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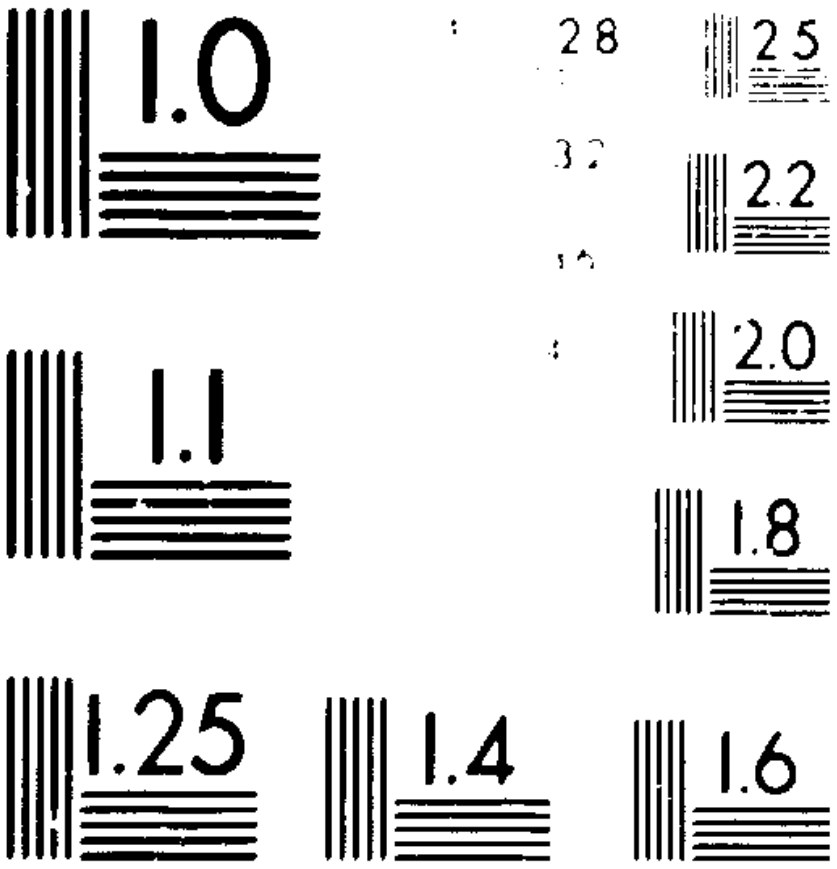

Item 5(g) of the provisional agenda

INTERNATIONAL CO-OPERATION, RELEVANT NATIONAL ACTIONS INCLUDING INDUSTRIAL POLICIES, AND UNIDO'S CONTRIBUTION IN CRITICAL AREAS OF INDUSTRIAL DEVELOPMENT 1985-2000:

INDUSTRIAL POLICIES AND MEASURES TO ACHIEVE RURAL DEVELOPMENT AND SELF-SUFFICIENCY IN FOOD SUPPLIES IN DEVELOPING COUNTRIES

Background paper prepared by the UNIDO secretariat

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CONTENTS

INTRODUCTION

1. Within the overall development effort, rural development is a pressing issue because it addresses directly the needs of the majority of the population in the developing countries, and food supply is perhaps the most critical of these needs. The development of rural areas will also help to mitigate the problem of urban concentration and its consequences. Rural development is an integral part of the overall issues of industrialization and has to be viewed against the background of several other related topics on the agenda of the Conference.

2. The aims of this paper are:

(a) To analyse the role of industrial activity in contributing to the rural end of the rural-urban continuum and to efforts to increase food supplies;

(b) To describe the dynamics and linkages involved;

(c) To suggest modes of constructive intervention aimed at strengthening industry's contribution to rural development.

3. Some of the mandates and recommendations that have guided UNIDO activities in this area up to now are discussed below.

4. The World Food Conference, held at Rome from 9 to 16 November 1974, noted the dangerously slow rate of growth in food production and called upon UNIDO, among other international organizations, to increase its assistance to agriculture and fisheries in developing countries, giving priority to programmes and projects aimed at benefitting the poorest population groups.

5. The Lima Declaration and Plan of Action on Industrial Development and Co-operation, adopted by the Second General Conference of UNIDO in 1975, emphasized that, to meet the target set by the Conference, the developing countries had to make full use of their natural and human resources and the raw materials at their disposal. A premium was placed on self-reliance in the efforts of developing countries to realize their full potential. It was envisaged that national industrialization policies would give special importance to the encouragement and support of small, medium-scale and rural industries and industries that fulfilled the basic needs of the population and that contributed to the integration of different sectors of the economy. Further, the complementarity of industry and agriculture was emphasized. Governments were encouraged to promote agro-based or agro-related industries so as to reduce migration from rural to urban areas and to stimulate food production. For the least developed, land-locked and island developing countries, the implementation of an appropriate agrarian policy was recommended as an essential basis for the promotion of integrated rural development schemes, involving the establishment of small-scale production units to meet both the needs of internal markets and export requirements. The importance of the linkage to such basic industries as steel, metallurgy and petrochemicals was also stressed. 1/

6. As a follow-up to the Lima Declaration and Plan of Action, UNIDO organized in 1977 an Expert Group Meeting on Industrialization in Relation to Integrated Rural Development to formulate guidelines for future programmes and policies in this field. The Meeting concluded that strong commitment to rural development policies was expected from Governments prior to proceeding with specific programmes or projects. Agriculture could be regarded as the starting point of rural development, with industry initially playing a supporting role. As the linkages between the two sectors became stronger the role of industry would become more important. The labour-absorptive capacity of agriculture being limited in developing countries, the Expert Group believed that the promotion of a larger variety of productive activities in rural areas was important to reduce rural-urban migration.

7. The experts agreed that each country needed a rural industrialization strategy of its own, taking into account local needs and resources. A proper infrastructure had to be created for the enterprises, and inputs, training and credit facilities had to be provided. The Meeting concluded that careful attention had to be given to the choice of production technology. Furthermore, the strategies and techniques of entrepreneurial development programmes required urgent attention. 2/

8. In 1979, the World Conference on Agrarian Reform and Rural Development declared that the rural areas had to be integrated into national development efforts and that the rural people had to be provided with better opportunities for employment and income. To achieve that, it was necessary to strengthen the linkages between agriculture and industry by locating industries in rural areas. Governments were also urged to undertake intensive efforts to ensure world food security. The Plan of Action approved by the Conference committed all of the United Nations system, together with the participating Governments, to improve the access of the rural population of the developing countries to inputs, services and markets, to develop non-farm activities and to expand economic and technical co-operation among developing countries in the field of rural development. 3/

9. The Third General Conference of UNIDO in 1980 reaffirmed the target of the Lima Declaration, such as the importance of developing small- and medium-scale industries as well as of improving the distribution of the benefits of industrial growth to the whole population, with special emphasis on rural industrialization and the development of agriculture. The developing countries themselves were urged to develop endogenous industrial technologies and to establish programmes for the efficient utilization of their natural resources by local processing to meet national requirements. 4/

10. The most recent mandate emanates from the resolution of the Third General Conference of UNIDO on the Industrial Development Decade for Africa. As requested, UNIDO, together with the Economic Commission for Africa (ECA) and the Organization for African Unity (OAU), has worked out a programme of action for the Decade. The food processing industry, including the manufacturing of agro-inputs and processing of agro-outputs, was selected as one of the priority subsectors of the programme. The achievement of independence from imported food supplies, to the extent desirable, requires the urgent development of the rural economy and its integration with the modern sector, an increase of agricultural productivity and the improvement of marketing and distribution of food products. 5/

11. In the light of these mandates and recommendations given at various conferences and meetings, it is clear that the participating Governments and experts have recognized the fact that industrialization is a driving force for economic development and a necessity for meeting ever-growing needs. UNIDO has a major role to play in this respect and has initiated a series of activities, such as Consultations in sectors of relevance to rural development, 6/ technical assistance programmes, the International Forum on Appropriate Technology 7/ and special programmes in regard to agricultural tools and machinery, rural energy, small hydropower plants, utilization of biomass, bio-fuels etc.

I. NEW PERSPECTIVES FOR INDUSTRIALIZATION RELATED TO RURAL DEVELOPMENT AND FOOD SELF-SUFFICIENCY

A. The need for balanced strategies

12. Within the last decade, there has been a growing recognition of the importance of rural development and food self-sufficiency in the developing countries. In the 1950s and 1960s, emphasis was placed on urban-oriented, capital-intensive activities, which produced a severe imbalance in developing countries between a few urban élite groups that monopolized power and wealth and the majority of the rural people, who remained poor. Because of such a pattern of growth, both industry and agriculture suffered. The neglect of agriculture was not due to the negative role of industry but, on the contrary, it was precisely due to the inappropriate use or lack of use of industry in developing agriculture and accelerating rural development.

13. It has become increasingly clear that the unbalanced strategies of the past must be (and have been, in some countries) replaced by more balanced ones, where industrialization and agro-rural development complement rather than compete with one another.

14. Not only more balanced growth but also more balanced income distribution with emphasis on productive employment have become a theme of growing importance. The benefits of growth filter down to the poorer segments of the population only at a very slow rate, and lack of purchasing power also means lack of demand for industrial products. Agrarian reforms, increased agricultural productivity, improvements in marketing and the distribution of food products, increased non-farm activities and increased employment should be essential components of a balanced strategy. The practical impact of the changing views on urban and rural development can be seen, for example, from a recent analysis by the Administrative Committe on Co-ordination (ACC) Task Force on Rural Development, which stated that "reports received from all [Member countries] on their activities during 1982 indicate clearly that positive attempts continue to be made to sharpen the poverty focus in rural development". 8/

15. The rural poor also become increasingly vocal in many countries, calling for better standards of life, better incomes and jobs and increased participation in decision-making. Because development is for people, people must be involved in the development process.

16. Many Governments have also come to see that unbalanced industrialization has led to rates of migration from rural to urban areas that have exceeded the capacity to provide necessary social infrastructure, thus furthering social discontent. For example, World Bank data show an increase in the number of cities of over 500,000 persons in developing countries from 141 in 1960 to 344 in 1981, thus indicating a huge increase in social expenditure requirements. A number of studies have shown that per capita social costs are much less in rural than in urban areas. Yet the World Health Organization (WHO) estimates that, while more than 50 per cent of people in urban areas of developing countries have access to adequate sanitation, in rural areas the figure is hardly more than 10 per cent.

B. Trends in economic growth and agricultural production

17. Concern for agricultural and rural areas has increased at least partly in direct consequence of the deteriorating situation, particularly in the poorest region - tropical Africa. Whereas per capita food production in the developing countries as a whole increased during 1970-1980 at a moderate annual rate of 0.9 per cent, per capita production actually declined at a rate of 1.2 per cent in Africa (a decline of 19 per cent over the decade), and the large surplus in food trade of the 1960s became a deficit in several years of the following decade. This deficit became severely acute in staple grains, particularly in wheat, which is increasingly in demand by urban African consumers but which is not easily grown in most of Africa. In many countries this has contributed to balance-of-payments crisis and food shortages. At the same time a large number of expensive tractors were imported but often hardly used because of frequent breakdowns and repair and spare parts problems. The World Bank has summarized the situation as follows:

> "But for most African countries, and for a majority of the African population, the record is grim and it is no exaggeration to talk of crisis. Slow overall economic growth, sluggish agricultural performance, coupled with rapid rates of population increase, and balance-of-payments and fiscal crises - these are dramatic indicators of economic trouble". 9/

Severe drought in many parts of Africa during 1983 has added to the crisis.

18. The recent world economic recession has greatly exacerbated the situation. Economic growth rates in all regions of the world dropped during the period 1974-1983, and the developing countries were particularly hard hit from 1980 onwards, with negative growth recorded in many of them. The effects on rural activity and incomes have been severe. Export prices for agricultural and other rural products have fallen, decreasing in some cases by 50 per cent or more since the peak year 1974. Faced with debt-financing difficulties, government expenditure programmes have been cut sharply, even in

oil-exporting developing countries which formerly had large payments surpluses. International aid for rural development has been severely curtailed.

19. There is a promise of recovery; and recovery now seems to be underway in several developed countries. The current crisis, therefore, should not be interpreted as long-term hopelessness. Rural development should be seen as not only more desirable than ever; it is, if learning comes from past mistakes, also achievable. In fact, it may make a country less vulnerable to external forces. A new relationship between industry and agriculture has to emerge.

C. Self-sufficiency in food

20. So far, food self-sufficiency - a more limited and more specific objective than rural, or even agricultural, development - has only indirectly been dealt with as a major development goal. It arises from the acute problem of a shortage of basic foodstuffs for the majority of the population. The food problem in several countries is largely one of distribution; sufficient food may be produced, but much is lost before reaching the consumer - through transport delay, poor storage facilities etc. - or because potential consumers have insufficient incomes to purchase food. Also, comparative advantage and technological and ecological considerations (such as the difficulty of growing wheat in Africa) make it irrational to attempt to produce all that is demanded (demand influenced by the urban élite). In many countries food security, rather than self-sufficiency, must be the issue. 10/ The nature of the food self-sufficiency goals will differ from country to country more than will the rural development goals.

21. Given that food self-sufficiency is a specific aspect of agricultural development, rural development (a spatial concept) requires agricultural development (an activity concept) because agriculture is the largest activity in most rural areas. But within a rural area, as within a nation, agriculture and industry will need to develop hand-in-hand, each lending support to the other through a system of linkages. Within the rural system, food production will in many cases be the most important activity, if not in value added then in employment. Thus food production can be seen as a part of the rural development objective, as well as other national objectives such as feeding the cities, aiding the balance-of-payments situation and encouraging industrial demand. The questions central to a food production programme are what, how, by whom and for whom to produce. The answers to those questions are interrelated.

D. Elements of a new approach

22. A new approach is thus needed to bring together industrialization, rural development and food supply in an integrated way. Rural development is a basic necessity and economic imperative, vital for long-term industrial progress. But is there any real hope for agro-rural development? It used to be a common argument that the agricultural sector in many developing countries was hopelessly inefficient, that farmers were unresponsive to economic

incentives, that technologies were static and unchangeable and that demand was limited by low income elasticities for agricultural products. These arguments have by now been shown to have no validity. On the contrary, numerous studies have shown that farmers are highly responsive to economic incentives. When Governments fail to provide such incentives, production declines and farmers leave the land.

23. Within rural areas there is a need to raise incomes, increase productive employment opportunities, increase participation in the development process and add to the quality of life. Achievement of these aims would contribute to the overall national development process by increasing food supplies and food security, improving the balance of payments, accelerating industrial growth and reducing migration to the cities.

24. To attain these aims, the industrialization process may need to be altered in terms of output mix, location of productive facilities and policies affecting rates of return and thus resource allocation. Industries need to increase supplies of intermediate and capital goods to rural activities, increase processing of rural products and increase the flow of consumer goods and infrastructural "hardware" to rural areas. Industries need to be located increasingly in rural areas, and changes will be needed in trade, credit, wage and other policies that affect the relative returns to industry and agriculture.

25. The emergence of not only changing development priorities but also new technologies gives reason for great hope for the future. Advances such as in genetic engineering, easy to apply and cheap micro electronics and new forms of energy as well as simple changes such as local production of improved farm implements should allow an acceleration in rural development.

26. A suitable system of managing such changes will need to be worked out. This will require the active participation of the rural population, including women and the young, in advancement. Care will be needed in evolving traditional work roles to suit the changing rural environment in order to enhance productivity. Industry can only benefit from the changes, and national self-sufficiency will be strengthened.

II. INDUSTRIALIZATION AND INTEGRATED RURAL DEVELOPMENT: PROBLEMS, CONSTRAINTS AND LESSONS

27. In this chapter, the relevant experience of developing countries and UNIDO will be examined and factors that foster or hinder the growth of industries in rural areas will be identified. The lessons to be drawn from this stock-taking should provide insights that may be useful in formulating alternative policies, strategies and structural adjustments required for a desirable and feasible pattern of industrialization that is conducive to integrated rural development.

The interdependence of agriculture and industry

28. There is a strong bond and interdependence between agriculture and industry. Industry provides inputs into agriculture with fertilizers, pesticides, agricultural machinery etc.; and agriculture offers raw materials for food and non-food industries that in turn lead into the tertiary service sector. The case for rural development through industrialization is primarily based on the catalytic role of industry in bringing added values to resources and generating opportunities for employment and incomes, as well as for reducing interregional disparities, providing food and other basic needs and improving living standards for rural people.

29. Efforts have been intensified in the 1970s to create, expand and diversify industrial activities that integrate rural areas with national development processes more effectively. Agriculture and other traditional economic activities have been given priority in rural development programmes. However, lopsided economic growth and uneven distribution of benefits continue in the developing world.

30. One problem at present is the massive influx of rural people to urban areas. This undesirable trend has to be checked. The cost of the social and infrastructural services needed to maintain immigrants in urban areas is much greater than providing the necessary social infrastructure to retain the population in rural areas. An International Labour Organisation (ILO) study has clearly brought out the reasons for this massive migration, 11/ these are: the concentration of investments in urban-oriented industries; wage differentials; government administrative activities; the concentration of opportunities for education and other social amenities and capital in urban poles; the disparities in income between farm and non-farm activities; and the increased population growth in rural areas. All these have to be taken into account to correct this imbalance.

31. UNIDO has experience in various areas of rural industrialization schemes: institution building and strengthening existing institutions, directing support to small and cottage industries and to outlying areas and technical support to the construction and operation of industrial estates. The number of such projects by the end of 1984 should be well over 150. An evaluation of some of the ongoing technical assistance projects, predominantly located in Africa, has given some insight into the problems, constraints and lessons to be learned from the successful and not so successful projects. Among the reasons why industrialization and technology development have not stimulated rural development, the following may be mentioned:

(a) Government attitudes towards small and medium-sized enterprises in general, sometimes more in favour of prestigious, large projects;

(b) Lack of communications and other infrastructure (roads, market information, access to markets, electricity, water), and price disparities;

(c) Dominant foreign ownership with mainly profit oriented decision-making (transnational corporations);

(d) Financing problems: absence of guarantee funds to secure loans to small enterprises, resulting in stringent guarantee requirements of banks;

(e) Lack of or uneven spread of skills (skills concentrated in favoured locations) and ill-timed training of entrepreneurs or workers (not "in situ" or on equipment to be used later on);

(f) Level of education and abilities of management that are not commensurate with the importance of the project;

(g) Administrative inadequacies (equipment not released from customs area, delay of land acquisition in industrial estates, insufficient co-ordination between project studies and processing of credit applications);

(h) Wrong choice of equipment owing to insufficient knowledge of functional requirements under particular conditions;

(i) Understaffing of projects resulting in increased responsibilities and reduced standards of performance.

32. Some of these problems can be directly attributed to the nature of small- and medium-sized industries and the special demands they pose to personnel who plan and execute projects; others reflect particular conditions in individual developing countries and the impact of exogenous factors on a project.

33. However, it is difficult to assess the real impact of industrialization in rural areas because of the paucity of reliable data and proper criteria and tools of assessment. It is also too early for assessing the relatively new and varied approaches and intervention mechanisms under experimentation. But it may be possible to quantify the degree of success of an industrial activity with a given investment, in terms of increased employment, value added to products, increased incomes to local people and the extent of linkages realized locally through secondary effects of industry on agricultural and other rural activities, though several factors other than industrial activity may also influence them.

34. The type of analysis suggested above can provide partial answers to the question of trade-offs between economic, social and environmental goals. In general, rural development and environmental protection are not only compatible but interdependent and mutually reinforcing. Rural development must be based on the responsible and rational use of national resources and people living in harmony with, but not controlling or being controlled by, nature.

III. INDUSTRIAL POLICIES, STRATEGIES AND MEASURES FOR DEVELOPING INDUSTRIAL ACTIVITIES IN RURAL AREAS

A. Aims of rural development policies

35. The nature of rural problems and the diversity of rural areas and communities, even within one country, dictate that policies and plans should be flexible but integrated into the total industrial policy. Rural

development is a multisectoral process calling for an integrated approach. Each country has to design its own strategy for implementing policies and programmes.

36. Policies should aim at bringing about the balanced social and economic development of rural areas and rural people, correcting the present severe imbalance between the urban élite and rural poor. Such policies should strive to achieve a rural-urban continuum rather than a rural-urban conflict, with a net transfer of surpluses and incomes to rural areas.

37. Strong political will, faith and commitment to rural development by the Government is essential. This should be clearly reflected in the allotment of an increased share of investments to rural industrialization, in order to provide the necessary infrastructure and incentives for the industries to be located in rural areas.

38. Policies should be designed to concurrently support and reinforce agricultural development, especially for the expansion of food production, and to promote the expansion and diversification of rural industrial activities, recognizing the strong bond between agriculture and industry.

39. Rural economy depends mostly on agriculture, forestry, fisheries and animal husbandry. Apart from food, crop and agricultural residues could be valuable raw materials for industrialization. Biomass can be converted into food, fodder, fertilizer, fuel, chemicals and building materials. Most developing countries have the advantage of sun, which can increase biomass yields per acre, and special plants, such as aromatic, medicinal and other commercial plants, which can be grown with advantage. Therefore, a rational biomass policy, indicating not only what to grow but also the type and clusters of industries that could be set around each agricultural or forest crop, is needed.

40. Rural development policies should be aimed at generating, mobilizing, utilizing and maximizing returns for natural and human resources and skills, through the setting up of appropriate industries in the rural areas.

41. The creation of a favourable economic and business climate for rural enterprises is fundamental to business confidence and business activity. Only by setting up special institutional arrangements within the Government and its agencies to identify and actively further the interest of rural enterprises can the worst effects of broader industrial policies be mitigated. More than this, however, will be necessary; the active promotion of rural industries, supported by selective assistance, is essential to initiate new activities and facilitate the expansion and diversification of existing ones.

B. Strategies, approaches and measures

42. There are two distinct categories of rural industries requiring somewhat different strategies within an overall national strategy for industrial development; these are: 12/

(a) The distinctly "village" type of industrial production closely related to local resources and initiatives and serving highly localized markets; such production is undertaken mostly by small enterprises in craft, service-type and "pre-industrial" activities;

(b) The more specialized forms of production, in organized, mechanized small-, medium- and large-scale sectors of the factory type, serving wider markets and perhaps requiring aggregate resources beyond the limit of what may be available in the local community.

43. Both types of production are necessary components of industrialization, and there are proven ways of stimulating those economic activities to catalyse rural development. Education in entrepreneurial skills and productivity orientation should be key elements to any small industry development programme, as they would enable the upgrading of rural activities to industrial levels. There is substantial economic opportunity for decentralized production in rural activities, ranging from food processing and knitting and weaving to electronics. Such activities could also be integrated with large-scale industries in urban centres, provided appropriate infrastructure and institutional support services are made available to rural people. Comprehensive technical assistance and integrated support mechanisms are needed to ensure raw materials of the desired quality and quantity, product design and adaptation based on studies of consumer preferences, quality control and producer-oriented marketing strategies. The following approaches are especially relevant when considering industrial development at the grass-roots level.

1. Dispersal of industries through growth centres and industrial investment

44. One way of initiating and accelerating the processes of rural industrialization is the identification and development of selected regional growth poles away from already established industrial centres. The question is: should the initial push come from large-scale organized enterprises or should this be done by inducing industries to relocate? These two approaches are not mutually exclusive, and a combination may be possible depending on the resource mix in the surrounding rural area. However, a strategy that combines both approaches has more chance of success where there is a definite potential for agro-industrial and commercial opportunities or where a cluster of interrelated economic activities plus some infrastructure already exist. Large capital subsidies to attract entrepreneurs to relocate and huge investments for infrastructural development may also be needed. Joint ventures could play a key role as public concerns for food self-sufficiency and rural development could be combined with the profit orientation of private entrepreneurs. Experience suggests that industrial investment decisions may lead to the creation of enclave-type demonstration projects of a highly capital-intensive nature in which the development of the rural areas becomes incidental. Further, the spin-off activities and the generation of additional employment opportunities may be comparatively small relative to capital investment, may not accrue to the local area and may fail to bring required changes.

2. People's participation

45. Some of the conflicts and discontinuities within developing societies, e.g., urban versus rural cultures and élites versus masses, have to be faced and overcome in designing strategies for rural industrialization. Considerable effort is required to unravel the complexities of rural economies. In this respect, close attention needs to be paid to the ability of rural people to understand and articulate their own requirements. Popular participation is the corner-stone for broad-based development and equitable access to its fruits.

3. Target-group orientation: Integration of women and participation of young people

46. A basic problem is that specific target groups are not usually identified, and, even if they are, it is questionable whether they are the rural poor or the intended beneficiaries of a given project. Strategies for rural development need to take into account the existence of various subgroups and different categories among the rural poor, who not only possess dormant knowledge, resources and skills but also have different types of dependency relationships within their communities. The subgroups would require different programmes and different approaches. In formulating policies for rural industrialization, not only the need for full-time jobs but also the need for part-time and seasonal employment should be considered. This issue concerns women in particular. The traditional methods for preparing and employing women mainly for labour-intensive and self-help non-farm activities is not only considered limited but also discriminatory and wasteful. Experience suggests that this reservoir of human resources can be developed in terms of entrepreneurial and management functions, as well as for high-level technical skills. 13/ As regards involving youth in industry, given the relatively long pay-off periods for most investment and training, attention should be focused primarily on the needs of young people entering the labour force.

4. Industrial entrepreneurship

47. The critical factors limiting economic growth in developing countries are compounded by lack of entrepreneurship to perceive economic opportunities, to organize the resources for setting up productive units and to run industrial enterprises profitably. Several models for improving entrepreneurial skills have been tried in India, Kenya, Malaysia, Mexico and the Philippines based on the experience of such pioneers in the field as the Federal Republic of Germany, Ireland, the United Kingdom of Great Britain and Northern Ireland and the United States of America. Among these, the "Gujarat experiments" in India seem to have been the most intensified effort during the last decade and have produced verifiable and conclusive evidence that entrepreneurship can and needs to be nurtured and cultivated. 14/ Observations suggest that even where financial resources are available and adequate, indigenous entrepreneurs are not forthcoming. Further, industrial credit does not reach potentially needy entrepreneurs owing to restrictive norms, policies and procedures of conventional lending institutions. The

industrial activity generated by a few established groups perpetuates the imbalanced distribution of industrial ownership. To accelerate the process of indigenous industrial enterprise formation, credit policies and entrepreneurship development programmes are required, backed by sound institutional and other support systems. The experiments prove that a comprehensive programme for entrepreneurship development is a valuable strategy for:

(a) Ensuring that people are identified who have the potential to utilize financial and technical assistance effectively and with maximum impact;

(b) Reducing dependency on employment. Craftsmen, women, early retirees and young people are induced to become job creators;

(c) Providing an important link to small enterprise development thus sowing the seeds for large-scale industries and more intensive economic engagement.

48. Education and training must be development oriented. The unschooled and traditional rural people are potential innovators and not passive receivers. Human resource development should be, through formal and non-formal education, imparting the latest technical skills to illiterate persons entirely through "learning-by-doing". Training programmes must recognize the customary household decision-making and work-sharing patterns, community leadership and personal communication patterns and processes found in rural areas and recognize women as equal partners. Human resources development at the grass-roots level and for an upstream flow requires a different approach.

5. Technology development and delivery

49. It is widely recognized that technological improvements to meet changing demands are imperative for maintaining or achieving efficiency in production. The development of an adequate technology delivery system (development agencies, voluntary agencies, extension services, change agents) is a prerequisite for technologies to be effectively transferred to and absorbed in rural areas. The system should start at the grass-roots level and extend to the national Government, whose sustained commitment to the success of the system is essential. Appropriate technology issues were the subject of a series of meetings sponsored by UNIDO in 1978, 15/ and it is relevant to mention the following conclusions:

(a) Appropriate technology, as a dynamic and flexible concept, was viewed as being the technology mix contributing most to economic, social and environmental objectives relative to resource endowments and conditions of application of each country;

(b) A broad spectrum of technologies need to be examined and applied as no single pattern of technologies could be considered appropriate. Both large-scale and low-cost small-scale technologies should be used, according to a given set of objectives and circumstances.

50. The Expert Group on Industrialization and Rural Development, drawing lessons from experiences of several developing countries, concluded: "...the choice of production technology for rural enterprises was not a simple or a genuine choice. All too often neither alternative, either labour-intensive or appropriate technology was available in rural areas. Governments could increase the range of choice by examining existing technologies used in other sectors of the economy and in other developing countries and by encouraging processes of adaptation and dissemination. The experts suggested that the level of technology to be used should be determined by a country's real or potential machine-building capability, as well as by the ability of rural enterprises to absorb fresh technology". 16/

51. Contrary to the common belief that simple village rural and intermediate technologies were sufficient for rural industrialization, the emerging technologies such as biotechnology and genetic engineering, microelectronics and material sciences, as well as the "spin-off" sophisticated technologies from the exploration of outer space, offer great promise for application to rural industrialization and for improving the quality of life of the rural poor, either by providing income-generating opportunities or improving the standards of living, e.g., improved food production, education, communication, health care and health delivery.

52. A number of projects are under consideration, in some cases with UNIDO assistance, e.g.: the improvement of communication infrastructure to integrate isolated rural communities with the mainstream; cost effective means of providing education via satellite; and the application of microelectronics to forecast yields, monitor and transmit weather information, for sprinkler control irrigation, for food storage and control and for many phases of milk collection and processing. Biotechnology, genetic engineering and tissue culture methods have made possible increased crop yields, hardier plants that can resist disease, pests, heat, frost, draught, flood, alkaline and saline soil and nitrogen fixation; better food processing and conversion of biomass into food, fertilizer, fuel, fodder, chemicals and construction materials; and more effective vaccines. The scale of operation can be reduced, and decentralized production is made possible. New and renewable sources of energy, conversion of lignocellulose into ethanol, solar photo-voltaic cells, hydroelectric power, biogas and energy forests offer scope for less costly, less complex and less polluting methods for meeting rural energy demand.

53. Rural development thus calls for technological pluralism, using high and low, traditional and modern technologies. The prime difficulty is that, in practice, in any individual project the choice of technologies available tends to be limited, although this situation is changing. Examples of the common technologies in use are mostly in urban areas, and few rural entrepreneurs have access to these technologies or are capable of developing their own adaptations. Few business promotion organizations or technical assistance organizations have any broad competence for the development of more relevant technologies. Lack of technological support services is a major constraint on the longer-term growth of rural enterprises.

54. In the last two decades a number of important new technology facilities have been established at the international level; these facilities provide a skeleton of reference points for would-be inquirers who can gain access to them. UNIDO has the Industrial and Technological Information Bank (INTIB).

It has also promoted the concept of a Technological Services Delivery System (TSDS). Various regional network arrangements exist such as that for agricultural machinery in the Economic and Social Commission for Asia and the Pacific (ESCAP) region under the auspices of ESCAP, the Food and Agriculture Organization of the United Nations (FAO) and UNIDO. Some regional technology centres have been established, including a centre in China for the promotion of agricultural machinery in developing countries. There is further scope for linking up national institutions that deliver technological services to industry through regional or subregional arrangements, exchange of technical information, mutual referral of problems and shared use of specialized facilities. However, in terms of the needs of rural industries, perhaps the greatest need is to improve access to the national and international facilities that already exist. To this end, contact facilities at the national level should be established so as to guide would-be users into the most appropriate "entry point" to the system. Greater emphasis is also required on the diffusion of technologies and improving entrepreneurial capabilities. In the longer term, more concerted efforts are necessary at the national level to seek out and support entrepreneurs with the rare capability to innovate, so as to integrate their activities with those of concerned agencies and institutions.

6. The development of management capability

55. The overwhelming majority of rural enterprises are small- or medium-scale. Many very small units might be described as "informal" or "unorganized" businesses with a single owner, proprietor, manager or shop-floor supervisor. For such enterprises the organization of the production process is the dominant management activity, although other areas, such as control of financial resources or marketing, are just as crucial to the survival of the enterprise. Small workshops or factories require greater specialization in management skills with greater attention to the organization of raw material supplies; the accounting function and the management of the work-force are more demanding on management resources. There are a wide range of management skills required by very few key decision-makers, and these management capabilities need to evolve as business activities grow and change in nature. The qualities and skills required of an entrepreneur in launching a new enterprise are very different from those required to foster its growth and diversification.

56. Attempts thus far to provide management development and training services in developing countries have focused on formal educational institutions and full-time courses, although some attempts have been made to provide consultancy services through extension services or technical assistance projects. But extension workers rarely have commercial or managerial experience. Few part-time training facilities are available, and self-instruction materials in basic techniques in the local language are rare. Little use is made of local business organizations such as chambers of commerce to create awareness of the need for training. Thus far, very little progress has been made in helping rural enterprises in this key problem area.

57. New approaches in management training and development are urgently needed to solve this problem. Local formal educational institutions can make some contribution with specially tailored courses on an occasional or

part-time basis. However, new instructional techniques using the mass media, roving demonstrations, self-help teaching materials (including visual presentations), together with incentives for training at both the management and the supervisory level, are required. Perhaps the key basic management skills for rural industries are the capability to utilize financial resources effectively and marketing capabilities. These two areas should be given priority in management development programmes in rural areas. Training programmes aimed at improving basic accounting skills could be very helpful. 17/ Similarly, training programmes in agro-, forest-, animal- and fish-based industries would prove helpful, as they offer greater employment potential.

7. Labour

58. At first sight, the supply of labour is rarely a constraint in rural industries, but trained or skilled labour is often in short supply. It has been argued that the primary training ground in developing countries in basic manual and business skills are the rural business activities. 18/ Up to one half of the total numbers employed in skill-based activities may be under training through traditional apprenticeship arrangements. The introduction of new technologies or the upgrading of skills, therefore, presents special problems that are not likely to be solved by formal training institutions. Just as with management training and development, a reorientation in approach and method is necessary here. Two comments can be made at this stage on possible improvements. First, if the knowledge and skills of workshop or shop-floor supervisors can be improved significantly, this will have a great spin-off effect on the work-force as a whole. Second, the concept of improving the traditional training capabilities of the enterprises themselves offers much promise, particularly if this can be done at least in part through self-help teaching materials etc.

8. Co-operatives

59. There has been a failure in many countries to recognize the merits of co-operative forms of organizing production. The reliance on self-help and the advantages of scale that they confer, especially in the production of items that satisfy basic needs and in service industries commonly required by rural communities, is thought to be particularly important. Such co-operative forms of production are most effective when the initiative and drive for their establishment comes from below.

9. Finance

60. A shortage of finance is a universal complaint of small enterprises. Small businesses may also suffer from lack of access to longer-term credit for investment in productive assets on terms equal to the financial facilities extended to larger-scale industry. Poor access by rural entrepreneurs to all kinds of credit can be solved by small business development agencies and financial institutions. Because of the higher risks involved and the

reluctance of banking institutions to extend credit facilities to the small business sector, especially to relatively unorganized units, special facilities often have to be created or else guarantees provided by government to insure bankers' loans. The most important measure is to distinguish clearly between the different purposes of the loans. With credit for the purchase of fixed assets (land, buildings and equipment) special facilities with easier repayment terms are often necessary, but subsidized interest rates are less important than improved accessibility to loans. In rural areas there is much to be said for hire-purchase credit schemes, where the loan is secured by the capital good or asset. The concept of leasing could be usefully applied. The provision of working capital has long been the traditional role of the banks, but their limited branch network in rural areas and reluctance to make high risk loans is often a major obstacle. While special measures might well be necessary to persuade banks to assume their full responsibility for providing working capital in rural areas, the banks need to accept their share of the task of education and servicing rural customers' credit needs to integrate rural businesses into the formal economy and to foster sound financial practices in those businesses. It is important in rural development schemes to ensure that financial assistance is made available to activities at all levels of rural society, so that even small traders or part-time service activities can be upgraded. Only in this way can the expansion of industrial activities reach down to the poorer sections of the community.

10. Infrastructure

61. Land, buildings, utilities and essential services are important inputs for the growth of rural industries. Many developing countries assist rural industries by constructing industrial estates or giving special financial assistance for building construction. The availability of water and electricity is a precondition for almost any form of industrial activity, but the construction of industrial estates or modern buildings is perhaps less relevant to the needs of very small rural enterprises. At a later stage, when larger industrial units are being established, the supply of land and buildings becomes a more pressing issue, and usually at that stage the need to control land use also plays its part in the designation of "industrial areas". However, the cost of physical infrastructure is so high that the construction of industrial estates perhaps should follow only from an overwhelming demand.

11. Raw materials

62. It is inevitable that small, dispersed units of production will have more difficulty in organizing their supplies of raw materials than larger plants. Transport, the availability of credit for raw material procurement and storage facilities - all these factors bear on this problem. In certain circumstances the bulk purchase and transport of raw materials can be a valuable source of assistance to cottage or household industries and may make for a significant improvement in the quality of output. However, in general, the organization of supplies is too detailed a task to merit public-sector

intervention. Therefore, efforts to improve the flow of materials to rural enterprises are probably best confined to improving the operation of the market by educating buyers about quality etc., introducing standards and perhaps organizing special credit facilities.

12. Outputs

63. Rural industries suffer also from lack of market information and market intelligence for the sale of their products, lack of adequate transport and the high cost of transport. Brokers or "middlemen" also exploit. An intervention may, therefore, be called for in several ways - by allocating certain products and markets, setting up a marketing or trading company to sell the products etc.

IV. INDUSTRIAL POLICIES AND MEASURES FOR FOOD SELF-SUFFICIENCY

64. A wide range of policies and measures are available for increasing food self-sufficiency in the developing countries. 19/ The discussion in this section is limited to industrial policies and measures that would promote food self-sufficiency, i.e. to specific linkages between industry and food supply. 20/

65. In general, countries aiming at increased food self-sufficiency will need to devote a greater share of their national resources to food production. In many developing countries changes will be needed in the structure of protection, at present aimed in most countries at supporting industry, not agriculture. Changes in the structure of industry will also be necessary, favouring increased linkages with agriculture.

66. The problem can be summarized as follows: "Trade and exchange rate policies have undervalued agricultural resources by very significant amounts in country after country. These same policies have caused many low-income countries to shift from being net exporters to being net importers of agricultural products. It is not that these countries cannot do a better job of feeding themselves. It is that their policies make agriculture a very unprofitable activity, and eventually channel (resources) to other sectors of the economy where profitability is greater". 21/

67. In many developing countries, it is a policy to keep prices paid to farmers deliberately low in order to keep urban living costs down, even though incomes in industry are far higher than in agriculture. The cost of such policies, apart from increasing food imports, has been a strong disincentive for food production. These policies need to be reviewed, at least for such food products as basic staples. Increasing farm prices to adequate levels would remove a major source of economic distortion and allow an increase in agricultural incomes, output and employment. This would result in an increase in demand for many industrial products, including consumer goods,

intermediates (e.g., fertilizers) and capital goods (e.g., farm machinery), as well as an increase in the supply of food inputs to processing industries, so that industry as well as agriculture would gain. Furthermore, it would reduce the rate of migration from rural to urban areas and help promote, through multiplier effects, rural development in general.

68. Greater farm incomes alone are not sufficient to increase agricultural production. Farmers will need in many cases to adopt new techniques requiring substantial investments. To meet this demand, the production of farm implements, machinery and equipment and fertilizers, pesticides and fungicides will need to be greatly increased, thus providing new opportunities for industrial growth. At present, levels of production of these products are very low in most developing countries. In particular, the capital goods industry is still in its infancy, so that much of the farm machinery and equipment is imported. The new linkages suggested above would not only contribute to the balanced and mutually reinforcing growth of industry and agriculture; the development of endogenous capital goods industries, based initially on farm machinery, could also provide, through the widespread linkage and learning effects of capital goods production, the basis for accelerated growth of many other industries. The precise path taken will, of course, vary from country to country. Very poor, less technologically advanced countries may be able to produce only improved tools and implements at first, and even in more advanced, higher income countries the costs, especially in terms of employment and of technological developments (such as the increased use of tractors), will need to be carefully considered. Differences between country capabilities enhance prospects for economic co-operation between developing countries and subregional co-operation in industrial production.

69. The changes outlined above suggest the strengthening of yet another linkage between industry and agriculture, i.e. food processing. In many developing countries, particularly the least developed countries, this is still the most important manufacturing sector in terms of both value added and employment. 22/ Increased food processing would improve self-sufficiency by aiding in food conservation. Increased food output would allow an expansion in processing industries and thus contribute to higher overall levels of industrial growth. Care should be taken, however, to ensure that agricultural production coincides with processing needs; for example, consumers want fresh tomatoes to be large and juicy, but processing requires small tomatoes with less water and a higher content of dry substance, even if they are less appetizing. Additional processing of exported foodstuffs would also improve the balance of payments. Given national differences in agricultural output structure, food processing industries could in many cases be designed to serve subregional markets.

70. Processing is one element of food conservation, and self-sufficiency depends on conservation, as well as on food production. Other investments in post-harvest conservation are needed to provide a balanced programme. In particular, investments in storage and transport facilities are required. This provides yet another opportunity for industrial growth, namely the production of trucks, containers, sheet metal, plastics etc.

71. Rural areas usually have substantial amounts of un- or underutilized energy resources. A number of practical and cheap technologies have recently been, or are in the process of being, developed to exploit these resources.

Such advances need to be actively encouraged, so that biomass, in its various forms, could at least partly substitute in rural areas for commercial energy sources such as oil. This would assist rural self-sufficiency and improve the balance-of-payments position of oil importers or allow greater oil supplies for industrial use.

72. An important aspect of rural industrialization is the relationship between small-scale industrialists and small farmers. Small farmers are major purchasers of the products of rural small-scale industries. Both are essential interlinked actors within the framework of rural development. Thus, a key aspect of the development of agriculture and rural industry is to provide an integrated programme of financial and other incentives for these actors. This allows a balanced rural growth of output and employment. A simple example of such linkages is the relation between animal feed grains production, husbandry and dairy products. The financial and administrative costs of such a programme are quite high. But, if the programme is well designed and utilizes all available resources, the benefits could be considerable. Strong local participation and commitment are required.

73. Finally, the establishment of "facility centres" may be an interesting and useful institutional innovation for many developing countries. Such centres would provide many of the infrastructural services needed, but often unavailable, in rural environments. Producers would receive advice on, for example, the availability and specifications of machinery and equipment, repair and maintenance services, basic quality control, training, new technologies and marketing. Such centres could become a vital link between food producers, rural processing industries and engineering industries.

V. GUIDELINES FOR INTERNATIONAL ACTION

74. National policy measures, strategies and institutional mechanisms for increasing the contribution of industry to rural development and the production of food, as discussed in the previous two chapters, need to be complemented with actions by the developing countries at subregional, regional and interregional levels, by the developed countries and by international organizations such as UNIDO. The following guidelines for international action may be considered by the Fourth General Conference.

A. Joint action by developing countries

75. The developing countries may wish, either through arrangements for economic and technical co-operation among themselves or bilateral or multilateral agreements among like-minded countries, to undertake actions in the field of industrialization as it relates to rural development and food supply in such areas as:

(a) Exchange of information and experience (including failures as well as success stories);

(b) Establishment of joint ventures in production, marketing and research;

(c) Joint institutional development, including training programmes for entrepreneurship and skills development;

(d) Financial or technical assistance by the higher income and more advanced developing countries to the less advanced.

B. Action by developed countries

76. Developed countries have generally, especially since the mid-1970s, encouraged aid policies that favour rural development in developing countries. Further specific action could be considered on the following lines:

(a) Increased financial and technical assistance, especially to least developed countries and other particularly disadvantaged developing countries, to rural industrialization and industries furthering food production and rural development;

(b) Revision of food aid policies to ensure that rural development is not adversely affected;

(c) Encouragement of, including preferential treatment to, export products from rural areas in markets of developed countries;

(d) Encouragement of twinning arrangements between institutions in developed and developing countries serving the needs of rural areas.

C. Action by UNIDO and other international organizations

77. International organizations, including UNIDO, should intensify research and technical assistance activities in their fields of competence relating to rural development and achievement of food self-sufficiency. They should also intensify co-operative efforts undertaken through inter-agency bodies, such as the ACC Task Force on Rural Development, the ACC Task Force on Science and Technology for Development and the Inter-Agency Group on New and Renewable Sources of Energy. The following specific suggestions may be considered.

1. Research and information

78. Rural development and the achievement of food self-sufficiency require a multi-sectoral approach. Available resources could be better utilized through co-operation among interested United Nations and international agencies and with Governments in organizing pertinent research studies:

(a) Preparation, collection and dissemination of case-studies relating to successful rural development programmes and projects, including profiles of successful rural enterprises;

(b) Preparation, collection and dissemination of information on technologies and products suitable for rural development, including those based on the use of local resources or sub-contractual manufacturing;

(c) Studies on economic and social infrastructure and overhead costs in relation to industrial location in metropolitan, urban and rural areas;

(d) Studies linking technology, size of enterprises and location for different products, analysing the advantages and disadvantages of different scales of production;

(e) Studies on factors limiting or promoting rural development such as development of transportation and communications; generation of agricultural surplus; development of new technology; labour-saving technologies; and tendencies towards concentration and urbanization.

2. Other action

79. Technical assistance should be intensified at the request of developing countries, preferably through arrangements for technical co-operation among developing countries for establishing policies, programmes and projects; setting up rural institutes, technology centres, production centres and training centres; and preparing feasibility studies for establishing industries.

80. Effective programmes for economic and technical co-operation require co-ordination among participating countries. UNIDO and other concerned international agencies could increase the priority given in their work programmes to promoting such co-ordination and co-operation.

81. The UNIDO senior industrial development field advisers could increase their involvement in rural development systems and programmes.

Notes

1/ Lima Declaration and Plan of Action on Industrial Development and Co-operation (A/10112).

2/ Industrialization and Rural Development (United Nations publication, Sales No. 78.II.B.10).

3/ Food and Agriculture Organization of the United Nations, Report of the World Conference on Agrarian Reform and Rural Development (Rome, 1979).

4/ Report of the Third General Conference of UNIDO (ID/CONF.4/22), para. 133.

5/ A Programme for the Industrial Development Decade for Africa (ID/267).

6/ Consultations have been held on the agricultural machinery industry (ID/239, ID/285), iron and steel (ID/WG.243/6 Rev.1, ID/224, ID/291), fertilizers (ID/WG.242/8 Rev.1, ID/221, ID/260), petrochemicals (ID/227, ID/273), pharmaceuticals (ID/255), leather and leather products (ID/WG.258/9, ID/255), vegetable oils and fats (ID/WG.260/9), food processing (ID/278), industrial financing (ID/293) and training of industrial manpower (ID/294).

7/ Report of the International Forum on Appropriate Industrial Technology, New Delhi and Anand, India, 1978 (ID/WG.282/9).

8/ Progress Report prepared by the Lead Agency, 11th Meeting, Rome, 11-13 April 1983, p.2 (ACC/1983/15).

9/ World Bank, Accelerated Development in Sub-Saharan Africa: An Agenda for Action, (Washington, D.C., 1981).

10/ See "Review of selected major issues in the medium-term plans of the organizations of the United Nations system: food and agriculture", United Nations Economic and Social Council, E/1983/99.

11/ "The role of migration", in The Urban Informal Sector in Developing Countries, S. V. Sethuraman, ed. (Geneva, ILO, 1981), p. 111.

12/ Industrialization and Rural Development, op.cit., p.22.

13/ Ongoing research under UNIDO/INSTRAW (International Research and Training Institute for the Advancement of Women) joint project "Integration of Women in Development".

14/ V. G. Patel, Innovations in Banking: The Gujarat Experiments (Industrial Development Bank of India, Bombay, 1981)

15/ Appropriate Industrial Technology for Light Industries and Rural Workshops, Monographs on Appropriate Industrial Technology No. 11 (ID/232/11).

16/ Industrialization and Rural Development, op.cit., p.11.

17/ For example, see W. Loehr and J. Powelson, "An accounting analysis of rural business in Kenya", Industry and Development, No. 4 (United Nations publication, Sales No. E.79.II.B.4).

18/ D. Andersen and M. W. Leiserson, "Rural non-farm employment in develcping countries", in Economic Development and Cultural Change (Chicago, Illinois, University of Chicago Press, 1980), pp. 127-148.

19/ See, for example, Food and Agriculture Organization, Agriculture: Toward 2000, (Rome, 1979).

20/ See also Industry in a Changing World: Special Issue of the Industrial Development Survey for the Fourth General Conference of UNIDO (United Nations publication, Sales No. E.83.II.B.6), chap. IX; and background paper prepared for item 5(f) of the provisional agenda (ID/CONF.5/12), chap. III.

21/ G. E. Schuch, "The world food situation", paper presented at the Seventh World Congress of the International Economic Association, Madrid, September 1983.

22/ See background paper prepared for item 5(h) of the provisional agenda (ID/CONF.5/10), chap. II, paras. 54-55.