

# Setting the Ground for Sustainable Agriculture

by Kona Lasker

EVER since evolution began, beings have been exploiting land and other natural resources for a survival. A great variety of agricultural systems has existed throughout the world. Nomadic, shifting cultivation, irrigated cropping, horticulture, or some combination of these, are just a few examples.

While some of these agricultural systems have prevailed, others that have sustained human populations for centuries, have become obsolete as conditions have changed. Of the more important of these changes, is the rapid increase in population, and the introduction of modern technology. Population pressure has been accelerating fast; implying simultaneously, a higher demand for agricultural products, and less land available per person and for cultivation. While this has rendered systems like shifting cultivation no longer viable, it has called for the intensification of other agricultural systems, so that enough food can be produced without bringing new land under cultivation.

But for how long will this be possible? By the end of this decade, during the production process, is replaced, so as to not harm the ecological balance.

The world agricultural base — already old and stressed — is being subject to over-exploitation, deforestation, and soil erosion. These factors are leading to its rapid depletion. Increased use of artificial inputs are also causing environmental problems. There is great concern for the earth's threatened ecology. Any further intensification of such agricultural practices would worsen the situation, and prove to be unsustainable in the long run.

We therefore find ourselves in a moment, where agriculture is being asked to change its habits, and to adopt more sustainable agricultural methods of production. By this, is meant adopting agricultural practices that have "the ability to maintain and effort (yield) at a given level or intensity." This dictionary definition of "sustainability" however, offers a rather narrow interpretation, for the concept of sustainable agriculture is a vast one.

One of the principle determinants of the sustainability of agricultural systems lies in the over-exploitation of resources. Yet, paradoxically, this same exploitation is of crucial importance for the survival of the world's 5 billion people. 1 billion of these already do not have enough to eat, and there will be another billion more mouths to feed by the year 2000. This pressing need to increase food production has reached a plateau in global efforts to expand cultivable land and enhance yields per hectare.

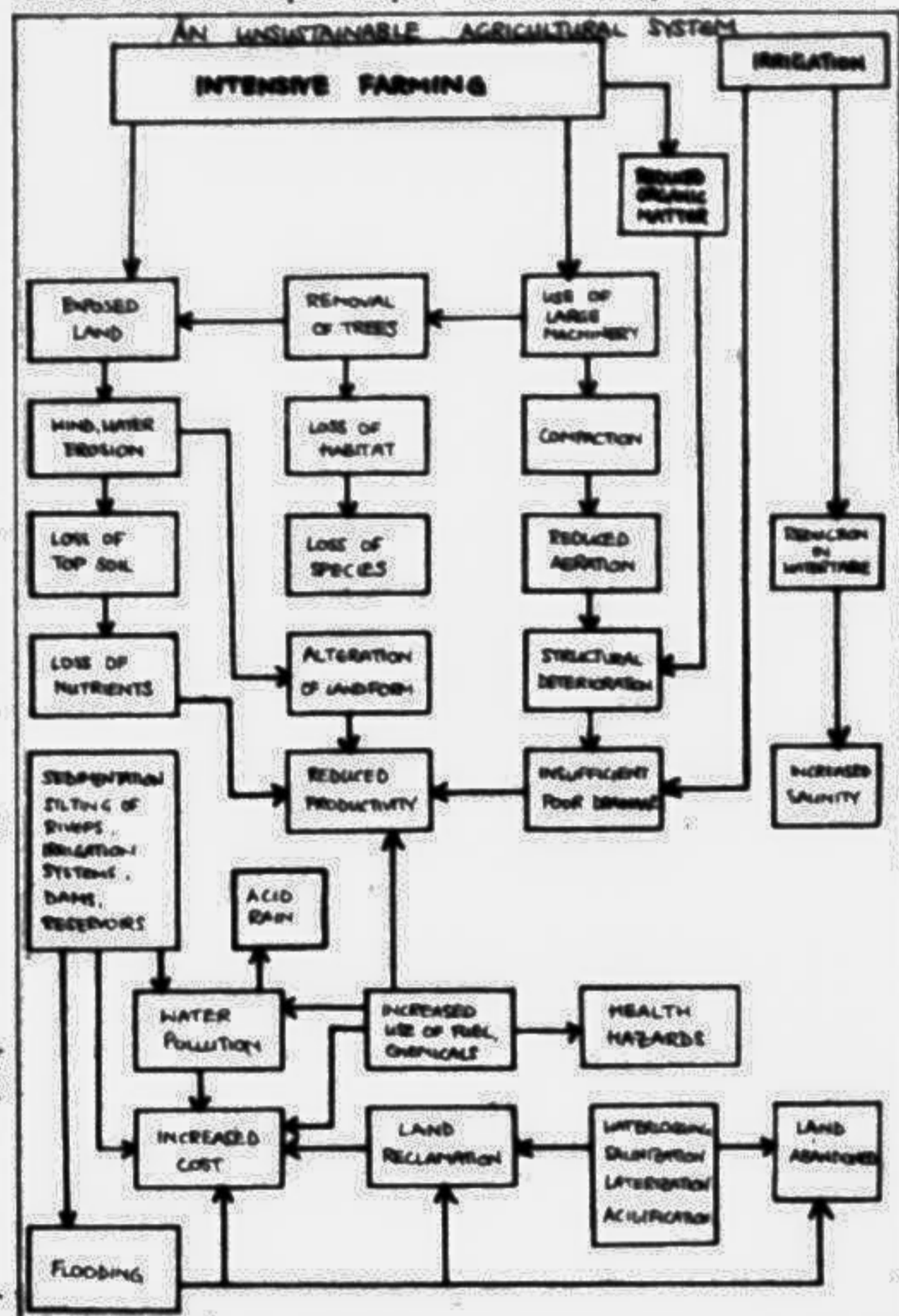
For an agricultural system to be sustainable in the long run, several conditions must be satisfied. The first priority is that of meeting the basic nutritional needs of present and future generations. This must be, in terms of both quality and quantity. A balanced production system, involving both crops and livestock will be needed to enhance productivity. Moreover, meeting the needs of rapidly increasing populations will represent a great challenge in increasing yields per area, whilst ensuring sustainability.

Secondly, the productive capacity of the natural resource base should be maintained, and where possible enhanced. The FAO states that this implies

that the "regenerative capacity of renewable resources be maintained, without disrupting the functioning of basic ecological cycles and natural balances or causing contamination of the environment." From this condition itself, follows number of important biological considerations. Careful management of resources is a vital element if benefits are to be achieved in both the short run and the long run. One of the most important resources in ensuring sustainability is soil. This must not be degraded in quality through the loss of its solid structure, or through the build up of salts, selenium or other toxic elements. Nor must topsoil depth

(cheap inputs, high prices, good returns) they still normally not be motivated enough to switch to such a system. Economic viability is not only measured in terms of direct farm produce or yields, but also in terms of the cost-effectiveness of sustainable practices. Thus costs should not be great, and can be spread over a variety of agronomic and ecological benefits. Having said that, it may be noted, however, that agriculture will always be sustained economically in some fashion, because everyone wishes to continue eating. But how, and at what costs, remains uncertain.

The fourth and final criteria for an agricultural system to become sustainable is that it should satisfy social expectations.



be significantly reduced by erosion, thereby reducing water-holding capacity.

Available water supplies must be managed such that crop needs are satisfied. Any excess should be removed through drainage, or otherwise kept from inundating fields. It is estimated that in rainfed areas destruction of soil structure and water pollution will lead to the loss of 544 million hectares of cropland. Ecological management of agricultural systems will require the development of effective long term pest control and yield enhancers. Improved, environmentally-friendly methods for disease and parasite control will be important for sustaining animal production. As the majority of the methods will invariably be of chemical substance, care must be taken to prevent them from accumulating into toxic wastes, as this will pollute the environment and affect agricultural production.

The third condition for a sustainable agricultural system is that besides being ecologically sound, it must be economically viable — in both the short and long term. In other words, it must return an acceptable level of profits to the producers. Unless producers are given sufficient economic incentives

and be compatible with cultural norms. Besides economic and managerial costs, the transition to sustainable systems may incur social costs as well. Sustainability requires modification in current practices — but also in current thinking. The society has an important role to play in ensuring that there systems are sustainable. They must be willing to contribute to the long term continuity; and be prepared to change some of their habits. But a system that is too demanding in this respect can threaten the entire social system, including its agriculture. Therefore, it should be socially and culturally just, where numbers of society will have rights to land use, adequate capital market opportunities, and may participate in decision-making.

If all the world's agricultural systems could prove itself to be sustainable in the long run, by satisfying then four criteria, then the environment and the natural resources — that Mother Nature so generously endowed upon us, could be conserved.

The writer is a final year student of BSc Agricultural Economics at the University of Reading, UK.

# Neither Predestined nor Inevitable

by Rashed Mahmud Titumir

A disabled person has to face a lot of difficulties in both physical and emotional term. But the worst one is the tradition that disability is inevitable. It is predestined.

ONE tenth of the world's people are disabled. Indeed, the figures are so alarming that we can hardly grasp them.

Faced with this writer of figures will we sit idle or just try to explain the reality instead of seeking a pragmatic solution?

"Yet this figure could be cut drastically," saying so, a blind man of the UK came up with the idea of a strategy for the prevention of disability to the United Nations General Assembly in 1980, which eventually led to the founding of IMPACT, an international initiative mobilising resources to prevent disability through practical, low-cost health delivery transforming the life of millions in 1983.

The man who founded the organization — Sir John Wilson, Chairman of IMPACT Foundation, UK was in the capital, accompanied by his wife Lady Jean Wilson to discuss the programmes of currently created IMPACT Foundation Bangladesh, awaiting the approval from the Bureau of NGO Affairs, with the government and donor agencies.

Born in 1919, Sir John Wilson CBE, at the age of 12, was blinded by an accident at school. After being re-educated in Braille, he graduated in Law and Sociology at St. Catherine's College of the Oxford University.

During his extremely active career, Sir John travelled extensively in forming organisations for the blind in some 30 Commonwealth countries of Asia, Africa, Europe and the Americas and formulated the Asian Plan for the Blind in 1963 and the African plan in 1966.

Following the inception of the IMPACT programme, sponsored by the UNDP, WHO and UNICEF and his appointment as Senior Consultant began another phase of his life, which still continues, of international travel to develop action for the prevention of causes

of disability which are estimated to affect 450 million people in the world.

In connection with the work, Sir John Wilson paid a six-day visit in Bangladesh beginning from September 30 to October 5, with a packed schedule.

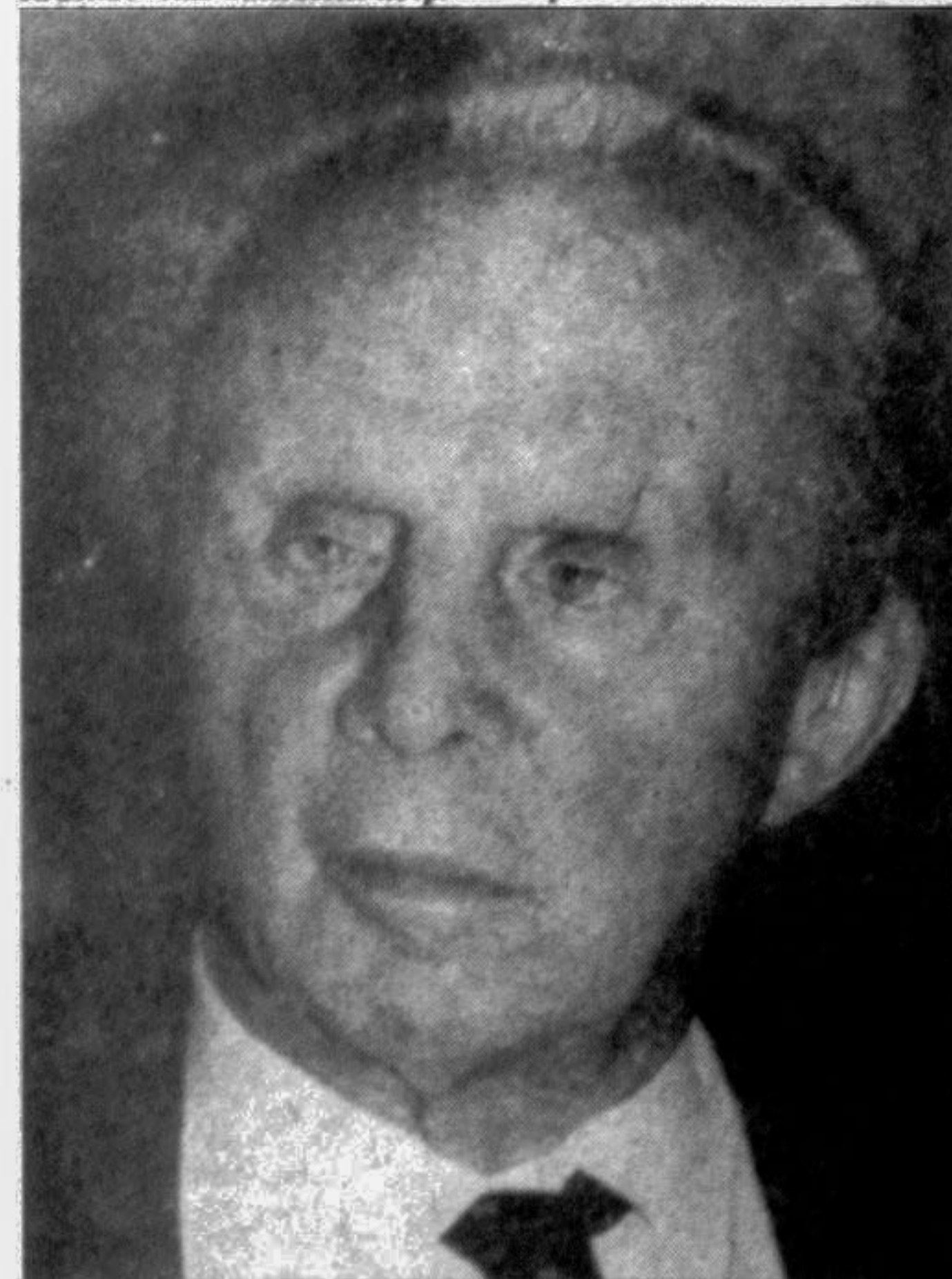
Sir John Wilson gave The Daily Star his only exclusive interview, finding time from his busy schedule. The interview follows:

The Daily Star (DS): Would you please introduce the IMPACT Foundation, in the wake of the inception of your affiliate in Bangladesh?

Sir John Wilson (JW): The IMPACT Foundation was launched by the United Nations, ten years ago. The aim is to prevent causes of disability which affects a tenth of human race. Here in Bangladesh, it is estimated that from eight million to 12 million people are disabled. We believe it will be possible in ten to twenty years to reduce that to one-third. In addition to the UN mechanism, the IMPACT Programme sets up a series of foundations. One of this has just started in Bangladesh with Shafiq Ahmed Chowdhury as its Chairman. We will handle a number of projects here in Bangladesh.

Two projects, proposed by the Board of Trustees of the Bangladesh IMPACT Foundation have been drafted as a contribution towards the national programme for the prevention of disability in Bangladesh. The first of these, involving action in five sub-districts (thana), aims, over five years, at achieving at least a 30 per cent reduction in the level of childhood and maternal disability. The second project is the establishment of a "river hospital",

fully equipped to undertake basic surgery for the restoration of sight and hearing, to enable some physically handicapped children to walk again and to promote and work with the primary health structure. This waterborne hospital, built in Bangladesh, will be designed to travel along the country's 3000 kilometers of waterways and will incorporate experience gained by IMPACT in the spectacularly successful "Life Line Express" in India.



These projects are proposed on national and potentially international models, which are expected to justify external support from international and bilateral agencies.

DS: In your view what is the worst difficulty a disabled has to face with?

JW: A disabled person has to face a lot of difficulties in both physical and emotional term. But the worst one is the tradition that disability is inevitable. It is predestined.

DS: Don't you think that our prevailing social system is discriminatory to the disabled?

JW: Well, it is just not in Bangladesh. It is all over the world. Disabled people are the poorest people in the community. There is a lot of discrimination everywhere, in England, in USA, in Bangladesh. It's a world problem. We have to break down this barrier. It is part of our programme.

DS: Do you consider that poverty and disability are the twin brothers?

JW: Yes, the main cause of disability is poverty and ignorance and beyond that malnutrition, disease and deprivation — all these come together. We have to fight them. We are glad to establish the programme now. We will be working with the governments, NGOs.

DS: Would you please share with our readers your Bangladesh experience?

JW: I have been coming in Bangladesh on many occasions, about four times. We have done some wonderful programmes on blindness, immunisation, orthopedics. We now want to bring them together on a single track of avoidable disability.

I met the President, talked to the ministers, they are anxiously waiting to do something about it.

DS: Thank you for giving us time.

JW: Thank you.

THE real energy crisis is being faced by the developing world, the three-quarters of mankind where the average consumption of energy per capita is at the level which was achieved in most of the western nations a century ago. Such low energy usage is accompanied by inadequate diets, poor health care, a low degree of industrialization and too often, a general socio-economic malaise.

Developed nations, a quarter of mankind, is consuming four fifths of the global use of fossil fuels and primary electricity and enjoying a quality of life unsurpassed in history. But in the Third World as a result of energy starvation, there exists a very low consumption of fossil fuels and electricity. The majority of people (around 90 per cent) in these developing countries are living in small villages or small towns. Their energy needs are hardly extravagant and they could be easily satisfied with a small scale — labour-intensive approach, which might be environmentally sound too.

The sources of energy in Bangladesh can be broadly divided into two groups.

(1) Non commercial biomass fuels which include woodfuel, agricultural residues and animal dung.

(2) Commercial fuels which include coal, peat petroleum products, natural gas and hydro-electricity.

Like other poor countries in Bangladesh, the commercial energy supplements are also used almost exclusively by the wealthiest 20 per cent of the people. In Bangladesh with a per capita income US\$ 210 per annum, nearly 80 per cent of the working people of the country are dependent on agricultural activities for their livelihood. Per capita total energy consumption in Bangladesh is

# Energy for the Poor

by Naseer Ahmed

around 190 kg of coal equivalent.

Non-commercial biomass fuels play an important role in meeting the total energy need of the country. Of the estimated total final energy consumption in 1990, about 73 per cent was supplied only by biomass fuels.

The distribution of urban and rural households regarding fuel use for cooking and lighting in 1990 are as follows:

Urban House Holds	
For cooking:	Percent
Natural gas	10.77
Kerosene	19.00
LPG (insignificant & included in Kerosene)	70.23
Biomass fuels	
Total	100%
For Lighting:	Percent
Electricity	23.53
Kerosene	76.47
Total	100%
Rural House Holds	
For cooking:	Percent
Biomass fuels	100%
For Lighting:	Percent
Electricity	6.55
Kerosene	93.45
Total	100%

(d) Biomass fuels grown in rural areas are used both in rural and urban households.

Energy is a vital input to meet the subsistence requirements of the total population irrespective of rich and poor. Total population should be the beneficiaries of the national development programmes.

But the development programmes of the energy sector

by-product. This could be used economically & efficiently through establishing small scale bio-gas plants in our rural areas like Indian villages and the residue left can even be used as fertilizer.

\* Services to the poor for alleviating poverty: This would mean providing energy at controlled price (may be by giving kerosene coupons) to get minimum amount of kerosene for lighting). Metered gas supply may also be provided to operate community kitchens to be used for cooking food or for running small mobile business (e.g. selling tea, snacks etc.). Also energy based income generating activities, may be geared up through giving priority in supplying energy to small industries, which are employed by poor people and located in poorly stricken areas.

It is estimated that biomass fuels will supply 65 per cent of total primary energy by 1995. It is inferred that by that time it would require about 7,82,000 tons of additional kerosene to substitute 3.87 million tons of deficit biomass fuels. Since augmentation of biomass fuels will not be so fast a process as envisaged, conservation of biomass fuels through the use of improved cook stoves, generation of electricity from solar sources, more access to natural gas, coal, etc. are some of the alternative approaches to meet the energy shortage in rural areas. In the absence of deliberate and drastic policy decisions and more use of fuel wood would result in accelerated depletion of plant resources causing massive deforestation, which is not at all desirable.

Along with the poverty alleviation programmes of the government this issue also needs immediate attention.

The writer is an independent researcher



Biomass fuel may supply 65 per cent of total need.

are unfortunately addressed only to the development distribution and consumption of commercial energy resources. An analysis of various policies and programmes of the energy sector indicates that these are being guided by the following objectives:

— To meet the energy demand of other sectors.

— To achieve accelerated growth of the respective sub-sectors of energy.

These objectives fail to consider the energy need of the groups who can not create demand. Market oriented energy delivery systems are not too

basic energy need of the have nots. In this regard following immediate measures are essential:

\* Introduction of improved biomass fuel and lighting devices (eg stoves, kilns, furnaces kups/ets) on priority basis.

\* Massive afforestation through organising local population (particularly poor people and road sides and homestead areas. This will offer opportunities for increasing biomass and generating employment.

\* Massive cattle development and cattle rearing programme, which will yield large volumes of cowdung as a

# Greens that Really are Good for You

Julian Gearing writes from Amper Phimai, Thailand

MILLIONS of mothers around the world have long been lecturing their children that eating vegetables is good for them. Green leafy vegetables can provide important vitamins for a growing child and for pregnant mothers too.

Yet many children in developing countries continue to suffer malnourishment, illness and even death due to the lack of the right vitamins. Although globally enough food is produced to feed everyone, many do not receive their share for environmental, political, socio-cultural or economic reasons.

The figures are shocking. Statistics from the United Nations Children's Fund (Unicef), show that over 2,000 million children are suffering from micro-nutrient malnutrition, mostly a lack of vitamin A, iron and iodine.

Vitamin A is normally found in green, yellow and orange vegetables, and in animal products such as eggs, milk and liver. Lack of this particular vitamin alone affects nearly 60 million children in the developing world.

Thailand is an example of a country which has made progress in improving the nutritional status of its population over the last few decades. There has been a significant reduction in the prevalence of

protein-energy malnutrition in pre-school children.

According to Unicef, combined mild, moderate and severe malnutrition in the country dropped from 51 per cent in 1982 to 17 per cent in 1991.

But lack of sufficient vitamin intake continues to affect millions of young Thai children. And this despite the fact that there often appears to be an abundance of vegetables in the markets, with the classic image of the Thai food continuing plenty of fresh, lightly-cooked vegetables.

The problem for Thai children, it would appear, is not so much vegetable availability or money to pay for food, though these factors can play a part. According to Unicef, it is very much a question of education. Lack of knowledge, often combined with negative "Old wives tales" among mothers primarily in rural areas, often means they fail to add needed vegetables to their child's dinner.

In the battle to encourage all mothers to give their children a balanced diet in Thailand, a very unremarkable looking plant is playing a key role.

Partly due to the efforts of Unicef, the humble ivy gourd has been rediscovered. Going by

the Latin name *coccinia indica*, and called by the Thais *tam lueng*, this dark green leafy vegetable can sometimes be found cultivated on vegetable patches and for sale on market stalls.

Public knowledge about the benefits of eating this vegetable is mixed. "People in this area know about *tam lueng*," said Sunee Ruangchan, a housewife in the market town of Phimai in

northeast Thailand. "I grow it, my neighbour grows it, it's cheap to buy in the market, and you can often find it growing wild."

Yet it would appear that many women are not so well informed and believe old folk tales about not eating certain foods. In the poorer parts of Thailand, in other areas of the northeast, and in the north, lack of knowledge about the benefits of eating ivy gourd or some other green vegetables is one of the reasons for the high incidence of micro-nutrient malnutrition in pre-school and school-age children.

Until recently vitamin A deficiency affected between 20 and 27 per cent of pre-school and school age children in the northeast, according to Unicef. Worse, some children are reported to have gone blind or had partial sight loss which has been attributed to the lack of this vitamin.

But thanks to the efforts of Unicef and the Institute of Nutrition at Mahidol University, the situation is changing for the better. In an attempt to tackle the problem, the Mahidol University conducted a USAID-sponsored project entitled the "Social Marketing of Vitamin A-

Rich Foods" in Srisaket province in the northeast. Two ideas were investigated.

Firstly, that community-wide education would improve people's knowledge, attitudes and practices concerning the consumption of vitamin A-rich foods.

Secondly, the adoption of new food consumption behaviour would lead to a decline in vitamin A deficiency.

This research found that young children, and pregnant and lactating mothers, ate a high carbohydrate diet which tended to be low in vitamin A, fat and protein. But what they also found was that foods rich in vitamin A, fat and oil were actually available year-round and were part of the local cuisine consumed by the rest of the adult population.

With these findings in mind, a programme was set in motion to get the message through that "greens are good for you," as one field worker described it.

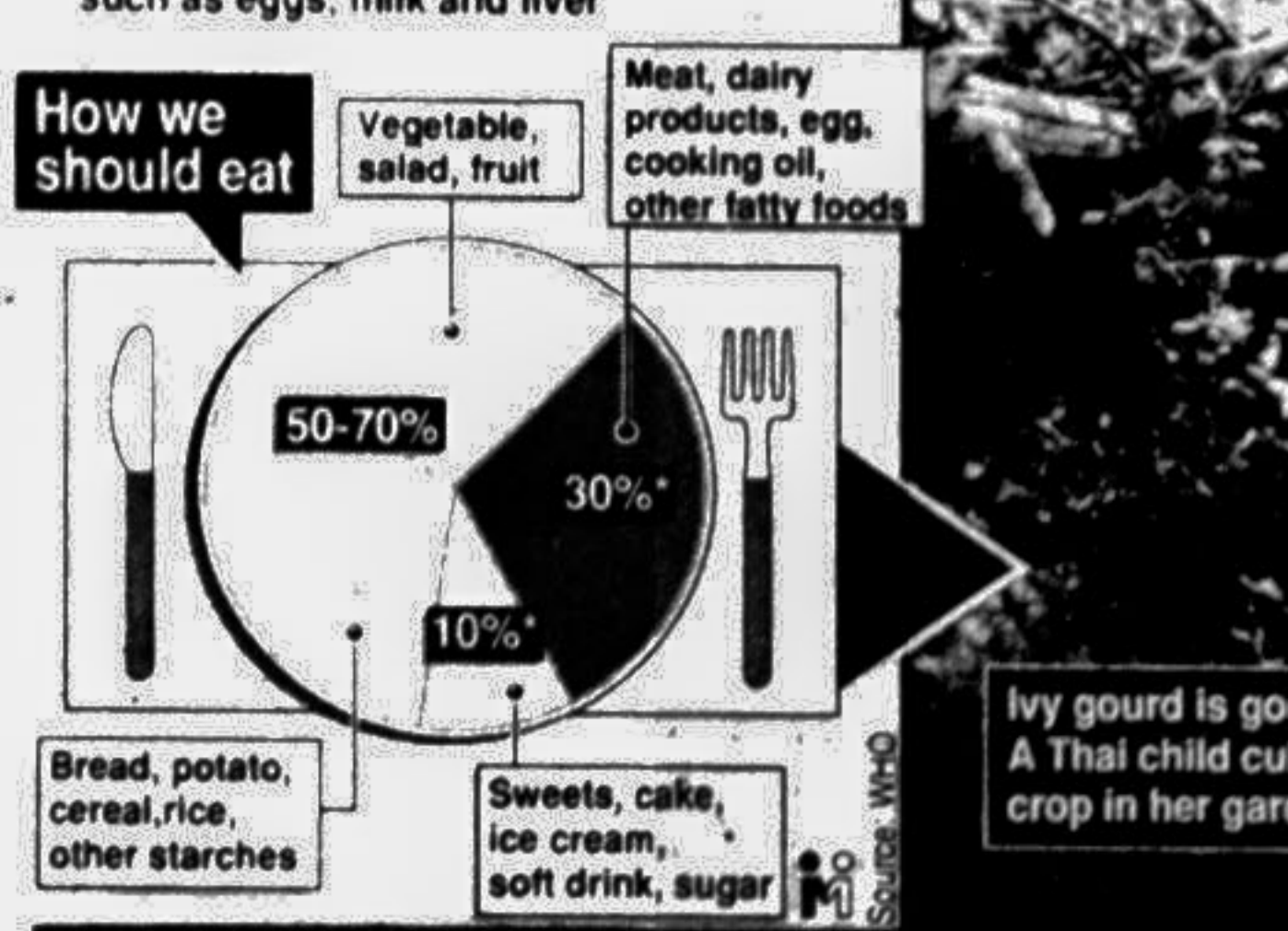
Three years ago, the UN-sponsored World Summit for Children set a target to end mass malnutrition among children by the end of the decade. In Thailand the humble ivy gourd is proving to be one small but important weapon in that campaign.

— Gemrit News

Julian Gearing is a journalist based in Bangkok covering political and social issues in Asia.

## New crop for a green diet

- 2,000 million children suffer from micronutrient malnutrition, mostly lacking vitamin A, iron and iodine
- Vitamin A is found in green, yellow and orange vegetables, also in animal products such as eggs, milk and liver



Ivy gourd is good for you. A Thai child cultivates the crop in her garden in Khorat