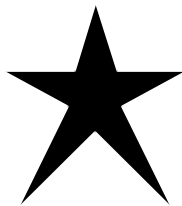


# **SUSTAINABLE LIVELIHOODS**

The one-point agenda for planetary survival

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## The one-point agenda for planetary survival

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For more than one half of the people on this planet, the turn of the millennium — or for that matter the turn of the century — will be no different from any other day in their lives. Full-time preoccupation with matters of survival and subsistence tends to distract one from appreciating the significance of such milestones in history, even when one is actually present at the event. For such people, it will be just another day or, at best, another year signalling yet another cycle of poverty, deprivation, marginalisation and exclusion.

These three billion people, each a person in his or her own right, are both an integral part of the global economy and yet completely outside it. In the terminology of ecological science, they lead the front and bring up the rear of the economic 'food chain': the low wage producers and the unpaid scavengers. In these roles, they are very important to the world's economic flows, as shown by the large numbers of foreign, 'guest' or landed immigrant workers in any industrial country and the huge volume of low cost commodities and products its businesses import from the South. The good things in between — the products and services generated by the economy and the purchasing power to acquire these — go, of course, to the well-fed consumers in the middle. When it comes to the modern amenities of life, most of the three billion are definitely not in the game.

Unquestionably, the world today is a better place to live in than it was, say, a hundred years ago. Progress in medicine has eliminated many killer diseases, devised treatments for a wide range of disabilities and made it possible for people to live longer than ever before. The revolutions in materials and energy technologies have opened dramatic arrays of options for satisfying basic human needs and for extending our capacities to shape our destinies in many new directions. Transportation and communication have opened opportunities for work and leisure that could not have been dreamt of earlier. We now have more, control more and know more than ever before.

But few societies today have escaped the widespread scourges of growing pollution, waste accumulation, social alienation, drugs, climate change, and a wide range of generally unsustainable production and consumption patterns. Rampant unemployment and accelerating inflation; growing supplies and depleting resources; stagnant and unmet needs — these are the paradoxes and hallmarks of many economies today, no less in the North than in the South.

In a natural ecosystem, all niches are crucial to its survival and functioning — and each receives its due share of importance in the grand design that gives it viability and resilience. In the world of human beings, on the other hand, this is not necessarily so: politics, economics and, more recently, technology have all been appropriated by the privileged few and worked to create vast disparities in social standing and access to societal resources. Decision systems that determine the direction of the whole economy are largely controlled by the rich for the benefit of the rich and the day-to-day reality of the poor rarely enters into their calculations.

The more fortunate upper half of the three billion poor subsist on an income of under US\$2 a day, working endless hours in factories and fields to produce cheap products for an insatiable market. They themselves can never hope to get the benefits — the goods or services — widely flaunted by this market. The remaining 1.5 billion survive, under conditions as inhuman as any known to history, by collecting and processing the detritus of the modern economy. The star earners among them get at most one dollar a day and have virtually no meaningful contact with the monetised economy.

At the top of the food chain, some one billion people live in the unprecedented splendour and luxury made possible by the dynamite combination of modern technology and concentration of wealth. Dynamite: first, because of the sudden and explosive growth of this transnational class over the past one hundred years; and second, because of its in-built, inevitable destiny in due time to self-destruct as a result of the narrow, short-sighted pursuit of its self-interest. Spread throughout the world, they form a rich and powerful network that now controls the economy of virtually every country.

### ***Equity and ecology***

What, one may well ask, have the extremes of wealth and poverty that manifestly exist in the world today to do with planetary survival and sustainable development? The answer: a very great deal. Both extreme affluence and extreme poverty — wherever they exist, whether in the North or the South — are highly effective destroyers not only of societies but also of nature.

The affluent reside in largest numbers in the industrialised countries but certainly not only there. They are also to be found in significant numbers in every nation. In addition to having a great deal of money to spend, their major distinguishing characteristic is the virtually total control they establish over the structures of governance and business in their countries. It is through these structures, by influencing legislation and organisational strategies, that they collectively capture the major part of the economy's rewards. Both to symbolise and to demonstrate their status in society, they acquire an insatiable desire for material goods and physical services and the means to generate an unlimited demand for these. These demands inexorably concatenate through the economy into the natural resource base, producing tremendous pressure on the earth's biosphere.

One major category of impacts is, of course, the depletion of non-renewables including fossil fuels and minerals. A second group of impacts is the destruction, often irreversible, of the regenerative capacity of 'renewables' such as water, timber and gene pools. The third set of impacts is the disruption of biogeochemical cycles and global life support systems such as the stratospheric ozone shield and the greenhouse effect. These impacts are not small: the anthropogenic movement of material world-wide is, today, approaching in magnitude the natural, geological flows of material – a trend that is clearly untenable for long without major breakdowns of critical life support systems. They also foreclose many options for a decent and healthy life not only for future generations but even for a large part of humanity today.

The consumption patterns and production systems adopted by today's rich also produce large quantities of waste and pollution. Much of this is in the form of chemicals and toxic substances that are expensive to dispose of safely — and in many cases accumulate in dumps that will continue to endanger health for many generations to come. Even with the exemplary efforts of some industries over the past decade to adopt cleaner production methods, the emission of pollutants world-wide continues to grow rapidly.

The affluent in any country create other, more subtle and indirect, impacts too. By a combination of money muscle, political power and social supremacy, they regularly manage to appropriate the best and most productive lands — squeezing the original inhabitants further and further into marginal, and ecological fragile, areas such as forests, deserts and uplands. The 'reasons' for displacing them come in many forms: factories, dams, power stations, roads, bridges. Or just mechanised agriculture and plantations — always in the name of economic efficiency and social progress. Except that the poor, who keep having to pay the bulk of the costs in terms of personal loss, never seem to get any share of the wealth and progress created. They only get blamed for the ecological disasters they constantly find themselves squeezed into.

In fairness, it would be difficult to deny that the poor also create significant impacts on the resource base. The exigencies of survival and the lack of options available sometimes force them to undermine their own futures by using their resources in a non-sustainable way. In villages, fuelwood collection certainly contributes to the loss of trees and the creation of wastelands; excessive pumping of water has in many areas drawn down water tables to levels that are now uneconomic to use. In urban areas, slum dwellers contribute their share of pollution hazards and social disruption.

Nevertheless, the poor can never hope to compete with the affluent in the magnitude of environmental destruction they cause. Moreover, the distribution of impacts in the two cases is quite different: the rich can escape from the problems they cause, the poor cannot. In the one case the environmental costs are largely externalised, in the other they are borne by the people who cause them, however involuntarily.

## *Consumption patterns and population growth*

The current debate on environment and development, particularly at the international negotiating table, has thus become quite polarised. Some — primarily the affluent and most of them from the North — feel that population growth poses the greatest threat to planetary survival. Others — mainly the poor — claim that it is the consumption patterns of the rich that are the primary cause of environmental destruction. As in many such debates, there is some truth in both positions. Rapid population growth certainly places intolerable pressures on the resource base as does mindless material consumption, though there are, of course, differences in the precise nature of the impacts each produces. But what distinguishes this from many other debates is that the underlying causal factors and many of the solutions for both sets of problems lie largely in the hands of one side: the rich. They also have the means to solve these problems — though not necessarily the inclination to do so.

In a world, like ours, that has the resources to meet every individual's basic needs, it is intolerable that such needs are not met. But we do not need moral, ethical or ideological arguments to prove that extreme poverty or disparity is unacceptable. Eradication of poverty, at least of involuntary poverty, is as much an ecological imperative — a matter of self-interest, and possibly of survival, for everyone, rich or poor. Unless the pressure on our natural resources is urgently reduced the very basis of our economies will be irreversibly lost, a disaster from which no one will be able to escape.

The urgency to eradicate poverty is further heightened by the longer-term implications of every new baby that is born. Unless we quickly bring down human birth rates, which are highly correlated with the degree of poverty, population growth will certainly continue well into the second half of the twenty-first century before it levels off. Each additional person added will, of course, be entitled to the same standard of living as everyone else and this can only add further to the already high pressures on the life support systems of the planet. The best investment that the affluent can make today, purely as a matter of self-interest, is in measures that accelerate genuine, sustainable development in the third world and thus help speed up the demographic transition from high birth rates to replacement fertility.

The magnitude of material now being physically moved by industrial economies is rapidly approaching that of geologic flows. Such a trend clearly cannot continue for long without massive disruption of the natural processes on which life depends. Yet, the largest part of the current material and energy production is appropriated by far less than half the world's population. It would appear we have two basic choices. *Either* we accept a future that is even more unjust and inequitable than the world of today *or* we drastically cut the *per capita* use of materials and energy by adopting alternative lifestyles and reduce the material intensity of our production systems.

The Factor 10 Club has shown that material intensity in the industrialised North must be reduced by a factor of at least ten if we are to avoid massive ecological catastrophes. It has further concluded that it is technically possible to reduce material and energy use in the industrialised countries by an order of magnitude without loss in quality of life or access to 'the services' people have today.

At the same time, to prevent the 'rebound' effect of growing populations, the countries of the South will need to access sufficient material and energy resources to help accelerate their passage through the demographic transition. And they must do so NOW. This apparent paradox is resolved through the principle of 'convergence': everyone, and particularly over-consumers, must now reduce the material intensity of their lifestyles and under-consumers may continue to raise their access to resources until the two converge to an acceptable level that lies within the limits set by nature. This is probably the only short cut we have to a sustainable future for the globe as a whole.

### ***Production systems and human development***

Our concepts today of human development and what constitutes well-being are not the same as they were at the turn of the last millennium – or even at the beginning of the century. In a world dramatically shrunk by technological innovations in transportation, communication and information processing, the opportunities available to people to find fulfilment have exploded in terms of range and variety. And so have their expectations, embedded in such concepts as 'progress' and 'economic development'. Short of some unforeseen catastrophe, few societies will ever accept on their own to go back to the way people lived in earlier times.

In any case, one thing seems clear to most societies: economic progress is determined by the ability of a society to make investments — in infrastructure, in scientific research and technology development, in utilisation of resources and in the skills of the people. The ability of society to make investments depends on the surpluses and savings it generates. In a modern democracy, where feudal types of human exploitation are not permissible, such surpluses can only be generated by raising the productivity of workers. In a viable ecosystem, the productivity of resources must also be raised. Raising the productivity of labour and resources needs technology and enterprise.

Many contemporary economies have demonstrated how much 'progress' is possible by adopting an aggressive use of technology and enterprise. But their experience has also pointed to the need for careful selection of the types of technology and forms of enterprise, to avoid wholesale destruction of human, social and environmental values that are also important. It has become clear that how something is produced, where it is produced and for whom it is produced are issues as important as what is produced.

For the poorer half of the world's population, living mostly in the 'developing countries' exposure to technology and enterprise is more recent than for those who travelled this road earlier. While they start with the obvious handicap of limited means, however, they also have the relative advantage of being able to learn from the earlier experiences of others and to leapfrog over expensive intermediate stages.

Human development appears to be closely related to the degree of control people have over their lives and over the decisions that affect them. In today's monetised economy, such control is in considerable measure linked to the degree of financial autonomy a person has. And in a world that is rapidly adopting the work ethic, financial autonomy for the average person comes largely from the income one gets from one's job or livelihood. Work also offers other rewards such as status in society, self-esteem and a focus for one's life.

The modern economy would appear to be creating a world where cheap machines produce ever-cheaper products for other cheap machines to use. As a consequence, human beings have less and less to do. It is common to see more and more automation in the face of more and more unemployed people. With each day that passes, we have more and more products chasing less and less purchasing power. Today's labour displacing technologies and mechanistic economic structures can only lead to growing supply and stagnant demand — until, perhaps, we reach the catastrophic environmental transition when supplies collapse altogether and both human populations and their demands collapse with them.

Ever increasing consumption and ever more 'efficient' production systems also spell ever greater demands on the resources of nature. Under particular threat from this run-away consumption are those that are non-renewable or capable of being lost irreversibly — like minerals, life-support systems or biodiversity. Rapid growth of population, largely associated with poverty, has its own impacts on natural resources, particularly those that are classified as renewable — such as forests, rivers and soils. Analysis of production systems shows, again, that extremes of affluence and poverty inevitably lead not only to economic and social breakdown but also ecological and biospheric catastrophe.

### *The false promises of globalisation*

In a developing country, as in any other, a job is the most basic need of all, a means to generate income with which to meet the other basic needs. The third world needs to create some 70 million jobs each year if it is to accommodate the needs of all the new entrants into the job market plus the backlog of unemployed people within a reasonable time frame of, say, fifteen years. India alone needs to create 12 to 15 million jobs per year. Partly because of improvements in farm labour productivity, and partly because of the natural limits to agricultural expansion, no more than 25% of these can be in the agricultural sector. Off-farm industries, tertiary sector services and other activities must produce the remaining ten million jobs.

The capital investment needed to create one job in a modern industry is significant. In regions like North America, Europe and Japan the average cost of a making a new workplace is well over one million dollars. To compete in the global economy, even a country like India needs more than \$100,000 to create an industrial workplace. To start bringing the unemployment rate down, India would therefore need to invest, each year, some \$1,500 billion — 8 times its GNP — just in creating new workplaces. This simply cannot be done; it is not a coincidence that during the past decade during which the Indian economy has been progressively liberalised,

the rate of industrial job creation has also come down substantially. The country is currently creating not even 3 million jobs a year (out of the 10 million needed), steadily losing the race against unemployment. The answer to job creation for sustainable development clearly lies elsewhere.

‘Global competitiveness’, ‘comparative advantage’, ‘economies of scale’, ‘environmental externalities’ and other such shibboleths — the ultimate being the ‘free’ market — based on simplistic (and entirely unrealistic) assumptions are concepts of neo-classical economics that do not easily translate into the language of sustainability. In fact, they do not translate at all, since economists have been unable to recognise the issue of sustainability in the first place — presumably because it would complicate the mathematics of their elegant models.

The theories of global trade and comparative advantage have no meaning unless the full environmental and resource costs of transportation and are included in factor and product prices. Till today, such costs have been ignored, as have the social and human benefits of widespread employment. To complicate these calculations, barriers to trade in various guises today (under such pretexts as human rights, child labour, low wages, lack of environmental standards) distort international transactions to an extent that was not envisaged even in Mr. Ricardo’s rich, original framework.

The economies of scale depend directly on the technological, organisational and infrastructural choices available to a production unit. It is easy to show that with a small change in any of these choices, the economies of scale can be quickly turned into diseconomies of scale. Recessions in some of the industrialised countries have forced many large corporations to learn this lesson the hard way, a process Japanese and American companies these days often refer euphemistically to as ‘downsizing’.

Unfortunately, the assumptions underlying current economic theory — and the machinery of the modern marketplace that they naturally lead to — are not sufficiently solid to support the common platforms of human values on which societies must stand to benefit collectively and equitably. Growth, they have claimed, must come first, even at the expense of distributive injustice and human misery. Efficiency above equity. Machines over people. The rich before the poor.

### ***The limits to self-employment***

*Over the years, we have gradually learned that for any development process to be sustainable, it must be equitable, efficient, ecological — and empowering.*

The term empowerment, despite its impending nose-dive into the sea of meaningless jargon as it rapidly becomes the buzzword of the development and gender sets, is a valuable, highly integrative concept that brings together many of the desirable goals of social and economic development. It signifies activities that help the people who are most marginalised in society — particularly women, but also the poor and the handicapped — to gain a reasonable degree of control over the

decisions that affect their lives. A person becomes more empowered when he or she is able to participate effectively in family and community processes. To be empowered, one must have access to basic knowledge, health and social status. Successful routes to empowerment therefore include access to education, adequate nutrition and health care and information about one's rights.

Nevertheless, it is difficult to imagine that, in the increasingly materialised, commoditised, and monetised world of today, anyone can feel truly empowered without access to the income or status that for the poor comes only with a job. But, in the real world, jobs are usually created by capitalists more concerned with their own financial ambitions than with the welfare of their workers — creating conditions of exploitation that quickly undermine any 'empowerment' that the job might have led to in the first place.

It is basically this reasoning that has led to the widely held belief among development workers that 'self-employment' is the most effective route to genuine empowerment. Several initiatives in recent years have dramatically shown how much can be done by simply providing access to small amounts of (commercial but fairly priced) capital in getting women and other disempowered people back on their financial feet, thus enabling them to stand on their own legs in the community. Indeed, the success of such programmes as the Working Women's Forum (WWF) and the Self Employed Women's Association (SEWA) in India and the Grameen Bank and the Bangladesh Rural Action Committee (BRAC) in Bangladesh have led some actually to equate 'empowerment' with 'self-employment'.

Although some of these ventures have achieved outstanding results, they can only be limited in their impact in the long run unless the financial inputs are supplemented by a variety of other support systems. Genuine, durable development means that the structures of production and distribution must be transformed — though admittedly not in the mould of the North. This means that households and local economies must create surpluses to be able to accumulate savings and thus make investments that will in turn enable them to continue to improve their material well-being. It is not possible, simply with one's hands and without any amplifying tools, to do more than survive and subsist in the modern world.

Thus, in addition to the boat of financial capital, people need the engines of technology, management expertise and marketing skills to be able to sail towards a better future. And this means enterprise.

But entrepreneurship is not for everyone. An entrepreneur must have very special traits: to be able to mobilise resources, to manage people, money and machines, and above all, to take risks. Not everyone in society has these attributes. In fact, very few do. Most of us prefer the security — and sanity — of a steady job. Is it fair, then, to expect village (or even city) women — illiterate, vulnerable and without any safety nets to fall back on — to take risks that we ourselves are not prepared to?

To avoid this trap, we need to evolve new kinds of enterprises that will mobilise resources and create steady jobs for local people.

## ***Sustainable livelihoods***

*The central issue facing society, North and South, East or West, is the need to create sustainable livelihoods. Large numbers of sustainable livelihoods.*

Any simple solution proposed for a complex set of social and economic problems must inherently be suspect. Yet, if there is a One Point agenda for sustainable development, it surely has to be the large-scale introduction of sustainable livelihoods.

Sustainable livelihoods create goods and services that are widely needed in any community. They give dignity and self-esteem to the worker. They create purchasing power, and with it greater economic and social equity, especially for women and the underprivileged. And they do not destroy the environment.

In short, a sustainable livelihood is a remunerative, satisfying and meaningful job that enables each member of the community to help nurture and regenerate the resource base.

Sustainable livelihoods, and the human security they engender, underlie the one set of issues that is common to all nations and societies, at all stages of development. They provide a powerful synthesising, unifying concept that can bring the most disparate interests together to design more viable economic systems for the future in any country, rich or poor.

Economists often oppose any alternative approach with the objection that the primary need of poor countries is 'economic expansion', meaning that unless the growth rate goes up there will be no wealth to spread around. One cannot take exception to this view — only that the quickest pathway to such expansion lies in placing a heavy emphasis on sustainable livelihoods. While development economists debate whether GNP should grow at 7 percent or 8 percent per year, eradication of poverty within a reasonable time frame will in fact need growth rates in the double digit region. China has demonstrated that such a growth rate is not only possible, but that it can be sustained over long periods. And the only way to do this when a country has limited capital resources is to put everyone to work.

Clearly, a better mix of large, small, mini and micro industries is now needed. Given the continued failure of policies to address the needs of the small, mini and micro sectors, a proper balance will require greater encouragement and incentives to such industries. There are, of course, sectors for which the economies of scale favour large, mechanised production units. These probably include steel making, oil refining, petrochemicals and automobile manufacture. But there are many sectors where economies of scale are not relevant. Most industries producing basic goods for rural populations are commercially viable even at quite small scales. And because of the low capital requirements and short gestation periods, they can have high returns on investment – in some cases even double those for their larger counterparts.

By definition, sustainable livelihoods bind people to their communities and to their land. Not only do they thus have a positive impact on health, fertility reduction, migration and other demographic behaviour, but they also permit a far more effective use of resources for the benefit of all.

But without improved productivity and better management and marketing systems, they can never lead to the quantum shifts in lifestyle that people everywhere now desire. For this, the large-scale success of sustainable livelihoods will depend on our ability to design:

- ♦ sustainable technologies;
- ♦ sustainable enterprises;
- ♦ sustainable economies;
- ♦ sustainable institutions of governance.

### ***Sustainable technology***

With the evolution of societal perceptions, aspirations and conditions, and with recent developments in science, design, new materials and production processes, technological innovation is becoming increasingly important for solving the problems of poverty. New products and technologies, many with significant, positive social and environmental spin-offs, are now possible for mass distribution as a result of the application of sophisticated scientific and technological knowledge.

*Technology that serves the long term goals of development is defined as 'sustainable technology'.*

Sustainable technology springs from endogenous creativity, in response to local needs and possibilities:

- ♦ It is relevant and ready for use by the common people, and aims directly to improve the quality of their lives.
- ♦ It derives maximum leverage from the local cultural environment by drawing upon the existing managerial and technical skills and providing the basis for extending them.
- ♦ It uses the physical potential of an area, and maintains harmony between people and nature.

Sustainable technology is the offspring of the marriage between modern science and traditional knowledge: a method, a process, a design, a device or a product which will open up new possibilities and potentials for improving the quality of life. It requires frameworks for innovation and delivery very different from those that exist today, either in the global economy or in the village.

Throughout the Third World, there is an evident and pervasive need among both rural and urban poor for a whole variety of technologies ranging from cooking stoves and lamps to gasifiers and windmills.

\* *Why have these needs not led to a more widespread demand?*

Moreover, tens if not hundreds of designs are available for each such technology, scattered in laboratories, workshops and archives throughout the world.

\* *Why has the existing technical capacity not led to supply?*

The answers to these two questions are complex, and interlinked. A combination of economic, social, political and cultural — not to mention scientific, technical and institutional — factors have greatly inhibited the supply and demand for sustainable technology. They apply, in varying mixes, to all rural technologies. The more important among these factors are:

- ♦ capital/operational costs;
- ♦ efficiency of the technology;
- ♦ evidence of improvement over traditional methods;
- ♦ ease of operation and ergonomic design;
- ♦ availability of spare parts and ancillaries;
- ♦ ease of repair and maintenance;
- ♦ problems of production;
- ♦ adaptation to local conditions;
- ♦ existence of marketing organisations;
- ♦ availability of information;
- ♦ promotion, training and extension services;
- ♦ management skills and social organisation;
- ♦ social, class, political and cultural attitudes.

Above all, the ‘appropriateness’ of a technology must be measured by how well it satisfies the needs of the end client and with what success it takes advantage of the opportunities and constraints of the production and marketing processes. Contrary to past development understanding, sustainable technologies need to compete in the marketplace. To design technologies that can reconcile the conflicting requirements of the market, nature and people requires systems for innovation and delivery comparable in sophistication with those of the most successful multinationals.

Many technologies for such enterprises already exist. So does the demand for their products. What prevents the poor from setting up such enterprises is their lack of access to these technologies and their inability to put together the financial capital required. What prevents them, once set up, from becoming profitable is the absence of entrepreneurial and management skills, infrastructure and marketing channels. Much more public investment is needed to provide these, but probably not nearly as much as is being made today for the benefit of large, urban industries.

Governments, private sector and universities have shown little interest in the innovation of appropriate technologies. Most of the work in this area has been done by independent-sector organisations. Development Alternatives is one that has had

some success with a wide range of technologies. Examples of Development Alternatives' products include building materials, water pumping and water purification systems, recycling of waste materials, handmade paper, energy from renewable fuels and local infrastructure such as check dams.

### *Sustainable enterprises*

Sustainable livelihoods using sustainable technologies will require sustainable enterprises. Sustainable enterprises produce goods and services that are needed to better the lives of the great majority of people, including those who have been left outside the mainstream economy. At the same time, being environment-friendly, they minimise waste, use renewables and residues and generally conserve resources.

To break out of the present poverty-pollution-population trap, we need to create new kinds of corporate institutions that integrate considerations not only of economic efficiency, but also environmental soundness and social equity into business decisions. Neither the current policies for national development, nor the activities of the corporate sector are geared to achieve this kind of goal.

The way needed lies far outside the imagination of the planners and decision-makers of most countries. Much of it lies in small scale, decentralised industries of a new kind. Such (mini-or micro-) industries use good technology to raise productivity and local resources to make products and services that satisfy the needs of local people without destroying the environment. To be viable, they will need to evolve substantially modified market mechanisms that can take account of full-cost pricing and social impacts.

Traditionally, corporate response to social issues has largely been driven by fear — the fear of jail, of markets lost or of financial liability. This must change, and the broader social good has to be internalised in decision making at a level no less than the bottom line of cash profit. To bring about this change, the sustainable enterprise will have to strike a radically new synthesis across sectors and institutions, either by redesigning itself or through partnerships with other entities that have complementary strengths.

Taking the complete cycle from biomass generation to end-product use, entire jobs can be created at costs of a few hundred dollars, the environment can be enriched at no cost at all, and the basic needs of whole communities can be met through the additional purchasing power created. Hand-made, recycled paper manufacture demonstrates the possibilities in this direction. In comparison with a large-scale paper mill, a small paper enterprise has many environmental, social and even economic advantages:

Cost of creating a workplace	~	1/10
Capital investment per Kg of paper	~	1/3
Energy consumption per Kg of paper	~	1/4
Water consumption per Kg of paper	~	1/2
Local economy component per kg of paper	~	4

If the full economic and environmental costs of the processes and resources used in manufacturing and delivering products is taken into account, and no 'perverse' subsidies are allowed for energy, transportation, financial and other services, small scale production can become quite competitive.

All that the small enterprise needs to beat the large corporation at its own game is better access than it has today to technology, finance (not necessarily cheaper finance), and marketing channels. The primary role of the public sector in facilitating these is to provide basic infrastructure for financing, communication and transportation.

*The myth of the 'economies of scale' that justifies the bulk of national investment going into urban infrastructure and large industries is as hollow as it is deeply embedded in a bankrupt theory of development economics.*

As evidence of this, 'small and medium enterprises' already form the backbone of the national economy. For example, in India, they account for more than 60 percent of the industrial production in India, and for more than 65 percent of industrial exports. More important, they employ more than 70 percent of the industrial workforce. When adjusted for the vast subsidies and infrastructure that large scale industry can take advantage of, their real contribution to the economy is even higher.

Sustainable enterprises are usually quite small. They have between one and 100 employees, with an average of around 20. They are generally informal and flexible and quite labour intensive. They may properly be called 'mini enterprises', since they bridge the gap between what are usually referred to as micro enterprises on the one hand and small scale industries on the other. However, being small, dispersed and largely unregulated, mini enterprises can often have environmental and social impacts that are fairly negative. To overcome this, they need access to better technologies as well as other supports.

The design and operation of rural enterprises is a complex, still unfamiliar business. They have to master the technology-environment-finance-marketing linkages, while keeping their overhead costs low. They must do this without access to highly qualified engineers, management specialists, marketing experts — or to friendly bankers or market infrastructure, either for buying raw materials or for selling products.

An interesting solution to these seemingly insuperable obstacles lies in building franchised networks of small, private enterprises capable of growing and processing biomass to manufacture products for both the urban and local markets. To be successful, the franchise arrangement will have to provide high technological and marketing inputs and access to capital. Technology and Action for Rural Advancement (TARA), the commercial wing of Development Alternatives actively franchises mini enterprises based on appropriate, sustainable technologies.

### *Sustainable economies*

The possibility of improving equity, efficiency, ecological harmony and self-reliance — and thus of achieving sustainable development - rests on how quickly and effectively innovations can be introduced into the economy. Given the size, spread and poverty of the rural population, which must now comprise the primary target of any effort aimed at sustainable development, it becomes immediately clear that any viable approach must be:

- ♦ highly replicable;
- ♦ locally accessible;
- ♦ self-financing.

These criteria imply that the strategies of development must now turn many of the earlier paradigms upside down: technologies must be economically viable, institutions must be decentralised, and the environment's capacity to supply resources must be conserved. To achieve these attributes, we will need whole sets of new concepts: participation, networks, appropriate technologies, the diseconomies of scale, environmental and social appraisal of projects, rapid resource surveys, corporate research and development, and non-governmental action.

Yet development of sorts has taken place in some parts of the world, and management approaches that have succeeded can yield valuable ideas which, appropriately generalised and adapted, can also be made to work in the rural business environment. Among these, the most important lessons for effective organisation of rural technology efforts come from:

- ♦ organisation of innovation in high technology industries, such as the manufacturers of electronics components;
- ♦ effective decentralisation of production and marketing through franchising, such as the fast food chains;
- ♦ the management of complex systems and projects, such as space programmes.

The urban markets of any developing country have so far provided highly attractive business opportunities to entrepreneurs and have prevented them from fully appreciating the possibilities offered by the rural areas. However, the huge and untapped potential for profits in lower income 'peripheral' or village markets will soon necessitate and produce a more systematic corporate approach to generating both supply and demand through innovative technologies and marketing systems.

Several mechanisms are now evolving to help enterprises overcome the barriers to obtaining technology, to using effective transport and communication facilities and to introducing modern management methods. However, as the table shows, credit continues to be the key missing link. Currently, finance is fairly easily available in some developing countries to 'small and medium enterprises' that have capital requirements of \$25,000 or more. Also increasingly available is finance to micro industries that need capital of less than \$250.

**Table**

Size of Enterprise (Investment in plant and machinery)	Potential for Livelihoods (Investment per Job)	Transformation	Reach	Impact	Annual Loans In India (estimated)	ROI & Recovery
Micro Enterprises (\$20 to \$250)	Highest (\$20 to \$200)	Survival to Subsistence	Household, Local Neighb'd, Village	Family Self-Sufficiency	> \$1 Billion (from Formal Sector)	High & Very Good
Mini Enterprises (\$250 to \$25K)	Very High (\$200 to \$2K)	Subsistence to Security (for workers) and Surplus (for owners)	Local Neighb'd Community Village, Town	Local Self-Reliance	< \$10 Million	Very High & Excellent
Small Enterprises (\$25K to \$250K)	High (\$2K to \$20K)	Surplus to Savings and Productive Assets	Town, Region, OEM*	Resilient Industrial base	\$2.5 Billion	High & Good
Medium Enterprises (\$250K to \$2.5M)	Medium (\$10K to \$50K)	Assets to Major Capital Investment	Region, OEM, Exports	Quality, Standardised products	\$7 Billion	Medium & Good
Large Enterprises (Above \$2.5M)	Low (\$25K to \$250K)	Capital Investments To Private Wealth	Buyer of OEM, National market, Exports	Global Competitiveness	> \$70 Billion	Medium to Low & Good

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**Note :** K = Thousand (1,000) ; M = Million (1,000,000)

\* OEM = Original Equipment Manufacturer

Unfortunately, this is not so for mini enterprises that fall in the range between these two categories, with capital investment of \$250 to \$25,000. It is precisely this sector that optimises the twin objectives of sustainable livelihoods and returns on investment. They are small enough to be responsive to the local economy yet large enough to get high productivity through technologies and skilled workers. At the same time, they are big enough to take advantage of public infrastructure, credit facilities, technology support and marketing channels provided these are available. There are numerous technology based mini industries in this range that could be set up today and run profitably.

Such enterprises can create, directly, several workplaces, each at a capital investment of \$200 to \$1,000. In addition, they indirectly lead to the creation of

several more jobs, upstream or downstream, usually at an even lower capital cost. Such workplaces, in the village or small town, yield incomes for workers whose purchasing power is comparable to, if not better than, those created at a hundred times the cost in large urban industries. At the same time, they permit very high returns on investment, sometimes with payback periods of less than a year.

The potential clientele for mini credit, accompanied by proper technology, marketing and policy supports is very large, certainly in the millions. Empirical studies by the Government of India, the World Bank and others show that among these potential clients, a significant percentage has high levels of credit worthiness. Carefully designed lending programmes can therefore be both financially profitable and socially worthwhile.

The paradox of our economy is that there is virtually no source of funding today that can actually deliver adequate financial credit in this intermediate range (which might properly be termed 'mini credit') where it has greatest potential impact, both on the generation of employment and on the national economy.

*These initiatives will have to come from the non-government sector and, more widely, the 'Independent Sector', hopefully with direct encouragement and support from Government.*

### ***Sustainable governance***

For development to be sustainable, people must acquire a sense of ownership and responsibility for their resources — economic, social and natural. And they must be able to oversee and correct the actions of their elected representatives on a continuing basis. Such a sense of ownership can in the long run come only from actual ownership — enshrined in institutions of local governance involving the entire adult population. Such bodies should collect revenue from local resources, decide on local priorities and authorise higher level institutions to co-ordinate activities that involve other jurisdictions or skills and knowledge not available at the local level. And for any such citizen oversight to be effective, it needs certain basic prerequisites — transparency, accurate information and the right to be consulted in all matters that affect the citizen.

In the minds of many people, democracy is synonymous with elections, held periodically at the national or state level. By themselves, however, elections are not sufficient — or even the most important features of democratic systems. The success of Jeffersonian democracy lies largely in the existence of strong institutions of local governance, a hawk-eyed media and a flourishing civil society, all of which America has, painstakingly, built up and nurtured over the past two hundred years.

The institutions of the marketplace, which are both the products and the prime supports of this democracy, also underpin much of its success. But in their present, capitalist form, they are also the cause of its greatest failure — extraordinarily profligate and wasteful consumption patterns on the one hand, and the consequent, unprecedented inequity and poverty on the other, which now threaten the very survival of the planet.

As the work of People First, the advocacy wing of Development Alternatives, continues to show, a true democracy, of the type that can support sustainable development and generate sustainable livelihoods, is actually an inversion of today's highly centralized, top-down systems of government. People First aims to bring about, in India, a bottom up form of democracy that assigns the primary decision making responsibility to the local community — the entire adult population a village or city neighbourhood. The local community will retain the portion of the tax money collected in its jurisdictions to implement these decisions. These bodies and the ones above them devolve successively upwards only those decisions and activities that cannot be handled at a given level of governance, together with the residual funds to implement these.

### **The Author**

Ashok Khosla is the President of Development Alternatives in New Delhi. His primary professional concerns include appropriate technology, environmental management and institutions for effective governance. He taught physics at Harvard University and has held senior posts in the Government of India and in UNEP. He is Chairman of WETV, the global access television channel. He has been on the boards of IUCN, WWF, the Earth Council, Stockholm Environment Institute, IISD, the Centre for Our Common Future and EXPO 2000, and is a Vice President of the Club of Rome.