

10 YEARS FOR TOMORROW



SPECIAL REPORT

IDRC's first 10 years

Ten years ago, only a few people in the know were awaiting impatiently the establishment of the International Development Research Centre. But they had great expectations. Their fondest hope was that the new organization would harness more of the world's scientific and technological endeavours for the benefit of the disadvantaged of the earth. In short, they wanted to translate into a formal structure the famous saying: "Give me a fish and I will eat for one day; teach me how to fish and I will eat forever."

Today the founders' hopes are embodied in an increasing number of scientists, most of them born and working in the Third World. Despite the speed of technological advance, however, one decade is not enough

to assess whether the young organization has lived up to the task. At least it has succeeded in providing hundreds of young people — some of the most brilliant minds in the developing countries — with the means of devoting their skills to the solution of problems affecting the lives of millions of people.

The following pages, published on the occasion of IDRC's 10th anniversary, present a few achievements of these researchers who are striving to develop — or more often to re-establish — an indigenous scientific and technological momentum in their communities.

No one is better placed than they to bring the benefits of science and technology to bear on the solution of international development problems.

A HISTORY OF RESPECT



An interview with Rex Nettleford on IDRC's first 10 years

The Hon. Rex M. Nettleford, O.M., is Director of Extra-Mural Studies, University of the West Indies, Kingston, Jamaica, and advisor to the Jamaican Prime Minister on cultural affairs. A founding member of IDRC's Board of Governors, he served on the Board during the Centre's first 10 years. He was interviewed for Reports by Ian Boyne, a feature writer with the Jamaican Agency for Public Information and Sunday Sun newspaper.



Reports: What were the conditions that led to the creation of IDRC?

Nettleford: "I think it has to be seen in the context of the disappointing record of the first development decade, where the projected recipients of assistance from the developed world turned out to be the least of the beneficiaries, and, in fact, much of the help given to the Third World did not really reach the mass of the population. This, of course, was clearly understood and seen in the 60s to the extent that the Pearson Commission was set up in 1969 under the auspices of the World Bank and the chairmanship of the late Lester B. Pearson. That produced a watershed report in the literature of development strategies. †

"My suspicion is that Mr Pearson was impelled to return home and try to get something done as a result of that report. His tremendous influence in the Canadian political system at the time was brought to bear on the political directorate there and, together with people like Maurice Strong, they came up with this mechanism, the International Development Research Centre, which was designed, modestly, to plug some of the gaps that had resulted from the first development decade.

"The composition of this rather odd body was quite unprecedented in the history of developmental systems in that, although the entire thing was funded by the Canadian taxpayer, they included some 10 non-Canadians on the Board of Governors, people from

the Third World largely, as well as from those countries that have had a long tradition of relationships with the developing world."

Reports: What were the objectives of IDRC during those first few years?

Nettleford: "Broadly speaking, the way we like to put it is this: humanizing development systems to put emphasis on human resources and, above all, to build up the research capabilities of people within the developing world so that decisions are taken by their own people, in their own self-interest. And to determine their own destinies, they would be informed by a body of knowledge which is well within their grasp and whose formulation would be their responsibility. So it means that from the simplest form of action research — data gathering even — to the most sophisticated, the involvement of developing peoples would be encouraged with a view to policy decisions.

"Everybody takes this for granted now because that early IDRC resolve and orientation, although unique to IDRC and revolutionary in 1970, has now become the common stock and capital, if you like, of many development assistance agencies.

"IDRC was lucky enough to have as its first chief executive a fantastic human being, David Hopper, who brought a wealth of experience from his own involvement in the so-called Green Revolution in India. As an agricultural economist he had a tremendous knowledge of development strategies, of



The Hon. Rex M. Nettleford of Jamaica

scientific knowledge as it applies to development strategies in the Third World.

"He gathered around him a most effective professional staff, many of whom had gained a lot of experience, certainly on how *not* to do things from the very failures of the first development decade. So in that sense, the first development decade was not totally a failure because it bred a number of people who, through their insight, their own creative imagination, and their skill, could see what went wrong. Now they had an institution to put them right, supported by a Board of Governors I remember to be very enlightened, very carefully chosen. The Canadians



on the first Board were eager and willing to learn. And you had some people who had come with a reputation who again brought their own enthusiasm to the proceedings.

"From the very beginning, we set ourselves tasks and subjected ourselves to a kind of seminar or tutorial session where we literally looked at the problems as they presented themselves. We decided that, of course, we should concentrate on aiding the world's poor, and that emphasis should be placed on rural development, specifically in such areas as agriculture, food, nutrition, population and health sciences, social sciences and human resources development and, not long after, information sciences. Since then, science and technology policy has been added and developed, and energy is now being seriously considered. But the concentration on these areas we felt should guarantee the benefits of self-reliance, self-discovery, self-help among the large mass of people in the world."

Reports: A major criticism of Western institutions is that they largely ignore the poor or the bottom 40 percent of the population. Is the IDRC exempt from this criticism?

Nettleford: "By and large. But the IDRC is very sensible. It has not indulged in the trendy mode of looking for 'the poorest of the poor' because that in itself can be counterproductive. The important thing is that it recognizes the need to build up expertise in areas of intellectual knowledge and research capabilities so that developing coun-

tries in turn can be in control of the knowledge, because those who own the information own a very important means of production.

"Of course no IDRC or other outside agency can go into another political jurisdiction and dictate what is to be done. This is one of the reasons why emphasis has been placed, quite frankly, on the professional capabilities of the IDRC rather than the political. The respect that the IDRC professionals have gained has given them access to the sort of people in different parts of the developing world who will ensure that the projects benefit the large mass of people."

Reports: You were yourself on the Board of Governors of IDRC. When did you join the Board and what were your expectations of IDRC then?

Nettleford: "I was in it from the beginning — I'm a charter member and a founding member, and participated in helping to shape how the thing would develop and what our main concerns would be.

"My own interest is largely the full quest of maximizing the resources of the human being, our creative imagination, our creative intellect. I believe very strongly that, in the final analysis, it is the capacity of the human being to act, to think, to do, that will make anything work.

"What has happened, of course, is that I have learned a tremendous lot about the world, both the developed and the Third World. It has strengthened my own views of the world's inescapable

Inaugural meeting of the IDRC Board of Governors, October 26, 1970. Left to right, front row: Sir J. Crawford (Australia), A.L. Dias (India), L. Engberg (Canada), the Rt Hon. Lester B. Pearson (Chairman, Canada), Lady Barbara Ward Jackson (England), P. Ungphakorn (Thailand), C.F. Bentley (Canada). Back row: A.F.W. Plumptre (Canada), the Hon. R.M. Nettleford (Jamaica), I. Brecher (Canada), H.A. Oluwasanmi (Nigeria), W.D. Hopper (President, Canada), P. Bauchet (France), R. Campos (Brazil), R.W. Medjuck (Canada), J.G. Bene (Canada). Absent: L. Berlinguet (Canada), R. Dubos (U.S.A.), P. Gérin-Lajoie (Canada), M. Sankalé (Senegal), M.F. Strong (Canada).

interdependence, based on mutual respect and understanding by all people.

Reports: What were your expectations then when you sat on the IDRC Board?

Nettleford: "I expected it to do precisely what it did: develop an understanding of the capacity of the developing world to take decisions in their own interest and manifest it in practical programs; encourage that degree of self-confidence among peoples in the developing world, with no strings attached; and demonstrate to the world that those who enjoy a certain amount of wealth can relate to those who are poor on the basis of mutual respect."

Reports: How has IDRC evolved over the years?

Nettleford: "It has evolved as a high-powered professional body. It has gotten worldwide recognition and is, therefore, in many sorts of development assistance consortia.

"There are also new dimensions. For

IDRC has effectively challenged the old philosophy and pointed a way of how to help people help themselves

example, the North-South dialogue. It did give some money to the Brandt Commission and, although there were reservations on the Board, generally they felt that this was the thing to do. As it turned out, a report which is being hailed all over the western world has been produced[†]. But the IDRC itself is not satisfied with that. It is very much concerned about how you implement some of those recommendations and is very much part and parcel of a kind of task force to look into this so that the report doesn't become another classic in the literature of development rather than a basis for action.

"Also of late, Canadians, quite rightly, have been taking an interest in external affairs and how the Canadian dollar is spent. This, many of us who are non-Canadians on the Board appreciate, and have encouraged in the past because there needs to be a greater knowledge among Canadians of what is possible and what contribution they can make to developing a better and more equal world. The new IDRC president, Ivan Head, is, I think, ideally suited to spearhead this new phase of the development without abandoning the old commitments, while also encouraging a sense of interdependence based on mutual respect — not on anybody dominating anybody else, but, in fact, in a surge of sharing. The Canadian public can be drawn into this."

Reports: In the IDRC's 10 years of existence, what would you say have been successes and milestones?

Nettleford: "In all fields there have been significant achievements. But more important, I think, it has effectively challenged the old philosophy, which was rooted in domination, in the patronizing of the South by the North, and it has pointed a way of how to help people help themselves — not in a kind of old-time aid society way, but in terms of getting projects off the ground.

It has had multiplier effects on many of the development assistance agencies in the world."

Reports: Would you say that perhaps the work of IDRC has had some impact on the philosophy and concept of assistance?

Nettleford: "I know that has happened because Robert McNamara, World Bank president, in fact, was very much in contact with David Hopper (who is now a vice-president in the World Bank) and he was impressed with the orientation and the approach. None of these things are mutually exclusive. But we must be very careful that 'aiding the poorest' doesn't become a fad because you then deprive the Third World of the necessary cadre of people to do the thinking, the continuing reflection, the evaluation. If you do, you will have the Third World remaining the hewers of wood and the drawers of water, while the developed world continues to be the brains for the rest of the world.

"This imbalance must go. We must all think, and we must all hew wood, and all draw water. We need thinkers and doers in the Third World.

"There are several ways of doing this. This is where the collaboration with developed-world research institutions and with Canadian research institutions is important. This new dimension is very much coming to be part of our thinking at IDRC."

Reports: Has IDRC itself been imbalanced by putting too much emphasis on knowledge and research needs, rather than on meeting practical needs?

Nettleford: "No, because that has a kind of logical priority in terms of the needs of the Third World. They were never mutually exclusive, because the kind of projects we have been emphasizing are the ones that include intellectual and action content, the one drawing on the other. It's theory out of action not the other way around. In fact, everything I am saying calls for a

particular entrepreneurial skill, the skill of being able to identify the right kind of projects and being able to encourage Third World people in their own self-perception as to where they might go."

Reports: Looking in the future, Prof. Nettleford, do you think IDRC is suited to meet the challenges of the 80s? What changes do you think IDRC should undergo during this decade?

Nettleford: "Ask me what the problems of the 80s are and I will answer, 'What were the problems of the 70s?'. The notion that you solve things every decade is a myth that human beings indulge in merely to have a cushy way of looking at existence. The problems of the 80s are the problems of the 60s, or the problems of the 50s. We have not solved them at all. The innovative urge that IDRC had in 1970 continues to be of tremendous relevance.

"Yes, there has been a shift around — it has to do with energy now, it has to concern itself with alternative sources of energy. But the old commitment to build up capabilities for decision-taking and for discovering and storing appropriate knowledge which will lead to appropriate technology is something that will have to happen in the 80s.

"Maybe then one can say that the IDRC could pay more attention to delivery systems, to helping Third World countries use what has been discovered... the wheel, once invented, can be put to many uses.

"There are, of course, other things besides getting people to understand, to get at the storehouse of knowledge in science and technology and in human organization. The IDRC should help the Third World in building its own institutions and its own mechanisms, the frameworks within which it can actually take action.

"One last thing. In the whole question of the North-South dialogue, the New International Economic Order, I think IDRC has got to have a responsibility in helping the Third World marshal its own position. The Third World has a lot of energy for rhetoric, but it doesn't have the expertise in bolstering effective advocacy. And I think that the New International Economic Order, in its effort to bring about the kind of world where there is some distributive justice and mutual respect between the different contributors to the world system, is something that IDRC could continue to make a greater contribution to and of which it could be more conscious." □

[†]*Partners in development: report of the commission on international development* (New York and London, Praeger Publishers, 1969, 399p.).

[‡]*North-South: a program for survival, Report of the Independent Commission on International Development Issues* (The MIT Press, Cambridge, Massachusetts, 1980, 304p.).



The Right Honourable Lester B. Pearson



W. David Hopper, first IDRC President

FUTURE FOCUS

*Ultimately, the
focus remains
on people*

The year 1980 is much more than the 10th anniversary of IDRC. In both international attitudes and international relations it reflects a striking departure from the past. That contrast was marked in the first sense by the report of the Brandt Commission; it was marked in the second sense by the Special Session of the United Nations General Assembly on Development.

Mankind faces disaster of global proportions, said the Brandt Commission. Because the ingredients of that disaster are problems of worldwide dimension, solutions will be effective only if they are equal in scope. In the pursuit of survival, the concepts of "we" and "they" have been replaced by "us".

At the Special Session, the developing countries — those that are home to some 72 percent of humanity — made it clear that their commitment to remedial measures jointly with the industrialized states is conditional on an equal commitment from the latter. The frustrations endured by those countries as a result of continued injustice have led to a dangerous schism even as the perils of division are overwhelmingly apparent.

Disaster, said the Brandt Commission, may proceed from several sources: from an epidemic of political instability spawned by economic deprivation; from a sequential collapse of industrial and financial institutions brought about by maldistributed wealth and resources, by the disappearance of confidence, of credit, of markets; from a deteriorating biosphere suffering from the disappearance of forests and arable soil; from nuclear holocaust prompted by a reliance on armaments rather than cooperation.

Injustice along the North-South axis of the international community is more



Ivan L. Head, IDRC President

a product of indifference than of greed, more of inertia and ignorance than of intention. Yet its results are appalling whether measured in terms of human misery or of planetary degradation.

Disaster will not be averted, nor justice achieved, without a series of actions involving sectors as basic yet distinct as food, population, and health, and sectors as complex and interrelated as terms of trade, monetary practices, and transfer of technology.

There are many reasons for economic disparity between North and South but it is clear that resource transfers, no matter how large, will not by themselves lead to any appreciable change. The structures of the international monetary, financial, and trading communities will not permit it. The lack of human competence and institutional capacity within the developing countries will continue to deny it. To overcome these defects and deficiencies, a number of prescriptions are required, a variety of

actors needed.

IDRC is one such actor, its activities one such prescription. Over a period of ten years it has attempted to discharge its mandate of supporting development-related research in a fashion that enhances the indigenous human and institutional competence of the developing countries. It has done so in ways that were, in the Centre's infancy, oft-times innovative and sometimes unprecedented. It has experienced the satisfaction both of successful results and of emulation by other organizations created in its image. It has every reason to be proud of its accomplishments.

Yet in the decade to come the Centre will undoubtedly change far beyond our present ability to anticipate. Just as in the past 10 years developmental theory has proved to be critically flawed, so will the next 10 open new avenues of research, new techniques of research management, new methods of coordination and cooperation. Forecasting and planning will become essential elements in Centre processes. The insistence of the public and the Parliament of Canada on effective expenditure of tax revenues will increasingly require IDRC to engage in evaluation and accountability exercises. The shifting priorities of the developing countries will demand of the Centre flexibility and ability to respond.

In one respect, however, there will be no change. IDRC will continue to focus its attention on people, will continue to insist that their welfare be the central goal of all Centre projects. Human beings are not only the beneficiaries of development activity, they are the only true engines of the development process. They have been the *raison d'être* of IDRC for the past 10 years. So will they be for the next 10. □

TECHNOLOGY

THE OLD IS MADE NEW

PAUL ICAMINA

In the *sitio* of Olanen in the north-western Philippines, only 12 out of 176 residents speak English. Although some speak both the national language (Pilipino) and the local one, more than half speak only one tongue, the local *Ilokano* dialect.

So, how do you ask them what "technology" is?

One may well not ask. The closest Philippine word for "technology" is *teknolohiya*, a Pilipino adaptation of the original. Nevertheless, a team of researchers went 250 kilometres north from Manila to the rugged western coast of Pangasinan province, and in an almost inaccessible place called *sitio* Olanen, they asked.

Surprisingly — to the researchers — the villagers had answers. Some said *teknik* or *taktik* — words adapted in the local tongue and bearing traces of American influence and the second World War. One villager said, "If you have problems, you need tactics."

"They know what technology is, but can't verbalize it. With us, it was the other way around," remembers Patricia Pangan, an anthropologist with the

research team.

In a meeting with villagers, the researcher-visitors first asked what a community was. Then using fishing boats, hook-and-line, stoves, pots and pans, they related community life to technology. Then they asked again what the people thought of the 'monster' they had stitched together out of bits of ordinary objects.

One young fisherman at the meeting walked up to a blackboard and chalked a picture of the local oblong flippers, made of marine plywood with strips of discarded rubber and slipper straps to fasten them to the feet. He then told them a story about technology transfer.

A few years ago, a group of city university students had come to Olanen for summer fun, bringing with them rubber flippers. Friendly with the visitors, the villagers found the flippers were effective for underwater swimming and promptly made their own stiff version, weighing half a kilo per pair. While they are a far cry from the flexible rubber ones, the villagers insist they are just as good.

That was in April 1979, when the joint

United Nations University/Economic Development Foundation study moved to Bani town in Pangasinan province. A year had been spent testing the research methodology in an adjacent province, with IDRC support. Researchers sought to understand the social, economic, and technological activities in communities, and attempted to analyze the existing and potential knowledge that could be used to improve the communities' technical base — and thereby, their living conditions.

Today, the research team has covered 22 of Bani's 25 villages (Olanen is a *sitio* or unit of Dacap Sur village). The project is being carried out by a project leader, an engineer, an agriculturist, a rural sociologist, and an anthropologist. This year, the team is assisted by experts in aquaculture, agronomy, and animal husbandry from Central Luzon State University (CLSU). In identifying more specific technological problems, the team consults with other experts, like a rice water specialist, an agricultural extension worker, the water district manager, and so on.

The inventory of traditional technologies in Bani showed that most problems are in agriculture on which 80 percent of Bani's 28 000 inhabitants depend. Only a few years ago did a significant change in farming occur with the introduction of high yield rice varieties (HYVs) on lowland farms. Already, the new seeds pose problems. For example, there were no difficulties in sun-drying the traditional varieties harvested in November-December when the dry season is well underway. The early-maturing HYVs, however, are harvested in the middle of the rainy season.

Since most farmlands are rainfed, water shortage is acute. The lowland villages north and east of the town are usually flooded during the rainy season and no effort is made to retain water for irrigation. The excess drains into rivers that cannot be tapped during the dry summer because of high salinity.

In rolling and hilly farmlands, farmers have long taken advantage of the terrain, building terraces to impound water and retard its downflow. However, it proves ineffective in upland soils that are light or sandy and have little water-holding capacity.



Ka Inchiong's bamboo water pipes in Olanen, Philippines: an indigenous and ingenious village technology that could be harnessed for community development.

P. Icamina

Until recently, most fishermen along Pangasinan's rugged western coast were really farmers who turned to the sea when lack of water during summer temporarily suspended field work. They did not invest scarce capital on fishing equipment that would lie idle most of the time. Fishing is now the main occupation in many coastal villages, however, and local fishermen envy the modern deep-sea trawlers they see nearby.

In Olanen, one of these tiny fishing villages, the villagers have devised many ways of harvesting the sea. In-shore fishermen — those who work up to about five kilometres offshore — generally use spearguns, or a local version. Twenty years ago, villagers used "spears" or straightened metal rods salvaged from auto seat springs. One oldtimer recalls: "The fish were so plentiful then, we simply dived and stabbed at the fish of our choice."

Over the years as fish became more elusive, the spear's length was reduced and barbs added at the tip. The spears were "launched" by rubber strips, like a slingshot, with the fingers acting as support. Discarded umbrella ribs also became popular sources of mini-spears. Several years ago the spear or harpoon was mounted on a wooden "gun". Now both short and long spears are mounted on the local spearguns.

To improve vision while underwater, men make spectacles carved from wood or bamboo. Eye openings are covered with salvaged pieces of glass glued on with melted rubber or tar.

Local fishermen have even married the modern with the traditional. The *kaliskis* method of line fishing, instead of using the usual bait, uses thin strips of polyethylene tied around the hook to conceal the barbs. The fisherman rhythmically tugs at the stone-weighted line, causing the polyethylene to shimmer like small shrimp or squid, or to look like the scales of small fish (*kaliskis* means fish scale).

In deeper waters fishermen use simple handlines, assisted only by powerful lamps to attract fish. Almost all Olanen families own one or two Coleman lamps used for fishing and never for lighting houses except on special occasions. Other fishermen use nets suspended and allowed to drift with sea currents into schools of fish.

When interviewed, Olanen fishermen talk of schools of fish or squid encountered at sea and their inability to catch more because of inadequate equipment. Half of them believe that better fishing techniques could improve their lot, indicating that most are aware of the shortcomings of traditional technologies and would be receptive to change.

Mountain springs are Olanen's main water source and villagers carry water more than two kilometres to their houses. Inocencio Opolento, a 63-year-old farmer-fisherman, has devised a one-kilometre split bamboo pipe system to carry spring water over steep slopes and thick brush to his house and a

neighbour's. Other houses get water from where his pipe system ends.

Longitudinally split bamboo lies face up, ends connected to each other. Water flows continuously and is diverted into containers when not tapped in the kitchen; otherwise, it is allowed to run off unused. The open bamboo means that clogging by dirt or leaves is a constant problem, and when the water flow stops, either Ka Inchiong — as Mr Opolento is called in the village — or his wife follows the pipe to see where the clog is. He insists it is sanitary, "like running stream water" and besides "nobody will urinate into the open pipes."

Says Ka Inchiong: "It's very easy to extend the pipe to other houses but these people just won't."

This reflects what both researchers

THE PROJECT

In 1978, IDRC supported a project to test a development strategy that attempted to link the scientific skills of a developing country to the knowledge and skills of rural communities, ultimately to produce new technologies for the rural poor. The Economic Development Foundation of the Philippines was one of the organizations participating in a pilot study. Scientists were placed in rural areas to find out what villagers felt were their technology needs, to weigh the technology already in use, and to project what new technology might be introduced to improve incomes and productivity. The project was as much a study of the interaction between scientists and rural people, as it was of means of stimulating technical progress by combining the old with the new.

and villagers recognize: the need for *bayanihan*, Pilipino for community work. Says Mrs. Purita Festin, EDF Project Director: "The people don't even know the resources that exist right in their villages. We should get them to participate in projects that affect all of them, get them to know their capacity to do things."

"The right mix of attitude is needed right from the start. The people should be interested. When the researchers leave, we want community projects to continue and be self-sustaining. Our aim," she says, "is to maintain the right community attitudes without losing sight of the study's principal objectives."

The first step is to organize the villagers who feel the need for community action. The Philippine study uses the community as a group, rather than

the local political leaders, to identify traditional technology and augment it with the new to solve what the villagers see as their problems.

Most villagers are easy to organize, having traditional links with each other in their small neighbourhoods. But researchers find them easier to get together for festivals and celebrations than, say, to discuss loan cooperatives. Still, the researchers persist, encouraged by the villagers' willingness to start again.

The study's main emphasis is still the inventory of traditional technologies, coupled with the identification of new ones that can hasten what the villagers perceive as their slow economic development and low standard of living.

Olanen itself is a village in transition, struggling with a lifestyle where, on the one hand, barter is still commonly used and, on the other hand, a market economy is slowly encroaching.

Both researchers and villagers are working closely on how to introduce new solutions to identified technological problems while retaining what is useful of the old.

For instance, Bani's second source of livelihood is livestock raising. Repeated use of year-round marginal, uncultivated land too steep to till, and overgrazing on feed of low nutritional value means lean stock. Researchers are looking for high quality, year-round forage and the efficient use of farm byproducts as feed.

Ways to supplement the income of fishermen are also being studied and a first project is planned: small salt-making stoves fuelled by rice hulls to replace traditional sun-drying of seawater dependant on erratic weather.

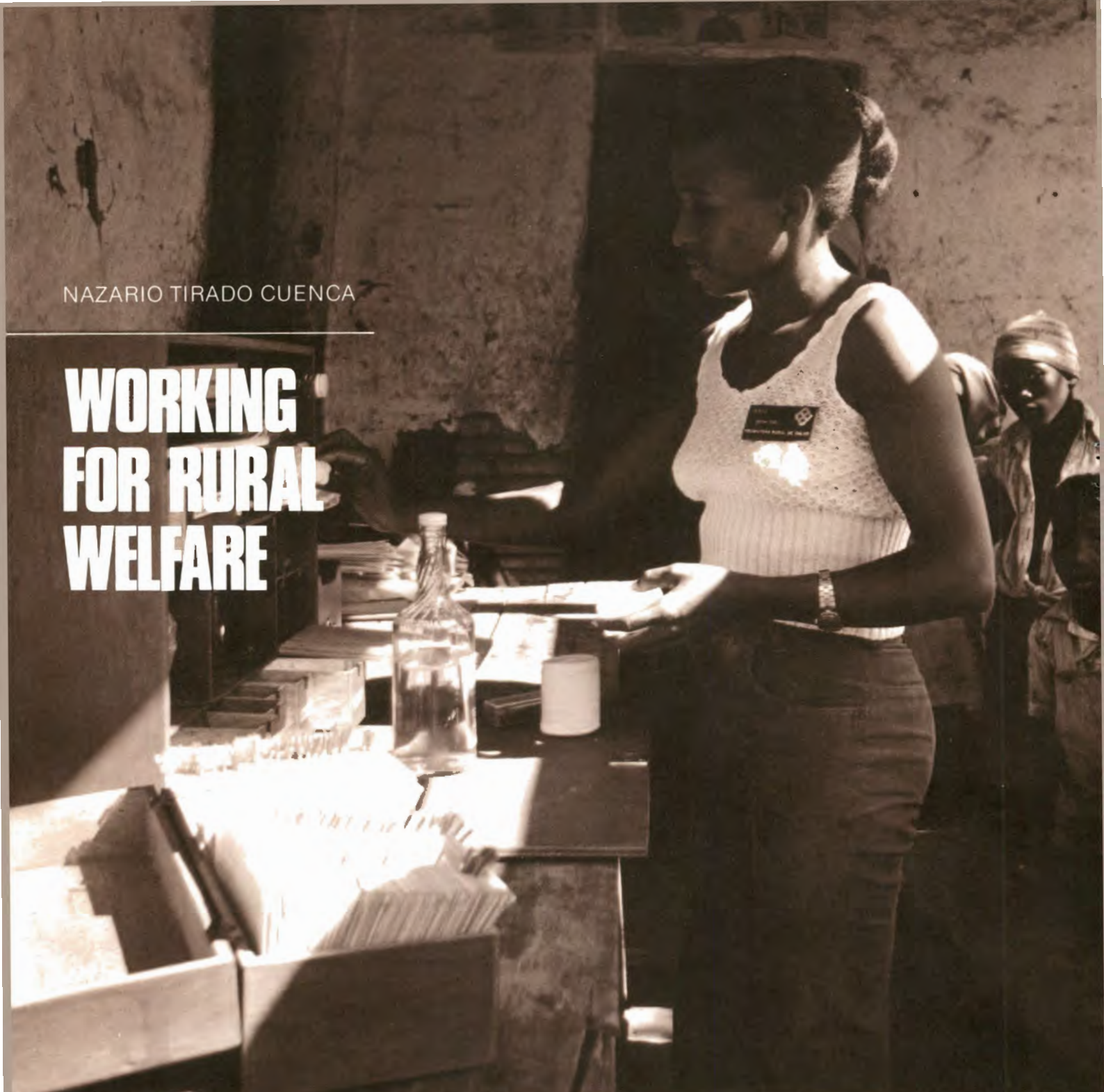
Researchers are also working on alternatives to artificial fertilizers which villagers say are very expensive. Studies show that reducing the amount of chemical fertilizer and substituting it with organic ones — even by a third or half — will greatly help already strained pocketbooks. Aquaculturists are also introducing mudfish in rice fields as a supplemental source of income for rice farmers.

The International Rice Research Institute has sent a still untried high-yielding rice variety resistant to high water. It is being tested this planting season (June-August) in several villages.

"These are not dole-out technologies. In every stage the villagers themselves are involved and, when we leave, we hope to see that what they have started continues to benefit them," says Patricia Pangan.

Ka Inchiong agrees: "I have worked these soils for generations and have been successful in filling my family's stomachs and sending my children to school. But my wife and I both have to work the mountain slopes inch by inch. We're successful because we persevered."

Paul Icamina is Editor of Depthnews Science Service, a service of the Press Foundation of Asia, in Manila, Philippines



NAZARIO TIRADO CUENCA

WORKING FOR RURAL WELFARE

In Colombia, community organization and participation are the key to the success of CIMDER's rural health project.

“We must be healthy to work the land and solve our problems...” So says Roman Cajero, a rural leader born and raised in a village where an experimental program was established by the Rural Development Multidisciplinary Research Centre (CIMDER), based in Cali, Colombia. His words are an eloquent statement of the program's philosophy: community health and welfare are the building blocks of rural development.

The program zone is located in the northern sector of the Department of Cauca, in Colombia's south-west corner, and includes the small towns of Santander, Puerto Tejada, Corinto, and Caloto. Along the road, children return from the hills with loads of

firewood and women wash clothes in the river. Sugar cane, a major crop in this region, grows abundantly along the roadside. The local people live on small landholdings, and one of their most serious problems is the shortage of farm land.

Against this backdrop, the CIMDER program, which has received IDRC assistance since 1974, has carried out specific actions aimed at improving the well-being of the rural inhabitants by raising their health and living standards and by improving social conditions. A young health worker explains that the program tries to make health services available to everyone in the community and reduce existing health problems.

The project has made the idea of "everyone working according to their capacity and resources" come true

In one village in the experimental area, a health station provides primary health care for pregnant women and sick children. One user of this service, a mother of five who has been coming to the station for two years, testifies to the project's achievements: "they help us to take care of our children and treat our illnesses. It's a good service that we small farmers need and support," she says.

COMMUNITY PARTICIPATION

In another village, a group of health promoters is meeting in the school with the children's mothers. They are discussing the importance of community organization and participation in the health service.

These communities, like many in Latin America, are socially, economically, culturally, and politically disadvantaged. As a result, an enormous human potential is excluded from development efforts. Colombia is no exception in this sense. Traditional institutions and forms of organization were supplanted during the Spanish Conquest, throwing rural inhabitants into a state of isolation and disorganization. Consequently, they have been excluded from the decision-making process and have participated little in the process of change.

At the end of the meeting, a woman carrying her sleeping son speaks about participation in the program. "At first, in our village, we were not organized. The visits from the CIMDER people made us see the need to organize, find out what our problems are, and how to solve them. Soon afterwards, we decided to hold a meeting and, with the help of the health workers, we organized the Family Health Association. The Association enables us to participate in this health service just as if we had started it ourselves."

The program's striking feature and value is the fact that the community itself is helping to raise its standard of living. It has made the idea of "everyone working according to their capacity and resources" come true.

A CIMDER officer points out that experience has shown that the Family Health Associations work because they are part of the health service system, carry out activities that extend beyond the health field, interact with local organizations, and are permanent education centres that provide the foundation for more

complex organizations.

AUXILIARY HEALTH WORKERS

At midday in a small rural school, a group of health workers is having lunch. As a rule, they work as a team, supporting each other and even preparing their daily meals together. This cooperation helps maintain group spirit and a sense of fellowship.

A young health worker explains that the women in the group are natives of the region, volunteers chosen by the community and specially trained to provide health services to their fellow villagers. They are able to care for most of the illnesses occurring in the village without having to unnecessarily call for a doctor's assistance.

CIMDER

"Research is the mainstay of CIMDER since research findings make it possible to formulate strategies, develop programs, do follow-up and evaluation work, and provide technical assistance to the Rural Health Service System."

This statement was made by a CIMDER program official. CIMDER is a multidisciplinary program that brings together professionals from various fields. They form a team that works to apply science to human development in rural areas. Among them are doctors specialized in public health, nurses, development economists, sociologists, administrators, agricultural engineers, and educators. All of them play key roles in decision-making and defining strategies and programming.

Some of the health workers travel on foot, others ride bicycles on their home visits to families, but all carry woven bags that hold their work instruments: health history cards, a medical manual written in collaboration with communities, and tri-coloured strips used to determine the nutritional condition of children under six by simply measuring the circumference of the upper arm. They also provide care for pregnant women and children at health stations. In one of the villages, this station is simply a room partitioned in two. In the front part, on a table, is the "micro-health post" — a wooden box containing the necessary equipment for first aid and medicines. Next to the box, another smaller one known as the "master box" is filled with cards on which is recorded all the

information on the villagers' health condition (see *Reports* vol. 7 no 1).

A multi-coloured health chart called the "health flag" hangs on the front wall of the room. Its purpose is to show graphically the overall health status of the village. One health worker explains: "... red is the number of under-nourished children; orange, the number of cases of diarrhea; blue, the number of children that have been vaccinated. White means the number of families using treated water; yellow indicates the number of houses without latrines; and black shows the number of deaths."

Sometimes, several communities get together to compare their charts. Says one woman, "The charts show us what must be done and what we have accomplished. They also show us if we are in better or worse condition than other communities. It's like a race and it makes us work for the community."

A PROMISING OUTLOOK

Most of the people interviewed in the experimental area agree that the CIMDER program has helped improve the community. They are proud that illness has decreased and that their children no longer die from diarrhea and fever. As a result of the health workers' activities, pregnant women face fewer risks.

They have also learned how to treat water and build latrines. But they are especially pleased with the tricoloured strip because it lets them know for themselves if their children are well-nourished or if they need medical attention. They have made progress, not only in solving their health problems, but also in raising their level of organization which helps increase the pace of community development.

As a result of this initial experience, the program is expanding into the Departments of Choco, Bolivar, Boyaca, and Meta this year. CIMDER is also serving as the basis for the development of similar services in Ecuador, Guyana, Paraguay, and Bolivia. Other countries have also expressed interest.

The words of an elderly woman who uses the health services regularly, nicely sum up the program and its promising outlook: "... since CIMDER came to our village, my family has been healthier. Little by little, things are getting better." □

Nazario Tirado Cuenca, a Bolivian journalist and expert in rural communication, visited the CIMDER project villages for Reports.

IDRC IN THE REGIONS

Latin America and the Caribbean

"It can't be true" was a standard reaction when IDRC began to be known in Latin America and the Caribbean. And yet IDRC has been on the scene now for a decade. During this period, IDRC contributed about US\$40 million to close to 250 research projects spread across almost all countries of Latin America.

How did we spend that money? Let us, in retrospect, confess our preferences. We are pragmatic and biased in favour of peasants. We have to be. Some 150 million human beings are struggling to survive at the bottom of our under-developed and unfair social systems. Thus, some 40 percent of that money went to foster research ventures in agriculture, food, and nutrition, destined to alleviate the plight of the poor. IDRC emphasized support to research projects seeking to improve the nutritional qualities of staple foods native to Latin America. We sponsored inquiries about forestry and agroforestry. We provided long-term and full support for experiments incorporating the ambitious concept of integrated rural development.

In health, our bias showed again. A major priority has been to help learn how to extend the basic health services to the forgotten rural dwellers. Water, sanitation, and control of viral and communicable diseases have received preferential support.

Our agrarian inclination has not prevented us from supporting efforts to find solutions for the enormous problems of urban population growth and distribution in the region.

Numerous multi-country ventures were conducted with our assistance to explore the problems of migration to cities. We also put some money into educational and communications research.

We have had two other major concerns: on the one hand, to help countries build mechanisms for formulating and applying national policies on science and technology for development; on the other hand, to aid them to establish national and international information networks that support research activities.

We feel we did our best. However, is "our best" truly the best for the nations whose scientific advancement we aim to serve? How well have we actually performed our mandate? How productive have we been?

There are no easy answers to these tough and crucial questions. But on this, our 10th anniversary, let us toast IDRC, in the firm conviction that we will meet the new challenges of its second decade with the same imagination, audacity, and vigour that have already earned for it a unique reputation.

Henrique Tono T.

Middle East and North Africa

IDRC is unique among foreign donors in the role it plays in international development. Unlike others, IDRC treats recipient countries as equal partners. This was made clear by the Centre's first president, David Hopper, in a lecture delivered in Michigan, May 1975: "The conquest of hunger will rest on the partnerships forged between nations... The dialogue between partners must be made more equal, more

accommodating of social and cultural traditions and current aspirations."

In his speech to CARE World Conference held on 4 May 1980, Ivan Head concurred with his predecessor: "We continue by accepting that new structures and new processes must be designed by architects from both North and South..."

The Centre continues to respond to local needs and priorities of the Middle Eastern countries. It is left up to local research workers to identify their countries' pressing needs, define their problems, and set their priorities. In business terms, IDRC is market oriented: the projects it sponsors are tailored to meet the requirements of self-determined needs.

Research capacity within the region is unevenly distributed. Middle Eastern countries may be classified into those that have both research institutions and research skills, and those that have only universities used exclusively for teaching. In the first, more emphasis is being given to research management; in the second, IDRC helps to establish a research base.

Research management is vital to the effective and efficient utilization of the limited funds available. Dedicated to quality work as they are, researchers may not be cost-conscious. Under conditions where cuts in research funds are the norm, donors, IDRC included, are concerned about both effectiveness and efficiency.

Research management, however, is a missing link in the Middle Eastern research communities. Interdisciplinary research and a teamwork approach are new phenomena in the region. Outreach

programs, directed to the end-users of research results, do not generally exist. Local information systems have very limited data on research.

Fortunately, IDRC is conscious of these deficiencies and has already left its mark in improvements in these areas. Research communities in the Middle East, however, are anxious to see more IDRC involvement in years to come. IDRC is most welcome in our region.

A.R. Bassyouni

Asia

In its report entitled *North South: a program for survival*, the Brandt Commission calls for a fundamental shift in attitudes towards North-South relations: "The international debates on development deal not just with 'assistance' and 'aid' but with new structures... the building of a new order and a new kind of comprehensive approach to the problem of development."

When IDRC was set up by Canada a decade ago, its main mandate was precisely to bring an innovative approach to the international development scene. Instead of providing conventional technical assistance, the Centre aims at assisting developing countries to overcome the gap prevailing between them and industrialized nations in terms of scientific and technological research.

During its 10 years of operation in Asia, IDRC has always tried to project the image of an organization that truly believes in "development research for developing countries, by researchers in developing countries themselves." It has assisted researchers in the region in introducing

new dimensions into research activities. By encouraging the network approach, the Centre has succeeded in increasing the contact between developing country researchers working on similar problems. In one of the network projects supported by IDRC, researchers from Indonesia, Laos, Thailand, Sri Lanka, Hong Kong, Singapore, Malaysia, and the Philippines were provided with opportunities to regularly meet and work together, to share their experience along the lines of the TCDC (Technical Co-operation Among Developing Countries) philosophy.

Another important feature of the Centre's activities in the Asian region is its attempt to encourage researchers to work more closely with policymakers. In Thailand, for example, a cropping systems project has university researchers working alongside government officials from the Ministry of Agriculture and Cooperatives.

The IDRC has indeed established its reputation in the Asian region as a dynamic organization, and it has played a very useful role in building up the countries' research capabilities. There are indications that the Centre will continue to abide by its mandate and increase its support for "low-cost, high-impact projects", not only to contribute to the development of scientific and technological research in Asia, but also to assist in putting appropriate research findings into action.

Jingjai Hanchanlash

East Africa

For IDRC, East Africa is defined geographically to include 17 countries in eastern, central, and southern Africa. The population of this area is approximately 131 million people and is estimated to have one of the highest growth rates in the world. As much as 90 percent of the population live in rural areas and are engaged in agriculture.

It is the general goal of the countries in this region to pursue strategies that will alleviate poverty by

creating income-generating opportunities and meeting basic needs. To achieve these goals, governments have committed sizeable portions of their resources to the development of rural areas. This, however, requires sound scientific research programs oriented towards solving the problems and developing technologies that will be useful and adaptable.

Given this situation, IDRC has played a useful role in the past and has an important future responsibility to assist with the development of a scientific research capacity. In the past 10 years, it has allocated some \$9.5 million to national institutions in 12 countries of the region and has supported projects totalling \$3.2 million with international programs and institutions.

Governments in the region have placed a high priority on the development of the agricultural sector. IDRC has responded to this priority by allocating the majority of its funding to supporting research to increase agricultural production, with emphasis on the important food crops of the semi-arid tropics and their post-production aspects. A number of projects in rural afforestation have also been supported and, more recently, research has been supported to examine more efficient means of utilizing wood fuel.

As in the agriculture sector, the Health Sciences Division will need to support the training and development of personnel and continue to concentrate efforts in rural water supply and sanitation, rural health services, and infectious tropical diseases.

In the Information Sciences sector, there is a need to explore and finance research activities on more appropriate means of disseminating information from institutions to the users of technology in all fields of activity. The Social Sciences program is proposing to finance energy policy studies that could be extremely timely and valuable for govern-

ments in the region.

If the research that we are supporting is to provide maximum benefits to the rural population, however, IDRC must continue to identify critical sectors, provide research funds, and examine the technical, social, economic, and policy issues related to these problems. In addition, given the relatively new research foundation that exists, IDRC must consider more comprehensive programs that will assist the development of key scientific institutions, including personnel development at all levels, strengthening research management capabilities, developing techniques of research policy formulation, and providing linkages between institutions.

In 1980, IDRC has decided to establish an office for the region in Nairobi, which will assist in the continued development of research programs that respond to and are appropriate to the needs of the region.

R. Bruce Scott

West Africa

When the IDRC office in Dakar, Senegal, opened its doors in 1973, barely 12 years had passed since most of the countries of the region had gained independence. But independence had not been accompanied by changes in economic, scientific, and technical relationships. The ties with the old capitals were still as strong as ever. While no written agreements stated that research remained within the dependent vertical structures that characterized the old regimes, the behaviour of many states unfortunately confirmed it as fact.

Many reasons explain this state of things, but two stand out. The first is that the link between research and development is not clearly perceived, at least not by a great number of decision-makers. Funds allocated to research are considered to be lost, with few, if any, monetary returns. To believe that improved crop varieties, now being tested for their suitability to African soils

and climate, cost millions of dollars elsewhere is something that is understood and accepted with great difficulty by anyone whose budget is severely limited.

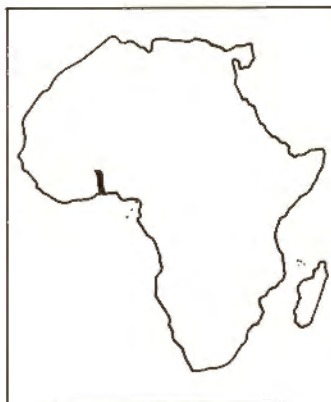
The second reason is that fundamental research in universities has not progressed, not only because of a lack of financial resources, but because of heavy teaching loads.

The first impact the Centre had when it was established in West Africa, therefore, was its contribution to changing attitudes. Today, many decision-makers know very well that even if sophisticated research must remain the monopoly of industrialized nations for a long time to come, applied research aimed at solving the problems of day-to-day living is required for the development of African countries. There can be no real development if those directly concerned do not assume the responsibility for bringing it about. It is not a negligible contribution for IDRC to have assisted in this realization.

Yesterday's mistakes and omissions are most relevant if they lead to tomorrow's successes. In the coming decade, IDRC's second, Africa will face the same kind of problems as during the 70s. Some will be aggravated no doubt by worldwide recession, high population growth, and progressive desertification.

For IDRC, the coming decade will mark its entry in African countries having gained independence during the 70s, countries that were considered to be settlement colonies and whose independence has coincided with the repatriation of researchers and scientists. Their needs are varied and the call for help pressing. But the shortage of indigenous researchers could mean delays in IDRC's assistance. The urgency with which help is required in these countries may mean, however, that old criteria will be revised and training programs stressed. It is on this that Africa invites IDRC to reflect generously as it celebrates its 10th anniversary.

Lumpungu Kamanda



At once overpopulated and uninhabited, rich and poor, overexploited and underexploited, Togo's coastal zone, like most of the country or even Africa and the Third World in general, has been struggling with its fair share of contradictions, encumbrances hindering its development. But its burden will now be eased by new data that will be taken into account in future development planning. Without fanfare, a small, hopeful revolution has just unfolded.

With the financial help of the International Development Research Centre, a land use and planning mapping project of the coastal zone has been successfully completed. The drawing up of 13 maps — 11 of them thematic and two of synthesis — represents the most global approach possible to the region's development, offering an alternative to the usually isolated, spur-of-the-moment activities that sometimes cancelled each other out. A scientific document is now available that allows planners to consider all needs and resources before undertaking any development project. It is a promising event for this region certainly, but also for the country as a whole since the coastal zone includes Togo's capital city, Lome, and is the country's nerve centre.

Moreover it can be predicted that this initiative will set an example for the rest of the country because the caution that has marked the implementation of development projects to date, often because of a lack of information on which to base them, has served to brake the country's progress.

THE COASTAL ZONE

Although covering only 11 percent of Togo's territory, the region mapped through the project — at a cost of \$57 720 spread over 18 months in 1978 and 1979 — is nevertheless one of the most important in the country. Its population of 704 000 inhabitants represents 36.4 percent of the country's total. Population density is therefore very high at 116 inhabitants per square kilometre, compared to the national average of 35. Moreover, the population is unevenly distributed within the region. Overpopulated zones border on unpopulated expanses, resulting in a population density that can reach 200 people per square kilometre in some areas.

All of the demographic characteristics of developing countries are to be found in Togo's coastal zone: the population is young (57 percent are under the age of 20); it is rapidly growing (three percent a year); and it is subject to large migratory movements, destined largely to the capital, Lome.

With three of the country's seven cities within its borders, the coastal zone is the most highly urbanized in the country. Its economy is nevertheless predominantly agricultural. Patterns of soil utilization reveal serious imbalances. Some lands are severely overexploited and the traditional system of shifting cultivation has almost disap-

New data on the coastal zone will facilitate future planning

TOGO MAPS ITS DEVELOPMENT

CHÉRIF ELVALIDE SEYE

peared, particularly on the plateaus where population density is the highest. A critical threshold has been reached.

The reverse is true, however, in the uncultivated alluvial plains, the depressions, and on the coastline. The soils in these areas, rich in organic matter from alluvial deposits, are not to blame. It is rather that the type of agriculture, still faithful to traditional norms, has not been modernized. The conventional crops, maize and cassava, still take precedence. All evidence points to an agricultural underutilization of an area that could play a large part in solving the problem of local and national food shortages if it was better exploited.

The great number of industrial establishments in the coastal zone, compared to the country's other regions, further illustrates its economic importance. Togo having entered the industrial age only recently, however, industrial activity provides employment for only 10 percent of the labour force. In fact, it is only after independence, in 1960, that the first factories opened their doors. Ninety percent of them are now concentrated in Lomé.

These industries are to some extent cut off from the population. Even those processing local foodstuffs have little contact with the rural population that supplies them with raw materials.

INVENTORY AND ANALYSIS

These development factors and others are inventoried in the thematic maps. According to Mr E.Y. Gu-Konu, project leader, each thematic map deals with a particular aspect of the region, detailing inadequacies as well as potential. This is particularly the case for the maps dealing with population distribution, commercial equipment and services, industries, and communications infrastructure.

The maps on land use, agricultural potential, possible cropping patterns, water resources, and soil utilization go beyond being simple inventories to suggest how agriculture could be modified. The map on the environment presents the state and interaction of various factors to enable users to predict how different areas would be affected by the programs proposed in the land use map.

A report accompanies each map, stressing certain points that the maps themselves do not cover or can only hint at, and pointing to relationships that must be taken into account in order to understand the overall state of the coastal zone.

The two synthesis maps, regrouping all of these elements, offer a global view, an analysis, and are also accompanied by specific recommendations. Guidelines for future action have thus been established. For example, it is recommended that planning and land use programs give priority to agriculture without neglecting the non-agricultural sector. Cooperative organizations are also recommended to stimulate small family enterprises more concerned with survival than commercial

production and to facilitate the peasants' modernization.

It is also suggested that the coastal zone should be subdivided into relatively uniform areas called "intervention zones", for which definite actions are recommended in keeping with the particular characteristics of each and with the need for optimal development of the region of the whole. Thus, a solution is being offered to all problems considered.

The work was far from easy to carry out. Many documents do not exist, or if they do, they are often not reliable. To draw up the map on population, for example, the researchers had to undertake another painstaking analysis of the census. And this second analysis yielded results quite different than the first. The Togolese Geographers' Association had to play a pioneering role in order to obtain the necessary assistance from often reluctant public authorities. But this situation improved steadily as the work progressed and its usefulness became evident.

No one can now doubt the usefulness of the maps and report. Full sup-

*No one can
now doubt
the usefulness
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and report*

port is now forthcoming from government authorities through the Ministry of National Education that ensured that the final document was distributed to all concerned, including State technical services, research organizations, and universities, and through the Ministry of Scientific Research from which the geographers' association has now obtained offices.

A scientific conference presided by the Minister of National Education enabled the geographers' work to be made better known. The minister clearly outlined to the participants the benefits that the country could expect from the study, carried out by national researchers in the best of scientific traditions.

And it is in this respect that the project, carried out in Togo, by Togolese geographers, is most encouraging. Staff trained by the State, acting as technicians, were able to assume the role that must be theirs to play if Togo's development is to be brought about. It is an enormous task in which all must participate. □

Chérif Elvalide Seye is a journalist with Le Soleil in Dakar, Senegal.

A STRONG BEGINNING

The Togolese Geographers' Association (TGA) responsible for the successful completion of the coastal region's land use and planning project is a young organization. Created in 1976, it counts 11 members, all Togolese geographers and researchers. Open to all geographers living in Togo, its members either work for different government technical services, or teach at the University of Benin, in Lomé.

A branch of the Togolese Association for Scientific Research, the geographers' association aims to promote the application of geography, still considered in many francophone countries of the region to be only an academic discipline. This project was the association's first, harnessing the talents of seven of its members.

According to the researchers, IDRC's help was crucial, not only financially, but also because the funding was perceived by public authorities and research organizations as a recognition of both the project's value and the researchers' capabilities. "Without this support, we would never have been able to prove our competence so rapidly," says the Association's secretary.

In fact, thanks to IDRC support and the tangible results obtained, the TGA has acquired scientific credibility. And that is without doubt the most important benefit for the Association's members. In Africa, this type of study is rarely entrusted to local scientists. Rather, the work is contracted to foreign organizations or consultants, often at a higher cost, and without necessarily obtaining better results. The consequence is an underutilization of national personnel who become less and less involved. The country, having paid for their training, benefits little in the long run.

In Togo, the favourable reactions to the TGA's project indicate that this situation is being changed. The Association has now been asked to carry out further studies, something of which it is rightly proud. It hopes this is only the beginning.

ELEPHANT GRASS

AZZA EL HUSSEINI NEW HOPE FOR EGYPTIAN FARMERS

Small farmers are reaping the benefits of a hardy forage that helps carry their animals through the Egyptian summer

In spite of the high productivity of the Egyptian land, and a cropping system that ensures a regular production to meet both export and local needs, there is a serious shortage of meat and animal products in the country. According to Dr Abdel Moneim Makky, director of the Animal Production Research Institute at the Ministry of Agriculture in Cairo, one of the major causes of this shortage is that cropping patterns do not produce enough forage for farm animals. He backs up his opinion with statistics: only about 18 percent of the total farmland is planted to clover in winter, which hardly covers the total animal feed requirements. In summer, no special forage is planted to meet animal needs: they are fed on the available by-products of plant crops, mainly wheat straw, stripings of corn leaves, wheat and rice bran, and cottonseed cake concen-

trates. The feed shortage in summer amounts to about 61 percent of the total feed requirements, estimated to be 3.1 million tons of starch equivalent. To compensate for this shortfall, six million tons of cottonseed cake would need to be produced instead of the present annual production of 850 000 tons.

In an attempt to solve this problem, elephant grass (*Pennisetum purpureum*), native to Uganda and other equatorial countries, was tested as a new source of forage. In 1966, Dr Makky, together with a number of his colleagues and assistants, began introducing this plant in a number of Egyptian governorates. The project was supported by IDRC in 1975.

Dr M.K. Hathout, the principal investigator for the project, says that during the past 14 years elephant grass has proved itself, producing high yields of



feed with a high nutritive value under Egyptian agricultural conditions. Field surveys have shown that the yield may reach more than 100 tonnes per hectare per season. Moreover, during its growing season from April to November, it can be cut from seven to ten times. This means an increase in total production, and a corresponding increase in the farmers' total income. And according to the researchers, elephant grass is never attacked by the cotton worm (a common pest) in spite of its dense growth during the warm season.

Having proved itself under experimental conditions, the new forage was introduced in private farms in four governorates, including the Sharkia governorate. The grass was first planted on five big farms whose owners were willing to experiment. One of them is Mr A. Beny Helal, in Menia El Kamh. After planting elephant grass, he noticed a great increase in milk production, and a weight gain in animals that he estimates to be about 25 percent. Milk production was higher in summer than in winter. He attributes this to the higher nutritional value of the new grass compared to clover, the winter forage. The dense green vegetation on his land and the animals' sustained health and production did not go unnoticed. Many smallholders in his village subsequently requested elephant grass seed for their pastures.

One of these smallholders, Mr Mohamed Koraium, started by planting 3 *kirats* (one hectare equals about 60 *kirats*) to elephant grass and has now increased the area to 13 *kirats*. He says that elephant grass solved one of his major problems: he usually had to sell all of his animals at the beginning of the summer season as he had no money to buy the feedstuffs needed to support them. After planting the summer forage, he was able to keep his animals, feed them, and sell only the milk produced.

Another villager, Mohamed Ramadan, planted his only hectare to elephant grass. He says that his average production is 100 tonnes, enough to enable him to fatten his cattle, at about 25 percent of the cost of straw and concentrates. Feeding a 300-kilogram animal with 37 kilograms of elephant grass every day, produces a weight increase of about 700 grams daily. This does not cost him more than 15 *piasters*, whereas to obtain the same increase using straw and concentrates would have cost him 70 *piasters*.

In Monofia governorate, elephant grass was first introduced in Hassan Akbawy's land. A smallholder who owns only six *kirats*, he planted three *kirats* to the new grass in 1975 to test it for himself. He has since increased the area to cover all of his land. He says that his income increased by about 25 percent, just from selling the milk from his two buffalo. Fertility increased as he no longer prevents his animals from mating at any time during the year. So convinced was he about the new forage, that he talked his neighbours into planting it on their land. There are now about

50 other smallholders in his village planting elephant grass.

In Meet-Khalan village, in Monofia, there is a woman farmer called Om-Bakr. She planted her only three *kirats* to the new forage in order to feed her animals. She can always find herself something to eat, she says, but her animals used to starve, and she had to sell them one after the other.

Elephant grass as a new summer forage is making continuous inroads in Egypt, and the distribution of germ plasm is currently progressing. This situation stimulated the investigators to conduct more studies on agronomy, soil, and forage conservation. An experimental station, Mehalet Mousa, was planted to elephant grass for these studies. The station, a 10-hectare farm, is 80 kilometres north of Cairo, and 5 kilometres from the Institute's laboratories in Sakha, where the collected samples are analyzed. Besides evaluating the productivity and nutritive value of the grass, the researchers are assessing the effects of the new fodder on the farmers' income and the nutritive status of farm animals.

Economic studies were carried out to find the ideal way to introduce elephant grass without disrupting the production of other food and cash crops used locally and exported. The first system proposed by Dr Makky and Dr Hathout was to grow the new summer forage in half the area reserved for clover in the conventional pattern of crop rotations, and to leave it on the land during the entire year. As ele-

phant grass is dormant in winter, clover production is not interrupted. The other half of the clover area is to be planted to extra wheat in winter to compensate for the loss of grain from the half now occupied by the new summer forage, and to equal parts of corn and rice during the summer. This system would improve the overall grain balance and produce animal feeds equal to about 5.5 million tonnes of starch equivalent. This increase, Dr Makky points out, would more than cover the annual feed shortage.

A second system proposed is based on cultivating summer maize and sorghum crops on 75 percent of their usual area, and planting the rest to elephant grass to feed the animals. Dr Makky estimates the cash value of the animal feeds produced under this system to be 99 million Egyptian pounds (about us\$142 million). The total cash value of the additional milk and meat produced according to that system would be more than 145 million pounds (us\$207 million).

The elephant grass project is expected to lower the costs of milk and meat production, increase the national income, and introduce a great change in the traditional practices of animal rearing in Egypt. It could go a long way toward alleviating Egypt's chronic meat shortage. □

Azza El Hussein is a science writer with Al Ahram newspaper, based in Cairo.

THE RESEARCHERS

As part of the summer forage project, a number of graduate students received "on-the-job" training. Azza El Hussein introduces four of them.

The first researcher was Mr Soliman Aly Soliman from the Faculty of Agriculture, Ain Shams University. While completing his master's degree on the effect of using different levels of elephant grass in fattening buffalo cows, he was able to prove that this summer forage was sufficient for fattening cattle without needing extra feeds. Experiments conducted on Friesian cows for his PhD produced almost the same results.

Three other researchers are about to present their theses on elephant grass:

● Mr Kamel Osman Ibrahim from the Faculty of Agricultural Sciences in Zakazik University researched the effect of the new summer forage on milk production and composition while using different levels of concentrates. He examined the effect on milk yield and weight gain of feeding elephant grass to buffalo, together with different concentrate

supplements. He has deduced that the new forage is both palatable and nutritive, and could cover buffalo requirements without supplementation.

● Mr Ahmed, from the Faculty of Agriculture, Al Azhar University, tested the effect of the type of ration on buffalo milk yield and composition. He concluded that buffalo fed elephant grass gave higher milk production and more fat content than those fed straw and concentrates. Moreover, he noticed that milk production did not cease on buffalo fed elephant grass, as it did in those fed other foodstuffs.

● Mr Helmy Ghanem from the Faculty of Agriculture, Zakazik University, analyzed the milk properties of dairy cattle fed different levels of different protein sources. He was able to deduce that feeding lactating cows with elephant grass alone gave approximately the same results as those fed with extra sources of foodstuffs.

Elephant grass, say these researchers, could be the only known hope for increasing total milk and meat production in Egypt, and thus increasing total national income.

THE ROAD TO A SCIENTIFIC RENAISSANCE

Seven hundred and sixty years ago, a young Scotsman left his native glens to travel south to Toledo in Spain. His name was Michael, his goal to live and work at the Arab Universities of Toledo and Cordoba.

Michael reached Toledo in 1217 AD. There he formed the ambitious project of introducing Aristotle to Latin Europe, translating from the Arabic translation of the original Greek.

Later, while visiting the medical school at Salerno, Michael the Scot met the Danish physician, Henrik Harpestraeng, who had come to Salerno to compose his treatise on bloodletting and surgery. His sources were the medical canons of the great clinicians of Islam, Al-Razi and Avicenna.

Toledo's and Salerno's schools, representing the finest synthesis of Arabic, Greek, Latin, and Hebrew scholarship, were some of the most memorable of international assays in scientific collaboration. To Toledo and Salerno came scholars not only from the rich countries of the East, but also from developing lands of the West such as Scotland and Scandinavia.

After 1350, however, the once rich developing world loses out to the North except for the occasional flash of scientific brilliance. We have come full circle, and it is we in the developing world who now turn westwards for science.

The question we must ponder is this: are the developing countries today firmly on the road to a renaissance in science? Unfortunately, the answer is no.

There are two prerequisites to this renaissance: one, availability of places like Toledo and Salerno for international concourse, where one can light a candle from a candle. Second, the interest in our own developing societies to give the topmost priority to, firstly, the acquisition of knowledge and, secondly, its dissemination throughout the community.

Regrettably, the opportunities for international scientific concourse are fast shrinking. It is becoming increasingly clear that the developing world will need internationally run — United Nations' agency run — postgraduate universities of science, not just for research, but also for the high-level teaching of modern technology and sciences.

The second prerequisite is a passionate, consuming desire on the part of the developing countries, the removal of all internal barriers to the acquisition and dissemination of science and technology throughout their socie-

ties, and finally, their application to development. Unfortunately, and I say this with anguish, the prognosis in this respect is not very bright.

Seventeen years ago, the Board of the International Atomic Energy Agency (IAEA) pioneered in recognizing that there are two things wrong with science in developing countries: firstly, its sub-critical size, and, secondly, that it was not part of international science. One of the major reasons for the scientific brain drain then was identified as scientific isolation in developing countries. The IAEA Board can take the fullest credit, together with the Government of



Italy and with Unesco, of pioneering the first international centre in a scientific discipline.

There is no question that the developing world today needs international institutions of this type, but with requisite stability; for example, centres like the wheat and rice research institutes. Without internationalization, science cannot flourish. Such centres guarantee keeping abreast of new ideas, guarantee a transfer of science and technology by people who created it. If such centres are in developing countries, one may even envisage a reverse brain drain.

My own feeling is that almost every developing country has a technological problem that needs international scientific expertise. I strongly feel that the United Nations systems, IAEA, Unesco, and UNIDO must take a lead by directly or indirectly helping in the internationalization of science in developing countries.

In sciences, as in other spheres, this world of ours is divided between the rich and the poor. The richer half — the industrial North and the centrally man-

aged part of humanity — with an income of us\$5 trillion, spends two per cent of this (some \$100 billion) on nonmilitary science and development research. The remaining half of mankind — the poorer South — with one fifth of this income, spends no more than \$2 billion on science and technology. On the percentage norms of the richer countries, they should be spending 10 times more — some \$20 billion.

I would like to make three appeals.

My first appeal is to the developing countries. In the end, science and technology among them is their own responsibility. Speaking as one of them, let me say this: your men of science are a precious asset. Prize them, give them opportunities, responsibilities for the scientific and technological development of their own countries. At present, even the small numbers that exist are underutilized. However, the goal must remain to increase their numbers tenfold, to increase the \$2 billion internally spent on science and technology to \$20 billion.

My second appeal is to the international community — both of governments and of my fellow scientists, as well as the United Nations agencies. A world so divided between the haves and the have-nots of science and technology cannot endure.

And finally, and in all humility, I wish to address myself particularly to my brothers from the OPEC Islamic countries. To some of you Allah has given a bounty — an income of the order of \$100 billion. Following international norms, your countries should be spending \$1 to \$2 billion annually on supporting science and technology. It was your forebears who were the great torchbearers of international scientific research in the 8th, 9th, 10th, and 11th centuries and who funded the first Advanced Institutes for Sciences. Be generous once again. It is as much our responsibility, in accordance with Allah's injunctions, to add to human knowledge now as it was theirs in their day. Spend the billion dollars on international science, even if others do not. Create a fund available to all Islamic, Arab, and developing countries, so that no potential, high-level, talented scientist in the developing world is wasted. □

Abdus Salam, of Pakistan, received the 1979 Nobel Prize for Physics. This article is extracted from an address to the Board of Governors of the IAEA, given in March 1980.