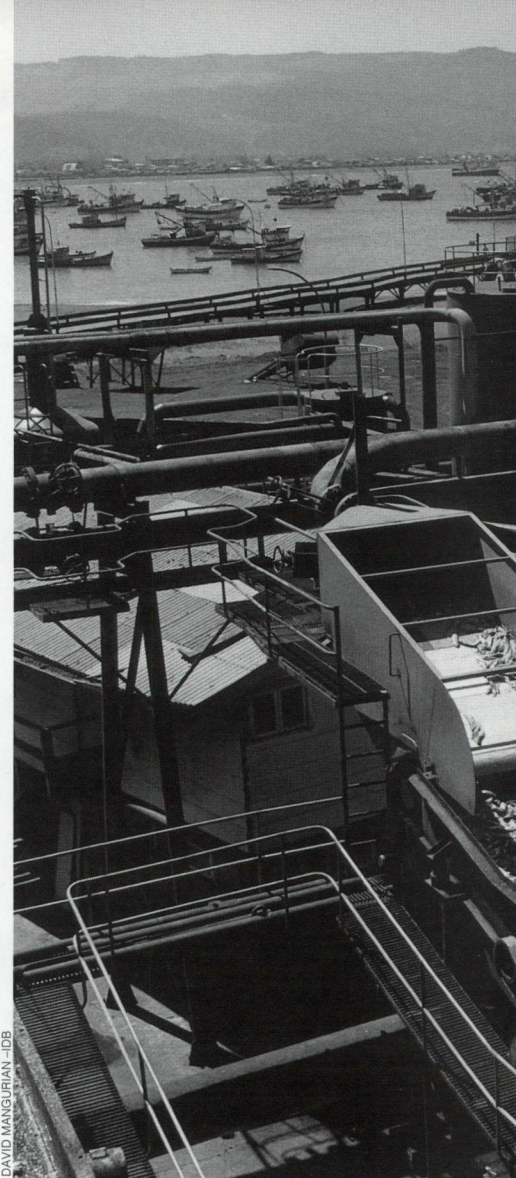
■ While virtually all Latin American and Caribbean governments have expressed qualified approval for the creation of a hemispheric free-trade zone, debate rages as to the near-term benefits that such an arrangement would have for individual countries.

Regional trade pacts

In some countries, politicians argue that regional trade blocks like Mercosur or even a series of good bilateral agreements might be preferable to a hemispheric pact, at least in the short term. But most economists agree that the status quo—several regional trade zones crisscrossed by dozens of unique bilateral agreements—falls far short of what is needed to unlock the true benefits of liberalized trade.

To help clarify the debate, several economists supported by the IDB recently produced a model that calculates the costs and benefits, in terms of anticipated GDP growth, of 20 possible integration scenarios for economies in Latin America and the Caribbean.

The results of the model, presented in a report entitled "Convergence and Divergence between



Processing fish at the San Pedro Fishing

NAFTA, Chile and MERCOSUR: Overcoming Dilemmas of North and South Economic Integration," confirm what integration specialists have long believed. Of all possible trade integration scenarios, the one that would offer the most benefits to all participants is a uniform hemispheric free trade agreement.

But if such an agreement is not reached, the "second best" integration alternatives for individual countries vary greatly and tend to conflict with the second best option for neighboring countries. The second best option for Mercosur members Argentina and Brazil, for example, is exclusive access to NAFTA, an option that would of course be opposed by other Mercosur members.

The authors of the report consequently warn that if the region fails to reach a hemispheric trade ac-

EDUCATION

The knowledge dividend

The link between schooling and economic growth

Economists have long assumed that rising levels of education contribute to economic development. But until recently, little was known about how greater educational achievement actually affects national productivity and growth.

Although that relationship will always be hard to quantify, the 1997 edition of the IDB report *Economic and Social Progress in Latin America*, due out in September, shows just how much of a return the region can expect from investments in education.

The report draws from several recent technical studies to calculate the effect on economic growth of increasing the average level of schooling of the region's workforce, which now stands at a comparatively low 5.3 years (4.9 years if adjusted for population).

"Latin America's potential growth rate could increase substantially during the next 10 years if the average educational level of the workforce was raised by one year (above

current tendencies)," according to the report.

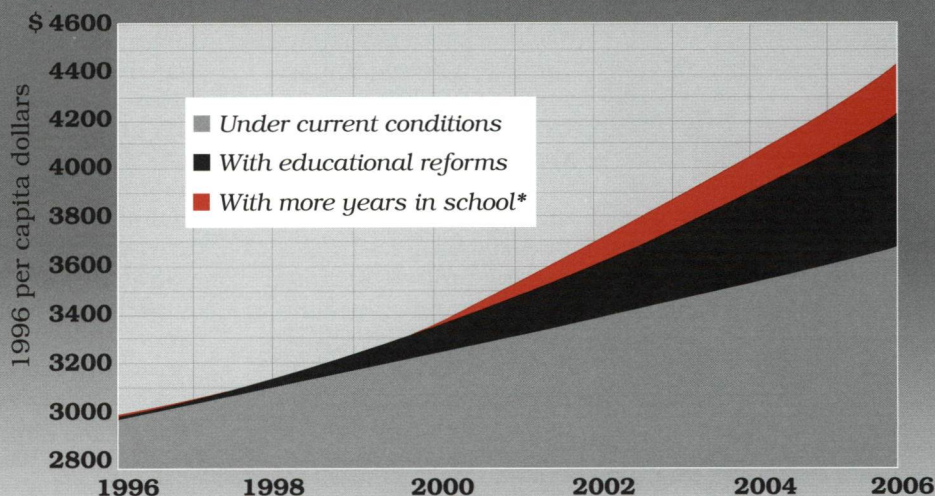
The report estimates that such an increase in educational achievement would raise the average potential growth rate for the next decade by a full percentage point. As shown by the chart below, that difference could translate into very substantial improvements in the average Latin American's earning power.

In microeconomic terms, education enables individuals to acquire general skills and assimilate information more efficiently. Educated workers are better able to adapt to changing production processes; they have better communication skills, which allow them to cooperate with co-workers in solving production problems.

Educated workers are consequently capable of taking on more complex manufacturing and service projects. They make better use of technology, become more productive, and ultimately add value to a country's economic output.

The more they study, the more they earn

Scenarios for average per capita income growth in Latin America




*Assumes a one-year increase in the average level of schooling over a 10-year period.
Source: Economic and Social Progress in Latin America: 1997 Report.



pany in Concepción, Chile.

cord, "each country is left to fend for itself in a high stakes and highly competitive environment which will tend to focus on more limited and conflictive short-term gains."

The challenge, the authors believe, is to improve the credibility of the negotiating process leading to a hemispheric agreement, so that politicians can have a reasonable assurance that an agreement will be reached and that its benefits will be tangible and fair. Only then will governments be willing to take on the considerable political and short-term social costs of joining a hemispheric free-trade zone.

 Copies of this paper, which was written by Raúl A. Hinojosa-Ojeda, Jeffrey D. Lewis and Sherman Robinson, can be obtained through the IDB Library, tel. (202) 623-3211, or via email at library@iadb.org.

ARGENTINA

Beef exports are back

People are always cheered by news of sickness in retreat, but Argentina's recently recognized victory over hoof-and-mouth disease, a highly contagious ailment that can kill cattle, was celebrated with particular fervor.

Argentines are justifiably proud of the lean, tender meat produced by cattle fed on the Pampa's lush grasslands. But while the meat's quality is recognized abroad, and Argentina was once among the world's premier meat exporters, the country's beef industry has been severely affected over the last 60 years because of the stubborn presence of hoof-and-mouth disease.

Locked out of the world's principal markets by sanitation laws that prohibit fresh beef imports

from countries where the disease persists, Argentine producers have been limited to selling cooked and processed meat products. Lost sales related to the disease were estimated at \$1 billion per year.

"The eradication of hoof-and-mouth is proof of our collective capacity to overcome adversity," Felipe Solá, Argentina's agriculture secretary, said recently. "This accomplishment, which for so long was considered unattainable, was made possible by the hard work of Argentine beef producers, the technical support of the scientific community and the existence of an effective vaccine."

The 146 member countries of the International Epizootic Organization, which monitors animal epidemics under the World Trade Organization, gave Argentine fresh beef a sanitary seal of approval in May. In June the U.S. Department of Agriculture, widely regarded as a pace-setter on such issues, lifted a ban on fresh beef from Argentina that had been in effect since 1930. Effective August 25, the U.S. allowed imports of up to 20,000 tons of fresh Argentine beef per year.

The campaign to stamp out hoof-and-mouth was a massive undertaking, costing around \$150 million annually in public and private funding. The effort was supported by a \$107 million agricultural and livestock sector modernization program funded by the IDB and the World Bank in 1991.

"One of the program's goals was to vaccinate 100 percent of Argentina's cattle in five years and eliminate any remaining foci of the disease," said César Williams, an IDB sector specialist in Argentina. "The vaccination rate did in fact rise from 60 percent to 100 percent during that period," he said. "Producers also began using a more effective and less expensive vaccine, while implementing sanitary measures such as an epidemiological early warning system for detecting other diseases."

The IDB-funded program has also introduced quality control and export and trade promotion measures that should help reestablish Argentina's position as a leader in fresh beef exports, according to Williams.

The struggle with hoof-and-mouth is not entirely over, however. Argentina is currently controlling the disease by vaccinating virtually every head of cattle on its soil. But the countries with the most demanding sanitary standards, such as Korea and Japan, require evidence that the disease will not return even after the vaccine program is discontinued. Experts estimate that Argentina could pass that final milestone within three years.

Argentina hopes new markets will help its beef exports to increase by 70 percent by the year 2000, to 800,000 tons. More than 90 percent of Argentine beef is still consumed domestically.

—Christina MacCulloch

BOLIVIA

Public access preserves ruins

Priceless cultural remains from a magnificent though mysterious period in the history of the Aymara people have been saved from looters and the ravages of time in the highlands of Bolivia, thanks to a new road.

The preservation work was carried out at 15 sites in the areas of Warijana and Pujrata in the Andean altiplano, as part of an IDB-financed project to construct the Patacamaya-Tambo Quemado highway, which links Bolivia with Chile.

Anthropologists with the "Amaya Uta" project identified 44 tombs, carried out conservation work on six, and then sent 21 containers of human and cultural remains to La Paz for analysis and eventual exhibition at the National Museum of Anthropology.

The tombs, which date back to the period following the fall of the Tiawanaco Empire, or after



Argentina's prized cattle.

JEDU SAGARNAGA





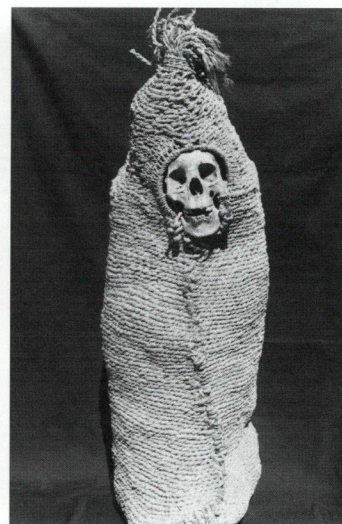
1200 AD, consist of clay towers called ch'ullpares. The corpses contained inside were mummified through a process of evisceration and abdominal filling, and then placed in straw baskets, which promoted dehydration and impeded later rehydration.

Before burial, the bodies were decked out in sumptuous clothes, decorated with the feathers of exotic birds and jewelry made of precious metals, indicating either contact

with, or dominion over, the Amazonian lowlands.

Radiographic studies of the mummies indicate that the people were well nourished. And to make sure that they would not suffer from hunger or thirst in the hereafter, the deceased were provided with clay pots containing corn, potatoes, quinoa (an Andean grain) and chicha (a traditional drink).

A large percentage of the skulls showed deliberate deformation during in-



A view of Bolivia's Patacamaya-Tambo Quemado highway where it intersects the Aymara tombs (left); three of the ancient burial towers (top left); and one of the recovered mummies in its protective straw basket.

fancy, a symbol of social class. One skull had evidence of a double trepanation in which both perforations showed signs of bone regrowth, proof that the person survived two operations carried out by obviously skilled surgeons.

The burial towers, despite being made of mere mud and straw, have survived nearly 1,000 years of fierce winds, baking sun, freezing temperatures and torrential rains. By protecting the mummies, they preserved an enigmatic link to a magnificent past.

—Max Lenin Chávez

ECUADOR

From trashheap to urban oasis

For years, Carolina Fernández Rodríguez endured a sore throat that had no obvious medical explanation. But Fernández, who lives on the outskirts of the Ecuadorean coastal city of Guayaquil and told her story to reporter Jorge Alvarado of *Expreso* newspaper, had a theory about her ailment. She called it "La Chamba."

That is the name local residents gave a nearby dump that until four years ago received Guayaquil's garbage. Fires at La Chamba released a constant cloud of toxic smoke and gas that stung the eyes and irritated the throats of people in San Eduardo and the adjacent community of El Paraíso.

Today the noxious fumes are gone. The city of Guayaquil, under the leadership of Mayor León Febres Cordero, has contracted garbage collection to Vachagnon, a private company. A new, sanitary landfill far from San Eduardo is being managed by another company, ILM.

The old La Chamba site has been covered with soil and surrounded by concrete walls. The IDB is partially funding a study to determine how to seal the site so the land can be used for other purposes.

"The municipality has not yet decided how to use the land, but I am leaning toward planting it with trees to create a much-needed 'green lung' for the city," mayor Cordero recently told Alvarado.



Denmark's Madsen and IDB President Iglesias at the signing ceremony.

PRIVATE SECTOR

Denmark joins the Investment Corporation


First new member country since IIC was established

Denmark became the thirty-fifth member of the Inter-American Investment Corporation (IIC) at a signing ceremony held July 16 at IDB headquarters in Washington, D.C.

Sven Boje Madsen, Denmark's Chargé d'affaires in the U.S., signed the official record of membership and added Denmark's name to the Agreement Establishing the Inter-American Investment Corporation. The official record of membership was also signed by Enrique V. Iglesias, IDB president and chairman of the IIC board.

Denmark, a leading donor country in terms of percentage of gross domestic product earmarked for development assistance, is the IIC's first new member country since its founding in 1986.

The IIC was founded to promote economic development of Latin America and the Caribbean by providing project financing for small and medium-sized private enterprises in its developing member countries.

 For more information, visit the IIC website at www.iadb.org


Essay contest on economic integration

The Institute for the Integration of Latin America and the Caribbean (INTAL) will offer a prize of \$10,000 to the winner of an essay contest on the relationship between labor standards and international trade.

The contest is open to professionals and academics in all the IDB's 46 member countries. Essays, which should be no more than 30 pages, should be submitted on a floppy disk accompanied by two printed copies, signed with a pseudonym, in English, French, Spanish

or Portuguese. The deadline for submissions is January 20, 1998.

Based in Buenos Aires, INTAL is part of the IDB's Integration and Regional Programs Department. It carries out regional and national technical cooperation projects, organizes forums on policy and integration, and distributes information.

 For more information on how to participate in the INTAL contest, contact Verónica Toscani in Buenos Aires, E-Mail, veronicat@iadb.org.

TRADE

IDB supports hemispheric talks

Lays groundwork for FTAA

The IDB, along with the Organization of American States and the U.N. Economic Commission for Latin America, has taken a central role in preparatory work leading to the launching of negotiations for the Free Trade Area of the Americas (FTAA) at the presidential summit in Santiago, Chile, next April.

The IDB has provided technical assistance to several of the working groups created in ministerial conferences held in Denver, Colorado, and Cartagena, Colombia, in 1995 and 1996, respectively. The conferences brought together ministers of commerce from 34 Western Hemisphere nations.

The Free Trade Area of the Americas, first proposed during the 1994 Summit of the Americas in Miami, would develop a comprehensive trade agreement for the entire hemisphere. It would cover traditional issues, such as market access, and new areas including policies on investment, services, intellectual property and competition.

Antoni Estevadeordal, FTAA coordinator in the IDB's Integration, Trade and Hemispheric Issues Division, said the Tripartite Committee formed by the IDB, OAS and ECLAC is now completing a feasibility study on the creation of a temporary secretariat that would provide logistical and administrative support for the negotiation meetings that are scheduled to run from 1998 to 2005.

The feasibility study also examines criteria for selecting a site to host the negotiations following the presidential meeting in Santiago, according to Estevadeordal. He said the IDB, along with the OAS and ECLAC, is also jointly maintaining the official FTAA home page on the Internet (www.ftaa-alca.org), where readers can view official documents.

LOANS

Argentina. . . \$38 million

to support a program that expands access to essential social services



among female heads of household, indigenous communities, youth at risk, the elderly, and the disabled.

The initiative, to be carried out by the Secretaría de Desarrollo Social, will seek to institutionalize a participatory planning process that encourages groups and individuals to develop and carry out their own social service projects at the community and neighborhood level. Funds will also be used to support the development of a Universal Family Identification and Registration System intended to improve the government's capacity to focus resources on the neediest sectors of the population.

Bolivia. . . \$20 million


from the Fund for Special Operations to support projects that will contribute to the development



of approximately 70,000 poor children under six years of age in rural or marginalized urban areas.

The main objective of the program, which will finance 360 child services projects in 200 municipalities, is to assist the process of consolidating services that provide basic child needs, including primary health care, nutri-

INFORMATION ON IDB PROJECTS

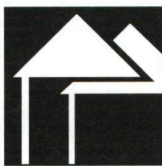
 More details about these projects, including press releases, project summaries and related papers, are available electronically through the IDB's Internet home page (<http://www.iadb.org>). Check under the Press Services, Publications and Project Documents sections.

IDB Projects, a monthly compendium of planned projects and related opportunities to supply goods and services, is also available on the home page, under the Business Opportunities heading. For a sample copy of the print edition of *IDB Projects*, call (202) 623-1397, or fax x1403.

tion, stimulation of early learning capacities, and protection. The program will establish comprehensive child care centers serving 25 to 40 children each for 11 months out of the year, and it will also offer training in child care for local families and communities. The program will be coordinated by Bolivia's Social Investment Fund.

Colombia. . . \$38.5 million

to support a program to modernize land titling and the registry of deeds and cadastre.



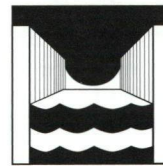
The project is designed to consolidate and strengthen an open, transparent, and efficient land market that will make access to the financial system easier for urban and rural property owners. Registered titles will be awarded for approximately 100,000 parcels of land in 200 rural municipalities and 150,000 parcels of urban property in 50 municipalities.

The land registry sys-

tems of existing recording offices will be computerized, paper records will be transferred to magnetic media, and some 1.5 million properties will be digitally mapped and geographically referenced to create a geographic information system.

Ecuador. . . \$40 million to

improve the water and sewerage services of the city of Guayaquil.



The program includes granting long-term concessions to the private sector to promote greater service efficiency and investment in the system. The funding will enable the Empresa Cantonal de Agua Potable y Alcantarillado de Guayaquil (Ecapag), a municipal agency, to undertake technical, legal, and financial studies and to prepare bid specifications to award the concession. Ecapag will be reorganized to function as an oversight agency, while the private companies will be responsible for operating the water and sewerage system.

Guatemala. . . \$107.65

million to support reform of the infrastructure and investment sectors.



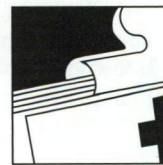
The project, to be carried out by the Ministry of Economy, is designed to increase the efficiency, quality, and coverage of the telecommunications, aviation, and electricity sectors.

The IDB financing consists of a loan of \$100 million to support the sector reform as well as a second loan of \$7.65 million to finance technical assistance.

The program is also being supported by a grant of \$1.15 million from the Multilateral Investment Fund, an autonomous fund administered by the IDB, which is supporting the aviation sector reform.

Jamaica. . . \$17.7 million

to assist in a reform program to improve the equity, efficiency and quality of health services.



The resources will support the development of a National Health Insurance Plan, strengthen the policy-making and regulatory roles of the Ministry of Health and assist its decentralization, and improve human resources.

Paraguay. . . \$22.2 million for microenterprise credit.

Approximately 12,000 loans are expected to be granted to microentre-

(continued)

(from previous page)

preneurs under the program, creating an average of 2.5 jobs for each loan. The project expands the successful first phase of a microenterprise credit program that was supported by a \$12 million IDB loan approved in 1992.



Peru. . \$45.6 million to increase agricultural productivity, especially exports, by financing programs to control and reduce animal and plant diseases.



The resources will strengthen the National Agricultural Health Service and enhance agricultural health surveillance and defenses, with the goal of eventually assuring the inspection of 100 percent of imported farm products. New agricultural checkpoints will be built at airports and seaports and campaigns will be launched to control pests such as the fruitfly and hoof-and-mouth disease, among other activities.

Uruguay. . \$123 million to upgrade national highways and bridges that connect the countries of Mercosur, the southern South America common market.



The resources will help rehabilitate and improve 520 kilometers of national

highways and 26 bridges that are on integration corridors and improve the quality of pavement on 360 kilometers of roads in Montevideo. The Ministry of Transportation and Public Works and the National Highway Department will be strengthened, and increased private sector participation will be promoted in the transportation sector.

TECHNICAL COOPERATION

Regional. . \$845,000 to help provide advanced academic training in macroeconomics to government professionals from throughout Latin America.



The courses will be conducted at the Economics Institute of the Pontificia Universidad Católica de Chile. Two previous phases of the training program at the university were supported by \$3,380,000 in IDB non-reimbursable financing.

MULTILATERAL INVESTMENT FUND

Ecuador. . \$1,260,000 to establish a pilot program providing technical training to microentrepreneurs.



The project will train about 30,000 microenterprise workers and owners in business manage-



DAVID MANUJAN-IBB

Just add water

Workers in Port-Au-Prince, Haiti, deepen a drainage canal designed to prevent flooding. The work was one of nine IDB-funded projects that were reactivated in 1995 following three years of political turmoil in the country. Other projects are in the areas of irrigation, potable water, education, agriculture and transportation.

ment, technology, and small-scale manufacturing, utilizing a voucher system as an incentive for participants to enroll and improve their skills.

Nicaragua. . \$1.2 million to finance training to improve productivity of small

and medium-sized agricultural producers in the regions of León and Chinandega.

The objective is to increase the producers' income through the adoption of better



business practices. Among the training areas are business organization, management, marketing and credit.

The project will directly benefit 1,500 small and medium-sized producers and indirectly another 1,550 producers. The representatives of 30 nongovernmental organizations, which in turn will train thousands of other producers.

Uruguay. . . \$2.2 million for workforce training.

The funds will be used to help finance the design of a national system of skills standards and a registry of training organizations. Two private, nonprofit institutions that are leaders in job training—Talleres Don Bosco and the Del Plata Hotel and Tourism School of the Asociación Cultural y Técnica—will be strengthened to serve as models for other training organizations.

INTER-AMERICAN INVESTMENT CORP.

Argentina. . . \$20 million loan to Hidronihuil S.A. to help finance the construction of a 30 megawatt hydroelectric power plant under a 15-year concession granted by the province of Mendoza.

The IIC will fund \$10 million of the loan, and the balance will be funded

by international commercial banks mobilized through the IIC's cofinancing program.

Barbados. . . \$4 million in preferred share equity to "take-out" a bridge loan to help finance construction of the \$21.7 million Accra Beach Hotel Limited.

The project will help ensure continued growth of the tourism sector and provide \$75 million annually in foreign exchange earnings in the first 12 years of operations.

Colombia. . . \$10 million loan to Corporación Financiera Santander S.A., which will on-lend the funds to small and medium-sized companies primarily in the states of Santander, Tolima and Huila.

The resources are expected to enable at least 20 companies to expand and improve their competitiveness, creating 600 jobs and more than \$40 million in export earnings.

Mexico. . . \$5 million

equity investment in The Baring Mexico Private Equity Fund, L.P., to support a \$60 million fund that will invest in small and medium-sized companies.

The fund is intended to support firms with strong

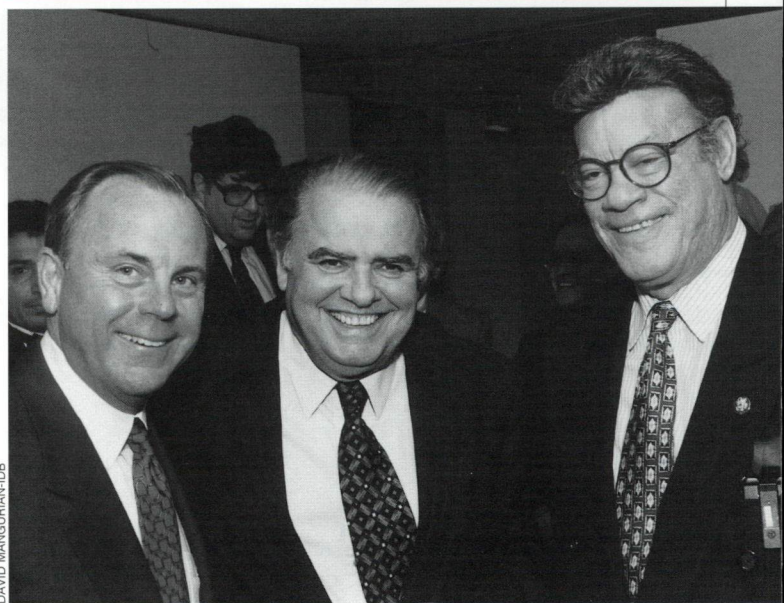
growth potential that need long-term capital for capacity expansion. Reaching several economic sectors and geographic areas, the fund will serve as a pilot to be replicated in five individual country funds under a \$250 million umbrella scheme.

Regional. . . \$5 million

equity investment in Newbridge Andean Partners L.P. to support a \$60 million private equity fund, complemented by a \$100 million loan guarantee from the Overseas Private Investment Corpora-

tion, to invest primarily in Bolivian, Colombian, Ecuadorian, Peruvian and Venezuelan companies.

The fund will provide medium- and long-term capital to a region where capital is often available only to the largest firms. The use of the stock market placements as the preferred exit mechanism for these investments will assist in widening and deepening local capital markets. The fund will also provide companies with better management techniques and modern technologies that are essential to increase efficiency and improve access to long-term debt financing.



DAVID MANGURIAN/IDB

High-level delegation

Mack F. McLarty (left), U.S. special envoy to the Americas, IDB President Enrique V. Iglesias, and Esteban E. Torres (right), U.S. representative from California, were among the guests at a July reception at the IDB's Washington, D.C., headquarters honoring William Richardson, the United States Ambassador to the United Nations.



Fundemix's Santos admires a credit client's latest weavings.

GUATEMALA

Fine weaving as a way of life

Traditional textiles find a modern market

Lidia Chile does not consider herself to be a fancy dresser, and she certainly is not rich. Yet she would never think of leaving her house in Santo Domingo Xenacoj wearing anything less than a hand embroidered blouse worth many weeks' earnings.

Throughout the Mayan highlands of Guatemala, textiles are a way of life as well as a source of income, a statement of personal and community identity whose traditions reach back centuries. The fabrics, whose designs are often revealed to the weaver in dreams, could be considered an anachronism in a world of international fashions and assembly line production methods. But handmade textiles are what these people know and what they do well.

Unfortunately, most highland weavers are commercial neophytes, according to Carmen Santos, executive director of the Mixco Development Foundation (Fundemix), an IDB-supported nongovernmental organization that administers training and credit programs for microentrepreneurs. Her staff helps producers adjust their product line to the realities of the global marketplace.

Fundemix's loan officers and design and production experts guide weavers into product lines that will

sell, such as pillow cases, table cloths and napkins. They help the weavers to increase production by adopting new technology, such as the foot pedal loom.

When Fundemix opened its doors a decade ago, villagers suspected its staff of being tax collectors, thieves or guerrillas. But over the years, the microentrepreneurs and Fundemix have learned a great deal about each other.

Santos, for example, was not surprised when her knocks went unanswered at the first of several houses she visited on a recent afternoon. The families are probably off planting corn and beans in their plots, she explained. Farming guarantees the people something to eat in uncertain times, but it also limits their production of textiles.

At the third house, Santos found the women at their looms. They all wore the colorful blouses called *huipiles*, but their children ran

about in factory-produced clothing.

Is the *huipil* disappearing? Not according to weaver Lidia Chile. "How else would people know where we're from if we're not wearing our *huipiles*?" she asks, adding that her daughters wear *huipiles* at special events.

But even as Guatemala's 21 ethnic groups, which comprise two-thirds of the country's population of 10.5 million, are reasserting their indigenous identity and pride, the old ways are changing. Many young women opt for contemporary fashions, and many of them actually work in clothing assembly plants outside of Guatemala City. When they arrive home from their factory jobs, they have little time or energy to devote to traditional weaving.

In the final visit of the day, this one to a family with a foot pedal loom, Santos asked the weaver—a man—how the payments are going.

"Look, doña Carmen, we are very behind," he replied.

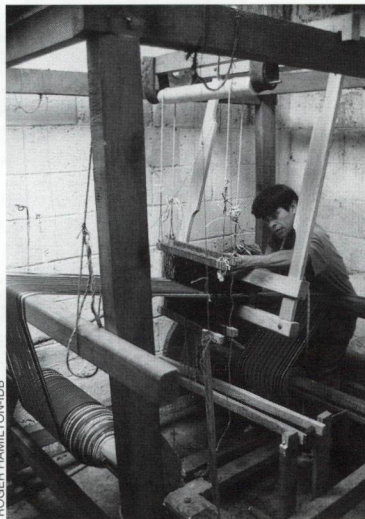
"The problem with him is that he is a man," Santos later said, only half joking. The men are more prone to experiment and they over extend themselves and get into trouble. Some of them also spend their earnings on drink, she added.

The women, who make up nearly half of the credit recipients, are more realistic in their aspira-

tions and more inclined to plow their earnings back into their homes, she said.

In general, Santos reports, her clients not only pay back their loans on time, but are demonstrating that a little business knowledge can go a long way in preserving their art and their livelihood.

—Roger Hamilton



The foot loom increases weavers' productivity.