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□ Second, the definition of the main problem areas where international co-operation is necessary and likely to be successful. Apart from questions of military co-operation, these cover North-South relations, energy and raw materials problems, international trade policy, structural change in industry and the co-ordination of cyclical and monetary policy.

□ Third, a minimum consensus has to be reached concerning guidelines for action. For example, agreement should be reached that national strategies should be so designed that they do not result in burden-shifting from one country to another. Energy policy and structural policy for industry are two areas in

which this principle has been extensively ignored in the past.

□ Fourth and last, the institutional consequences have to be drawn at both national and international level. National governments must reflect on how to co-ordinate and reconcile national and international policy. So far as international organisations are concerned, it is important constantly to review their areas of activity and their structure in the light of new problems. Lastly, it seems important at both levels to orient short-term programmes more intensively than has hitherto been the case towards long-term concerns and in general to ensure greater consideration of increasing global interdependence.

NUTRITION

Agriculture: Toward the Year 2000

Major Results of the FAO-Report

by Heinrich von Loesch, Rome*

When the World Food Conference of 1974 demanded the eradication of world hunger within the brief time span of ten years, experts and laymen alike were surprised. The target seemed too ambitious, and it can be safely expected that it will not be achieved. A study has now been submitted by FAO to its 20th Plenary Conference session which – without proposing a new target date – attempts to prove the feasibility of greatly reducing world hunger before the advent of the 21st century.

The declaration of the World Food Conference of 1974 was a spontaneous and noble gesture which did not offer a well-designed, comprehensive and realistic strategy for attaining this target. FAO's report "Agriculture: Toward 2000"¹ embodies quite the opposite approach to the global problem. Innovative in its methodology but cautious in its judgment, FAO has assessed what progress in the field of food, agriculture and trade could reasonably be achieved to the year 2000 if an effort is undertaken to speed up

development. The study arrives at the conclusion that a growth rate of gross agricultural production in the poor countries close to 4.0 % – seen against the background of a 2.6 - 2.8 % growth rate during the period from the early sixties to the present – could be achieved and it would greatly contribute to get closer to the objective as described by FAO's Director-General, Edouard Saouma: "The World could free itself from the scourge of hunger largely by substantial advances in food production in developing countries; yet, it cannot all be done within the next five or ten years. What is needed is a sustained effort to the end of the century; there is no new major technology that can be relied upon; there are no easy shortcuts."

*Food and Agriculture Organization of the United Nations (FAO). – The views expressed in this article are those of the author and do not necessarily reflect the official position of FAO.

¹ FAO : C 79/24 July 1979.

The study measures the forest by examining the trees. Global conclusions were reached combining new projections of future demand and supply of major agricultural commodities, as well as international trade and food aid, for each of 90 developing countries and the main region of the developed world. For the purpose of illustrating the differing impact of a complacent laissez-faire attitude and a strong concerted effort, this study analyses two alternative development paths.

A "trend" scenario projects what could happen over the next two decades if development continues to follow patterns of the recent past while a second, "normative", scenario attempts to trace out a more desirable path of faster growth for which governments of the world would have to implement a package of strong policies to improve agricultural performance and restructure their economies for a New International Economic Order.

Sombre Background

The trend scenario does certainly not describe the worst possible outcome of events, yet assuming only modest improvements in diets, it projects rapidly declining self-sufficiency in cereals of the 90 developing countries studied. Cereal deficits of the net cereal importer countries (83 out of 90) to be met by imports or food aid would increase from around 50 mn tons in the mid-seventies to 115 mn tons by 1990 and a staggering 175 mn tons by 2000. The deficit in meat production would increase tenfold. The total agricultural trade deficit of the 90 developing countries would soar from a surplus of around \$12,000 mn to a net deficit of close to \$ 30,000 mn by 2000 (in 1975 dollars). If past trends continue to prevail, as assumed by this scenario, the report concludes that "all in all, the results paint a depressing picture. Agriculture would fail, in these circumstances, to make any worthwhile contribution to widely accepted national and international growth and welfare objectives. The major cause is the inadequacy of food and agricultural production".

In view of the huge cereal deficits which this scenario projects, even the moderate growth of food demand per capita to be expected from higher incomes might not be fully satisfied because of scarcity and rising prices with the result that the corresponding improvement in nutrition would also not materialize. A major reason for this disappointing course of development is, of course, the expected increase in population, which FAO throughout its calculations has assumed to follow the official "medium variant" of the UN population, although slightly modified in the light of latest data.

The Normative Scenario

Seen against this sombre background, the normative scenario paints a rather brighter picture. This scenario embodies patterns of economic growth which would help to significantly improve living standards of most people in poor countries and to arrest their increasing dependence for food on imports from developed countries. The scenario, therefore, examines the feasibility of, and requirements for, a distinct improvement in the performance of agriculture in developing countries. Balanced emphasis is put on both increasing domestic food supplies and on developing agricultural exports of the poor countries.

The scenario represents, in other words, an assumption of accelerated overall economic growth and a drive toward improving the degree of food self-sufficiency, or at least checking any tendency of its reduction, but with allowance for sizeable export development, which in turn would require important accommodations in the agricultural import policies of developed countries. This set of assumptions and targets broadly corresponds to the philosophy and objectives of a New International Economic Order and falls within the likely range of growth targets in the new international development strategy of the UN for the Third Development Decade, the 1980s. The report "Agriculture: Toward 2000" represents in this respect FAO's input to the formulation of the new strategy.

Most of the 250 pages of "Agriculture: Toward 2000" are devoted to discussing the targets of the normative

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scenario and the conditions and policies related to their attainment. Major aspects of employment, nutrition, world trade, food aid and external assistance are also discussed. The study will also prove useful to national economic and agricultural planners, since it provides a globally consistent perspective of world agriculture.

Need for Stimulating Farm Production

The normative or main scenario of the study puts strong emphasis on the need for stimulating agricultural production in developing countries. Increasing demand for agricultural produce, particularly the food demand, together with remunerative producer prices for the farmers are essential components in the drive towards accelerated agricultural development. "The poor and underprivileged must be able to increase their incomes, or must be otherwise enabled to translate their basic food requirements into effective demand", says the Director-General of FAO in his introduction to the report: "The productivity of the rural poor themselves, small farmers and landless labourers, must be raised and they must contribute a large part of the increased output."

The growth of effective demand partly presupposes a corresponding growth rate of national income. This also implies that assumptions have to be made about the growth of the non-agricultural sector which — under the conditions of a sector study like "Agriculture: Toward 2000" — has been dealt with as an external variable oriented toward development targets which are likely to be adopted by the international community in the context of the new international development strategy in the 1980s.

Another factor determining demand is government action to raise the incomes of underprivileged and undernourished sections of the population including through income re-distribution. Government policies to hold down consumer prices, particularly of food, should, however, not interfere with the need to grant price incentives to farmers and to improve income levels of an expanding agricultural population, the report states.

Given the required growth of demand and the necessary incentives, the question arises as to where and how the additional production required could actually be obtained. Expanding the land area under cultivation offers part of the potential required, mainly in some developing regions such as Latin America and Africa whereas in others, such as the Near and Far East, the prospects for area expansion are very

limited. Increasing yields and stepping up cropping intensity must thus provide most of the additional production.

Expanding irrigation together with better drainage and improving existing irrigation facilities constitutes one of the most promising possibilities for more intensive land use. Water management, improved seeds, more fertilizer application, plant protection and power inputs are other essential elements of the strategy for improving agriculture. The ratio of input to output value in the agriculture of the poor countries would have to increase considerably in order to step up production growth. This change requires incentive prices which make intensification of agriculture worthwhile for the farmer. Considerable increases in the working capital of farmers would be needed to finance the growing use of inputs. But this represents only a fraction of the additional investment necessary to expand agriculture along the envisaged growth path.

Investment Requirements

The study contains a detailed assessment of investment requirements under a broader-than-usual definition. Instead of dealing with investments for crop and livestock production only, FAO's definition also includes depreciation charges for existing capital plus major investments for the support of agriculture, such as transport, storage, marketing, credit and the first stage of processing. Under this wider definition, total gross annual investment requirements in the agriculture of developing countries are estimated to be \$ 52,000 mn in 1980 and to rise to \$ 107,000 mn by 2000. The primary agricultural sector component of these estimates is \$ 35,000 and 70,000 mn, respectively.

Regionally, the highest levels of cumulative investment needed per hectare of land or per head of farming population are expected to be required in Latin America; the lowest figures are indicated for Africa. The Near East shows both investment ratios in the medium range whereas high cumulative investments per unit of land but a low ratio per caput in the Far East reflect land scarcity and the need for intensification.

Most of the funds would, of course, have to come from private capital formation of the farmers themselves, the remainder from government sources. A considerable part of the investments would, as in the past, require foreign exchange expenditure which would heavily tax the balances of payments of most of these countries. In fact, already in the mid-seventies, the net export earnings of agriculture in developing

countries were not enough to cover the combined gross foreign exchange requirements of agricultural investment and inputs. "This situation would prevail in the future even in the face of greatly improved net trade earnings", the study says. The gap between these requirements and the net agricultural trade earnings would, however, grow only modestly from about \$ 6,000 mn in the mid-seventies to around \$ 10,000 mn by 2000 due to favourable development of the net trade balance in the scenario. This relatively favourable picture is due to two factors: investment requirements considered in these calculations exclude the components for transport and processing, and secondly, it is assumed that the estimated foreign exchange share of inputs would decline from around 33 % in 1975 to 20 % by 2000.

Call for Increased Aid

In practical terms, however, the investment problem seems to be more thorny than the overall figures suggest. In many regions, the report says, the recent emphasis on agricultural investment "has barely matched the rate of physical depreciation of irrigation works, soil erosion and related capital investments, quite apart from the need for additional net investment". "Much more is needed in the 1980s and 1990s to catch up on past neglect of both domestic and external investment and to bring about higher growth in this sector for balanced development." The report therefore calls for a sharp increase in aid commitments, particularly through the early 1980s, to overcome past neglect and to provide the basis for future rapid development, particularly in the poorest countries. The study confirms an estimate of the World Food Council that annual investments in agriculture of \$ 8,300 mn would be required between 1975 and 1980, and projects requirements rising to about \$ 13,000 mn a year by 1990 and \$ 17,000 mn by the year 2000. Moreover assistance requirements might rise even more strongly if the developing countries themselves turn out to be unable to finance a growing share of their foreign exchange requirements for agriculture. The terms of foreign aid would also need to become more generous. The share of concessional lending would have to rise more quickly than total aid, namely from 67 % in 1976 to 85 % in 2000. This would reflect the growing emphasis on the poorest countries as the share of assistance in funding investment gradually declines when growth in the advanced developing countries becomes more self-supporting. More predictable, continuous and assured aid commitments, the report says, would help to increase the impact and "cost-effectiveness" of assistance.

Lack of ability on the part of developing countries to procure the necessary foreign exchange could be caused by an unsatisfactory development of agricultural trade. "Total export availabilities", the measure of the agricultural trade potential of the 90 developing countries analyzed in the study have increased sluggishly in the past at an average rate of only 1.7 % per year. The normative scenario, however, envisages a potential for 4.7 % annual growth.

The growth of import requirements of agricultural commodities could, on the contrary, decrease from a past annual rate of 4.6 % to 3.6 % per year during 1980-2000. Thus, the developing countries' net agricultural trade balance with the rest of the world could increase from \$ 12,000 mn in 1975 to \$ 19,000 mn by 1990 and \$ 29,000 mn by the year 2000, assuming that availabilities and requirements would indeed materialize as actual trade.

That, of course, would depend upon deliberate governmental efforts towards a restructuring of the world economy for a New International Economic Order. Trade liberalization leading to better market access would be vital if the developing countries' share in world agricultural exports is to rise from 38 % in 1980 to 48 % in 2000. This would require more radical changes in agricultural trade policies than governments have been willing to negotiate up to now. "Many of the major adjustments", the study argues "are needed on the part of developed countries". Developing countries, too, would have to adjust, for instance by reducing some of the heavy export taxes levied on commodities and by liberalizing their own agricultural import policies, thus permitting a freer flow of agricultural products among themselves for improving their collective self-reliance. The restructuring which is urgently required would presuppose that governments find and introduce "ways of protecting domestic interest groups without resorting to protection which hampers the development efforts of developing countries", the report says.

Remaining Food Gap

Even if all demand and production targets of the normative scenario were reached and the foreign exchange situation of the poor countries develops as envisaged, there would still remain a gap between food supplies, food demand and food requirements which would call for food aid.

Despite the acceleration of food production, 330 million people would remain undernourished by 1990.

Assuming that the international community would aim at eliminating the calorie gap of at least one-fifth of the undernourished by 1990, a minimum additional 6 mn tons of cereals would be needed, thus bringing the total food aid requirements, including an estimate of 1 mn tons for developing countries additional to those studied individually, to 20 mn tons by 1990, the study warns. It furthermore expects that food aid requirements of the same size would persist in the year 2000, though a precise quantitative assessment is considered very difficult. This aid would be required to close the calorie gap of the 240 mn people remaining undernourished by 2000. To help these people food aid in project form would be particularly required.

Under the normative scenario the tendency of the cereals self-sufficiency of the developing countries to decline could be arrested: it could be maintained in the area of 90 %. However, the absolute volume of imports of the deficit developing countries would still increase considerably by 2000, though increasing exports (to the tune of 45 mn tons by 2000) could be forthcoming from the cereals surplus developing countries.

Moreover, a good deal of the overall cereals deficit should be concentrated in the better-off developing countries, including the major petroleum and other mineral exporters. By contrast, such traditional deficit regions as the Indian sub-continent could become fully self-sufficient and even turn into modest net exporters. Such developments reflect in part also the commodity composition of demand; increases in wheat demand are largely translated into import requirements because of production constraints in many tropical developing countries. By contrast, rice production could respond fully to the quest for complete self-sufficiency of the developing countries as a group. Another factor which would be of increasing importance in cereals gap developments is the emergence of some of the higher income developing countries as significant importers of coarse grains for animal feeding purposes, driven by fast growing demand for livestock products.

The above described developments refer to country groups. An examination of the study results for individual countries, however, reveals that quite a few of them could be facing mushrooming cereals deficits and rapidly declining self-sufficiency.

Apart from the analysis of the food problem as a whole, "Agriculture: Toward 2000" deals in considerable detail with specific sectors of food

production, such as livestock and fisheries. Whereas demand for fish is expected to outstrip supplies and price increases seem inevitable, livestock production could rise steeply – by nearly 5 % per year – under the normative scenario, particularly of meat other than beef and veal.

Breeding fish in enclosed water areas, or aquaculture, could increasingly help to satisfy demand for fish in view of the limited growth potential of maritime fish catches. Utilization of hitherto unexploited resources of conventional fish or of unconventional species, better utilization of the catches and improved management of resources, particularly in regions that have become the Exclusive Zones of developing countries, could also help to maintain a slow but sustained growth of production.

Not only in fisheries but also in agriculture and forestry, badly managed production growth could collide with the need for protecting resources and environment, our most valuable heritage.

Concretizing Utopia

"Agriculture: Toward 2000" pays strong attention to environmental issues. The report particularly stresses the need for country-level long-term plans for land and water use. Such plans can be more effectively implemented by promoting understanding and acceptance by the population at large. Another vital prerequisite of environmental protection is a remunerative farm-gate price policy which helps the farmer and forester to cover all long-term costs of using natural resources.

Every modelling exercise, be it predictive or normative, is of course an effort to concretize utopia. "Agriculture: Toward 2000" is no exception. As a successor to the 1969 "Provisional Indicative World Plan for Agricultural Development" (IWP) and to the FAO contribution to the documentation of the 1974 World Food Conference, the present study is built on FAO's considerable experience in perspective studies. In this respect, the Director-General of FAO, Edouard Saouma, said in his foreword: "All major regions include a number of countries whose record in improving agriculture demonstrates clearly that sustained high growth is possible. Slow agricultural growth in other developing countries is generally neither inherent, nor is it inescapable in the future; imposed by past circumstances, it can be reversed – though not easily – by new policies, attitudes and incentives".