

High technology and human

For the introduction of any new technology, countries must have the know-how and the

By Q Isa Daudpota

"Recall the face of the poorest and the weakest person you have seen, and ask yourself, if the steps you contemplate are going to be of any use to him [her]." — M K Gandhi

July is very hot in Islamabad, but thankfully the monsoon rains that started early this year, prevented a serious drought and have cooled the weather enough for me to sit under a tree. My ten-year-old 800 cc car has blown a gasket and is undergoing repair by four young men in their twenties. While I watch them work on my four-wheels for over five hours, I keep dipping into the United Nations Development Programme's (UNDP) Human Development Report (HDR) for 2001, wondering what recipes it offers for Pakistan — for people like these hard-working lads and for me.

In its overview, this year's report tells the reader that it is about people; and its focus is on the role of information technology and biotechnology for sustainable development. These twin wonders have raised the hopes of leaders and planners alike and these will give us "healthier lives, increase access to knowledge and bring about greater social freedoms." I am tempted to ask the four mechanics about these three desirables and how they view them, but then I decide to brood over them myself.

Technology brings about rapid changes that most citizens often fail to comprehend and adjust to. Then there are its resulting products and processes that have caused much harm — starting with the atomic bomb to less dramatic ones, such as the industrial disaster in Bhopal; the nuclear accidents at Three-Mile Island in the US; and Chernobyl in Ukraine; the warming of the atmosphere due to carbon dioxide and other emissions from industrial plants; and the depletion of ozone caused by CFC, the coolant in refrigerators and cooling plants. Or the mixed results of the green revolution that — while raising grain production to meet the demands of the relentless population growth — has left soils and farmers less better off.

From all this arises a general mis-

trust of scientists, technologists, private corporations and governments. No such worries exist for the technicians with their heads under the car bonnet. It doesn't bother them what the diesel and petrol fumes from cars around them do, nor the effect of leakage from the coolant used in car air-conditioners on the ozone layer above. The HDR intones enthusiastically about the positive effect of info and bio-technologies on developing countries and poor people. In contrast, many fear that these technologies may exacerbate division between the countries of the North and the South, and between the rich and the poor, or all countries. The report in turn contends that without an enlightened leadership and a socially responsive public policy, these technologies could indeed become exclusionary and a hindrance to progress. Managed with wisdom and humility, they can become powerful tools capable of freeing people around the globe to achieve their potential — out of the rut they presently find themselves to more productive livelihoods. The technicians would agree.

The last century's amazing gains in advancing development came on the wings of technological breakthroughs. Vaccines and antibiotics introduced in the South in the 1930s had, by the 1970s, increased life expectancy at birth to more than 60 years. In Europe, the same gain took over a century. In this part of the world, under-nutrition has been halved in less than 30 years. World cereal yield has doubled in the last 40 years due to successful plant-breeding, fertilizers and pesticides — even though their use and misuse have generated other problems. With the introduction of any new technol-

ogy, particularly one that has far-reaching consequences, countries must have the know-how and the resources to tackle any unforeseen adverse consequences.

Technology-related problems can often result from poor policies, inadequate regulation and lack of transparency. In the US for example, three major agencies are involved in regulating genetically modified organism with a high degree of funding. This cannot be matched

to 100,000 technologists from India leaving annually at an estimated loss of \$2 billion to India. The fact that this diaspora will repatriate money back home and also create technological linkage with India is a fortunate but unplanned result. Such a human export program is not one

that Pakistan should emulate, not only because it is expensive, but also we should not turn into nurseries for Silicon Valley.

The first chapter of HDR about human development outlines the grim realities of the Southern countries. "Of the 4.6 billion who live there, more than 850 are illiterate, nearly a billion lack access to improved water sources, and 2.4 billion lack access to basic sanitation. Nearly 325 million boys and girls are out of school. And 11 million children under five die each year from preventable causes — equivalent to more than 30,000 a day. Around 1.2 billion people live on less than \$1 a day, and 2.8 billion on less than \$2 a day." Right now, despite the impressive achievement in the standard of living due to technological inputs, it takes a leap of faith to see how so many people can have their lives improved, particularly as world population continues to rise steeply. What is needed is not just technology, but an educated mass of people and an enlightened leadership that is willing to use all human and technological resources at hand to ensure that the impending environmental



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problems that the world faces are averted.

To grasp these issues, I again turn to the technicians who are fixing my car, and to the car itself. First the car. This is a vehicle that was first imported from Japan and slowly some of its parts started being manufactured here. Hardly any change has been made to the design of its body or chassis to improve its aerodynamic performance or to its engine, which is inefficient by today's standards. Our university mechanical engineering departments, if supported and encouraged, could have got their students and faculty to experiment on these factors to evolve a much-improved design. Today, even the nationally manufactured oil filter for the car is regarded as suspect by the mechanics, and they advise me to buy the 'Made in Japan' one, which they say is also made locally but is better! The 'genuine' part is not readily available, and perhaps very expensive when it is. Our existing industries need to be made reliable and more efficient by our own technologists and technicians — what they need is support and encouragement.

Newer industries and processes for the domestic and export market should come from the minds and hands of a creative work force that has honed its knowledge and skills by improving earlier products. Such continuity is essential for success in setting up anything new in our country. The technicians are nearly through with my car, only two and half hours later than they had promised! I wonder what they will be doing a decade from now. It is unlikely that they will break away from the motor car profession. The assistant will become the *mistri*, the master mechanic, and recruit young boys to work for him. He will not know any more than he knows now about how the car really works. This is unless there is a concerted attempt by the public sector to open opportunities for technicians to update their knowledge and skills. Greater literacy will help, so that a technician will know that acquiring more knowledge will quickly help him become better and hence earn more. Good knowledge of English and Mathematics, invariably neglected today, are essential. Night schools and well-equipped polytechnics with good faculty and

access to libraries and the Internet will help.

Internet by itself won't. For a farmer short of water and inputs, what is more important is the recognition of efficient farming practices that are cheap and based on traditional farming that can easily provide food for him and his family and enough surplus for sale in the market place. He will need to use water efficiently and to rediscover the judicious use of manure and care for the soil. Merely using fertilizers, or growing cash crops with excessive water

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will only lead to water-logging and salinity. Appropriate education and appropriate technology are the key to progress.

The HDR highlights the importance of education, but in this year's report there is no reference to cheap appropriate technology — its focus is on high-end technologies. I look up and see clouds full of water. Much of the rain that falls will flow away and cause problems downstream, and Islamabad will be faced with water shortage again next year. We have lost our traditional means of storing rain water, and that has principally led to droughts over the last three years. Cheap traditional methods made better with newer ideas can

solve this problem and for this we can turn to India to learn how best to do it. At Delhi's Center for Science and Environment (CSE) — see their webpage at www.cseindia.org — they have researched for ten years and come up with methods of water-saving that are applicable in villages and cities in South Asia. The Pakistani team meeting the Indian leaders to talk about resolving our conflict would do well to take time off and visit CSE and invite them to Pakistan.

The job on my car is now done, and it is time for several of the technicians to take their last cigarette. I asked one of them how many who work in that area with cars smoke and he says, 80%, and each smokes a packet of 20 daily. The HDR's table on leading health crises and challenges gives the annual cigarette consumption per adult for Pakistan as 562 which come to under 2 cigarettes per day per person. India's consumption is a factor of five less. Greeks, the highest smokers in the world, on the other hand, smoke nearly 5 times as much as Pakistanis. Biotech may help make tobacco less harmful but what is needed today is better education and greater government pressure to end the luring of young people by multi-national tobacco giants and local companies into becoming addicts. UNDP and other international agencies from their experience of development need to have gathered by now that top-down development policies cannot work in the long run.

There are no silver bullets. Instead the age-old fundamentals of development of the masses are a prerequisite for the successful introduction of new technologies. The HDR impresses with the clarity of its suggestions i.e. make information technology and biotechnology the engines for development in countries such as ours. It deserves to be read by all our planners and development workers. This large report can be downloaded from www.undp.org/hdr2001. But they should keep in mind that these two technologies can only become the dynamo for change when supported by a reformed educational system developed through a public-private partnership in a society that is based on justice and equity. The technicians will then have something to smile about.