

REFLECTIONS

The More Complex, the More Stable

Trying simplistic solutions for complex systems disturbs the in-built stability and increases instability. The complex human mind is not designed to be treated like a machine, or as a statistical unit. It reacts, and spills over the theories applied by the societies...

WHAT is common between population control (family planning) and the tropical forest (the greenhouse effect)? The advice is to control the family, not the forest.

What is common is the general complexity theory of the ecologists. The more complex a system, the more stable it is. If efforts are made (by man) to introduce changes to control the system, or to achieve certain goals, then instability will set in, creating more problems.

That is the central idea behind the environment activists, now being supported by powerful North countries, who are asking the developing countries not to cut down or disturb the tropical forests.

This universe is too vast and too complex for complete human understanding. The vastness and complexity makes the universe so stable. The sun continues to shine, the moon appears as usual for thousands of years, and this earth of ours still exists (a sick, man-made management system). But there is no guarantee for the 21st century.

On the other hand, a small system like a personal garden will die out if left to itself, without maintenance by the gardener, whereas the huge jungles and forests continue to live and thrive merrily for years and years, if left undisturbed, without any external monitoring and assistance (note how wild the grass grows even on the unused city plots).

The greenhouse effect (rising of the earth's atmospheric temperature) is said to be due to our tampering with the forests, for the materialistic development of the human civilization. This principle may also be applied to government and economics, according to the ideas developed

by A M M Aabid

by scientists and economists such as Ehrlick, Hayek and Friedman.

Other examples tempt us: The breakup of Soviet socialism (communism), the unity of the poor, the struggling West European nations, the trade blocs. Therefore there appears to be no guarantee that man-made capitalism will be safe and stable.

Births and deaths (population of the living creatures, including human beings) take place in highly complex systems in nature, and attempts to control or simplify, or to set some goals through human or artificial means, is likely to create more instability than more stability, according to the complexity theory.

The size of the family and the human population in the industrialised countries follow a common pattern of smaller families and lower growth rates. Family 'planning' was indirect in such countries due to many artificially created reasons, such as internal mobility and migration, late marriages, and the invasion by the females of the factories, offices and shops. On the other hand FP as practised in the underdeveloped countries is by direct and planned methods.

Studies are needed, spread over several generations, on these plans and controls, and the resulting short-term and long term effects of FP programmes. In contrast, the rapid industrialisation has set in a chain of instabilities which the civilization has to tackle in the 21st century.

Nations today are armed with nuclear devices destructive enough to destabilise the vast and complex eco-system. Combined with the general unstable

political climate, we are living in a trigger-happy world, waiting for the pressing of one wrong button.

The analytical inputs are far more complex than set out in stray examples above. Solutions are not easy to find, or even the identification of the action strategies. The options and priorities have to be spotted and defined. It pays to learn from errors (the greenhouse effect, fast consumer societies, political and economic systems).

This is not possible, as the scientists tell us that it is impossible for the evolutionists to make long-term predictions about the future of the human race ('The Anthropological Cosmological Principle', the 700-page book written by Barrow & Tipler, published in 1988 by the OUP).

The complexity theory has offshoots and side questions. It is said that a thought can move the world; and macrocosm and microcosm affect each other ('as above, so below', the latest chaos theories, reincarnation and karma). How about the effect of mass prayers on macro systems? Since control increases instability, the western world is advocating free market economy; but the messages are coming from tightly guarded economic trade blocs! Where is the inconsistency?

Life is worth living — at least it keeps us busy, and makes us more complex. Now for the lakh-taka question: have conditions in Bangladesh become so complex that there are glimpses of the signs of stability, according to the theory under review?

Time for a pause here, before proceeding further, because, if we are to believe in G Wald, 'We are the products of editing, rather than authorship.'

Homestead Forests: Neglected Resources

by Md Shahidullah

Regeneration and better management of homestead gardens could help the vast majority of the rural people to meet their needs for fuel, housing material, vegetable and fruits and fodder for their cattle.



Collecting fuel wood from forest

INTENSIVELY managed and densely planted homestead forests contain a large variety of annual as well as perennial crops. A study in 1980-81 estimated that homestead forests provided about 85 per cent of all wood consumed, including nearly 90 per cent of all fuelwood and 80 per cent of all timber. In addition, about 90 per cent of bamboo, an extremely important commodity come from homesteads. The total standing volume of trees (growing stock) on homestead lands is estimated to be about 79 million cubic metre. The low productivity and underutilization of government controlled forests containing a growing stock of about 47 million cubic metre and lands contrast with the high productivity and relatively efficient management of the homestead forests. These homestead forests are the most productive and indispensable component of the forestry sector. The homestead forest accounts for the majority of the country's growing stock and production of forest products and are an important source of food and income for the marginal and the poor.

Homesteads are well established and vitally important traditional land-use systems throughout Bangladesh. They cover about 0.27 million ha and account for 26-47 per cent of total family income. Over half of the fruits, vegetables and species grown in homesteads are sold. In addition, about 55 per cent of the country's requirements for timber, fuelwood and bamboo are met from this source. In Bangladesh almost every rural homestead grows some trees, bamboos, shrubs etc around homestead or on boundaries of land for supply of fruits, vegetables, timber, construction materials, fuelwood etc. This unorganized sector of forest i. e. rural and homestead forestry, is an integral part of the total forest area and forestry resources of the country.

Trees make an important contribution to farming systems which integrate agro-forestry, horticulture, vegetable gardens, fisheries and livestock

production with annual crops to better satisfy the full range of a household's need and to increase its income-generating capability. Despite their importance to household economics it appears that a combination of the need to use more of the homestead land for additional home sites, and the continued high level of extraction of wood and other products from the homestead forests may be leading to a decline in their area.

It is to be noted that because of limited and insufficient supply of timber and fuelwood from state-owned forests, village forests have been depleting at an alarming rate. Another important aspect of homestead

tree resources in Bangladesh is that most of them have been set up in an unplanned manner without due consideration of balancing varied needs of timber, bamboo, raw materials for agricultural implements, fruits, fuelwood, fodder etc. The people are also very much aware of arranging trees on short, medium and long rotations so that they cater to different types of uses and needs. So a complete orientation and reorganization of the present unplanned methods of setting up homestead

forests need to be gradually introduced through the social forestry approach by motivating, educating and training the homestead owners.

Above all a large number of trees in the homesteads whether they are for timber or fruit have very little economic value. Most of the fruit trees are of low quality and old which need to be replaced by new high quality and economically more valuable trees. Such a process needs door to door motivation of each and every owner of the

homesteads to go for a long term qualitative change in the rural and homestead forest scenario. For many years farmers' homesteads and woodlots have been overcut and depleted due to increasing density of population, poverty and hardship in the wake of natural calamities. This needs replenishment.

Homestead often possess a number of attributes, with regard not only to their ability to meet a number of farmers' needs without negatively affecting the resource base, and in many cases even improve it, but also to their potential to meet several ecological, socio-economic and institutional conditions which contribute to their sustainability.

Regeneration and better management of homestead gardens could help the vast majority of the rural people to meet their needs for fuel, housing material, vegetable and fruits and fodder for their cattle. For this social mobilization for homestead gardening is needed. Further, broad understanding of indigenous management techniques of homesteads, complementing and supplementing existing scientific knowledge is needed for the maintenance of ecological diversity. In this regard the following issues are to be considered:

- involving marginal farmers and landless groups in participatory homestead forest management;
- development of site specific and ecological zones around homesteads;
- improvement of homestead tree production system;
- conducting study on indigenous multi-purpose trees, shrubs and medicinal plants for selection of site specific and end-use oriented species for homestead forests.

- encouraging indigenous management techniques of traditional homesteads; and
- genetic improvement of homestead multipurpose trees, medicinal plants and bamboos.

— BCAS Feature

Prosperity Drive Down the Corridor to the Coast

SOUTH Africa's ambitions of becoming an economic power-house for the whole southern African region look set to advance along an important new trade route now under construction.

The Maputo Corridor — a development zone stretching from the Johannesburg area to the Mozambique coast — promises to attract big investment, create thousands of jobs and stimulate regional economic growth.

"Already the corridor is inspiring similar projects elsewhere," said President Nelson Mandela of South Africa at a ceremony in June to launch construction work on a \$400 million, 440-kilometre highway from Witbank to Maputo. The toll road will serve as the zone's key artery.

Mandela and his Mozambican counterpart, President Joaquim Chissano, unveiled a plaque at Ressano Garcia on the border, where future travellers and cargoes will encounter minimal, "one-stop" transit formalities.

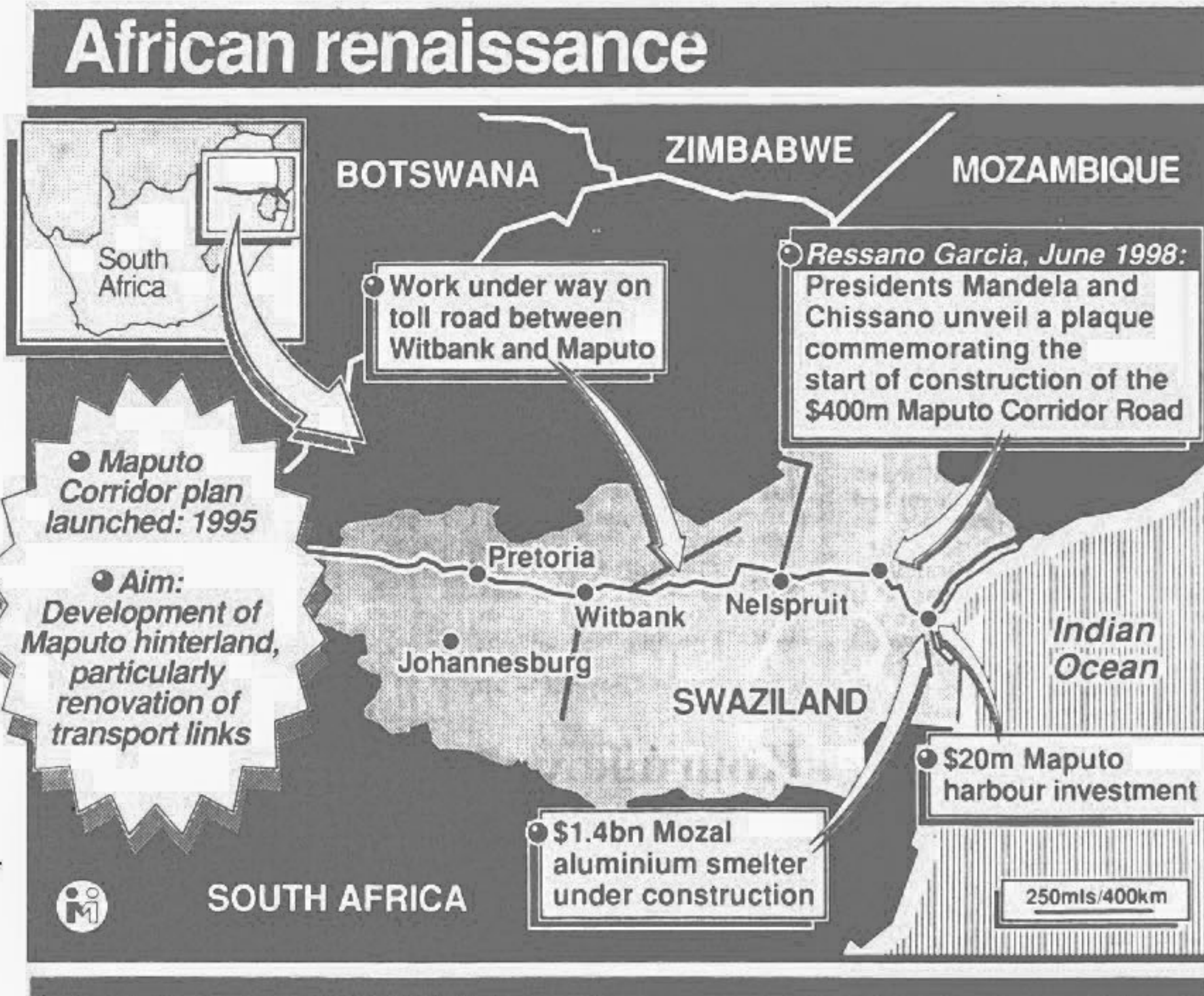
"As we cooperated in our struggle for liberation, we are now joining hands to improve the lives of our people," said Mandela. The project "has helped set a trend that is changing the face of our region and making a reality of our dream of development through cooperation."

Plans for the corridor were hatched in 1995 with the aim of reviving a trade route that once flourished. Maputo is the closest port to Johannesburg, but decades of war in Mozambique severed this artery. Now that peace has returned to the country, the idea is to re-establish the link by building the highway and upgrading rail and port facilities.

Investors are being invited to develop the area around the main transport route. Feeder roads either side, stretching for 50 kilometres or more, and sec-

A big new enterprise zone in southern Africa is helping to make development dreams come true, says President Mandela. Besides acting as a catalyst to economic growth across the region, reports Gemini News Service, the project is boosting recovery hopes in one of the world's poorest countries.

Guy Arnold writes from Ressano Garcia, South Africa-Mozambique border



ondary development corridors are envisaged. Authorities say that about \$7 billion worth of investment schemes are under consideration for the Maputo Corridor.

Estimates of the consequent employment potential range from 8,000 to 35,000 new jobs. The plum project so far is a \$1.4 billion aluminium smelter, being built by Mozal, an international joint venture, near Maputo. This expected to be completed by the end of 1999 and will provide about 400 permanent jobs. A number of spin-off developments are likely, further boosting local employment.

Other projects in the pipeline involve iron and steel, petrochemicals, agriculture, casinos, game parks and other tourism developments. Mozambique, one of the world's poorest countries, stands to reap huge rewards as trade between the two countries revives and its virtually defunct tourism industry is helped to take off again.

After years of stagnation, the country is now boasting an annual growth rate of about seven per cent for the past three years, coupled with low inflation.

The government is offering tax holidays and other financial incentives to investors. South African Breweries have moved into Mozambique in a big way, the South African oil-fuel-coal enterprise Sasol is examining the potential of Mozambique's natural gas resources, and investors are also considering possible tourism developments along the coast north of Maputo. The country enjoys rich fisheries and reserves of coal, gas and graphite.

However, it faces many problems as it seeks to develop. First, it is so poor and anxious for investment that it is vulnerable to exploitation. There is an urgent need for

reforms to the cumbersome and inefficient administrative and banking systems. Government salaries are low, causing a loss of good people to the private sector and a tendency towards corruption.

In addition, the business community is small and inexperienced and educational standards are low.

Despite the problems, there is a sense of renewal and excitement at the achievements of the past three years, and a belief that over the next decade, the economy will be transformed and much bigger advances made.

The Maputo Corridor, therefore, is much welcomed development. The main priority now is the construction of the toll road, due for completion in 2001. A private consortium is undertaking the work and will operate the highway for 30 years before handing it over to national authorities.

Besides linking Maputo with Witbank, it offers good road connections to Johannesburg and on through Botswana to Windhoek and Walvis Bay on Namibia's Atlantic coast — a transcontinental highway of more than 2,500 kilometres.

This offers further regional development potential. For example, the Francistown abattoir, which processes Botswana's export beef and uses Cape Town to ship its produce, is looking at the possibility of switching to Maputo. This would cut land travel time by 50 per cent.

Meanwhile, South Africa, which has adopted a policy of creating development zones, is considering new ones stretching south of the Maputo Corridor into KwaZulu-Natal

province, and north from Nelspruit, the capital of Mpumalanga province.

"The role of our governments has been to facilitate," said Mac Maharaj, South African Transport Minister, and his Mozambican counterpart Paulo Muxanga, in a joint statement. "[We] provide the necessary investment environment to enable the financial sector to undertake the commercial risk while we bear the political risks."

Efforts are being made to ensure that the indigenous communities benefit from these developments. Minimum employment clauses will help ensure that black workers and contractors enjoy employment opportunities, while about 300 small farmers have been settled in new sugarcane developments.

Support programmes have been set up to advise and help finance small and medium-sized enterprises and new projects within the corridor. A range of financial institutions is involved and, inevitably, these are South African rather than from Mozambique, which, in economic terms, is very much the junior partner in the venture.

In a sense, this fact is central to the whole Maputo Corridor development strategy.

South Africa, which is keen to become the economic motor force for the region, knows that it cannot expand its markets while neighbouring states — members of the Southern African Development Community — remain among the world's poorest.

The more prosperity that can be brought to Mozambique, the better for trading and investing neighbour South Africa and for the region as a whole.

The writer is a freelance journalist specialising in North-South relations and African development.

Green Wonder in the Antarctic!

by Michael Gonsalves

Horticulture can now be taken up on a large scale at Maitri station, the scientist said, adding that local soil might be used for cultivation if silts from Klargestar (an equipment meant for kitchen waste disposal) is used as manure.

IN a major breakthrough, Indian scientists have successfully grown a variety of vegetables in the frozen environs of the Antarctic round the year — and set the record of being the world's first to do so.

Around 26 scientists stationed at the Indian permanent station of Maitri in the Antarctic use throughout the year vegetables such as brinjal, capsicum, cucumber, lettuce, celery, potato, radish, beans, maize, onion, garlic, fenugreek, chillies, pudina (mint leaves), spinach and coriander grown in the greenhouse facility set up there. They used them along with the freeze-dried foods carried from India.

"This is the first time that these vegetables have been successfully grown in the polar region, which is almost completely covered by ice with sub-zero temperatures prevailing throughout the year," senior scientist Brigadier Ramesh Chandra Pathak told India Abroad News Service.

Pathak is from the Research and Development Establishment (Engineers), or R&DE(E), based in this western Indian city. The engineering establishment is a unit of Defence Research and Development Organisation (DRDO) which functions under the Defence Ministry.

The Indian breakthrough is all the more significant as a German team stationed at their George Foster station, about five kilometres from Maitri, too had tried to grow some vegetables in the summers of December-January 1988 and 1989. But they dropped the project, Pathak said.

After painstaking research spanning eight years, a team of scientists led by Pathak and

those from the Department of Ocean Development (DOD), New Delhi, developed an integrated technology for vegetable production involving greenhouse, hydroponics and photo-period regulation. Scientist M.R. Joshi, Director of Pune's R&DE(E), said the greenhouse facility at Maitri was created during the ninth expedition (1989-90) for carrying out experiments in plant growth and agricultural science in the Antarctic environment.

"The successful teamwork of scientists has really shown the world that the Indian researchers are second to none in breaking new paths in scientific achievements," he told IANS.

Explaining the technology, Pathak said a modular greenhouse construction made of teflon glass to prevent heat loss was raised to allow future expansion. An environment control system, to simulate conditions suitable for plant growth in the severe climatic conditions of Antarctica, was incorporated. Temperature, humidity, oxidation, carbon dioxide, illumination, air change and pH value were kept in mind while designing the systems.

Since the average temperature in Antarctica is between -25 and -35 degrees Celsius, Pathak said, the foremost task was to regulate the temperature in the greenhouse. Depending on the temperature set, the flow of hot water in the radiators is regulated. In case the temperature cannot be maintained by the radiators, air heaters are used.

"Essentially, we adopted pot culture to grow the vegetables, maintaining temperature between 18 degree and 25 degree Celsius, humidity between 40

and 70 per cent and average carbon dioxide level of 400 ppm," Pathak said.

As the surface in Antarctica is covered with ice for most parts of the year, soil was taken to the Maitri station in barrels. "Initially, the results of the experiments were not encouraging, but continuous research paid off," Pathak added.

Horticulture can now be taken up on a large scale at Maitri station, the scientist said, adding that local soil might be used for cultivation if silts from Klargestar (an equipment meant for kitchen waste disposal) is used as manure.

India's scientific quest in Antarctica started in 1981 when the first Indian expedition was launched under S.Z. Qasim, an eminent oceanographer and former secretary, Department of Ocean Development, and founder of the Polar Research in India.

Since then, the Indian Antarctic expeditions have continued every year. There have been 17 to date, with over 1,300 scientists and technocrats taking part. Studies have been carried out in the fields of oceanography, meteorology, climatology, geology and polar medicine, among others, with the involvement of about 50 national research institutions in the venture. Maitri, built on stilts having adjustable telescopic columns as foundation, is designed to withstand low temperature and wind speed up to 200 kmph. The superstructure comprises four blocks which provide living accommodation, medical facilities, communication control room and laboratory for research.

— IANS

Mission for Vision

IT isn't difficult to come by individuals and groups who, driven by altruistic zeal, are selflessly engaged in diverse fields ranging from child labour to AIDS.

But it isn't every day one comes across a humble bus conductor who decides to give up his job for a social cause — and come down from the bus and take to the bicycle.

Manmohan Singh Lamba, from the central Indian state of Madhya Pradesh, has been criss-crossing the country on his bicycle for more than a decade, exhorting people to donate their eyes, a newspaper has reported.

Since April 27, 1987, when Lamba started out on a bicycle on his noble mission, he has covered 24 of the 25 Indian states. Having set up educational institutions or offices, he tries to convince people to donate their eyes. Lamba also distributes eye donation forms to interested persons.

More than 1,000 people in the Chhatrapur area of Madhya Pradesh alone have filled up the forms and committed themselves to donating their eyes after death, Lamba claimed.

"More than 12 million people in India suffer from blindness and at least one million of them can be cured through eye transplantation," Lamba was

quoted as saying by The Tribune newspaper.

Saying that blindness is a bigger problem than it is usually perceived to be, he added that people need to come forward in larger numbers to donate their eyes. At present, only about 2,500 eye donations are done in the country annually.

A native of Madhya Pradesh, Lamba shifted to the northern state of Haryana after his house was burnt down in the 1984 anti-Sikh riots in the aftermath of then Prime Minister Indira Gandhi's assassination.

He started to work as a bus conductor in the state-run transport corporation, a job which he left when he set out on his countrywide tour to promote the cause of eye donation.

"It just happened to come my way when I read in a newspaper about 12 years ago that the eyes of the dead could be of immense benefit to the blind," Lamba was quoted as saying about his inspiration.

Lamba has appeared in 36 radio and 11 television programmes as well as a tefilm spreading awareness about eye donation. Slogans exhorting people to donate their eyes were painted on state-owned buses in Haryana after he persuaded the authorities to do so.

— India Abroad News Service

Garfield® by Jim Davis

