

Feature

Development

ASIAN RICE ECONOMY

Recent Progress and Emerging Trends

by Mahabub Hossain and Alice Laborte

THE 1960s, was a decade of despair regarding the world's ability to cope with the food population balance, particularly in tropical conditions. The cultivation frontier was closing in most Asian countries, while the population growth rates had accelerated due to rapidly declining mortality rates. International organizations and concerned professionals were busy organizing seminars and conferences to raise awareness regarding the ensuring food crisis and mobilize global resources to tackle the problem on an emergency basis. In a famous book titled 'Time of Famines' published in 1967, Paddock Brothers (an agronomist and foreign service diplomat) predicted, 'Ten years from now parts of the underdeveloped world will be suffering from famines. In fifteen years...

The world price of rice, adjusted for inflation, has fallen by about 40 per cent compared to the level of 1960s. The policy makers are now concerned how to provide incentives to farmers to sustain the growth of rice production in view of the low and declining prices.

Owing to the dramatic achievements in the world rice economy, a mood of complacency has set different circles regarding the world's ability to cope with the food population equation. The donor agencies are diverting resources for...

the changing pattern of the Asian rice economy — supply, demand, trade and prices — to identify broadly the factors contributing to the changes. We then draw a picture of the emerging issues confronting the rice sector in the medium and long run.

Importance of Rice in National Economy

Rice production and consumption is often associated with low incomes and poverty. Of the 23 countries in the world that produce more than one million tons of rice, almost half have a per capita income of less than US\$500. These are countries categorized by the World Bank as least developed. Rice is one of their cheapest sources of food energy and their main source of protein. As incomes increase, people demand relatively high quality food, and resources are shifted from the production of rice to other food with high income elasticity of demand. The importance of rice in national economy further dwindles as agricultures share in national income declines with faster growth of non-farm incomes.

The contribution of rice is inversely related with the level of per capita income of the country. In most of the countries with per capita income of US\$500 or less, rice accounts for one-fifth to one-third of the gross domestic product, and one-third to one-half of the agricultural value added. China and India are exceptions, but in the major rice growing regions (central and southern China and Eastern India) the positions would be similar. In Japan, Korea and Malaysia, where income levels are high, rice is only a marginal sector of the economy, but it occupies an important position in the foodgrain production sector. In the humid and subhumid tropics, rice is the primary source of human energy. In Bangladesh, Myanmar, Thailand, Lao, Cambodia, Vietnam, and Indonesia rice provides 50 to 80 per cent

the calorie consumed by the people. Even in Japan, where rice accounts for less than 0.1 per cent of the GDP, nearly one-fourth of the human energy intake comes from rice. In most Asian countries, rice is still the prime mover of the food and economic conditions, particularly in rural areas.

Trends in Rice Production

Prior to 1960s, the growth of rice production was slow and originated mostly from the expansion of cultivated land

(Barker and Herdt 1985). The yield growth was mainly limited to East Asian countries, where irrigation infrastructure was already developed and the population pressure on limited land resources induced more intensive land cultivation and the development and spread of fertilizer responsive high yielding Japonica rice varieties. In South and Southeast Asia, rice yield was low and stagnant, and the increased demand for rice was met primarily by expanding the cultivated area. Rice research facilities were inadequate and irrigation and drainage facilities were poorly developed throughout much of the region. The lack of fertilizer responsive indica varieties and relatively poor market infrastructure contributed to application of chemical fertilizers at low levels.

Dramatic changes in the rice production scene has however taken place throughout Asia since the mid-1960s with the introduction of IR-8, a short-stem modern indica variety that was highly fertilizer responsive and could be grown throughout the year. Scientists have incorporated many new traits in modern rice varieties that followed IR-8 — greater pest resistance, shorter crop duration and improved grain quality (IRRI 1985). Farmers get two to three times higher yields from these varieties than from their traditional cultivars. Yields continued to increase as farmers gradually replaced traditional varieties by the modern ones. Over the last quarter century, production increased at 3.0 per cent per year, enough to meet the population and income growth induced demand for rice in these countries. Nearly three-fifths of that growth came from the increase in crop yields.

The changing pattern of the sources of growth in rice production across Asian regions in the early (1960-75) and the late (1975-90) green revolution period was almost similar in the two sub-periods. There was

however a substantial change in the source of growth. In the early period, one third of the growth originated from an increase in cropped land, while in the later period almost all of it came from the increase in crop yield. In the East Asia, the high rate of growth in yields (over 3.0 per cent per year) allowed diversion of land to non-rice crops in the later period when the growth of income and the changes in food habits had a dampening effect on the demand for rice. South Asia had a slower growth in crop yield in

lation throughout Asia, except in Japan, Korean Republic, Malaysia and Pakistan. In the first three countries rice consumption per capita has been declining because the changing food consumption patterns at high levels of income, and in Pakistan rice is only a minor staple food. Rice yields increased faster than population in East Asia, and kept balance with population growth in Southeast Asia. In South Asia, however, the long-term growth in yield had been slower than population growth, and additional land had to be allocated to rice production to maintain the demand-supply balance.

There is an inverse relationship between the growth in rice yield and the increase in area under rice cultivation.

The results of relationship between the expansion of rice



Transplanting of rice

the famines will be catastrophic, and revolutions and social turmoil and economic upheavals will sweep areas of Asia, Africa and Latin America.

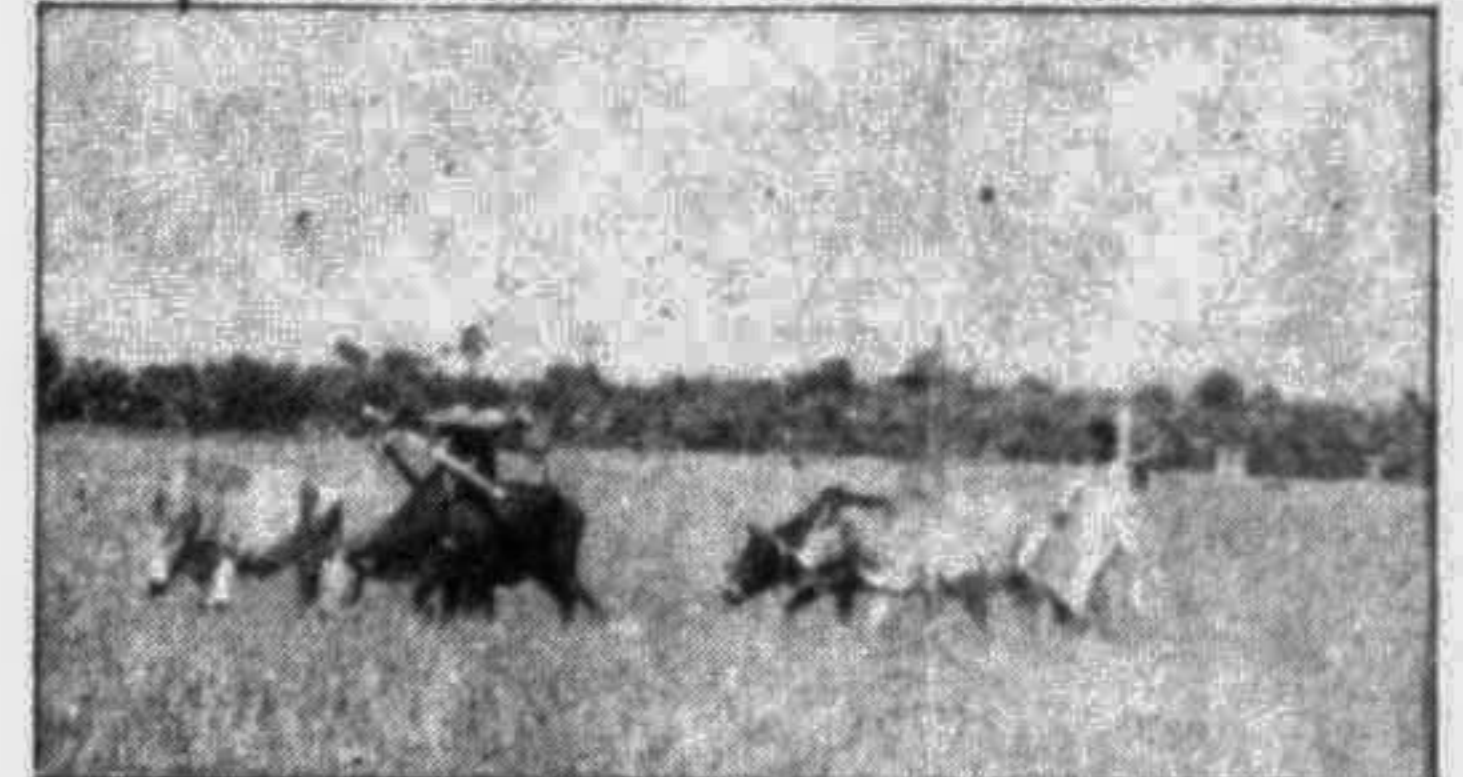
The history of the green revolution in Asia over the last quarter century gives the impression that the above apprehension was unfounded. The population of already densely settled rice growing Asian countries has grown by another 70 per cent, but due to rapid spread of higher yielding modern rice varieties, Asian rice production has almost doubled since 1966. The average per capita rice consumption today is about 25 per cent higher than it was at that time. Many traditional rice importing countries have achieved self-sufficiency in rice production and some are struggling to deal with the issue of rice surpluses.

search from increasing productivity to conserving the natural resource base, and reducing development aid for financing investment on irrigation, which has been the main vehicle for the diffusion of modern varieties. The policy makers in developing countries do not feel the urgency to support the growth of foodgrain production any further. This is reflected in withdrawal of subsidies from agricultural inputs, reduced investment on water resource development, agricultural research and extension, and adoption of policies to crop diversification which discriminate against foodgrain production (David and Rosegrant 1991).

This paper will argue that the race to stay ahead of severe food crisis is not yet over in many parts of Asia. To support this argument we first analyze



Rice harvest in Thailand (late autumn)



Greenish paddy field

the earlier period when the countries in the region could not take full advantage of the modern varieties due to underdeveloped irrigation and drainage facilities. They nearly caught up their East and Southeast Asia neighbors in the 1975-90 period by facilitating adoption of modern varieties through large scale public and private sector investment for expansion of irrigation facilities and by providing subsidies on modern agricultural inputs and increasing the supply of agricultural credit. In South Asia, rice yield accelerated to 2.6 per cent per year during 1975-90 period, compared to only 1.1 per cent in the 1960-75 period. Throughout Asia, the growth in rice yield accelerated in the later period due to faster diffusion of modern varieties.

The production growth surpassed the increased in popu-

area and increase in rice yield show that the higher the level of income, the less is the urge to extend cultivation under rice, presumably because of shifting demand to non-rice foods and greater capacity of the country to meet the demand through imports. Also, the higher the growth in rice yield, the less was the expansion in rice area. The result suggests that without impressive growth in rice productivity, the low-income Asian countries would have been forced to extend cultivation to marginal lands, thus aggravating the problem of sustainability of the natural resource base.

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South-South Cooperation in Gandhian Perspective

by Nirmala Reddy

GANDHI'S famous spinning wheel has become a universally recognized image, powerfully symbolizing the spirit and tenets of the movement that he founded. 'Not mass production, but production by the masses' was his philosophy. He envisaged a society largely composed of small, self-sufficient communities, meeting their basic needs through the use of labour-intensive rather than capital-intensive methods. The traditional old implements, he wrote, 'the plough, the spinning wheel,

have made our vision and our welfare... India's salvation consists in unlearning what she has learned in the last 50 years... You cannot build non-violence on factory civilization; but you can build it on self-contained villages. How valid, we may ask, is Gandhi's vision today? Can it be applied in the present harsh and uncertain global economic

environment? And is it applicable to South-South cooperation?

While Gandhi has always been widely admired for his non-violence and his leading role in realizing India's independence, his economic ideas have not always had a commensurate following. Jawaharlal Nehru, the first Prime Minister of independent India, went against Gandhian doctrine by launching an industrial programme based on large enterprises and mass production. At that time, and for many years afterwards, it seemed that Gandhi's small-scale vision was out of step with the modern world. Now, however, it is Nehru's 'think big' philosophy that seems out of step, while Gandhi's ideas are once again coming into their own.

One of the early re-discoverers of those ideas was the German-born economist E.F. Schumacher, author of the influential book 'Small is Beautiful'. Schumacher came under the influence of some of India's leading Gandhians while participating in a series of seminars. In 1961, he began to articulate his early ideas on intermediate technology. 'The only hope', he declared, 'lies in a broadly based decentralized crusade to support and improve the productive efforts of the people as they are struggling for their livelihoods now. Find out what they are doing and help them do it better. Study their needs and help them help themselves.'

In line with Gandhian thinking, Schumacher questioned the value of mass production based on technological advances, on both economic and social grounds. He saw the limitations of material wealth and began to realize how the 'economics of materialism' would impact on the poor in rural communities. So he focused on the importance of developing local expertise and self-reliance in advancing rural development. He emphasized that external aid should always be combined with 'a deep respect for the indigenous culture of those that are to be helped... It must be based on a clear understanding that the present situation of mankind demands the evolution of a non-violent way of political and economic life.'

While Schumacher's concept of appropriate technology ultimately went well beyond Gandhi's 'plough and spinning wheel' thinking, nevertheless her remained true to the Gandhian belief that human values must determine our choice of technology... and not vice versa. When Schumacher died in 1977 his movement was still a relatively small one, but today his ideas, along with those of Gandhi, are beginning

to look more relevant than ever (see also Rusan Lalkaka's article in this issue).

Several factors have contributed to this change in the climate of opinion. One is the threat to the global environment that has become increasingly apparent in recent years. Partly as a result of last year's Earth

Witness UNDP's much publicized Human Development Report, published annually since 1990. To quote the 1991 report: 'Development has to be woven around people, not people around development. It has to be development of the people, by the people, for the people.' These are words that Gandhi himself might have used.

Development, therefore, can no longer be seen simply as a process of material advancement imposed on countries from outside. It has to be determined by what the people themselves perceive as their social and economic priorities. This is also an argument for South-South cooperation, since developing countries can more effectively promote human development if they work together. Although Gandhi did not live to see the Buenos Aires Plan of Action, he would po

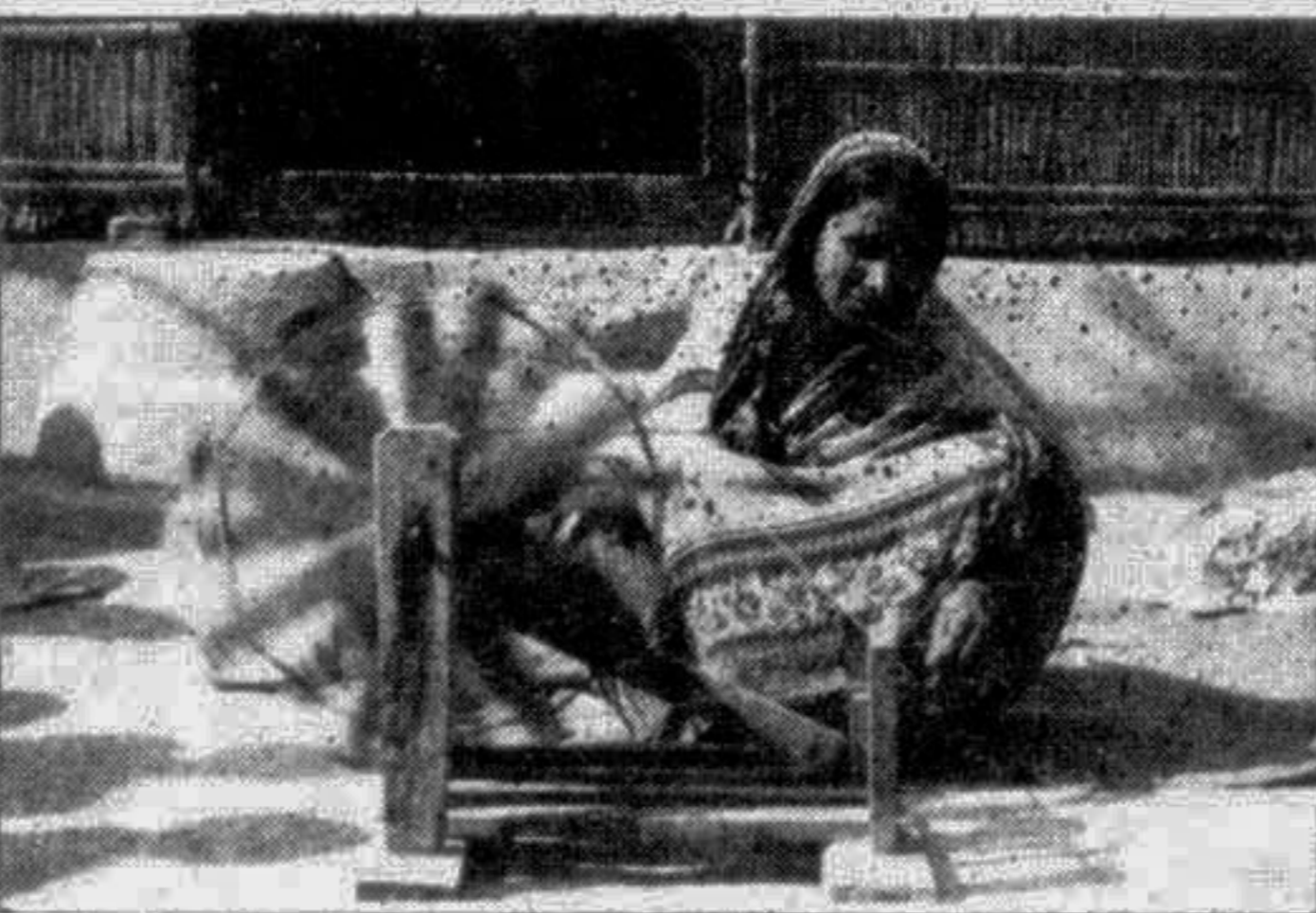


Nirmala Reddy argues that Gandhi's ideas on self-sufficiency and appropriate technology are gaining a renewed validity for the developing world. The author is an India rural development expert, currently working as a consultant to the United Nations Development Programme (UNDP) and other UN agencies

Summit in Rio de Janeiro, the term 'sustainable development' has become fashionable in both North and South. It is apparent that decades of industrialization and mass production have signally failed to produce sustainable development. Rather, as

doubt have approved of many of its aims.

Today, therefore, Gandhi's ideas are more alive and well than ever, not least in India. One of his leading advocates there is J.S. Juneja, chairman of the National Small Industries



In the Gandhian spirit: A Grameen Bank borrower in Bangladesh spinning cotton yarn.

Gandhi himself predicted: they have led to environmental disaster and large-scale human misery. Other solutions have to be found for supplying human needs without plundering the planet, and often those turn out to be the old solutions, developed by rural communities over the centuries.

Another concept that has taken hold in recent years is that of 'human development'.

country's industrial production. The NSIC supports the sector in a variety of ways, including training, supply of machinery and assistance in the marketing of products. One of the most important aspects of its work is helping other developing countries to build up their small industries.

'Through the expansion of small enterprises,' Mr Juneja says, 'we are promoting employment rural development and the eradication of poverty. We want other developing countries to learn from our experience, and we have so far carried out more than 200 small industry projects abroad. Whenever we set up a project, we transfer the plant and send our technicians to train the local people.'

Although the NSIC generally deals with more complex machinery than Gandhi's spinning wheel, the Gandhian principle of appropriate technology is fundamental to the organization's work. The experience of the NSIC offers many examples of appropriate technology that has been successfully transferred through South-South cooperation. One such example is the machine developed by NSIC for making fuel briquettes out of rice waste. This is now being manufactured and used in countries such as Ethiopia and Indonesia. It is made of simple components and can be assembled and maintained cheaply and without sophisticated engineering skills.

An outstanding example of appropriate technology in the area of finance is the Grameen Bank of Bangladesh, founded by the Bangladeshi economist Mohammad Yunus on the premise that 'to deny people access to financial resources is to deny them a basic human right.'

This has achieved dramatic success as a supplier of credit to poor people in rural areas, demanding neither collateral nor guarantor. A cornerstone of the Grameen system is the requirement that borrowers from themselves into mutual support groups with one member designated as the leader.

The members provide mutual support and act as a peer pressure group to ensure loans are properly utilized and repayments made promptly. In 1983 the Grameen became a bank in its own right with support from the Central Bank of Bangladesh, the International Fund for Agricultural Development, the Ford Foundation and bilateral donors. Through South-South cooperation, the Grameen system has been adopted in many other developing countries, in-

cluding Bolivia, Burkina Faso, Colombia, Guinea, Indonesia, Kenya, Malaysia, Mali, Malawi, Nepal, Pakistan, Peru, Philippines, Sri Lanka and Zambia. Gandhi would certainly have approved of this excellent way of providing credit for the rural poor.

To return to the question posed at the beginning of this article — how valid is Gandhi's

vision today? If that vision has a future, it is probably a modified version of it rather than the pure Gandhian notion of 'one person, one tool.' The spirit of the Gandhian movement will live on in ways that the Mahatma himself might not have envisaged. One of the most important things that Gandhi has taught us is that technology is for people and not people for technology. The present age is ripe for this message, and it is to be hoped that South-South cooperation will help to spread it in the developing world.



Development does not happen by itself. Certainly human development does not come about without deliberate effort to achieve it. Every human being may want it, even crave for it, but it takes more than just the motivation and drive of individuals. They cannot achieve it on their own and they have to join hands and minds collectively in order to make significant progress. It needs social institutions to maintain what is achieved and to make the process continue over time. Pathways towards human development differ from place to place and over time, and the learning process regarding effective courses of action is far from completed. There is no standard prescription, although there is a large body of experience which can give some guidance. Taking account of a society's own history and noting the experience of others, every society must decide on its own course. The institutional framework for human development is therefore unique in each case and will have its own dynamics. There are few prescriptions with long-lasting and universal validity.

Human Development in Bangladesh, UNDP



Despite the impressive gains, the development challenges facing Bangladesh remain formidable. Poverty is pervasive and many Bangladeshis face hunger and deprivation. Per capita income was estimated to be US \$210 in 1990. The proportion of the population that cannot afford a diet providing a minimum of 2122 calories per day fell only slightly from 52 per cent in 1985-86 to 47 per cent in 1988-89. More disturbingly, the incidence of extreme poverty has risen. The proportion of the extremely poor (those unable to afford a daily intake of 1805 calories) has risen from 22 per cent in 1985-86 to 27 per cent in 1988-89. Health and education outcomes are very poor. Life expectancy at birth in Bangladesh was 52 years in 1990, as against an average of 62 for low-income countries; adult female literacy, at less than 25 per cent, compares poorly with the average of 48 per cent for low-income countries.

Bangladesh Implementing Structural Reform, World Bank.