

Habitat:

United Nations Conference on Human Settlements

Vancouver, 31 May to 11 June 1976

Physical Elements and Mobilization of Human Resources

Item 10 of the Provisional Agenda



Dist.
GENERAL

A/CONF.70/A/3
22 March 1976

ORIGINAL: ENGLISH

PHYSICAL ELEMENTS AND MOBILIZATION OF HUMAN RESOURCES

This document is placed before the Habitat Conference for information and discussion only. It contains explanatory material for the following subitems of the provisional agenda:

- 10 (c) Shelter, infrastructure and services
- 10 (d) Land
- 10 (e) Public participation

Two other papers are submitted in support of item 10:

A/CONF.70/A/1 provides essential statistical information; and
A/CONF.70/A/2 focuses on subitems 10 (a), (b) and (f).

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INTRODUCTION

1. The most obvious physical components of human settlements are buildings. Between them is interwoven the thread of the infrastructure, transport and communications, networks for the supply of energy or water, and systems for the disposal of liquid and solid waste. A variety of services, social, educational, health, recreational, cultural, commercial and administrative, extend their action in another system of linkages within and between settlements. The land itself, perhaps more than any other component - the use to which it is put and the way it is divided, and the rights of individuals and groups to it - determines the process of human settlement. In the case of rural settlements, the cultivated fields are components as fundamental as the buildings. Other open spaces are organized and arranged in various ways, depending on economic activity and social life. The spaces between and around the buildings are not mere gaps but elements of the whole, whose form conditions the aesthetics and environment of settlements, as much from the point of view of utility as social relations.

2. The list of components surveyed in this document is not exhaustive. It would be a mistake to approach each chapter as an isolated policy theme, for the study has value only as a whole. Moreover, there are other elements that have not been explicitly considered. The treatment by chapters is justified by the specific problems posed by each component and by the fact that these problems require the formulation of special objectives and special instruments for their solution. In this limited sense, therefore, it is legitimate to speak of specific policies in each field.

3. A shelter is a physical wrapping which adapts spaces for human living, tempering the physical conditions (light, temperature, humidity), joining spaces together and separating them, and creating a psychological ambiance.

4. Any architectural ensemble provides the outer covering for a social group and its activities, belongings and tools. The group may be permanent (the family or the economic enterprise), transitory (the audience in a theatre) or a mixture of the two (the staff and customers of a shop). The complex variety of buildings that characterizes a modern city is an expression of the complex structure of groups that comprises the city's society.

5. Not all groups generate a physical wrapping. Certain conditions are required - a stable location, physical proximity of the persons involved, and an institutionalized regularity of behaviour, even if the persons themselves change (cinemas, theatres, concert halls).

6. The necessary features of shelter, therefore, are modified by changes in social structure - in the size, functions, behaviour and culture of groups. Buildings have a certain permanence over time and as changes occur in society the moulds they provide may become inadequate or may even impede changes in the social system. Sometimes, because they have deteriorated or were originally inadequate, or because they were modelled upon the buildings of a society structurally and culturally different, they oppress or distort social and personal life.

7. Differences in the necessary features of shelter between one country and another, or one region and another, do not depend only upon internal social and cultural differences but also on ecological differences, not to mention diverse material and technical resources. Clearly, the type of physical wrapping needed for adapting a space depends on the weather. In a suitable climate, a fence, a roof, or a simple shelter can replace an enclosed building. If problems are approached according to the criteria established for the temperate climate of industrialized countries, it is easy to forget that the aim of a building can be served by a variety of open or partly enclosed spaces combined with smaller enclosed spaces. Villages and cities alike offer a combination of open, partly open and enclosed spaces. These last tend to predominate in harsher climates and larger cities, and where economic wealth is greater and technological development more advanced. The different categories of buildings that appear in a human settlement correspond first to the types of social group for which they are intended, and second to the different architectural solutions adopted. A rich society of high technological achievement can of course afford to outfit public spaces with expensive structures and facilities. The non-existence of open spaces, however, or a lack of interest in them, is often an expression of disregard for the public interest or a misdirection of development which can only be harmful to the quality of life.

8. The physical conformation of buildings is fundamental to defining the shape of public spaces and of the human settlement as a whole. However, this very important item in the physical planning of settlements is not touched upon here.

9. Ideally, the units of which shelter is composed would be analysed according to their functions: dwellings (residential units corresponding to families or households); businesses (groups for economic interchange); factories (industrial production groups); offices (administrative activity groups); theatres, recreation centres, schools, hospitals, and so on. This is impossible in a brief document of this kind.

10. An exception has been made in the case of housing because of its enormous quantitative significance, both in numbers and in the size of the investment it represents, its importance to the quality of life, and its sensitivity to different social and cultural situations, including inequality and chronic poverty. Housing exemplifies the way in which each kind of building poses its own problems and uses resources, space and land after its own fashion. Housing also has its own needs as regards institutional organization, financing and policies, all of which involve different levels of public authority in different and specialized ways.

11. The rural family in its farmhouse is at the same time an economic production unit, and the dwelling cannot be separated from the productive facilities and constructions with which it forms a whole. Even in the industrialized countries - and in the developing countries still more - the family production unit exists in the shape of the craftsman's workshop or the small store. It cannot be destroyed with impunity by narrow housing policies that prohibit live-in stores or home workshops. Specific policies are needed, but rigid compartmentalization which denies the interrelationship of problems or solutions must be withstood.

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12. The first chapters of this document are addressed to the three interrelated topics of shelter, exemplified by housing, infrastructure and social services. Chapter I deals with the formal sector of construction, the construction industry. Chapter V is concerned with land as it relates to human settlements, including land use, land prices and systems of tenure. Chapter VI discusses the very important question of mobilizing human resources through public participation.

I. HOUSING

13. Housing plays an essential role in the development process. Adequate housing has been recognized as essential to health and well-being, 1/ and therefore to human dignity and self-fulfilment. Safe and sanitary housing contributes directly to human health and productivity, which are important both to the quality of life and to economic development. A dwelling that satisfies the felt needs of its occupants can also go far towards reducing the pervasive anomie that accompanies and reinforces chronic poverty. The desire for a better dwelling, when it appears realizable, provides a focus and an incentive for personal saving, both in industrialized and in developing countries. In addition, housing can serve as an effective and acceptable means of redistributing income. The availability of housing can also influence the location of population within human settlements. It can therefore be used to some extent as a planning tool to offset urban sprawl and to direct the physical growth of cities. Finally, since it constitutes so large a part of the man-made environment, it is a significant environmental parameter.

A. The incorporation of housing in national development plans

14. Despite its importance, housing is often treated simply as a residual in national development planning. Even in countries where the significance of housing to development is appreciated, planners often advocate postponing measures to improve the housing situation until a predetermined higher level of economic development has been reached, on the grounds that scarce resources can be better spent on supporting the agricultural sector or promoting industrialization. They assume that not until a source of income has been created will there be a corresponding demand for more and better housing.

15. In fact, delaying investment in housing in order to enhance economic development is to misunderstand both the objectives and the nature of development. Waiting until a country is sufficiently "developed" to "afford" housing may allow the housing deficit to reach intolerable proportions and sacrifice the underlying objective that development is intended to accomplish. In other words, it is wrong to assume that capital invested in housing is capital that is not being used to enhance development.

16. It is important, therefore, for housing production to be set in motion as soon as possible. While food production can be expanded to cover the needs of an entire population in a single growing season, housing can only be built or improved for a very small fraction of the population each year. 2/ On the other hand, once satisfactorily built, housing is consumed only gradually, over a period of years.

1/ Universal Declaration of Human Rights, Article 25.

2/ It is of course true that sustained improvement of nutrition takes many years.

A country cannot shift suddenly to a programme of housing production and improvement and expect a dramatic change for the better in a short space of time.

17. The skills, equipment and materials needed for housing, moreover, need not be taken from other sectors of the economy. As early as 1963, a United Nations report noted that "housing programmes are breeding grounds of enterprise, technology, management and craftsmanship, and they frequently serve as a transitional bridge for unskilled rural migrants as they become integrated into urban environments." ^{3/} Clearly, then, it is essential to plan for housing, as well as other major sectors such as transportation and agriculture, from the very start.

18. A number of situations can be identified in which housing policy can exert an important influence.

19. First, it can help to promote the economic development of regions which have been chosen as targets for the concentration or increase of population. Comprehensive policies aimed at stimulating growth in lagging areas or settling formerly underpopulated regions of significant economic potential should include a housing component. The provision of better housing may not in itself lead people to relocate, but combined with urban services and amenities and prospects of employment it is an important attraction. One prospect of employment, of course, is construction work in connexion with housing development. Alternatively, housing policy can be used to deter migration. If residential construction is restricted, the attraction of construction jobs for migrants in search of employment will decrease.

20. Families can be encouraged to stay in rural areas by improved housing and community facilities. National development plans often seek to halt the migration of the rural population to the big cities by providing middle-sized urban centres in rural areas. To be successful, the plans for these centres must include the provision of services and community facilities, as well as housing. Since over-all densities are lower in smaller towns, a greater variety of housing can be built, making use of the potential that exists for self-help labour and mutual assistance.

B. Some points of conflict in housing policies

21. The objective of a housing policy is not to build houses but to house the population adequately. This can be achieved directly, by intervening in the production of houses, or indirectly, by providing the inputs and facilitating the building process (for instance, by providing land, stimulating the production of raw materials, encouraging the formation of organizations, or fostering savings and

^{3/} Report of the United Nations Seminar on Financing of Housing and Related Community Facilities, Cairo, 14-23 December 1963 (ST/TAO/SER. C/72, annex I), para. 269.

credit). The income level of the population is the most important factor, and this should be borne in mind in formulating a housing strategy.

1. Universal or specific policies

22. As a general rule, housing policy should be addressed to all levels of the population. It is important to maintain this principle of universality, because certain geographical areas and certain social levels or groups (in general, those with the biggest problems) are unable to respond positively to conventional housing programmes and will therefore be forced to remain marginal. ^{4/} Account must be taken in different ways of these different groups of the population, priorities must be established in favour of the poorest, and appropriate strategies and methods must be devised. Some groups, for example, are socially and economically strong enough to look after their own housing needs. Policy makers must regulate this segment of the housing sector, however, to make sure that it does not absorb an excessive share of the resources available to the sector as a whole. Most of a country's population, on the other hand, will require substantial assistance, in the form of land, or financing, or the supply by the government of ready built housing for sale or rent, or the provision of sites with minimal services on which they can construct their own shelters.

Cultural considerations
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good point!
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23. An important principle of policy, therefore, is that resources should be made available, through a variety of programmes, to all income groups, but with priority for the most deprived. It may be helpful for policy-making purposes, to classify families according to income. There are many differences, especially between the industrialized countries and those of the third world in respect of income levels and the distribution of income groups, but they are not so significant as to render the classification meaningless.

24. Group I, High-income Families. This comprises the minority of families at the top of the income pyramid, who require no assistance in the purchase or rental of housing but whose propensity towards excessive expenditure on housing may need to be curbed.

25. Group II, Middle-income Families. These families have some ability to pay and some knowledge of the way in which housing finance works. They require a degree of assistance in the purchase or rental of housing, in the form of easier mortgage loans, reasonable interest rates and help in acquiring land, but provided such assistance is given no direct subsidy is necessary.

26. Group III, Low-income Families. This group consists of those households whose heads are employed on a more or less regular basis but at low levels of remuneration. Most unskilled or semi-skilled workers in urban locations fall into this category. These households require substantial assistance, though not necessarily in the form of massive subsidies to individual families. Assistance might take the form, for example, of technical advice for self-help housing built

^{4/} For a discussion of marginality, see chap. VI, sect. C.

on sites supplied with basic utilities. Special housing programmes assisted by private industry are common in this category. The rationale behind the private sector's contribution is that the provision of adequate housing enhances the productivity of the labour force and also its supply, since housing attracts workers. To carry the argument a stage further, an adequate supply of labour can induce more industries to locate in a particular area. On the other hand, workers' organizations can generate enough pressure to produce more housing programmes.

27. Group IV, Very Low-income Families. This group includes the vast majority of rural families and families living in slums and squatter settlements. With the head of the household often unemployed or underemployed in the town, and occupied in subsistence farming in the country, such families barely manage to eke out a living. In the poorer developing countries most households are in this category. Families in this group normally require substantial subsidies if government housing is provided. When resources for new housing are limited, the best way of doing this is through small loans to improve their existing housing and their neighborhoods, and in some cases to purchase or legalize their title to land.

28. The selection and ranking of the groups requiring assistance will depend upon the particular circumstances prevailing in each country, but it is nevertheless possible to identify certain sub-groups which are eligible for special consideration, whether in the form of loans, technical assistance, or legalization of land ownership. Among very low-income families, for example, priority should be given to refugees from natural disasters or political upheavals, families displaced by urban renewal, and families living in squatter settlements. Measures legalizing these settlements or guaranteeing the squatters' right of tenure to the land they have built on can be an incentive to these groups to improve their housing gradually at their own expense. In such cases, government money can best be spent on providing access roads, piped water and other basic facilities, with neighborhood families contributing the unskilled labour needed for these projects.

29. Institutionalized investment operates in the modern, monetary or formal sector only, and seldom reaches the informal sector. ^{5/} Similarly, housing programmes for very low-income families, based on information from formal censuses and statistics, hardly ever reach the people for whom they are intended. Not until governments realize that there are two distinct urban worlds and distribute their resources equitably between them will there be a real breakthrough in public housing.

30. Given this fact, and the limited volume of resources that most developing countries can marshal for housing, there is no point in continuing to pour massive subsidies into "model" public housing projects which may bring the authorities prestige but benefit only a tiny fraction of the low-income group, leaving the vast majority unassisted. Market forces cannot be counted on to supply housing, except for the well-to-do, unless more savings are channelled into the sector, making mortgage loans more readily available and stimulating the building industry.

^{5/} For a discussion of the nature and role of the informal sector, see chap. VI below.

While some public housing may have to be built for groups with special needs, developing countries with market economies are urged to adopt policies which will help to increase the flow of funds to the housing sector, and at the same time to spread these resources over a far larger number of households, emphasizing "affordable" popular shelter that can be improved later, instead of the provision of conventional housing. 6/

2. Distribution of resources and income redistribution

31. Housing can be an indirect but effective means of redistributing resources. Improving the housing conditions of the lowest-income groups will bring about an over-all improvement in living conditions. Moreover, addressing the improvement to the most deprived groups, means that much more significant results can be achieved in terms of coverage with the inevitably limited resources available.

32. At present, however, many features of housing policies, and housing development generally, merely accentuate the maldistribution of wealth. In the case of programmes designed to promote the construction of housing through low-interest loans or tax exemptions, the incomes of the poor are too low to allow them to qualify and the benefits go to economically stronger groups, thus reinforcing inequality. The provision of subsidized housing for government and other public employees has a similar effect.

33. Low-income families, through the payment of indirect taxes, help to finance the infrastructure and services provided to modern-sector housing without receiving the same services themselves. 7/ The pricing of utilities, moreover, is often structured so as to favour larger consumers. The wealth gained through speculation in land by those with sufficient resources to invest in it is drawn from lower-income families who are forced to pay the high prices demanded. In general, projects undertaken to enhance the national image are of no benefit to the poor. Such misspending deprives them of vital, though not politically exploitable, projects such as sanitary infrastructure.

34. Housing subsidies are one means of correcting this maldistribution. In most developing countries, however, not enough systematic attention has been paid to determining the necessary mix of government subsidies and supports. For example, the below-cost sale or rental of housing units may benefit the target groups but it also contributes to the profits of developers and other groups who need no subsidy. Similarly, making mortgage loans available at subsidized rates of interest favours middle and upper-income groups with access to the credit market, not the population as a whole. Another example of misdirection is fixed-interest mortgage loans in countries with high inflation. First, the high down-payment involved favours those groups that are able to pay. Monetary depreciation then so reduces the total amortization cost that society ends by granting large subsidies to those who need them least. Indirect subsidies to encourage private savings also assist only higher-income groups. In the case of fully-built dwelling units for

6/ See ibid. for a discussion of the concept of "popular shelter".

7/ For a discussion of this problem, see chaps. II and III below.

low-income groups, the cost and hence the subsidies tend to be so massive that housing of this kind can only be provided for a very small proportion of the target population.

35. Direct subsidies should be limited, therefore, to those families which really need them. These include squatters who are relocated against their will, rural households taking part in settlement or resettlement projects, the victims of floods, earthquakes or other natural disasters, and workers employed in the construction of large infrastructure projects (dams, power stations and the like).

36. More use should be made of indirect subsidies to encourage voluntary savings in order to finance the housing needs of the low-income groups. These subsidies can be used to cover the financial risks of lending to such programmes, and the costs of administering and supervising loan portfolios consisting of large numbers of small loans to low-income families. They can also be used to pay for such activities as community organization and technical assistance. These costs will be incurred chiefly during the organizing and building phase of projects, and subsidies will be needed for a shorter time than in the case, for example, of subsidies on interest rates for long-term housing loans.

37. As far as subsidized rates of interest for low-income groups are concerned, the volume of funds available to the government for such subsidies may be the deciding factor. Care should be taken not to impose too great a burden on the national treasury or to limit the subsidies to too small a fraction of the total population. It may be possible to provide some subsidies from private sources. Higher-income groups living in government housing projects should be charged full market rates of interest, and the surplus return should be used to subsidize the amounts paid by low-income families.

3. Leasing and ownership

38. From several points of view, leasing and ownership have moved closer together in recent years. As far as rights are concerned, an individual who becomes the owner of a dwelling by paying the charges of a long-term mortgage has a permanent right in the dwelling only on condition that he continues to pay. With the trend of modern legislation towards protecting the tenant, renting a dwelling also confers a firm right of occupancy on condition the tenant continues to pay.

39. The cost of the dwelling to the user is another important aspect. Theoretically, the payments in both cases are similar since in the long run they must cover the full value of the investment. In fact, most of the cost depends more on the type of loan and the legislation relating to tenancy than on the system of occupancy itself.

40. A third aspect is mobility. Here renting seems slightly more adaptable than ownership to changing needs, family size, or location of activity, but the difference is not significant.

41. A fourth aspect is the compatibility of the two systems with high-density collective construction. In the past this was usually associated with renting but co-operative ownership can be equally efficient.

42. The significant differences lie elsewhere. Private or co-operative ownership brings into play strong motives for mobilizing savings and maintaining property in good condition. Leasing has advantages for short periods, and reducing rents is a convenient means of providing subsidies.

43. It might be thought that through rent reductions the state could use one private group to subsidize another (with holders of capital or owners of houses subsidizing borrowers or tenants) but there are difficulties. If rents are frozen or deliberately fixed very low to benefit tenants at the expense of owners, investment in dwellings for rent will dry up and the only rental housing available will be properties that for one reason or another cannot be lived in by their owners. If interest on housing loans is set too low or if the principal is not protected against currency depreciation, capital will flee to other sectors, funds will be reduced and the whole system will be paralysed. Moreover, these categories (owners and tenants, lenders and borrowers) are very heterogeneous from the point of view of income level, and the social outcome of benefiting at the expense of the other is uncertain.

4. Rural versus urban housing

44. Despite the rapid rate of urbanization, the majority of the people of the less-developed countries still live in rural areas, 8/ at a standard lower even than that of the very poor in the rapidly expanding cities. This poor quality of life is a major cause of massive urban-rural migration. The lack of infrastructure and even more of services is chiefly responsible, but housing too is gravely deficient. [A recent United Nations publication notes that "as many as seven out of ten homes in the rural areas of developing countries are currently so unsuitable for human habitation as to require replacement or major alteration." 9/ It is of course questionable whether there can be standards of comparison for housing in the same way as for delivery of services. Almost everyone enjoys some form of shelter, while this is not true of services. 10/

45. Rural housing, whether small villages or individual dwellings, tends to be production-oriented with the residential unit and the agricultural production unit combined. There is generally no network supply of electricity or any sewerage, and water is taken from wells. On the other hand, rural dwellings tend to be on generous plots of land with low population densities. Human and animal refuse can be used as fertilizer and residential waste does not threaten the

8/ "Global review of human settlements" (A/CONF.70/A/1), para. 11.

9/ Financing Rural Housing: Selected Policies and Techniques for Developing Countries (United Nations publication, Sales No. E.74.IV.2), p. 6.

10/ This point is discussed at greater length in chap. VI below.

natural environment. Farming methods, however, can have destructive effects, particularly where the environment is fragile and weather conditions adverse.

46. The social, economic and environmental roles of rural housing, therefore, are different from those of urban housing, and in policy terms the two problems are quite distinct. In rural areas, land and house building materials are cheap and readily available. Infrastructure and social services, on the other hand, barely exist. Rural housing policy has direct links with agricultural policy, particularly agrarian reform in such matters as land-tenure, the break-up of large land holdings, and methods of production.

47. The dispersed nature of rural housing tends to make action by large central organizations difficult and expensive as well as less efficient. It is also more difficult for rural householders to combine to exert pressure on the central government to pay more attention to their housing needs. The result is a relative absence of rural housing policies. There are a few countries which have redistributed housing resources between urban and rural areas. For example, Cuba, Ghana, the Ivory Coast, the State of Kerala in India, Tanzania, and Venezuela have all emphasized the improvement of housing and services for rural families. Their experience should be studied in depth.

48. The attention given to cities and the relative neglect of rural areas intensifies rural-urban migration. From this point of view, city action often aggravates the very problem it is designed to solve. In terms of investment, a smaller quantity of resources could probably produce a larger result in rural housing than anywhere else. Viewed aright, the problem of rural housing is not so much one of competition with the cities for scarce resources as a challenge to capacity for innovation. The modest local resources of rural areas must be mobilized according to models quite different from those in force in the industrialized urban world.

5. New housing versus improvement of the old

49. Another decision that has to be made is whether to emphasize the rehabilitation and improvement of existing housing or the building of new housing.

50. A recent study by the United Nations corroborates the belief that it is impossible at present levels of development for governments to deal with their housing problems solely by new housing. 11/ Resources are insufficient to replace old or inadequate dwellings by new ones and cope with future needs as well. It is estimated that over 40 per cent of the urban area of many large cities in developing countries consists of squatter settlements built or financed by the residents themselves. 12/ These families have invested considerable capital

11/ "The production of low-cost housing and the increase in sites and services projects have been insufficient to provide a basic minimum of shelter services." World Housing Survey (United Nations publication, forthcoming), chap. II, p. 8.

12/ Ibid., chap. V., p. 3 and annex II, table 16.

in their urban communities which would be lost if the settlements were simply removed. In countries where capital is scarce, this spontaneous creation of physical capital should be fostered and encouraged, not crushed. On the other hand, most cities, particularly old ones, have a large stock of deteriorated buildings which offer a valuable opportunity for a flexible and imaginative policy of rehabilitation. Both types of shelter can reduce the need for new housing to proportions more commensurate with resources.

C. Housing finance

51. The magnitude of the housing deficit in the developing countries far exceeds the resources available to their governments. Even in the private sector, the machinery for financing the purchase of housing is inadequate in most countries, except for the well-to-do. Most households, therefore, must rely on their own efforts, and must build their dwellings on a piecemeal basis with no outside financing.

52. Some governments have taken steps to promote the growth of savings and loan associations and other financial intermediaries. In other countries, publicly-owned housing finance corporations have been set up to finance home mortgages. As noted already, however, such measures benefit chiefly middle and upper-income households.

53. The mix of private and public funds and their application to various schemes will vary from country to country, but it is important that both should be integrated into a comprehensive housing programme designed to meet the needs of the national development plan.

54. There are a number of potential sources of public and private capital for housing. They include: general and specific appropriations from the national treasury; housing bonds; loans from public or private financing institutions such as savings banks, savings and loan associations, co-operatives, credit unions, insurance companies and pension funds; levies on private enterprises in proportion to their earnings or payrolls; the personal resources of the potential consumers of housing (money or labour); and lastly, international funds.

55. In selecting from among these alternatives, it should be kept in mind that an effective housing policy involves the redistribution of wealth. Subsidies must therefore be made available to groups which cannot finance their dwellings out of their own savings. These subsidies can be direct or indirect but as noted already, it is important to manage them so that they do not go astray, as frequently happens, and benefit groups that are already relatively prosperous.

56. If the strategy chosen involves greater participation by the private sector, efforts should be made to enlist investors who would not normally be interested in investing in housing. These are a number of steps that governments can take to do this. Favourable loan terms and other subsidies can be granted to developers who agree to build non-profit housing. Long-time personal savers can

be given bonuses and their savings safeguarded through deposit insurance. Home loans for certain types of dwelling can be guaranteed. Interest rates on savings can be indexed to the cost of living in order to offset the effects of inflation. Guaranteed housing bonds can be issued and marketed in order to channel private savings into the housing sector. Small, short-term, low-cost loans can be provided to families in squatter and rural settlements to enable them to improve their housing gradually. In countries where inflation is a serious problem, indexing can be extended from individual savings to provident or union pension funds, trust funds, insurance funds, postal savings accounts and other kinds of public and private fiduciaries. Their steady and predictable cash flows are a potentially rich source of long-term financing for housing purposes.

57. In countries where there is no well-developed securities market, the compulsory absorption of government housing bonds by builders of luxury housing, office buildings and the like, may be an effective means of generating additional funds for low-cost housing. Another means of securing capital funds for expanded housing programmes is the adoption of compulsory savings legislation drawing upon the resources of private enterprises. Under such legislation, employers would be subject to levies proportionate to their payrolls or their earnings.

58. An adequate and reasonably stable contribution from the central government is also essential for augmenting the flow of funds into the housing sector. This contribution will come primarily, of course, from the proceeds of taxation, and its level will therefore be determined by the government's ability to tax and by the priority it assigns to housing development in drawing up its budget. Unlike other funds which must be repaid with interest, government outlays can be non-recoverable, going to subsidize low-cost housing projects, cover administrative overheads, and create favourable conditions, for example by insuring savings and mortgages, for the mobilization of voluntary savings to be channelled into housing for middle and possibly lower-income groups.

D. Summing-up

59. Housing should be regarded as an essential component of national development plans. Housing policy can serve both economic and social purposes. It can influence the movement of population, by helping to deter or encourage migration, and it can be used to redistribute wealth. Both direct and indirect means can be used to achieve the objective of adequate housing for all. An appropriate strategy will combine these means so as to take account of the needs of all levels of the population, paying special attention to the problems of the very poor.

60. Conventional housing programmes cannot reach the poorest groups, who tend to be outside the formal or monetary sector altogether, particularly in rural areas. They will benefit most from help in improving their existing housing, in

the form of advice on self-help construction, short-term loans for the purchase of materials, and the provision of rudimentary infrastructure and services. Limited resources will yield the biggest return if they are spent where the need is greatest.

61. The size of the housing deficit, in the developing countries especially, greatly exceeds present resources. A number of alternatives are open to governments in order to secure the financial resources needed for a housing programme, ranging from higher taxes to international assistance. In market economies, it is particularly important to mobilize voluntary savings and to encourage participation by new investors. Loans and subsidies must be assigned according to real need, bearing in mind the aim of income redistribution.

II. INFRASTRUCTURE

62. A shelter, to function as part of a human settlement of any scale, must be supplied with food, water, energy and the other goods necessary to support human life. Infrastructure provides the network through which these goods are distributed, as well as the linkages that enable people to travel within and between settlements and to exchange information.

63. The distribution network, or life-support system to use a term drawn from the image of "Spaceship Earth," can be divided into a number of sub-systems: the water-cycle, consisting of water supply, drainage, sewerage, and the treatment and disposal of waste; the goods-flow cycle, which includes the physical distribution of goods and the collection and disposal of solid waste; and the energy cycle. The communications system can also be sub-divided, into the telecommunication and postal system, which provides for the flow of information, and the transport system which provides for the delivery and collection of products as well as the circulation of people.

64. The role of infrastructure in the development process is vital. Through its dynamic system of linkages it facilitates the meaningful integration of town and country, region and nation, and the different sectors of the economy. It is clearly short-sighted, therefore, to regard infrastructure planning as a purely technical problem of providing new areas with services. On the contrary, infrastructure programmes should be used to guide the development of settlements into economically and ecologically efficient spatial forms.

65. Most infrastructure systems are characterized by extreme inequities, both in the physical availability of services and in their cost. Those who suffer most severely from deficits in public utilities are generally the households with the lowest incomes, the least well-equipped to seek alternatives in the private market place. The relatively well-off minority, often as little as 20 per cent of an urban population or less, is adequately, sometimes sumptuously, served through public systems, while the majority struggles to survive with minimal service and ingenious makeshifts. Low-income families, through indirect taxes, help to finance the infrastructure services provided to modern-sector housing without receiving the same services themselves.

66. Conditions in a major Asian metropolis that is not atypical serve to illustrate the problem of physical availability.

"Only 30 per cent of all households have piped water connexions. Only 20 per cent have sewer connexions. Approximately 25 per cent of the urban population lives at very high densities (400 to 1,000 persons per acre) in areas without proper drainage. Only about 50 per cent of all households have electrical connexions in their homes (many of these with only one or two light connexions, nothing more). Only 6 per cent of all households have individual gas connexions, although gas would be cheaper than other fuels (firewood, charcoal, kerosene or electricity) for cooking. Only

households with a monthly income of \$US 100 or more (about 6 per cent of all households) can afford a telephone." 13/

In this city, as in many others, current policies are systematically biased in favour of an affluent minority.

A. The water cycle

67. Most households in developing countries spend virtually all their incomes on food and rudimentary shelter. Pitifully little is left to pay for sewerage, waste disposal, and water purification and supply. It is estimated that fewer than 30 per cent of urban dwellers in the third world live in housing connected to public sewage systems, as against virtually 100 per cent in the United States and Canada. More serious is the fact that another 30 per cent of the third world urban population enjoys no sewage disposal system at all - not even buckets or pit privy septic tanks. In 1970, only a little over 3 per cent of urban sewage was publicly collected and subjected to some kind of treatment. That the corresponding figures for rural areas are lower still accounts for the shocking fact that some 50 per cent of the population of developing countries suffers from permanent and grossly debilitating parasitic infections. 14/

68. As far as water supply is concerned, it is estimated that only about 50 per cent of the urban population in the developing countries is served by house connexions, with an additional 20 per cent being served by public standposts. About 80 per cent of the rural population, or over 1,000 million people, have no access to water that can be regarded as comparatively safe - that is, free from gross biological pollution. More than 50 per cent of the population served receive their water from intermittent supplies. In one region, the estimate is more than 90 per cent.

69. These and similar observations have led the World Health Organization to recommend that water supply and water-borne sewage systems should be treated as a single utility. Planning the two separately is an example of the kind of sectoral thinking that must be discarded. Greater efficiency and equity are needed in the use and re-use of water for all domestic and industrial requirements, and the water needed to produce more food. Conservation of the environment and the rational use of hydropower from streams are other aspects that should be taken into account in planning for the water cycle.

1. Water supply

70. The approach to water supply developed over centuries in the industrialized world attaches great importance to high standards of water quality and hence of

13/ John D. Herbert, "The supply and pricing of public utilities as an instrument for social and economic development" (A/CONF.70/RPC/BP/20).

14/ Data provided by World Health Organization.

engineering design. ^{15/} It has served most of the population of these nations well. It has also met with some success in the major metropolitan centres of the developing world, at least in the case of the wealthy. The urban shanty-towns on the periphery or in the centre of the major cities, and the rural areas and smaller communities of the third world present a problem of survival rather than standards, and attempts to solve it by the traditional approach cannot hope to succeed on the necessary scale.

71. The 1972 Progress Report of the Director General of the World Health Organization indicated that the budget required to meet the water supply goal of the United Nations Development Decade in 90 developing countries was \$US 13.2 billions. It was estimated that even with expenditure at this dramatic level, only 25 per cent of the rural population in these countries would have reasonable access to safe water by 1980. At the same time, the 1969 Indicative World Plan of FAO recommended an increase of 48 per cent in the irrigated area of the world within two decades, a development which would require an investment of some \$US 36 billion. It is unlikely that water supply can be extended to catch up with rapid population growth, if present practices continue. It is reasonable, therefore, to consider programmes based on providing a more modest standard of supply to a much larger proportion of the population.

72. Although the ultimate goal should be to provide water to all houses, countries need to develop intermediate goals in keeping with their resources and their wants, as influenced by their climate, culture, economic and industrial development, recreational pursuits and other factors. The goals established, along with technical criteria and standards for water service, have a direct bearing on costs. These cost, in turn, are crucial in timing the provision of service and in determining priorities between competing needs, such as water supply, housing, education and food, in the light of the internal and external resources available.

73. The provision of water supply and sanitation has been hampered by a built-in conceptual contradiction in the decision-making process: programmes designed to answer the needs of the people are at the same time required to be profitable. The price charged then puts these services out of reach of the majority of the people they are intended to serve.

74. Not all users require the same quality of service. If processing and distribution can be controlled so as to deliver lower qualities or levels of service to some users, reserving the highest quality services for essential uses, substantially larger groups of consumers can be served at little or no extra cost. For example, many industrial users can tolerate low-grade supplies of water.

75. Three things are essential if a water supply system is to function successfully over a period of time. The technical aspect, the development of a water source and delivery system, is obviously vital. Equally important, however,

^{15/} For a discussion of the problem of standards in another context, see chaps. I and VI.

is effective management. This covers not only the recruitment and training of competent staff and ensuring that sufficient revenue is received from the distribution of water to pay for proper operation and maintenance, but also research and development to improve designs and materials and planning for the expansion of the system. The third component, more difficult to define, is the interest of the people themselves in obtaining a safe and adequate water supply. Their desires will be reflected in the choice of priorities among important community needs, and by their willingness to pay with money or contributed labour for improved water service.

76. In some developing countries, the importance of the managerial component and of the need for public participation has been overlooked. This has limited the success of water development programmes and in some cases resulted in the waste of resources. Accounts are all too frequent of wells left unused for lack of simple maintenance or because the villagers were not consulted about their location.

77. In the industrialized countries, the problems are mostly technical. As dependence upon surface water increases, more attention will have to be given to providing a high degree of treatment for water contaminated with organic waste and thermally and chemically polluted by industry. Competition for scarce water between household, industrial and agricultural users is also focusing attention on the need for long-term planning for water resources and, in some instances, the formulation and putting into effect of allocation and conservation policies.

2. Drainage and sewerage

78. Survival does not depend only on the availability of sufficient water. Polluted drinking water and inadequate or non-existent sewerage and drainage also threaten the health and lives of the millions of desperately poor who constitute the majority in the developing countries. Cholera, malaria, typhoid, and paratyphoid are some of the most obvious killers.

79. Very large cities have evolved in developing countries which "import" large quantities of water but make no provision for water-borne sewage disposal or proper drainage. In order to achieve a water "balance" and minimize the health hazards and other risks that arise from flooding and the backing-up of sewage, some minimum form of drainage network is obviously necessary.

80. The effectiveness of water supply improvements in controlling insect-borne diseases depends on the elimination of wet breeding sites for the insects. Improvements in water supply, surface water drainage and sewerage must therefore be co-ordinated. Simply increasing water supply, as is often done, may actually intensify the problem. This emphasizes the practical need for a co-ordinated approach, based as far as possible on analytical studies and guided by over-all urban planning and programming.

81. Present-day water-borne sewage systems are enormously wasteful of water as well as costly. Modified systems that conserve water are available and should be used in new urban developments. Innovative possibilities, capable of improving either economic or ecological performance or both, include systems for the irrigation and fertilization of agricultural land and improved biological treatment plants.

82. Non-network methods of sewage disposal range from minimal techniques such as borehole latrines to advanced variants of the septic tank. Simple disposal systems can work well in small or low-density settlements, if care is taken not to contaminate water supplies. It is usually assumed, however, that even in these settlements a move towards "advanced" sanitary systems implies the construction of a sewer network. In fact, technology now coming into use can combine sanitary facilities of a high standard with plants producing useful fertilizer and energy in the form of methane gas. In view of the high cost of network technologies, such systems may already be cost-competitive in some situations.

83. Recycling technologies seem likely to become economically attractive in both network and non-network systems, large and small. The intensive development, economic appraisal, and trial of such systems would be a very timely contribution to the solution of urban infrastructure problems.

B. The goods-flow cycle

84. A key element in "life support" for all but the smallest and most self-sufficient of rural communities is the system for the physical distribution of goods and the removal of refuse. The system includes such components as rural and urban marketplaces, shops and other trading locations; storage, warehousing and transshipment facilities at the supplier's and the consumer's location; transport and processing enterprises; and the collection and disposal of solid waste. The system covers not only food, which is of course an essential factor, but other goods such as clothes and materials of all kinds; in other words, the flow of physical resources directly or indirectly needed to fulfil human needs. This cycle of activity of course makes use of the transport system but it is considered separately because it deals with the supply of resources vital for human life.

1. Physical distribution of goods

85. The major problem as regards the physical distribution of goods - food in particular - is reaching the consumer. The accelerated urbanization now taking place in the third world is aggravating the problem of bringing food that has already been produced to the consumer at the lowest possible price, with the minimum of waste, when, where and how it is most convenient and desirable. The loss of opportunities for economic development is great when transport facilities are inadequate to give agricultural and other producers in and around rural settlements effective access to regional and national markets for

their products, and the waste of food because it cannot be conveyed to the consumer in time is huge.

86. Technical improvements in the handling, classification, storage, transportation, processing, and wholesale and retail distribution of agricultural products, through a more efficient marketing system, will bring about a more economical use of resources, reduce waste, improve the quality and supply of internal and external markets, increase farmers' incomes, reduce consumer prices and stimulate rural and over-all development.

87. Central and neighbourhood markets and other distribution facilities and their associated freight traffic are typically major causes of traffic congestion in urban areas and attention should be given to their functioning and location. A storage infrastructure at the farm level, and in certain centres at the area and regional level, would make it possible to regulate supplies and avoid losses and waste.

88. A system of roads that will allow the outflow of agricultural products and access to consumer markets is also necessary. The problem of the rural transportation and distribution of goods is primarily a question of standards and priorities in road construction, although the extension of rural telephone and telegraph service is also relevant to the organization of effective markets. The economic benefits in many situations of low-cost feeder roads have been well attested. Realizing them requires a willingness to allocate much of the capital budget for transport to large mileages of rural roads of modest standards, and less to high-standard major highways.

2. Solid waste collection and disposal

89. In urban areas at least, the removal of solid refuse is also vital to health and well-being. The task is very large. It has been estimated that the average rate of waste generation in the developed countries is well above 1 kilogramme per capita a day. In some cities of the United States it has been found to be over 2 kilogrammes a day. In most of the cities of the developing countries rates are under 0.9 kilogramme and the average is about 0.6. Collection is the most costly part of the solid waste disposal system, accounting in some countries for 85 per cent of the total.

90. In the developed countries, innovative measures to reduce wasteful design and packaging (through controls and taxation) and to re-use refuse are now under very active consideration. Successful examples of the recycling of refuse, through the extraction of valuable materials (metal and glass), the production of energy by combustion, and the composting of refuse, or refuse and sewage together, for fertilizer, already exist in the United States and several European countries.

91. One consequence of the abundant labour and the high organic content of refuse in the developing countries is that the advanced and costly mechanization used in collecting refuse in the industrial countries (such as dustless-loading compressor vehicles) is unlikely to be necessary.

92. There are severe deficiencies in many countries in the disposal of solid waste. Open dumping is a standard practice, often resulting in air and soil pollution and plagues of rats and flies. Safe and nuisance-free disposal can be accomplished by sanitary landfill, where compacted wastes are covered with earth each day, by composting, or by incineration. All these methods can be combined with reclamation or recycling schemes. These are most effective when carried out at the point where the waste is generated, i.e. agricultural wastes being composted on the farm where they are produced, and wastes from manufacturing processes being recycled at the plant where they are generated.

93. In short, with economically appropriate technologies and the fullest use of modern biological, chemical and engineering science, refuse can come close at least to being an asset rather than a liability.

C. The energy cycle

94. Energy supply is vital to economic and social development. Increased economic activity and higher standards of living are linked to higher energy demand, a substantial part of which comes from human settlements. Energy is an essential input in the satisfaction of primary needs, providing light, heat for living and working-space, food preparation and hot-water supply and power for domestic use and transportation, and for telecommunications.

95. Recent developments seem to indicate that the era of cheap energy is over and that a new phase of more costly supply has begun. Future economic and social development in industrialized and developing countries alike will demand a more efficient use of primary energy resources, and achieving this should become an immediate priority. In most developed countries, decades of low-cost energy supplies have led to waste and profligate habits, causing demand substantially in excess of essential needs. In most developing countries, on the other hand, the potential needs are undoubtedly greater than present ability to supply them. The share of human settlements in a country's total energy consumption will vary according to the climate, levels of economic and social development, and other factors. Considerable though it may be, this consumption is by its nature capable of being reduced, and efforts should be made to promote a less energy-intensive orientation of human settlements.

96. In doing so, it should be borne in mind that the energy demands of human settlements consist of a fixed component, depending on the structure of the shelters and their arrangement in space, over which the user can exert little or no influence once these have been established, and a second variable component, influenced by the consumer's habits and his choice of a more wasteful or more frugal pattern of energy use. Considerable advantages can accrue to urban settlements if their domestic energy supply networks (electricity, gas, heat) are integrated with larger regional networks providing the energy required for agricultural and industrial processes, and if they can take advantage of the resulting economies of scale and enhanced security of supply. Regional energy

systems, in turn, are capable of economic optimization within the framework of national energy supply systems.

97. The factors that condition the basic demands for energy in human settlements will also affect the economics that determine the most appropriate method for supplying these energy needs. Thus, where buildings are large and closely spaced, as in densely populated urban districts, integrated networks can be installed for the supply of electricity, gas and heat. In less populated areas, although overhead distribution systems may be economic for electricity, the low level of demand for heat and gas may prohibit the installation of distribution networks for these. In rural areas, it may not even be economic to supply electricity from an interconnected system, and in most countries of the world rural electrification schemes must depend on some form of financial subsidy. In view of the difficulty of meeting the energy needs of isolated rural dwellings and communities, attention has been given in some countries to the possible application of appropriate local sources of energy, such as the use of windmills to provide pumping power and electricity, and the utilization of biogas, produced by the fermentation of vegetable and other organic waste, as a fuel.

98. Development policies for human settlements should take account of such important trends in the energy field as the development of nuclear power (not forgetting possibilities for the supply of heat, and the siting restrictions that may be necessary on safety and environmental grounds), and the possible future use of solar energy.

99. A diversified approach to energy supply offers the greatest flexibility. It avoids over-dependence on a single energy source or on vulnerable centralized power networks. It also offers an incremental approach to energy supply for settlements of urban newcomers as their communities and their economic status are gradually consolidated.

100. No discussion of the energy cycle would be complete without mentioning waste heat, often regarded as "thermal pollution". Again, positive and discriminating use of technology can - given a reasonably restrained level of energy use - turn defeat into victory. Many innovative processes, for example, the use of waste heat (perhaps jointly with recycled nutrients from refuse or sewage) to support highly productive fish-farming, or in a vacuum distillation process to produce safe water and useful salts, look promising, though they still await large-scale study and application.

D. Transport and communications

101. The main purpose of the transport system is to facilitate the circulation of people and the movement of goods within and between human settlements. As indicated earlier, there is some overlap between the system dealing with the goods-flow cycle and the system dealing with the flow of people, since both make use of the same elements, such as streets and highways, trains, ships and planes and the problems in both cases are those of accessibility.

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102. Three universal functions of the transport system affect human settlements in fundamental ways. First, transport makes it possible for a community to exist and survive. It supplies the population with food and other necessities of life, moves needed materials to factory, farm and workshop, and delivers the community's products to buyers elsewhere in the country and abroad. This is the role played chiefly by long-distance railways, inter-city highways, ships and port facilities, and more recently by national and international airlines. A second and more visible function performed by transport systems is the local circulation of freight and passengers. Most of this occurs on community streets and highways, which accommodate the movement of pedestrians, motor vehicles, bicycles and animal-drawn vehicles. Third, transport, as much as any other single factor, is responsible for the deterioration of the environment not only because of its contribution to the noise, pollution and hazards of community life but because of the extent to which it uses land.

103. The planner's first task is to supply the national and regional transport networks to support a physical pattern of human settlement locations that is in the public interest. A second and increasingly complex task is to arrive at internal transport system solutions that will overcome the congestion and high social costs of urban concentration. The third is the need everywhere to view decisions on the design and location of transport as integral parts of a strategy to improve the quality of life.

1. Transport for rural settlements

104. Many millions of people engaged primarily in agriculture live in human settlements that are almost completely isolated. At a time of growing concern over world food supplies, the ability of these settlements to be connected to the rest of the economy is a matter of great importance.

105. The importance of transport is strikingly clear in the contrast between a village that has ready access to markets and one that is without an all-weather road connexion or perhaps any road whatever. In the latter case, there is little knowledge of the outside world, no scientific methods of agriculture, no cash coming into the village, no health services, veterinary services, or adequate means of education. Crops are disposed of for whatever they will bring locally.

106. The village with a good road and some degree of dependable bus and truck service presents a very different picture. Seed, fertilizer and other inputs for intensive agriculture find their way into the settlement, cash crops are marketed regularly, and consumer goods can be purchased at the market place. Children travel by bus to school, the agricultural extension worker and the veterinarian reach the settlement, and transportation costs by truck are sharply below the cost of moving goods by human and animal power.

107. The relations between immobility and poverty and between mobility and affluence have been well documented. It remains to decide what action should be taken. Already many countries are allocating 20 to 30 per cent of total public

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investment to transport. There are countless miles of local rural roads still to be built, and many major inter-city routes need to be modernized at high cost. It is impossible to supply all human settlements with instant accessibility. The aim should be to supplement national and economic planning with physical and spatial planning that will ensure that the resources available for transport are invested in the specific network of human settlements best able to achieve goals in other sectors.

108. A national strategy needs to consider how much transportation is required to produce a given value of national product. In industrialized countries, a given percentage increase in national product will generally involve a comparable percentage increase in the volume of freight. In earlier stages of development, freight burdens increase more rapidly than output. A strategy to avoid unnecessary transportation in the creation of wealth will involve such factors as the choice of transport technology, the possibility of construction in stages, the location of human settlements to be included in the network, the extent to which processing and storage can reduce unnecessary movement, and the general efficiency of transport operations.

109. This brief account can do no more than allude to the problems of inter-city and rural transport. What is important from the point of view of human settlements is that with limited transport resources it is not possible to provide all-weather connexions to whatever planless pattern of community locations may emerge. The transportation and other costs of alternative patterns of settlement must be weighed, in order to encourage those that are desirable and avoid those that would so dissipate national resources that not even a need for regional equity is sufficient to defend them.

2. Internal transport for large urban concentrations

110. In many parts of the world, cities that are already overcrowded and suffering from critical transportation problems will double their population by the end of the decade and triple their ownership of automobiles. Traffic congestion has already reached staggering proportions, public transit is grossly inadequate, and pressures are mounting for costly engineering solutions. Countries in all stages of development confront the problem of how the automobile is to be accommodated, what measures can be taken to make public transit work, and what urban growth policies and community designs can be adopted to reduce the congestion that disrupts the free flow of people and of freight.

111. Many current patterns of city travel create a highly unfavourable ratio of energy to output. The energy-efficiency of different methods of transport, however, varies not only with the technology but with the number of passengers actually being transported, so that a taxi shared by four passengers is more efficient from the point of view of energy use than a bus with a rush-hour load. A subway that is little used in off-peak hours may be highly inefficient in terms of passenger miles generated per unit of energy. What is needed is a transport system that incorporates vehicles that are energy-efficient for the purposes they

are designed to serve, and uses them in ways that take advantage of their inherent efficiencies.

112. Whether or not new metropolitan rail systems offer solutions that match their cost is a question not yet answered. On the positive side, the speed, comfort and safety of new subways are impressive, and they do permit greater efficiency of movement for considerable numbers of people in conditions of high density. Rapid transit systems save space and supply a fixed framework for the development of the urban area. Their possible disadvantages include the initial cost, the often unnecessarily high capacity, the inflexible nature of their fixed location, the fear of early obsolescence, the relatively limited proportion of urban trips accommodated, and the fact that low-income families generally cannot afford to use them.

113. To assess the desirability of rapid transit systems, the analysis must be extended beyond transportation to the urban system as a whole. If they make possible large cost reductions by allowing land to be used at high density and offer substantial benefits in the organization of economic activity, their introduction may be warranted. It may not be the high cost of rail relative to other transport that is critical, but rather the comparative total costs and benefits of alternative urban patterns made supportable by selected transportation solutions.

114. The choice of technology for public transport investments thus depends on many factors. The spectrum of alternatives ranges from conventional bus services and taxi and shared-taxi (jitney) service to segregated fixed right-of-way systems such as busways, rail rapid transit and such newer and more exotic technologies as monorails, continuous-belt conveyer systems and demand-responsive PRT (personal rapid transit) systems. If an effort to improve bus transport was undertaken for the larger cities of the developing world, the cost of the programme would be well within practical limits. The bus alone, however, is unlikely to meet all transportation requirements, and it may be desirable to supplement this form of public transit by integrating the taxi into the system.

115. Some means of separating automobile from other traffic and of reducing the use of private cars is essential. Big cities could solve their traffic problems at relatively low cost if it was politically possible to restrict the use of private cars in certain areas or on specified major streets, and to cater instead to public transit vehicles, freight movement, and the needs of pedestrians and bicyclists. A great deal of money could be saved that would otherwise be spent to increase transport capacity, still without providing the equity and mobility called for, and without ever coming to grips with the underlying causes of congestion.

3. Transport and the total environment

116. That human settlements suffer from traffic congestion regardless of the prevailing traffic technology is a reflection of a global weakness of public policy, namely, the tendency to focus exclusively on supplying transport capacity,

neglecting the factors that create the demand. Without measures to influence demand, efforts to ensure an adequate supply often turn out to be futile.

117. If the transport problems of the cities are to be satisfactorily resolved, the locations, densities and patterns of urban activity are vital elements in the picture. They are frequently overlooked because existing institutions require transport problems to be solved by transport solutions. But efforts at a solution cannot be divorced from the relentless additions to the problem that result from urban growth. The remedies do not reside exclusively in more buses, subways and highways; they also lie in providing job opportunities near housing developments, in trying to clean up the environment to permit people to live nearer city centres, and in designing multi-use structures that can function as housing, shops, offices and recreation centres. Urban growth needs to be guided in ways that promote transport-saving communities.

118. The planned cities of the world, despite their short-comings, have introduced new concepts of urban design that demonstrate how existing cities could be redesigned and further urban growth could be guided so as to create more satisfactory living environments that are also transport-efficient. Lessons can be learned from the successes or failures of the New Towns in the United Kingdom, of Singapore, Brasilia, Chandigarh, Tema and many others. If some of the best features of these planned communities were combined, urban development in the future could result in a rearrangement of housing and services, with neighbourhoods free from the intrusions of traffic and housing accessible to jobs, shops, services and recreation. Mobility is one way to make things accessible, but accessibility can also be achieved by the way in which things are located and arranged.

4. Telecommunication and postal system

119. Communications as well as transport facilitate interaction between people. Developments in advanced telecommunications, with their potential for reducing the demand for business travel, and making rural towns more accessible and attractive as locations for enterprises dependent on the processing of information, are most relevant to the industrial countries. At the same time, the inadequacy, in both quality and availability, of telephone and other telecommunication services in most developing countries probably has a large (though so far unmeasured) adverse effect on managerial efficiency, and causes many additional and unnecessary trips that overload the transport system.

120. One important consequence of current deficiencies - illustrating again the complex interdependence of infrastructure systems - is that poor service and consequent reliance on face to face communication make it more difficult to induce business to decentralize, and in particular to locate in new urban centres. Improvements in telecommunications, as a part of the development of utility systems, are essential to economic modernization in the developing countries.

121. The postal system in the majority of developing countries is also unreliable. Too often a letter mailed to another country takes less time to be delivered than

one within the country. As a result, most of the transactions that could easily take place by letter or by telephone are carried out by personal travel. It is likely that quite modest expenditures on public telephones and telegraph offices, as well as postal services, in places where little or no provision is made now, could produce a very high rate of return.

122. A further social role of basic telecommunication services is to improve the access of rural settlements and low-income urban residents to emergency services and a wide range of other economic and social opportunities. Increasing utilization of radio, telephone and television for domestic, commercial and mass-educational purposes is already enormously expanding the supply of information in the developing countries.

E. Summing-up

123. Because of the scarcity of resources, it is almost impossible for any Government - especially in the countries of the third world - to supply high standards of service to all its population. It is necessary to be realistic about the actual and future possibilities, and to accept the fact that policies and plans should provide for standards of service limited enough initially to permit everyone to receive an acceptable minimum but suitable for incremental improvement. Unfortunately, there has been a tendency in most developing countries to think in terms of ideal imported standards instead of planning realistically for step-by-step development of the infrastructure.

124. At the same time, at least minimally adequate utility systems - water supply, sewerage, refuse disposal, drainage, flood protection and power - are essential to achieve an acceptable quality of life and viability in the manufacturing, trade, service, construction, transport and other sectors, whose growth is necessary for urban economic development. Although small establishments in the traditional sector can persevere without adequate utilities, at least a rudimentary level of service is needed for establishments in the modern sector. In most cases, quite modest improvements in utility systems could substantially increase productivity in the traditional sector as well.

125. There is also a need to optimize existing systems. In almost all cases, there are large avoidable losses and wastages. One of the most obvious actions to be taken to augment current supplies at relatively low capital cost, therefore, is to make the fullest possible equitable use of existing facilities.

126. In most utility systems, in addition to avoidable losses, there are extreme inequities. Middle and upper-income households are favoured in the supply of public services while the poor have to pay for services provided by the private sector. These inequities in physical supply typically result in middle and upper-income households paying very low unit rates while the poor pay extremely high rates. Very often, if a complete system were installed and operated efficiently, the poor majority would receive much better levels of service and pay far less per unit.

127. Infrastructure is also a major means of achieving regional objectives in accordance with development planning. Regionalization of the infrastructure system is often required for geographical reasons but it also offers economies of scale and technical efficiency. It can also help to redistribute national resources in a more equitable way.

128. Little attempt is being made at present to use pricing schemes or the physical extension of infrastructure networks to guide land use. On the contrary, infrastructure generally follows settlement - often at very high cost in thinly settled wealthy suburbs - and pricing schemes that do not reflect the real cost of providing services encourage such dispersal.

129. Even within existing systems a sound pricing policy could help to restructure the pattern of land use in human settlements. It would be possible in some cases, without changes in existing networks, to introduce differential pricing to reduce high levels of consumption and favour small low-income consumers while preserving and sometimes for the first time achieving, economic viability. This can be done with water supply and sanitation in many urban areas and it may be possible with power also. Although price increases focused on selected consumer groups are likely to be politically difficult to implement, hard decisions will have to be made in a number of major cities. The choice is between change or disaster.

130. There is a common tendency to consider only part of the cost of an infrastructure service. Social costs are almost invariably omitted. True cost is a key piece of information for the policy maker because it enables him to choose the most appropriate kind of service and to decide how it is to be operated and subsidized. Very often, because such information is lacking, resources are assigned in an irrational way, and the benefits of subsidies go to people who do not need them. 16/

131. Most of these services are based on the concept of a network - that is, a hierarchical system with a central supply and an increasingly fine set of ramifications. This approach is justified above a certain threshold of density in space or intensity of use. While both these conditions obtain in the urban areas of industrialized countries, they are not generally met with in the third world cities and certainly not the rural areas. Fortunately, in recent years, new approaches have emerged based on decentralized supply and non-network forms, such as solar heat and rainwater catchments.

132. Another factor making for inefficiency in the infrastructure system is the outmoded or inadequate institutional framework that often obtains in the public sector, and a lack of co-ordination between the public and the private sectors. To this should be added the frequent lack of co-ordination between infrastructure authorities at the national, regional and local levels. Inefficiency may also be a direct consequence of the inadequate solutions offered by most legal systems. The concept of liability has been an inefficient tool for controlling pollution, for example.

16/ For a discussion of this effect in another context, see chap. I, sect. B.

133. The need has already been stressed, in developing countries in particular, for infrastructure systems that are flexible and can be expanded incrementally in step with rapid urban growth, thus minimizing dependence upon forecasts that must inevitably be unreliable in the dynamically changing urban conditions of these countries.

134. Throughout this discussion, emphasis has been laid on the feasibility and importance of a more effective use of resources in providing infrastructure. There are many areas where what are conventionally (and administratively) regarded as separate services overlap. Careful study of the interdependence of the various subsystems would reveal many opportunities for synergetic benefits.

III. SOCIAL SERVICES

135. Social services are community goods, very often intangible, which, like food and shelter, answer basic human needs. Primary social services - education, health care, recreation - exist in the most archaic and primitive of societies. In modern human settlements, cities and towns, their purposes may range from the most basic health care to maintaining aesthetic values.

136. It is not always easy to determine where infrastructure ends and social services begin. Both imply a network of physical distribution, and are therefore locationally specific, but the goods made available through infrastructure are by and large material and the success or failure of the system can be fairly easily evaluated. The intangible goods delivered through social services are less easy to measure. The United Nations Research Institute for Social Development has been trying for some years to develop suitable indicators for evaluating social development, so far without definitive results. Yet evaluation is an important part of the planning process, and the search goes on for objective criteria that will help decision-makers to plan a system of social services.

137. There is, however, one criterion, relating to the way in which service is delivered, that is more or less universally accepted - equity of distribution. In other words, it must be accessible to all. It may be difficult to quantify the achievements of a system of social services but it is fairly simple to deduce within broad limits whether it is equitable. It may not be so easy to ensure that equity is not pro forma only. For example, education and health in industrialized countries have tended over the years to become an entitlement of the people, delivered free of charge. But social segregation and locational restrictions may impose gross discrimination between groups of people in terms of quality and quantity of service, even while the appearance of equal access is preserved.

138. No detailed studies are needed to establish that the rural areas of the third world suffer from the lack of services of every kind. A persistently high rate of urbanization despite the shortage of new jobs in urban areas suggests that migration is at least partly due to inequality of services. Migration to the already swollen capital city often exceeds the flow to other urban centres because the capital is better serviced. Inertia and expanding vested interests make this trend difficult to reverse.

139. Rural-urban migration dissolves the cohesion of the enlarged family, which traditionally nurtured the weak, young and old, without putting anything as effective in its place. The role of the family must now be played by the community at large. To be effective, social services should mobilize community resources. Hence, they form an ideal ground for public participation.

140. The quality of social services is greatly influenced by the mode of delivery. In many instances in developing countries, the practice so far has been to concentrate on the "hardware", expensive structures that are inevitably few in number and unequally distributed, leaving large parts of the population for all practical purposes unattended. The priorities have been mistaken, a fault

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attributable perhaps to exaggerated respect for technology and the direct imitation of models in the industrialized countries. There is a move now towards a reordering of priorities, in which the "software", the people manning the services and their orientation, are recognized as being more important.

141. This chapter focuses on health services and education as the most fundamental of the social services. The importance attached to them by States is reflected in the fact that they account for three quarters of all spending on this sector. Also, their spread is very wide: ideally they extend right down to the neighbourhood level. Like all the social services they are linked with infrastructure - health, for example, depends very largely upon water supply and waste disposal, while access to education, and hence its quality, can be greatly enhanced by better transportation. If infrastructure and social services are considered jointly in the over-all planning process, the options for a more satisfactory allocation of resources will increase.

A. Health services

142. Health is an essential component of over-all development. The state of human settlements is invariably linked with the state of health care and hence of health - just as health is linked with and dependent upon other determinants of the state of human settlements and the quality of life in general, such as nutrition, which depends upon the production and delivery of foodstuffs, environmental conditions, which are largely influenced by infrastructure in the shape of water supply, waste disposal and transportation, and not least social justice, as reflected in opportunities for education, leisure and productive employment.

143. The most important causes of death in the developing countries are diseases and conditions that have already been eradicated or at least brought under control in the industrialized countries. The heaviest burden both of mortality and morbidity falls on infants and young children and on women in the fertile age group.

144. The infant mortality rate, i.e. deaths under one year, which stands at 20 or under per thousand live births in the industrialized countries, is 100 or more in many developing countries. Within the developing countries themselves there is a startling difference between the towns and the rural areas: in some cases, urban infant mortality is 50 per thousand or less, as against a rural mortality of 160 to 200. Toddler mortality (one to four years old) is an even graver problem and may be fifty or more times as high as in the industrialized countries. Moreover, even where city or town levels of mortality in children seem quite low, there are pockets within the cities, slum areas or squatter settlements, where they are as high as in the rural areas. The major causes of death in childhood are diarrhoeal and respiratory diseases, concomitants of poor housing, poor environmental sanitation, and poor nutrition.

145. Death in childbirth, or directly attributable to childbearing, is also relatively frequent. The risk is greatest for women who start having children too early (under 20), have them too often (at less than two year intervals), and go on having them after 35. It is this combination which in developing countries makes the death rates of women in the fertile age group higher than those of a comparable age group of men.

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146. Behind many of these health problems looms the problem of malnutrition. A study carried out in Latin America under the auspices of the Pan-American Health Organization showed that 50 per cent of all deaths of young children could be attributed directly to malnutrition, and most of the rest to causes with which malnutrition was strongly associated.^{17/}

147. Because malnutrition is lethal in the short run, there is no doubt as to the cost of allowing it to persist. On the other hand, because of the effects of environmental degradation, whether through pollution or the irrevocable destruction of resources, are cumulative and long-term there is not the same sense of urgency, and cost-benefit analysis and remedial action are slow to take place.

148. Settlements of low density are not particularly degrading to the environment because the absorptive capacity of the immediate surroundings is not overwhelmed, but even small-sized settlements that are growing rapidly may produce enough biological pollution of nearby waters to cause quite severe health problems. The pollution of a stream with cholera germs is as much a problem as the pollution of a great river with mercury. But this too occurs, for industrial pollution is far from being confined to the industrialized countries. Lack of care with industrial processes, and the utilization of cheaper procedures already discarded as suspect by the industrialized world can give rise to serious environmental problems in the developing countries. These problems will be difficult to solve unless the industrialized countries show a willingness to respect world environmental requirements and to underwrite a less polluting technology.

149. There are sound reasons to believe that the alleviation of individual and community poverty will improve the health of people in cities and rural areas alike. The improvement in the health of people in Western Europe and the United States at the turn of the century cannot be attributed to any specific health technology. Mortality and morbidity rates from communicable diseases were declining before the invention of the major disease-preventing drugs. Whether this can be expected to happen in the developing countries is not certain, but there are some positive indications. A study in São Paulo, Brazil, correlated infant mortality rates with the earning power of families and found that when real incomes dropped, infant mortality rates, which had declined steeply between 1955 and 1960, rose again, although other conditions in the city remained the same.

150. Generally speaking, improvements in health can be attributed primarily to better nutrition. Data from China, Cuba, and the Soviet Union, also suggest that a parallel improvement in the general level of living is a necessary condition for better health. Other indications are that the wise choice of health technologies, and the provision of services that are culturally acceptable to the consumer population and in which they play an active rather than a passive role, can have a positive influence on health in relatively short time.

151. It would appear, therefore, that a considerable redistribution of income is a necessary, though not the sole, prerequisite for better health. It should be emphasized, however, that hardly any developing country is so wealthy that

^{17/} R. R. Puffer and C. V. Serrano, Patterns of Mortality in Childhood, (Washington D.C., 1973).

redistributing the national income could on its own achieve the desired results. National efforts need to be combined with international co-operation.

1. The provision of health services

152. Health care services for human settlements should be conceived as part of an over-all national health service, which in turn must be fully integrated into an over-all national development programme. In planning and implementing health services, it must be borne in mind that diseases or adverse health conditions that arise or are maintained in a society through defects in the social, economic or cultural conditions within that society, cannot be eradicated or kept under permanent control unless these defects are themselves removed. Health workers should be advocates, therefore, of a comprehensive development strategy aimed at eliminating or at least alleviating gross poverty, and granting the individual a level of living reconcilable with human dignity and equality.

153. So far, many health schemes in human settlements have failed to serve the majority of the population, or even those most in need, because they have obeyed what has been called the "inverse care law" ^{18/} That is, both the best and the most care goes to those who need it least. In urban settlements, this usually means that the major hospitals and health facilities are geographically, socially and economically most accessible to the rich. In many countries half or more of the total number of doctors serve, theoretically, less than 10 per cent of the national population. In some West African countries, one third or more of all medical practitioners are to be found in the capital city. On the other hand, there are rural areas where the ratio of doctors to population is one to 200,000.

154. World-wide, the provision of hospital beds ranges from 150 per 10,000 population in Sweden to 1 per 10,000 in Bangladesh. The industrialized countries rarely fall below 100 per 10,000, while a study of 14 developing countries showed them with seven beds or less. ^{19/} The inequities in the hospital system extend to other aspects. Although cities have a disproportionate amount of service, city slum-dwellers do not seem to benefit readily from it. The orientation of the services themselves is generally unrelated to the real needs of the people.

155. The importance of preventive health care is increasingly acknowledged. Hitherto, priority has tended to be given to curative measures and prevention as a result has received little attention, but the emphasis is shifting. The problem is basically one of allocating resources between the two components and keeping a satisfactory balance between the two. Unfortunately, in many instances, the disease-treatment aspect of health work still predominates and health personnel are still trained in an ideology that keeps cure rather than prevention to the fore.

^{18/} J. T. Hart, "The marriage of primary care and epidemiology", Journal of the Royal College of Physicians, vol. 8, No. 4 (1974).

^{19/} "Health and environment in human settlements" (A/CONF.70/B/2), table 13.

A socially just health system for any settlement needs to be geographically comprehensive, in the sense that it covers the total area for which it is intended; socially equitable, in that it covers the total population, or the totality of the groups for which it is designed; economically accessible to all; and uninterrupted over time.

156. The options for the developing countries as regards health facilities are relatively clear. They can, if they choose, and many have done so, follow the hospital pattern of the industrialized countries with their rigid hierarchical arrangement and devotion to clinical and technological sophistication. Many developing countries have introduced fully-fledged hospitals of this type into their capital cities at exorbitant cost, ruling out any further investment in the field for years to come. For lack of resources, building up a network of services starts and stops at the top, providing access to health facilities for a very small minority. The hierarchical system is defeated even before it can become operative.

157. The other option is the reverse. Instead of starting at the top, it focuses first on the masses by developing a system of primary health care. For this to be effective, given the limited resources of most developing countries, it is necessary to train medical auxiliaries who can relieve the central facilities of the load of routine examinations or the treatment of chronic diseases. This approach has been demonstrated most effectively in China, where over a million "barefoot doctors" have been trained already. These community health workers can serve not only the villages but the urban and peri-urban slums which feel neglected by the city medical facilities. 20/

158. According to the World Health Organization, a primary health care system of the sort indicated above should be shaped around the life pattern of the population it is intended to serve, and the population should be actively involved in it. The health care offered should rely as far as possible on the resources available in the community, especially those hitherto untapped, and should be kept within the stringent financial limitations that are often present. It should combine preventive, curative and promotional approaches, both for the community and the individual. Care should be given at the most peripheral level of the system practicable by the worker most simply trained to provide it, and the other levels should be organized to support this primary care with supplies, supervision and a system of referral. Lastly, primary health care services should be fully integrated with the services of the other sectors involved in community development (such as agriculture, education, public works, housing and communications). 21/

159. Personnel must be trained and supervised, and if necessary retrained, according to programme needs. For example, the compilation of health statistics, an indispensable tool for planning, can be greatly improved through training. While

20/ Examples of health projects depending on community development approaches may be found in Health by the People (Geneva, World Health Organization, 1975).

21/ See The Village Health Worker, Geneva, WHO, forthcoming.

it may be necessary to reallocate funds for health care to the periphery, away from major hospitals, there need be no construction of expensive special facilities. Already existing schools or village centres can be used for part of the time as health care facilities by the people.

2. Special programmes

Control of communicable diseases

160. Many communicable diseases can be controlled relatively easily through massive immunization and the use of modern drugs. Not all the hopes that technology raised in the 1950s and 1960s have been realized however, and some diseases continue to be a threat to mankind.

161. In urban settlements, the most important of these are the sexually-transmitted diseases and such viral-mediated diseases as infective hepatitis. Gonorrhoea and syphilis, which seemed to be disappearing in the 1960s, have now become the major communicable diseases in big cities throughout the world and are spreading to rural areas. Facilities for early detection and treatment are of course vital, but there is need also for a massive effort at community education.

162. An already very serious disease in rural settlements, and apparently gaining ground, is schistosomiasis. It is particularly associated with human settlements formed around irrigation projects and on the shores of lakes. China has made exemplary use of community work to combat this disease, and great progress has been achieved through massive campaigns using human labour to destroy the snails and drain and refill their breeding grounds. At the same time, education campaigns have helped to break the man/snail chain of transmission. ^{22/} Other developing countries are relying less effectively on chemicals to kill the snails and potentially harmful drugs to treat infected humans, rather than using human resources.

163. Tuberculosis is another infectious disease prominent in both urban and rural settlements. The chain of transmission in rural areas is usually through a migrant who goes to work in a mine or a city industrial estate, catches the disease and returns to his village. Labour laws that would ensure that migrants with any infection were fully treated before they returned to their homes would help to reduce the spread. At the same time, rural communities should be taught to recognize the symptoms and to accept that treatment is possible. Opportunities for treatment at home would help to control the disease, and where it is an important problem a mass immunization programme should be organized for all children.

164. Malaria is still a killing disease and a major problem in many tropical countries. Though treatment is simple, control in many areas has defied the known technology, and while city centres are usually free of malaria, peri-urban and

^{22/} V. and R. Seidel, "Report on China", in Health by the People, (WHO, Geneva, 1975)

rural areas are not. Proper housing, drainage and environmental sanitation are needed, in combination with appropriate larvicides and insecticides.

165. A major problem with most endemic and epidemic diseases in the developing countries is the absence of adequate surveillance of the people at risk. Such surveillance should include the monitoring of food and nutrition as well as communicable diseases. Studies of food markets and the status of food movement and the collection of information on weather and soil conditions, are all activities that could be undertaken by the community.

Maternal and child health services

166. Health care for mothers and children, because of its links with tradition, can be incorporated into community action very easily. As far as delivery is concerned, all women who are not considered high risks can be quite adequately cared for by trained community aides of various kinds. Schemes whereby women are supposed to travel several miles to health centres for an ordinary delivery are directly responsible for the poor performance of such centres. If high-risk expectant mothers are identified early, problems can be anticipated and provision can be made to care for them in appropriate institutions. The various immunizations and vaccinations that pregnant women need can easily be given in their own homes or neighbourhoods.

167. Once a child is born, every effort should be made to encourage the mother to breast-feed it. Education in child care, started during pregnancy, should continue and should include family planning. Mothers should be taught supplementary feeding and weaning practices that will enhance the good development of the child and should be trained to notice any symptoms of impending malnutrition. Immunization, which is highly important, should be made available at the local level. It will be more acceptable there than if it requires travel. Cutting down high infant mortality rates means mobilizing the resources of the entire community.

Occupational health

168. Urbanization is usually, though not necessarily, associated with industrialization, which brings in its train occupational health hazards that need special attention from a trained force of health workers. Where a major settlement depends for its livelihood on a few industries, economic as well as ethical reasons demand priority health services for their workers.

169. Agricultural workers and fishermen may be exposed to special hazards of infection and infestation that require a programme of education and assistance. A work injury that starts as a simple cut can end as tetanus or gangrene, and unforeseen damage has been known to result from the improper use of insecticides. The same economic reasons are valid for the special protection of these groups since agriculture is central to the economies of most of the developing countries.

Family planning services

170. At the World Population Conference in 1974, 136 Governments reached a consensus that "all couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so."^{23/} Putting this into action will pose formidable difficulties for any community, yet if resources are to keep pace with numbers, the planning of numbers becomes an important individual and community responsibility.

171. Family planning programmes, as part of health services, are an important tool in human settlements faced with population pressures. Ideally, such programmes should include not only facilities and information for birth control, both positive and negative, but information and education on human sexuality and guidance and counselling in family life. Obviously, such services cannot be satisfactorily provided through clinics and professional health workers alone, and new community-based approaches to family planning are on the way. In the past, the unavailability of contraceptive devices or the need for prescriptions to obtain them have accounted for many of the failures observed, and programmes exist now in some areas where the village community leaders themselves distribute the contraceptives, after appropriate training. It is believed that when the community itself is responsible, many of the drawbacks and abuses to which family planning programmes may be liable will be minimized, if not removed altogether. In all cases there should be a clear-cut referral system and a system of training and supervision to ensure that the consumer is completely aware of what is involved and able to make an informed choice.

172. An example of a successful community-handled family planning effort is the distribution programme in Colombia which uses the women's development clubs on the coffee plantations. Each leader of a women's club who elects to be a distributor receives a period of training from a family planning field worker, after which she is given a stock of contraceptives which she delivers to her clients. These village distributors keep very accurate records and the continuation rates for oral contraceptives in these programmes is 85 per cent, which is very high indeed. An urban sales programme also operates in Colombia, using city shops for the sale of contraceptives. In Thailand, teachers are trained in family planning. In some parts of the country, they handle contraceptives, while in others community leaders and village shopkeepers do the distributing. The village suppliers form part of a system of general health surveillance and help to refer children who are ill to the supervising doctors, as well as reporting on other health issues.

^{23/} World Population Plan of Action, Report of the United Nations World Population Conference. (United Nations publication, Sales No. E.75.XIII.3).

B. Educational services

1. Educational systems and their relation to human settlements

173. The school system endogenously developed in the industrialized countries and imitated as a model in many developing countries is a relatively closed, isolated and specific system.

174. It takes over a limited number of the population from the time at which they become to some extent autonomous beings and releases them when they are qualified to engage in productive work. The upper and lower limits of the take-over vary according to local, regional and national economic circumstances. In the most highly industrialized countries it starts very early, with infant schools, and ends late, after adolescence, and for some students after university training. In developing countries, except for a few members of a social and economic elite, the take-over starts later, at six or seven, and ends earlier, at the age of puberty. In some countries where population growth is such that the State is overwhelmed by the demand, only a small part of the population is reached at all.

175. The school system also uses specific places, schools, where instruction and training are dispensed. These are nearly always special buildings, closed in and separate from the habitat, from places of production, and other community locations. The approach in most developing countries is the same. In many of the countries of Africa, the buildings are imitations of those of the former colonial Powers, or else small durable blocks remote and separate from the villages to which they are supposed to belong.

176. In general, only the users are admitted to these buildings, which tend to be closed except during school hours and the school term. The only adults allowed to enter are the teachers, a group of adults who have in principle been trained to make use of the educational apparatus. They tend to be regarded as depositories of social knowledge and the only ones authorized to transmit it. In some countries, they gradually become in effect a specific community, with a level of culture and an approach to problems different from those of the society whose values and knowledge it is nevertheless their responsibility to transmit.

177. Lastly, the school is concerned with a more or less systematic and closed set of knowledge to be acquired, attitudes to be adopted and social and cultural values respected. These are usually expressed in the form of "curricula", which are slow to change and relatively universal. In practice they are seldom geared to the characteristics of the surrounding society, and of the local community in particular.

178. This fourfold closing-in of the educational apparatus is supplemented inside the system itself by the compartmentalization of groups (classes) and time (school time-tables) and by a separation of disciplines which becomes increasingly strict at higher levels of education.

179. This set of practices has provided, in industrialized countries at least, a remarkably effective answer to the problem of the production and dissemination of

knowledge. But a system which is perfectly coherent in industrial and urban societies loses its effectiveness in rural areas and often becomes ineffective and harmful in developing countries.

2. Problems associated with traditional educational structures

180. The mass development of education is inevitably reflected in investment in school buildings, at heavy and sometimes unbearable cost to State and local budgets. Various approaches have been tried, each of which raises problems of its own, to deal with the matter of costs.

181. One such approach is based on the utilization of industrial construction systems, which are supposed to yield savings in cost, labour and time. In fact, such savings materialize only at a certain quantitative level of production of these prefabricated materials, economies of scale being by definition dependent on the size of the available market. This requires the standardization and sometimes catastrophic homogenization of school buildings over a large area. As far as the developing countries are concerned, the chief drawback is that these systems require an industrial infrastructure, a transportation network, and a fairly highly skilled labour force, all generally absent. Moreover, industrialized construction tends to increase the economic and technological dependence of developing countries and at most produces some savings in manpower in countries where jobs are already lacking and wages are low. Lastly, as in the case of housing, a shift to industrial construction may represent a saving in comparison with traditional durable construction, but it is far more expensive than local construction techniques which use locally produced materials and relatively abundant and unskilled labour, and are adapted both to climatic and to cultural and financial conditions. The promotion of norms and standards associated with industrial construction may also prevent the poorest communities from obtaining facilities that they could produce for themselves with the means at their disposal.

182. Another approach is the construction of multi-purpose spaces and the introduction of "integrated" facilities. The saving here lies in combining several elements: social, cultural, educational, in some cases health, and sometimes even commercial. Units are constructed whose total area and total cost are less than the sum of the space and the cost of each of the elements if built separately.

183. Although this approach produces results that are indeed less costly, and sometimes architecturally pleasing, and although in some cases it makes it possible to envisage facilities that would not otherwise exist, integrated facilities raise highly complex problems of management which tend to strengthen the grip of a specialized administrative apparatus. In large cities they also contribute to a concentration of social facilities that leads to the kind of cultural disinvestment in non-specific spaces which accompanies the trend towards reserving specific spaces for creative activities, social contacts and sporting activities, as well as education.

184. An "institutional" approach breaks down administrative compartments and enables operational budgets to be combined, thus allowing full use to be made of

existing facilities. New time-sharing arrangements can be devised for the occupation of the premises.

185. Another aspect of the cost problem is the expense of paying teachers, often increased still further in the developing countries by the need to use foreign personnel in the first stages of the development of an educational system. A number of solutions have been applied: mutual teaching, a method widely used in the traditional schools in India; the use of monitors, sometimes supported by programmed texts disseminated by the national press, as in Algeria immediately after independence, or by television broadcasts as in the Republic of Niger; and the use, after a short training, of teachers forming part of traditional structures, such as the Koranic teachers now participating in experiments in Mauritania, Morocco, Northern Nigeria and Somalia.

186. This last has important applications for the extension of education to communities which are too poor to build schools, or to nomads. Physical amenities can be reduced to a minimum, with classes being held in tents or even outdoors.

187. Another problem in developing a school system, in any political framework, is persistent inequality among schoolchildren because of social and economic background, and the continued existence, if not the growth, of social or ethnic segregation, which is linked in turn to segregation in housing. Various solutions have been envisaged, involving both institutional organization and spatial structures.

188. Attempts have been made, for example, to increase the number of schools and bring them closer to the user. In some developed countries (France, USSR, United Kingdom, United States), the trend has affected even higher education. These methods, however, are very costly. Their advantage is that they retain young people in their own localities and do not precipitate a first migration to the larger cities. They may also serve as real centres of social activism. The drawback is that, as standards vary greatly, they may actually reinforce segregation and inequality of opportunity between districts in large towns or between town and country.

189. Another method is to establish relatively large "complexes" with boarding facilities for the pupils. This practice is widespread in the USSR and the socialist countries of Europe and is being considered in Cuba and Tanzania. Such complexes create a relatively varied social mix, thus reducing segregation, and make it possible to assemble facilities of high standard. They are often costly, however, and they impair the closeness of the educational and cultural network.

190. Some countries have established comprehensive systems in which pupils with different educational aims are intermingled either in mixed-ability classes or in parallel streams. In some instances, these systems have been extended to higher education (some United States universities, the reform of higher education in Sweden, the Gesamthochschulen in the Federal Republic of Germany, the CEGEP experiment in Canada). Long and short, vocational and general courses are intermingled, in an attempt to avoid segregation and to encourage transfers from one type of course to another.

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191. Finally, there is the use of transportation (as in "busing" in the United States not simply to avoid unduly small educational units but specifically to combat segregation that is directly linked to housing segregation.

192. In general, the results of these experiments are disappointing. Segregation sometimes persists within the schools themselves; relatively little use is made of transfers; and inequality of opportunity remains a key problem in societies, regardless of their level of development.

193. In most countries of the world, the educational system is completely cut off from productive life and provides a very poor preparation for it. In urban areas in the industrialized countries, zoning often means that many schoolchildren have never encountered any productive activity other than domestic or commercial. In developing countries, in rural areas in particular, the knowledge dispensed by schools cannot be put to use in everyday agricultural work and the children are therefore encouraged to migrate to urban areas as soon as they have acquired minimal certification, without this leading to any increase in productivity. Finally, the idea that a store of knowledge sufficient for a whole lifetime can be acquired during a limited initial period no longer fits the realities of a rapidly changing society.

194. Various approaches have been envisaged for bridging this gap between the educational system and the productive system: the introduction of technological activities into secondary schools; the "ruralization" of primary education, now being tried in a number of African countries and in Indonesia; the introduction into systems of production of more or less regular periods of vocational retraining, and even periods of schooling to enable some workers to re-enter the educational system. 24/

195. The idea has been adopted in many countries of introducing participation in productive activities, in addition to information or initiation, into periods of school activity. This interpenetration of the educational structure and the structure of the world of work is regarded as an essential aspect of training itself and as a means of preventing pupils, on completion of their studies, from being unable to find gainful employment, or being psychologically incapable of productive work.

196. None of these approaches, however, radically calls in question the structure of the educational system. In other words, these reforms or experiments consist of adjustments to the school system which improve its organization or its output, or its adaptation to the requirements of the society in which it exists, but do not affect the fact there is a school system, and a school space, a set of more or less functional and specialized buildings, whose integration into the spatial, social and economic environment continues to pose a problem.

24/ For this and the following points, see United Nations Educational, Scientific and Cultural Organization, ED 74/CONF.691/61

3. Innovative approaches

197. In both industrialized and developing countries, sometimes for very different reasons, new educational models have been envisaged having fundamental implications for the organization of human space. There is a tendency now to reverse the generally established relationship between the school system and adult or workers' education, with the notion of lifelong education being viewed as the major concept, and the school system regarded merely as a partial and contingent means of realizing it. The notion of the democratization of education implies the working out of formulas which enable the young worker to pursue or resume his studies, and the young person who will be pursuing his studies for many years to acquire experience of gainful work at a very early stage. The gap between the worker's world and an education reserved for a privileged elite is to be bridged by structural reforms.

198. For example, legislation adopted by Sweden in 1972 gives adults over the age of 25, after five years employment or work in the home, full equivalency with students who have completed their secondary education, and takes work experience into account for admission to higher education. This is a decisive step towards implementing a concept of education based on the alternation of study and productive work in a context of lifelong education.

199. In completely different social and economic conditions, developing countries have turned to similar concepts, all entailing this structural interpenetration of the school and the world of work. Algeria, Botswana, Cuba, Indonesia and Peru all offer examples of flexible, community-based education made available to workers who did not receive normal schooling as well as schoolchildren.

200. The community education centres of the Ujamaa villages in Tanzania are genuine social complexes, situated near the work area. They bring together in one place school, clinic, co-operatives and various community service facilities, and serve simultaneously as training centres, social centres and meeting places, apprenticeship facilities for both young people and adults, and resource centres for the entire community.

201. The rural polytechnic schools in Kenya offer various training courses adapted to the needs and possibilities of the region. The aim is not to award degrees and diplomas but to teach people to do useful and necessary work at the village level. The development of the community is to be organized first and the young people then trained to contribute to it.

202. These examples pinpoint another basic change. They imply a new way of managing these new spaces and new institutions, in which the surrounding community takes charge of the educational institution and the members of the community participate directly as trainees and trainers, users and administrators.

C. Summing-up

203. In the countries of the third world in particular, the health and education needs of human settlements demand innovative approaches.

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204. The medical care and treatment of the sick has governed the approach to health in many countries for a very long time. Unfortunately, it has come to be synonymous with the glorification of hospitals and sophisticated equipment and practices, and the production of health workers largely unsuited to the major needs of their communities. In some developing countries, this has resulted in the development of systems for the delivery of medical care that may exclude more than 80 per cent of the population from any care at all. Those most severely affected by this discrimination are children, women, the urban poor and the rural areas.

205. What is called for now is a system of health care firmly based on the promotion and protection of health and the prevention of disease. Treatment will fit into the scheme chiefly from the point of view of its contribution to disease prevention and the protection of the health of the community. A structure needs to be established in which a clear chain of referral runs from village health workers or community health aides to senior health workers and doctors. The health leadership must be prepared to identify not only with the communities they serve but also with the political decision-making process, so that they can influence and be influenced by the people's chosen leaders. A just system is only possible if health care itself is seen as an integrated part of programmes aimed at total community development.

206. Similarly, the relationship between human settlements and educational systems can no longer be confined to the context of the traditional problem of spatial planning and the distribution of community facilities. Any place that is devoted to education can be the scene of activities of another type. Conversely, any place is educational to the extent that it possesses significance as a space for working or living. This calls into question not only the spatial segregation of education but also the temporal segregation. It implies the participation of young people in production and of adults in training, which in turn entails the breaking-up of age classes. Behind this breaking-up of the traditional system of school spaces and age groups lies a questioning of the whole hierarchical functioning of societies and the division of labour.

207. The most significant experiments in industrialized and non-industrialized countries alike show that the problem of managing space is as important as that of its distribution. Dealing with it is not a matter of a set of changes in school architecture. The aim should be to dissociate the educational function from a specific location. To that end, the local population should be given an opportunity to participate not only in deciding what buildings are to be constructed but also, in some cases, in their actual construction, and above all in the decision as to their use.

208. Lastly, it is useless to imagine that a non-compartmentalized educational system can be introduced into a social system that goes on indefinitely reproducing closed and segregated educational structures.

IV. THE CONSTRUCTION INDUSTRY

209. It is customary to divide the construction industry -- the means by which shelter and infrastructure are produced -- into the formal, or monetary, sector and the informal sector. The first, sometimes referred to as the modern sector, is more or less industrial in that it consists of firms applying a specific technology and operating under some form of management. The informal sector comprises the popular building effort, including those activities known in industrialized society as "do it yourself".

210. The terms may seem to be direct opposites but this is misleading. It may be true in the case of some developing countries, where the modern building sector is the product of foreign influences, but in general, the two sectors should be regarded as complementary, or rather as constituting not two distinct areas, but a whole spectrum of activity in which one shades into the other. Because of the basic fragmentation of the construction industry, many of the relationships between it and human settlements hold true regardless of scale.

A. The process and the product

211. The provision of shelter and infrastructure as and where it is needed is an essential part of the human settlement process. Before embarking on an analysis of the construction industry, a brief description of the end products may be appropriate.

212. The major characteristics distinguishing buildings and infrastructure from manufactured products are (a) their immobility, and hence their interaction with the physical environment, an interaction given more prominence by their relatively long life; and (b) their uniqueness. Buildings are made according to the specifications of the buyer, and they cannot be stocked although developers may leave buildings unoccupied for a time in the expectation of high profits. The uniqueness of buildings is intensified by the building process, which is generally complex and full of uncertainty. It is highly dependent on weather conditions, and demands the co-ordination of numerous inputs, including various levels of skilled manpower. The bulk and weight of construction materials makes them difficult to handle and transport, and their delivery to the site cannot be controlled by the contractor with any great precision. Since the process is lengthy, the contractor's capacity is confined to a geographically determinate area as the locus of projects, and this, combined with the high cost of transporting materials, makes the industry locationally specific.

213. Capacity should normally be determined by the availability of the scarcest input in a process. However, because of the lack of uniformity in the industry, it has not so far been possible to identify these restricting inputs in the case of construction, and in any case it is not certain that such an identification would be meaningful. This uncertainty has important implications: first,

governments can have only a vague idea of what can be produced; and second, because the relationship of labour to capacity is unclear, manpower planning is very difficult.

214. A useful distinction can be made between the end products of infrastructure and those of building construction. Infrastructure projects tend to be large, single "one-off" construction, particularly those most closely connected with national economic development, such as bridges, dams, harbour facilities, power stations and the like. Building projects tend to be more dispersed. For a variety of reasons, including what has been termed the quality of "inaugurability", in other words the opportunity to make political capital, the state is more inclined to pay attention to the former.

215. The way in which construction is financed is also important. It tends to be financed largely by the customer rather than the producer, by means of periodic payments during production. Furthermore, the source of the customer's financing (short-term for production and long-term for purchase) is frequently a loan secured by the construction itself, which puts the lender in a potentially influential position as regards design and building operations. This is particularly significant in the case of developing countries, where the financing of major projects is often undertaken by international agencies which can, and do, attach numerous stipulations to their loans, such as requiring competitive bidding, or agreeing to finance only the foreign exchange portion of the project. Finally, the temporary production loans are often dependent on the client's first obtaining a commitment for permanent financing.

216. The specialized character of each facility constructed, with project-oriented nature of production, the dependence upon weather conditions, and the construction industry's susceptibility to economic fluctuations and population changes combine to make demand inherently unstable. As a result, the construction labour force tends to be floating rather than permanent, and workers are hired on a project-by-project basis, which makes for high mobility and little job security.

B. Construction as part of the development effort

217. As late as the 1960s, development economists were preoccupied with capital formation, which they associated with long-term increases in real income (and hence the conditions for human happiness). As a result, they regarded construction as an unproductive sector for investment, useful only in times of recession for its pump-priming and multiplier effects. Even then they preferred large, public works that could influence economic development - roads, dams, ports and bridges - over housing and community services.

218. With the reorientation of values in recent years, human settlements have ceased to be regarded as a mere residual of economic development. The notion of construction as a means of economic development is gaining ground. It is important that policy-makers should recognize the positive role that construction can play in the achievement of various development goals.

219. Although it has been estimated that construction contributes at least one third as much as manufacturing to gross domestic product in the early stages of development (in some developing countries, two thirds), a few developing countries have a government department specifically concerned with construction. Public works departments, perhaps the nearest approach, tend to be exclusively concerned with the construction programmes of central or local government. In 48 national development plans recently analysed by the Habitat Secretariat, construction appears only in the public works sector.

C. The role of the public sector as stabilizer and regulator

220. The contribution of construction to national economies makes it a matter of concern to states. Although, as pointed out earlier, the industry is plagued by fragmentation and over-all uncertainty, at the same time the state is in a better position to intervene effectively than in the case of most other industries. In fact, the very easiness with which the state can intervene has in some cases led to the proverbial "stop-go" effect, where very short-term economic plans have been allowed to take precedence over long-term goals.

221. The state's major weapon for such intervention is the indirect and passive one of regulations. Planning regulations can be used to freeze construction in an entire region, or alternatively, through concessions, to induce a particular course of development.

222. Financing, for housing in particular, can be expanded or cut at very short notice with a relatively speedy impact - within the limits imposed by the inertia of the system - on construction itself. Other less drastic effects can be achieved by more moderate intervention, in the shape of varying taxation or the introduction of environmental and building regulations, particularly in respect to zoning and allowable densities. The secondary effects of such schemes should be analysed carefully, however. The indiscriminating imitation of industrialized country models can lead to the adoption of regulations that are incompatible with local traditions and circumstances and that do more harm than good.

223. The state, as undoubtedly the construction industry's most important single client, can exert a more direct influence by regulating demand. Public works (including infrastructure for human settlements) are by and large a state monopoly, and public buildings frequently account for more than 50 per cent of total building construction.

224. The extension of credit facilities to contractors can also work positively by removing some of the uncertainty from the market. Manufacturing usually enjoys the full support of the state in the form of short and long-term industrial development loans, for initial investment, working capital, expansion and so on, while building construction is expected to be able to manage alone. Projects are usually financed by the client in stages, and the contractor often has to cover significant gaps, particularly for the purchase of materials. Payment is made after a stage is completed and is often subject to deductions for forfeited

guarantees. The speedier certification of completed work could alleviate cash-flow problems and contract procedures should be simplified to allow this.

225. Lastly, the state, in its dual role of client and regulator, acts as the examiner for the licensing and registration of contractors. In the absence of any definite criteria for capacity, contractors are usually classified according to the type and size of contract previously filled. This can lead to a vicious circle of discrimination: contractors who are not on the register cannot be included in it until they have done public work, and public work is rarely if ever offered to contractors who are not on the register. This significant barrier to entry has led to an oligopolistic industrial structure, with all the disadvantages that oligopoly typically entails. In many developing countries, the malaise of oligopolistic collusion has proved difficult to cure as far as the public sector is concerned. Its effects are higher prices and poorer quality. Ultimately, the search for greater competence and capacity drives public officials and international aid agencies to seek international contractors for major projects. This in turn, results in foreign exchange deficits, the under-utilization of local potential, and the imposition of foreign models.

D. Choices in employment, materials and technology

226. Few industrial sectors have the potential of the construction industry, even in the least well-endowed of the developing countries. Its technology can range from the most labour-intensive to the most capital-intensive. Within this broad spectrum, every country can find a level that matches its capacities in labour, technology and materials.

1. Employment

227. The construction industry as a whole is relatively labour-intensive, it is estimated that in developing countries, physical activities in construction proper employ between 2 and 6 per cent of the total labour force, and ancillary operations account for another 2 to 4 per cent. The corresponding figures for developed countries are 6 to 10 per cent and 4 to 6 per cent. The share of construction in employment has tended to increase over the years in the developing countries. A report by the International Labour Office ^{25/} shows that construction's share of industrial workers is generally greater in developing than industrialized countries: the range in the former is 10 to 77 per cent, with a median of 25 per cent, and in the latter 13 to 29 per cent, with a median of 21 per cent. In both industrialized and developing countries, the share of construction in the economically active population is generally larger than its share in gross domestic product, which suggests that its labour productivity is less than that of the economy as a whole. This is perhaps attributable to the general resistance of many construction processes to automation and mechanization, and to the ever-changing nature of the product.

^{25/} International Labour Office, Construction Skills, CIRF Monograph No. 4 (Geneva, 1969).

228. The relatively labour-intensive nature of construction means that it can be used to help solve problems of un- and under employment, particularly in countries which have few alternative outlets for employment. There is the parallel advantage of the gradual formation of a semi-skilled labour force.

229. Employment is one of the variables that blur the distinction between the formal and informal sectors of construction. Both have a high labour input. In many rural communities in developing countries, it is still quite common for everyone from grandparents to small children to be employed in some aspect of shelter construction or maintenance. Where wage employment is available, the family member so employed will probably be the one to spend least time on actual construction work, though his earnings may help to pay for more modern materials, such as cement or corrugated iron. On-site labour is an important item in the formal sector, accounting for nearly 30 per cent of construction costs, but the informal sector's capacity for employment is even greater. For a given value of output, the informal sector's capacity can be ten times as high as that of the formal sector.

230. Construction also plays an important role in unemployment, its share being two to three times the national average in both developing and industrialized countries. A number of factors account for this, including the seasonal nature of the work, the industry's reliance on a floating labour force, and the fluctuating demand. In some developed countries, the government has taken steps to alleviate this job insecurity, but more important has been the development of labour unions which take an active part in influencing training and hiring procedures. Partly as compensation for poor working conditions, wages in construction in industrialized countries are generally higher than in manufacturing. This is not true, on the average, in developing countries, where labour unions are only just starting. As development progresses, however, and construction's need for labour increases along with that of other sectors of the economy, wages in construction's need for labour increases along with that of other sectors of the economy, wages in construction tend to rise faster than in manufacturing and soon to exceed them.

231. It should be noted in conclusion that it is possible for migration to urban areas to be over-stimulated by the prospect of employment in construction, with the consequent risk of a slump in agricultural production which could be highly detrimental to development. In general, however, where there is large-scale migration despite the lack of new jobs, construction is one of the few activities that offer opportunities for part-time employment and the acquisition of urban skills.

2. Materials and technology

232. The construction industry puts a considerable demand on other industries and has a significant multiplier effect. The share of materials in total construction costs is frequently over 50 per cent. However, to the extent to which the modern sector moves away from indigenous materials, the size of the materials component may mean an undesirable dependence on imports.

233. In some developing countries, 60 per cent of the materials input in construction is imported, and 30 per cent of the total value of construction derives from these imports and their transportation. Importing building materials can lead to a disproportionately high balance-of-payments deficit. It has been estimated that while expenditure on building materials may constitute between 3 and 5 per cent of GDP, the value of imported materials may be 5 to 8 per cent of the total value of imports.

234. The relatively new idea of self-reliant development and the need to avoid increases in balance-of-payments deficits have helped to bring about a fundamental revision of attitudes. Industrialization, technology and economies of scale are no longer regarded as a panacea. At the same time, the application of traditional building techniques, implying the use of indigenous raw materials and labour-intensive methods in the production of building components as well as in construction itself, is not dictated by sentiment alone. The use of traditional techniques is often rational by the most conservative economic standards. If all the costs and benefits, both public and private, are calculated, if a relatively long-term planning horizon is adopted, and if the ecological implications are properly evaluated the option of "gross-industrialization" 26/ is usually defeated. It should be borne in mind that when the social costs of unemployment or underemployment are taken into account, even labour-intensive techniques become "efficient" in the neoclassical economic sense. Moreover, labour-intensive techniques can bring savings in other cost components, such as fuel. 27/

234A. For example, if a small developing country establishes a "modern" cement plant, taking as its model the capacity of such factories in the industrialized countries, not only will it constitute a big drain on investment resources and foreign currency reserves, but it will also be a threat to the environment and the supply of cement will far exceed local demand. Unless there is multinational regional co-operation, therefore, it will be better to opt for a smaller-scale, less efficient factory - or to use a traditional bonding material instead of Portland cement. A further economic argument against such an increase in scale is that it requires highly specialized and very costly know-how. Unless repairs can be executed rapidly, moreover, under-utilization of the large scale may be much more frequent than in the industrialized countries.

235. A number of approaches can be suggested. Where there exists a range of technologies that are, on the face of it, adequate for meeting the needs of small, poor communities, traditional technologies can be upgraded. Foundry work and the hand-making of bricks are good examples. Where there are no

26/ Understood here to denote mimicry of large-scale practice in industrialized countries. The arguments used by local entrepreneurs to persuade the state to grant permits for large industrial units often include an appeal to national pride as well as misleading references to productivity, output and economies of scale.

27/ International Labour Office, Technology and Employment in Industry (Geneva, 1975).

obvious, reasonably efficient small-scale technologies, high-cost technologies can be scaled down and redeveloped. Cement manufacture is one example of such a process. Lastly, totally new processes can be designed, as in the case of most unconventional power sources or devices, or modern scientific knowledge can be applied to old arts, such as biological husbandry and the production of chemicals from biological sources.

236. Improved design should be a constant preoccupation, for even small savings per unit can lead to significant economies if production is large. Sometimes, alternative applications can be found for existing technologies, and the products and by-products of an existing system can be put to new uses. Typical examples are cardboard containers, new or used, and used tin cans.

3. Industrialization

237. A discussion of technology and employment leads logically to consideration of the extent to which construction should be industrialized. Industrialization is taken here to mean the transfer of work from a site to a fixed plant. This broad definition encompasses even the automation of site operations, since machine-hours can be regarded as inputs deriving from a fixed plant. Prefabrication and industrialization imply repetition, the reduction of variety and the co-ordination of dimensions, as well as economies of scale. The way in which the options present themselves is the same as in the case of building materials: labour versus capital-intensive technology. The reduction of site operations should cut down construction time, since weather hazards and general uncertainty will be reduced, and at the same time the quality of the components should be more standardized. Industrialization also involves much more co-ordination and management, and invariably the process is more capital-intensive than in traditional building construction.

238. It can be inferred from this analysis that countries that are anxious to increase their shelter capacity rapidly, especially if they already have some industrial experience and are in a position to exercise central authority, will opt for industrialization. This is essentially what happened in the socialist countries of Europe in the immediate post-war years. For instance, about 300 prefabricated concrete plants were established in the USSR alone. 28/

239. Industrialization is not a universal remedy, however. It has been estimated that even the best equipped countries make only a limited use of their capacity for industrialized production, and for the majority of developing countries industrialization of this kind makes little sense.

4. Training

240. Most developing countries need more and better trained construction workers. The reasons commonly cited for the shortage are a lack of training facilities, a shortage of instructors, low job status and poor pay. These conditions, and the

28/ "Review of post-war trends in housing, building and planning in Europe" (HBP/R.55/Add.12).

fact that their lack of training prevents workers from moving up to the position of foreman or site supervisor, have also created a general shortage of qualified foremen.

241. As in the industrialized countries, training for construction work ranges from formal institutional training to informal training on the job. The possibilities include: various apprenticeship programmes for construction craftsmen; vocational secondary schools with building trades sections; special training centres set up specifically to train construction workers; accelerated training centres often set up in response to economic planning requirements; mobile units used to complement training at fixed centres or to provide short intensive courses in a few skills to people who would not otherwise have access to training for construction work; training as a component of youth employment and training schemes, prevocational training or community development programmes; upgrading and retraining programmes for workers already in the industry. An example of the latter is the centre set up by the Training and Testing Branch of the Ethiopian Highway Authority to upgrade its own force of skilled workers and supervisors. 29/

242. By and large, the major means of acquiring building skills in the developing countries is through informal training on the job, or through a more traditional form of apprenticeship. To a lesser extent, this is true of industrialized countries also.

243. There is little question that training in the developing countries needs to be improved, in terms both of expanding and upgrading existing programmes and developing new ones. Adequate training of skilled workers consists of three elements: the provision of an adequate educational basis, systematic instruction in efficient work techniques, and supervised application of these techniques in real work situations. One means of accomplishing this is through an apprenticeship programme that combines training on the job with intensive short-term courses on a group basis during slack periods. The development of national industrial vocational training schemes is another possible approach. Training programmes must be tailored to conditions in the country concerned, however, and no generally applicable pattern can be established. Responsibility must be shared by governmental agencies, employers' and workers' organizations, and individual firms and workers. Greatly increased provision for retraining and upgrading workers already in construction is very important.

244. It is also necessary to train and retrain instructors for these programmes, and here international agencies and developed countries could be of assistance, as could co-operative activities among developing countries. In the long run, it is probably best for these instructors to be drawn from among the better-qualified craftsmen with considerable on-the-job experience.

245. The practice whereby managers rise from the ranks of the workers or from other positions in the industry, still relatively common in the industrialized

29/ International Bank for Reconstruction and Development, A Framework for the Promotion of Construction Industries in the Developing Countries, Staff Working Paper No. 168, November 1973.

countries, seems to hold good in the developing countries also. For this reason, managers are seldom trained in management techniques. The impact of such a lack of training on managerial capability and effectiveness is obvious. There is a shortage of adequately qualified managers for construction in most developing countries, and a similar shortage of clerical workers to support the managers. The latter can be corrected relatively easily, but the development and upgrading of managers is a much more difficult and time-consuming process.

246. Attempts to train managers for developing nations in the industrialized countries have not been very successful because the conditions are so different. Training in educational and specialized institutions within the developing countries has tended to lack practicality because of the absence of contact with the industry itself and needs to be considerably upgraded. More is required to be done in terms of improving the skills of present managers and teaching them new ones, and persuading them to adapt to technological change. An interesting programme somewhat along these lines is that of the National Construction Company in Kenya, established by the Government in 1967 to assist African contractors by obtaining work for them, giving them advice and training, and providing them with finance.

E. Summing-up

247. The provision of shelter and infrastructure is an essential part of the process of human settlement. On a formal level, the building and maintenance of these structures is the task of the construction industry, and the importance of this sector to the national economy should be recognized and acted upon by policy-makers.

248. The state can intervene effectively to stabilize and regulate the market for construction, through such means as regional planning, financing arrangements, taxation measures, and building regulations. As an important client of the construction industry, it can exert a more positive effect by regulating demand.

249. The state also licenses contractors, usually on the basis of work done for public authorities. This can lead to discrimination and to an oligopolistic structure of the industry that has a number of ill effects.

250. Technology in the construction industry can range from highly labour-intensive to highly capital-intensive, but on-site labour is always an important component. The relatively labour-intensive nature of construction makes it an important generator of employment. Over-stimulating construction, however, can lead to difficulties in other sectors, particularly agriculture, if too many workers are drained away.

251. The notion of self-reliant development of the developing countries calls for the use of indigenous building techniques, utilizing indigenous raw materials and labour-intensive methods. These techniques are frequently more efficient economically than high technology and industrialization. At the same time, there is a general need for better trained workers, foremen and managers throughout the industry.

V. LAND

A. Realities and objectives

252. The most obvious and yet the most profound attribute of human settlements is that they are consumers of space: in other words, they occupy and use land. Both the supply of land and its location is fixed. This means, for example, that a growing urban community's demand for land cannot be satisfied by the existence of large vacant areas in another part of the country. Since both the amount and the location of land is fixed, using land for a particular purpose will necessarily have an impact on its availability for other uses.

253. Land use is influenced by the interplay of many factors whose relationship to one another is constantly changing. The uses that determine a city's physical structure are at the same time a reflection of its social structure. On the one hand, continuing socio-economic changes influence a city's land-use patterns, and on the other, land use, by determining the location of various city functions, influences the future development of urban society. Each social group tries to influence the use of urban land to further its own economic interests and improve its own living conditions, with the most desirable space being utilized by the most powerful groups. Changes in social structure, therefore, affect the use of urban space.

254. The problem of allocation for land use is one of conflicting objectives. Conflicts may arise between short-term needs for housing and the long-term consequences that derive from the quasi-permanence of buildings once erected. Different needs and socio-economic functions may vie for the same land space. Individual and private needs may come into collision with collective land-use requirements, and local, regional and national interests may all conflict over the use of land.

255. Agriculture as well as human settlements needs land, and the growing demand from both poses a serious problem for the future of mankind. The total land surface of the earth is about 134 million square kilometres, of which about 80 million square kilometres, or some 60 per cent, is usable for human living. Estimates of the land space potentially available for agriculture vary. The Food and Agriculture Organization has put it at about 32 million square kilometres, some 14 million square kilometres of which are now in use, leaving a margin of cultivable land of about 18 million square kilometres. The degree to which land is utilized varies from region to region, depending in part on the density of population. In Asia, 83 per cent of all cultivable land is already in use. The allocation of agricultural land per person (.7 acre or 2800 square metres) is the lowest of all the regions. The amount of agricultural land per person in Europe is also low (.9 acre per person or 3600 square metres) but agricultural productivity is much higher. The amount of agricultural production depends not only on the space available but also on methods of cultivation. The level of productivity is correlated with the use of modern agricultural techniques, and hence with the level of industrialization and education.

256. The differences in productivity and the potential that exists for future increases in some areas have led some experts to suggest that present agricultural production could be doubled (through the use of irrigation and fertilizer) in the same amount of space. Irrigation and water supply are clearly highly important. The investment cost of irrigation works may seem very large in relation to the current resources of a particular country or region, but their long life means that the cost over generations is minimal. The relevance of this to the developing countries is great.

257. In Africa, for example, it has been estimated that if the currently unused water resources of the Niger River were diverted northward and used for irrigation, an area of some 10 million hectares could be made fertile and a population of about 50 million could be supported in a region where today starvation reigns. China is an example of a country which used to experience famines regularly but is now self-sufficient in food production through the investments that have been made in irrigation since 1949.

258. The problem is clearly one of choosing between alternative uses of scarce resources, as well as balancing the exploitation of energy and mineral resources, water resources and climate in order to preserve the natural equilibrium. The industrialized countries have shown that more intensive land use and higher productivity are possible. The population growth forecast, in Asia especially, means that the developing countries must manage their land resources carefully. International co-operation will also be needed to provide the necessary industrial and energy inputs to allow the world's remaining land reserves (chiefly in Africa and Latin America) to be put to productive use. It is estimated that if this were done the world could support a population of 10 billion people.

259. Some experts consider that if the cultivable land was exploited to the maximum, through a wide redistribution of resources between countries, the figure could be raised to a ceiling of 20 billion, provided that the land used for human settlements was so planned as not to interfere with agriculture. It is estimated that, at the present time, barely 2 per cent of the total usable land all over the world is used for human settlements, while the land occupied by urban areas is probably less than one half of one per cent of the world's land surface. ^{30/} There are wide differences between countries in the amount of land used for this purpose. It is difficult to compare estimates of the land used for urban settlements in different countries because they are based on varying definitions of "urban". Some gross estimates are that 1 per cent of total land in the United States, 7 per cent in the United Kingdom, and 10 per cent in the Netherlands, is used for urban settlements. Average urban land use per person in these countries may be estimated therefore at 400 to 600 square metres. Land use for settlement purposes in rural areas is higher than in urban areas (because housing is more dispersed, although less land is allocated to non-housing uses).

^{30/} "Global review ...", (A/CONF.70/A/1), para. 150.

260. These average figures, however, show only the global patterns of land use. Figures for particular cities show that the amount of land available per person in very large cities, particularly (though not exclusively) in the developing countries, is often inadequate. For example, the amount varies from 850 square metres per person in some North American cities to 27 square metres per person in Calcutta. With the 20 billion ceiling population suggested above, assuming that 70 million square kilometres of the usable land was used for agriculture, 5 million for urban settlements and 5 million for recreation and transportation, an allocation of 250 square metres per person would entirely exhaust the supply.

B. Land and the market mechanism

261. Land, in the strict sense, is an unproductive asset. It is the invested human labour which changes its utility. The investment of human labour also increases the capacity of land to satisfy needs: in agriculture, for example, by increasing productivity through better techniques, and in human settlements by allowing more people to live in a limited space through new methods of construction.

262. A significant feature of the allocation of land to particular uses in market economy countries is that decisions in most human settlements are based on the criteria of landowners rather than those of the community. The determining factor in landowners' decisions is the maximization of profit. The interest of the community, often conflicting with that of the landowners, is in land use according to economic, social and cultural criteria that will ensure a balance between housing, recreational space, public services, and present and future economic activity. In some instances, the public authorities cater to these community needs by land policy measures of varying efficacy. Thus, the present pattern of land use in human settlements in many market economy countries is a result of two factors, allocation through the market mechanism and public allocation and regulation.

263. The urban land market is not influenced by the general law of supply and demand in the same way as other commodities. Both demand and supply are related to specific location. Location determines land values according to the use to which the land is put, and generally speaking, exerts a greater influence on commercial than on residential use.

264. Because the amount of land in the desired place is inherently limited and because it can be withheld from use with relatively little penalty, there is a permanent disequilibrium between supply and demand. Evidence of this imbalance can be seen in the often exorbitant increases in the price of land. ^{31/} The high percentage of vacant land in metropolitan areas despite the heavy demand is another demonstration of the phenomenon. The expected profit from prospective higher-income use, and a taxation system that fails to penalize vacant land sufficiently, restricts the supply of land to the market. Some typical percentages

^{31/} For examples, see A/CONF.70/A/1, paras. 179-186.

of vacant land in metropolitan areas are São Paulo, 41 per cent, New Orleans, 58 per cent, San Diego, 54 per cent, Baghdad, 22 per cent. 32/ In India, a survey of 103 towns and cities showed that over 40 per cent of land in metropolitan areas was not built on. The ratios for Bangkok and Buenos Aires are similar. 33/

265. Generally speaking, land prices have increased much faster than consumer prices. In countries with restricted possibilities for investment and a high rate of urbanization and land price increase, the holding of vacant land is one of the most profitable economic enterprises. This is especially the case in countries with permanent inflation. In addition to the speculators, who are mainly responsible for restricting the supply and thereby causing prices to rise, higher-income households and users (including foreign nationals) also affect land prices by pushing demand in particularly desirable locations. Transnational corporations often play a similar role in respect of commercial property. Their bidding initiates a chain effect in all locations, starting with the nearest, and as a result the population with limited ability to pay is forced into undesirable areas, either far from the city centre or environmentally unsuitable, or is obliged to lower its standards, for example by accepting overcrowding. Thus, a small segment of the market can have a large effect. The effect of prospective higher income uses on all land prices is frequently underestimated, and governments seek to regulate prices in a single sector (for example, social housing), only to fail.

266. Some of the largest price increases are a side effect of planning decisions. The establishment of a commercial centre or the construction of a new road affects land prices over a wide radius from the area which has increased in value as a result of the public authorities' decision.

267. The aggregate increase in value in newly developed areas is created by the investment in infrastructure, but the distribution to individuals of the windfall gains that accrue when an area is rezoned for commercial use is determined by planning decisions. It is little wonder that the owners of both urban and agricultural land have a special interest in influencing the planning authorities.

268. The power of private landowners to withhold land from use encourages planning decisions that lead to the enlargement of the city. An interesting feature of the market mechanism is that land values in newly urbanized areas are based not on their economic cost (raw agricultural land plus the cost of infrastructure) but on the price level prevailing in the adjoining city. The highest rate of increase therefore, often measuring hundreds of percentage points, can be observed in these new urban areas. 34/

269. Such increases in the price of land have a detrimental effect on housing. When the cost of the land component is so overwhelming, efforts to reduce the cost

32/ A/CONF.70/A/1, table 3.3.

33/ World Bank, Urbanization, Sector Working Paper, June 1972, p. 38, note 2.

34/ A/CONF.70/A/1, para. 184.

of shelter become almost meaningless. Increased land prices have made the housing problem for low-income families in urban areas in developing countries extremely critical. The World Bank has calculated that 35 to 68 per cent of households in selected cities are unable to afford the cheapest dwellings presently available. ^{35/} A comparison of per capita income with housing costs illustrates the severity of the problem.

270. In the United Kingdom, the average cost of a public housing unit is \$US 20,000 and the per capita GNP \$2,680, i.e. eight years of per capita GNP for a dwelling space of some 80 square metres. In Bombay, where per capita GNP is \$100, a dwelling of 17.3 square metres costs \$1,300, i.e. 13 years of per capita GNP for a space some five times smaller.

271. Raw land is 45 per cent of the cost of single family low-income housing in Mexico City and 30 per cent of the cost of multi-family dwellings on the outskirts of Hong Kong. In Seoul, in 1957, the share of land cost in total expenditure on housing in the peripheral suburban area was under 20 per cent. In 1967, it was 50 per cent of the cost of low-income housing and 70 to 80 per cent of housing costs in better locations.

272. The problem is not confined to the developing countries. Today, land accounts for 50 to 70 per cent of the cost of residential construction in the big cities of Italy, France and Spain. For commercial development it reaches 80 per cent. Even for public housing, built far outside the city limits, land accounts for 25 to 35 per cent of total costs. The socio-cultural effects of these current patterns of land allocation have everywhere been deleterious. Provision of public resources, such as parks, playgrounds and transportation systems ensuring that city functions are accessible to all, has been inadequate, while private luxury accommodation for the few has been overdeveloped.

C. Policy instruments

1. Taxation

273. The general aim of taxation is to increase the income of the public authorities and at the same time to act as an instrument for the redistribution of wealth.

274. Urban growth creates needs that demand increased expenditure, much of which must be publicly financed. Traditionally, one of the sources of such finance has been real estate and land taxes. Taxation of land profits derived from the extraordinary increases in land prices that follow rapid urban growth is another

^{35/} World Bank, Housing, Sector Policy Paper, May 1975, table 2. Price includes the cost of land.

feasible source of revenue. At the same time, profit taxation is perceived as a way of restraining speculation in land, and thus of increasing the supply and slowing the rate of land price increase.

275. Taxation of vacant land in urban areas, and a high rate of taxation on land whose use is changed as a result of decisions by the public authorities (for example, rezoning from agricultural to urban use, or changes to higher densities within urban areas), are means to this end. The effect of introducing a high rate of tax on land profits, may, however, be contrary to what was intended.

276. A classic example is the Town and Country Planning Act adopted in 1947 in the United Kingdom. The legislation introduced a tax rate of 100 per cent on capital gains resulting from planning decisions, the effect of which was to cut off supply to the market and cause prices to rise. After some years, the tax was abolished.

Property tax

277. The aim of property taxation on land as well as buildings is chiefly to provide the financial resources that municipal and central government authorities need to cover the permanently growing costs of urbanization. At the same time, it has social and planning aspects. Property taxation may help to redistribute wealth and, if the rate is differentiated according to different land uses in urban areas, it can also serve planning purposes. For example, the rate of taxation on vacant land can be so differentiated as to allow a high rate of tax on land withheld for speculative purposes and a low rate for prospective homeowners. Tax on improved sites can be differentiated to distinguish between commercial and residential buildings.

Land profit tax

278. Taxes on land profits include taxation on the additional value created through normal urban growth and general price increases, and taxation on profits resulting from specific public development works and planning decisions by the public authorities. It is not always possible to evaluate the repercussions of planning decisions on the price of land but the effect of major decisions, such as changes in land use or higher building densities, is usually clear.

279. An example of efficient land profit taxation is that of Sweden. Under legislation adopted in 1968, profit is taxed at income tax rates, but if the land is sold within two years of acquisition, only 70 per cent of the profit is taxable. Calculation of the net gains, that is the gross income less the purchase price and less additional improvement, is deflated according to the consumer price index.

Taxes on vacant land

280. The taxation of vacant land in urbanized areas has special importance as far as urban development is concerned. In order to induce landowners to build, some countries have introduced a higher rate of taxation on vacant land than on developed land.

281. In Spain, a special tax has been introduced in areas that have been classified as urban. When an area is first declared urbanized, the rate is 0.5 per cent of the market value, or the expected value after development. After infrastructure has been provided, landowners must pay a rate equalling 2 per cent of the market value. If the site is still unused after five years, the rate goes up to 5 per cent.

282. In 1966, Syria introduced a differential rate of property tax on vacant land according to the value of the site. Sites worth under \$US 12,050 are taxed at a rate of 1 per cent. The rate rises gradually to a maximum of 5 per cent on sites worth over \$120,500. The intent of the regulation is to protect small landowners who might be keeping sites for their own families.

283. In Chile, a municipal tax on vacant sites takes effect five years after the approval of a detailed planning scheme and rises each year until the land is used for the planned purpose. It starts at 3 per cent of the assessed value and rises by 1 per cent a year to a maximum of 6 per cent.

Taxes on changes in land use

284. Tax is sometimes charged before land is actually sold, when prices increase as a result of land use changes decided on by the public authorities.

285. Denmark, for example, recently introduced a land value tax to be imposed when land is transferred from agricultural to urban use. The rate is 40 per cent on the first 200,000 kroner (\$US 50,000) of profit and 60 per cent on anything above that. The tax is collected after a public authority decision to change land use. If the owner does not wish to keep the land, the municipal council must buy it at the assessed value. If he wishes to retain it, he may obtain a moratorium of up to four years or a 12-year mortgage to enable him to pay the tax.

Property tax assessment

286. The most vigorous system of taxation is ineffective without a properly functioning system of valuation. The theoretical rate of taxation on profits may be very high, but the actual rate paid (based on the difference between the original purchase price and the selling price) will be far lower unless there is an effective system of valuation.

287. An ineffective system is likely to be unfair as well. Unless there is a system which limits an assessor's freedom to rate property as he sees fit and also to allow public comparison of the assessments on different properties, there is no

guarantee that the tax burden will be equitable. Inequity in turn leads to resistance to payment. A periodically published list of assessments made under the same rules for the whole country would help to ensure a check on the decisions of individual assessors.

288. One way of dealing with the problem of valuation for tax purposes is self-assessment. A system in which tax is based on a declaration of the landowner, already in operation in Mexico and under consideration for France, has advantages for expropriation also, since experience has shown that self-assessed values for tax purposes are generally lower than private market prices.

289. Denmark possesses a very efficient system, first introduced in 1922. A general valuation of all properties takes place every four years, and a special valuation is made when property is transferred to urban use during the four-year period. It should be noted that the Danish system is based on uniform criteria for the whole country. Assessors are elected by the municipality and their work is supervised by officials of the Ministry of Finance. It is the Ministry's task to prepare the material, data on transactions, planning decisions, development works and so on, used in formulating the criteria applied by the assessors in the valuation of property. The results of the valuations are published and easily accessible.

2. Planning regulations

290. The effectiveness of taxation is limited since it operates only as a brake or as a penalizing mechanism, while the options for action are still left to the individual. A more positive instrument is planning regulations. Their effect may range from preventing undesirable schemes to encouraging appropriate development, and at the same time they damp down speculation. There are numerous examples of the effective use of regulatory planning.

291. In Denmark, under a planning implementation system, agricultural land is released for urban development until all the land previously zoned for urban extension has been utilized. Plans are reviewed every four years and a high rate of tax on vacant land planned for urban use encourages compliance with planning schemes and influences the use of land for development purposes.

292. In the Netherlands, the planning authorities will not release agricultural land for urban use unless it is part of an urban extension plan based on the public acquisition of land by the municipality. In both these countries, urban extension planning is based on the preparation of macro- and micro-planning schemes, the first fixing the general land-use categories for the whole country (agricultural, recreational, urban, future urban, etc.) and the second presenting detailed plans for land use within urban areas.

293. Another useful device for implementing development programmes efficiently is readjustment schemes. These require the rearrangement of patterns of land tenure in particular areas in order to release land for public purposes (infrastructure, parks, etc.) and at the same time to solve problems that have

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arisen from repeated subdivision. One of their main advantages is that they do not require such radical action as extensive expropriation and relocation. As a result of the improvement in facilities, the plots in the new layout increase in value even if they decrease in size. Such compulsory land pooling has been used successfully in Japan, India and the Republic of Korea for many years. In Japan, the schemes are carried out by various public bodies and by associations of landowners.

294. Another important policy instrument for the control of land use is the designation of special areas in which particularly stringent regulations apply both to development and prices. Perhaps the most advanced system of this kind is in France, where certain areas have been designated by the public authorities as deferred development zones (Zone d'aménagement différé).

295. These are areas in which it is intended that future development will take place. In the meantime, land development in the deferred development zone is frozen for 16 years. The public authorities have priority rights of purchase of any land offered for sale in the zone, and if expropriation is necessary it is payable on the basis of land prices in the area one year before it was declared a deferred development zone. Through this scheme, the French authorities have been able to purchase land needed for development (for new towns, tourist centres, commercial development, etc.) without an excessive investment of public money.

296. Japan possesses a similar system whereby the governors of prefectures can designate areas in which it is feared that speculative land transactions will cause a sharp rise in prices as "control areas". All land transactions in such areas require permission from the governor. If permission for sale and building has been granted and the land remains unused after three years, steps are taken by the governor to make the owner use the land.

297. The imposition of such positive measures to control land use, requiring owners to use land rather than merely prohibiting undesirable development, is an important planning innovation of great significance for the future.

298. In Spain, permission to build confers not only a right but a duty. If planning permission has been given and new urbanization works undertaken, the landowner must start construction within two or three years. If he does not, he is liable to expropriation.

3. Pre-emption and expropriation

299. Pre-emption rights and measures of expropriation are a necessary adjunct to planning regulations, if speculation is to be curbed. The procedures used for acquiring public land have a major effect on the implementation of planning schemes, since it is very common for legal proceedings connected with expropriation and compensation to lead to long delays. The introduction of pre-emption rights, giving the public authorities the right to purchase any land which comes on the market before any other buyer, allows these legal delays to be bypassed. Together with other measures, pre-emption can ensure the provision of needed land, and it

also provides a way of monitoring land prices since all transactions must be reported. The introduction of special areas to which pre-emption rights apply makes it possible to control land prices over a wide area, although only a small amount of land may actually be acquired.

300. In France, pre-emption rights are mainly invoked in the deferred development zones referred to above. When a landowner declares his willingness to sell, the public authority must say whether it is interested in purchasing. If not, the owner is free to sell privately. Even if the authority is interested, there is no obligation on either side to accept the price offered or asked. The public authority may start expropriation proceedings, however, if no agreement is reached. Less than 1 per cent of the land in these areas has actually been purchased by the authorities but land prices (as measured by the price offered for public purchase) have decreased over time.

301. In Sweden, the municipalities are empowered to take the place of any buyer of real property in order to further the policy of public land acquisition. Prospective sellers of land are required to make their intentions known at an early stage.

302. Provision for expropriation exists in all countries, allowing the public authorities to acquire land for public purposes on payment of fair compensation. The differences between countries arise out of different definitions of public purposes, ranging from restricted (essential infrastructure works only) to very general (any land needed for urban development). The laborious nature of the proceedings and the difficulty of establishing fair compensation have been among the main reasons for reluctance to resort to expropriation.

303. The procedures recently adopted in Sweden are of interest. The public authorities can take possession of land and make use of it before legal title has been established, if it can be shown that it is a matter of extreme urgency. A system of compensation has been introduced in which prices 10 years prior to the date of expropriation are used as the basis for compensation.

304. Singapore has adopted seven years before expropriation as the base date for calculating compensation.

4. Land acquisition

305. An analysis of land-use control measures and taxation measures shows that in order to be effective they must be combined with an efficient land acquisition policy. This is the most positive and direct way in which the public authorities can intervene and should lead ultimately to a more equitable distribution of land among people and between present and future uses.

306. Most countries allow for direct intervention by the State in supplying the land needed for the development of human settlements. The extent of the intervention depends on the country's socio-economic structure. In some countries

all the land needed for human settlements in both urban and rural environments is supplied through public acquisition. Other countries acquire land for restricted purposes or in restricted areas only.

307. In the centrally planned economies, all the land needed for development is supplied through the public authorities. There are differences between and even within these countries, however, depending on differing concepts of land ownership rights and the varying extent of public and private ownership of land. In the USSR, all land is nationalized and belongs in principle to the State. Citizens have only land-use rights which may be abrogated if the land is needed for other public purposes. In other socialist countries, only land holdings above a certain size have been nationalized and small plots remain in private ownership. Thus, most urban and suburban lands are privately held. The acquisition of land needed for the development of human settlements is based on expropriation and compensation procedures which vary among the different countries. The land is provided within the framework of a general development scheme. The infrastructure works needed to prepare it are carried out as part of general public investment, on the basis of the planned allocation of resources between consumption, savings, and investment. The major problem as regards allocation is the general one of State-owned or controlled resources, namely the development of criteria for allocation.

308. In the market economy countries, the extent to which land is acquired by the State depends on the view held of the role of the State in general. Countries with mixed economies tend to have more comprehensive land policies. Many developing countries are adopting policies like those of the mixed economy countries but adapted to their own historical and cultural traditions. Land acquisition policy for instance, may be influenced by traditional patterns of communal ownership. Most mixed economy countries use an advanced land acquisition policy for restricted purposes or in restricted areas only.

309. The most comprehensive policies, with a long tradition behind them, are those of Sweden and the Netherlands. In those countries, all the land needed for urban development is acquired by the municipalities with the financial assistance of the central Government. In this way, the continuous planned development of Stockholm and Amsterdam has been ensured, while the rate of land price increase has been held in check. 36/

310. In France, Spain and the United Kingdom, more restricted policies have been applied to acquire land for new towns, housing projects and industrial development.

311. The New Towns Development Corporations in the United Kingdom and the Paris Regional Land Acquisition Agency in France operate as public corporations with legal powers to borrow funds and expropriate property. Similarly, Spain has a national land agency which has been able to assemble sites for new industrial and housing developments near large cities.

36/ A/CONF.70/A/1, table 3.9.

312. In the developing countries, the most successful policies have been those put into effect in Chile, India (Bombay and Delhi), Israel, Singapore and Venezuela. In all these countries, the establishment of public corporations, not part of local government but possessing legal powers, has proved the most effective means of publicly acquiring land.

313. It is difficult to evaluate land acquisition policies because there has been relatively little experience of applying them. Many experts from different countries, however, feel that the growing need for land in urban areas can be met more efficiently through such policies than through the traditional measures of taxation and the control of land use. The lower rate of land price increases in the major cities of countries which have such policies, such as Sweden and the Netherlands, tends to corroborate this view.

314. On the other hand, the experience of France, India, Israel, the United Kingdom and other countries has shown that a policy of public land ownership or acquisition unaccompanied by other measures does not necessarily affect the urban land market and may not even supply enough land for expanding areas of urban concentration. The implication is that the effectiveness of a land acquisition policy depends on the extent to which land is acquired in comparison with the size of the need.

315. Perhaps the most important aspect of a public land acquisition policy is that it allows the authorities to fix the timing of development, and thus to implement effectively a long-term development scheme. A policy of public land acquisition would normally lead to the municipality's playing the dominant role in such a development scheme by acquiring land on a large enough scale to supply the needs of the expected future urban population.

316. Where public land acquisition is restricted to certain areas and certain purposes, it has no effect on the land market and on patterns of urban growth. There is, however, a danger that the public authorities (including the planning authority) may use their powers to adapt the planning scheme not to the needs of the growing urban community but to the requirements of public vested interests, for example, to promote the specific schemes of functional agencies.

317. Frequently, the main obstacle to the implementation of a public advanced land acquisition policy is finance. Many of the parties concerned have a financial interest in preventing such acquisition. Some of the countries with a long experience of public land acquisition have financed their programmes from normal municipal budgetary sources, reinforced by long- and medium-term loans from the central Government. In other countries, programmes have been financed directly through the allocation of national Government revenue to the national land acquisition agencies, with additional funds coming from private financial groups interested in participating jointly in development schemes. In some cases, builders may transfer land to the public development agencies in order to be able to participate in development schemes.

318. The experience of the Netherlands and Sweden shows that an advanced land acquisition policy saves public money by supplying land for building when it is

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needed, at a cost based on prices paid many years earlier. The rise in land prices in urban areas in nearly all countries considerably outstrips the capital cost of loans to finance the advanced acquisition of land. Given the high rate of land price increase in new urban areas, the cost of acquiring a land reserve to cover 10 years' future development 10 to 15 years in advance may be approximately the same as the cost of acquiring land for one year's construction at the moment when it is needed.

319. The financing of land development, including land acquisition, is related to the general problem of evaluating capital investment. A community's actual development programmes are necessarily influenced by the financial constraints, local and national, within which it operates. One of the difficulties of planning is the permanent conflict between urgent present needs and long-term requirements. Since infrastructure works both for human settlements and for agriculture give a return over many generations, their financing should be based on long-term considerations.

320. Awareness of the fact that land is a natural resource and of the dangers that lie in continuing its unplanned use and the realization that land reserves for future urban development must be carefully planned, bearing in mind the growing needs of agricultural production, may help to orient land allocation and development more towards the satisfaction of collective needs than towards private profit.

D. Summing-up

321. The sharing of space is the basis for an improved quality of life in human settlements. The way in which most land is handled today, both by States and by powerful private interests, demonstrates a lack of concern for future generations. The universal application of individual rights as far as land is concerned may well mean the transfer of ownership rights to the community in order to ensure land-use rights for all. Taxation, planning regulations, and pre-emption and expropriation can serve as instruments to prevent undesirable development and encourage desirable land use. In market economy countries, land use has tended hitherto to depend more on private landowners' calculations of their prospective profits than on community needs.

322. The essential aim of urban land policy - to provide the land needed in the right place, at the right time, and at an appropriate cost - cannot be achieved solely through taxation. Nor will a more active role by the public authorities in the form of advanced land acquisition automatically solve all the problems of future development. Local, regional and national interests will continue to conflict. Even where private ownership of land has been eliminated, public agencies with various functions may have their own vested interests. Public acquisition can, however, create the framework for an urban land policy that is more efficient and more responsive to the needs of society than present methods of allocation.

323. Previous centuries saw a long struggle for agricultural land reform. We must hope that the necessary urban land reform can be carried out by this generation in a shorter time. It used to take a hundred years to add 1 million people to the earth's population; today it takes a week. If we are to survive, the rate of land reform must be more nearly adapted to the rate of population and of urban growth.

VI. PUBLIC PARTICIPATION

324. Participation, in the sense of participation by the public, has been internationally accepted as an integral part of development. The principle was endorsed by the General Assembly of the United Nations in its Declaration on Social Progress and Development (General Assembly resolution 2542 (XXIV) of 1969), and in the International Strategy for the Second United Nations Development Decade (resolution 2626 (XXV) of 1970).

325. The term is used in a wide sense to cover many social activities, from regular political action to the establishment of squatter settlements. Participation in development has been summarized in one United Nations publication as mass sharing of the benefits of development; mass contribution to the development effort; and participation in decision-making. 37/

326. Sharing in the benefits of development, in the sense of improved access to shelter, infrastructure and services (and more equitable distribution of income, has been discussed elsewhere in this document. This chapter focuses therefore on participation in decision-making, from the point of view of planning and decision-making by local authorities, and on human mobilization for the development effort in the specific area of housing and local services. A third section is devoted to that significant area of economic and social activity known as the informal sector. It deals in particular with the informal construction sector, which in turn is closely linked to the topic of popular shelter.

A. Participation at the local government level

327. Participation in the formal structure of local government normally means that the inhabitants of a community elect representatives to a local council and are themselves eligible for election. They may also be members of political parties, trade unions or workers' associations, or a wide variety of local community groups, which participate by putting up candidates for election, through voluntary service on public committees, or by exerting pressure on the local authorities through consultation and petitions.

328. The response of local authorities to participation varies widely. Depending on local political traditions and whether or not the individual or group speaks for a significant part of the community, the involvement may be viewed as helpful and legitimate, or as obstructive and irresponsible. A local authority may welcome participation if a group offers to help in providing a service and co-operates in policies that have already been adopted. Conversely, it may reject the participation of protest groups that make new demands or seek to obstruct public plans. The local authority may also have to judge between different groups claiming to speak for the community. It may feel that its status as an elected

37/ Popular Participation in Decision-making for Development (United Nations publication, Sales No. E.75.IV.10), p. 4.

body requires it to take a broader view of the public interest of the community as a whole. It can also undertake publicity and information campaigns to encourage public interest and support, although there is a danger that these may be more public relations and propaganda exercises than genuine provision for participation.

329. Some political leaders and local councils regard participation by the public as time-consuming, wasteful and divisive. They fear that factions will seek selfish interests, preventing necessary development, and they argue that the real need is for enlightened, trained and responsive leadership, equipped to deal with a rapidly changing world and to carry the public forward with it. It is true that national priorities, effective leadership and competent public servants are major considerations. Local people want effective and efficient services as much, if not more than, the right to participate. They do not want to take part in some nebulous activity merely for the sake of taking part but in order to achieve real goals and solve real problems. But settlements cannot be improved by exhortation alone or rules imposed from above, however enlightened public leadership may be. The people must be involved. There is a need for general education and wider social and economic opportunities, as well as trained leaders and public servants. In this way, participation can be informed and responsible, and local governments can encourage and respond to such involvement.

330. Participation covers a broad spectrum of behaviour, from voting in periodic elections, through individual and group consultation, to direct involvement in decisions. It is often argued that representative government means that the electorate chooses representatives who then make decisions on their constituents' behalf. While they are responsible to the voters and responsive to their wishes and demands, this does not mean that the public should be involved in initiating policy or on a day-to-day basis. From the contrary point of view, this is not enough. If democratic government is to be more than a façade, people must have the opportunity of taking part in the formulation of policy, not merely of choosing between alternatives in the final stages of policy-making. There should be more self-management of services and facilities all round, at work, in the neighbourhood, and in the larger community. This participatory democracy involves every aspect of people's lives.

331. The relationship between governments and the governed has many facets. Although there seems to be no one ideal form of participation, it is clear that a much wider range of formal and informal activity must be recognized than the simple election of representatives or the consultation of interest groups. The planning and management of human settlements must draw in people of all ages if it is to be successful, and this means finding more avenues for involvement. Through participation, people at the local level can learn that development is not due to blind economic forces but subject to their own choices.

332. Participation can also be seen as a means whereby interest and involvement can be encouraged to progress from the personal and immediate to the national and comprehensive. People are primarily interested in their own lives, jobs, homes and families, and it is from this base that they reach out to join with others in their neighbourhoods and communities to influence services and policies. In doing so, they learn about priorities and to understand that their own desires and

demands have to be set against those of others. From the local level, their interest can progress to the problems of the wider area and of the nation. The progression should not be exaggerated, however. Modern communications and party political machinery often mean that people in fact know more about and are more interested in their national government than in local affairs. This interest may be intensified if the national level plays the most significant role in their lives, with only minor or routine decisions being left to the localities.

333. In general, local government has a territorial basis, though there are other systems, as in Yugoslavia, for example, where the representatives are delegates from a number of functional and territorial groups. In order to avoid a parallel hierarchy of alternative institutions, local government should be perceived as the main forum for participation. Local authorities must cease to regard participation as a challenge and accept it as a force to be harnessed.

334. If individual and group participation is to be effective, there must be two-way communication between government and the governed. This is not an easy task. The dialogue must be more than propaganda by the government and unrealistic demands on the part of the public. Where information is provided by the authorities, there is a danger that only the convenient facts will be disclosed and the best interpretation placed on them. Timing is also difficult. To participate fully, citizens need information as far in advance of final decisions as possible, while local authorities are understandably loathe to jeopardize their plans by releasing financial and other data too soon. The local press and informal community newspapers and broadsheets can often serve as the necessary, independent and responsible means of communication.

335. An ideal system of decision-making should stretch from the neighbourhood to the city-wide level. Emotional attachment to the home area and national priorities must meet and be reconciled at the city level, and it is here that the planner has the prime role of explaining the consequences of the proposed alternatives, particularly in economic terms.

336. Physical planning at the local level is a significant part of all planning activity and one of the most important local authority functions. Public participation in the making, implementation and evaluation of plans can be achieved either through the existing political structures or through such new mechanisms as citizens' committees, planning commissions and opinion polls. Where an issue is a matter of conflict, or where people believe that their interests are directly threatened, they will form groups readily and will need no encouragement to make their views known. However, not many countries possess local structures that enable the public to participate in planning on a regular basis. To achieve more continuous involvement, and to reach the mass of the people who do not normally take part, it is necessary to bring representatives and planners closer to the people's needs and demands, through meetings, neighbourhood exhibitions, planning forums, newsletters and so on.

337. Participation can easily be reduced to publicity exercises where people look at displays and exhibits but have little chance to make a positive contribution.

It is the responsibility of planners to see that this does not happen. They must explain the economic and financial consequences of their proposals, not merely present the public with maps and models. By choosing on the basis of real costs, the public will be confirming their consent to the project and its implementation.

338. The education of planners is vital for improving participation in the management and planning of human settlements. Civil servants and experts must learn to discuss issues plainly, in terms of the aims in view and the means of achieving them, and there must be an open and intelligible dialogue between the planners and the public. The people's needs must be studied so that genuine alternatives can be put forward, instead of their being manipulated to produce the demands that the planners want to hear. Since the allocation of scarce resources is involved, a choice must be made at some stage. No choice can satisfy everyone. Planners will be forced to structure the options available, which will mean ruling out some choices from the start. At the same time, individual and group wishes must be ascertained. The aim must be to facilitate access by all groups, majority and minority, to the planners.

B. Participation in housing and local services

339. The term "housing" is used here as a label for the process as well as the goods and services produced, and for the public and semi-public spaces and amenities that are normally adjacent to dwellings. Participation covers public participation in the planning and design, building and improvement, and the maintenance and management of dwelling environments. The first section discusses whether or not participation in housing is economically desirable and the second considers alternative forms and applications of such participation.

340. The goods and services from which dwelling environments are assembled are of very different kinds, and the type of participation necessarily varies according to the component involved. For example, the kinds of participation appropriate for the planning, installation and administration of a public utility such as electric light and power, or a public service such as transportation, differ from the forms appropriate for the design, construction and management of dwellings. Still other forms may be appropriate for the control of basic resources, such as land or finance.

341. The assembly of dwelling environments can, and traditionally does, take place at local levels and on a small scale, but most types of infrastructure and many public services demand action on a larger scale. The planning and management of basic resources is generally carried out at the largest scale - regional, national or even international. For example, though it may be argued that the production of cement should be localized, certainly in countries with low per capita incomes and inadequate transportation systems, its distribution and pricing is almost certain to be tied into national or international markets. If land is not to be exploited by private (generally local) interests, it must be subject to government controls. And as long as housing

depends on long-term credit, housing finance will be a major concern of national governmental policy.

342. This suggests that there is a "normal" correlation of levels of action with levels or scales of organization and authority. The assembly of dwelling environments, for example, is correlated most strongly with local institutions, enterprises and persons, less strongly with municipal government and least strongly with national government. The provision of infrastructure components is most strongly correlated with municipal or local government, and less strongly with persons and national government. The maintenance of access to resources, that is the elements without which no dwelling environment or infrastructure component can be produced, is most strongly correlated with central or national government, less strongly with local government, and least strongly with persons. In addition to these variables, which are common to all times and places, there are major cultural and political differences that may affect the ways in which these levels of action and authority operate.

1. Desirability of participation in housing

343. The desirability of the participation of local citizens in the design, construction and management of housing (that is, at the level of the assembly of dwelling environments) depends upon two factors: the relative efficacy of centrally administered systems of providing housing; and the effects of local participation on the productivity of such systems. If it can be shown that centrally administered systems have a greater potential than locally self-governing systems, it follows that participation by local citizens is materially unnecessary and, in so far as it complicates administration and lowers productivity, undesirable.

344. Centrally administered systems are those in which housing is provided by large organizations in the form of completed developments ready for occupancy. In general, both private commercial developers and public or semi-public housing agencies and corporations tend to expand and to sponsor or build ever-larger projects. These systems contrast with traditional systems which are networks of independent builders and suppliers generally contracted by small proprietors and individual households. In the most "developed" form of these systems, users have access to modern credit facilities and to fully serviced building land and modern construction materials and equipment. However, the less developed systems by which most dwellings and settlements in low-income countries are built are essentially the same. These network forms of organization are locally self-governing.

345. Resolving the issue of autonomy versus heteronomy, or network versus hierarchic organization, depends on the assessment of the use of resources. It is often assumed that most or all resources for housing are controlled by large organizations, public or commercial. There are, however, certain critically important resources over which these corporate sectors, public or private, have no effective control. The resources controlled by this third, or "popular", sector are human resources - such as imagination, skill, initiative, co-operation and determination - and those material resources possessed by individuals and households, such as discretionary income, savings, property in the form of land, materials, etc.

346. This "popular sector" has great de facto power. So much is obvious from the vast areas of non-commercial, or only semi-commercial, and officially unauthorized housing in most cities of rapidly urbanizing countries. Those with confidence in the superior capability of central organizations and the industrial technologies that only large organizations can support will assume that the problem is to incorporate the popular sector's resources in centrally administered housing programmes. Those with less confidence in the hierarchical organization and heavy technology of the "formal" sector, and more in the network organization and light technology of the "informal" sector, will see it differently. For them, the improvement of housing conditions and the ordering of urban development depends on maintaining or reintroducing local control over those resources which can only be used, or which are best used, by people at local levels.

347. Demands for housing are as variable as personal and household situations. The potential and necessary variability of housing, therefore, is clearly immense. It follows that the variety of the system for controlling it must also be immense. The supply of satisfactory housing by large and centrally controlled organizations would therefore seem to be prohibited.

348. Studies carried out in several urban areas of the third world showed extremely wide variations of household priorities for kinds of location and forms of dwelling. Not only were there major variations for each element of housing demand but the elements varied dramatically in relation to each other. The very poor, for example, often have a very high priority for nearby access to sources of casual employment, and a less - or even negative - priority for a dwelling complying with minimum official standards for the area.

349. The tentative conclusion from these studies is that while aggregated demand for shelter can be projected relatively accurately, and while these projections can be used for resource and infrastructure planning, they cannot be used for housing programmes. The clear implication is that such programmes are not appropriate instruments of housing policy and should perhaps be abandoned altogether. In practice, of course, this cannot be done until all sectors of the demand have been appropriately housed, a Utopian goal which may never be reached in any large and complex society. Nevertheless, a start could be made immediately on reallocating resources. Public investment in direct housing construction could be reduced and investment in infrastructure and basic resources increased.

350. Neither the public nor the private commercial formal sector can compete with an unfettered popular or informal housing sector. First, because the network of independent operators provides the requisite variety in the controlling system, so that locally and personally specific demands can be more easily met. Secondly, the greater expectation of satisfaction resulting from this stimulates the use of available human and material resources. Thirdly, personal responsibility, and therefore tolerance, are maximized. Not only do locally self-governing housing systems provide exceptional value for money and high levels of utility in proportion to the resources invested, but in general they create aesthetically satisfying and culturally meaningful environments.

351. If participation in housing is necessary because the full use of available resources depends on personal and local responsibility, then the participants and the enterprises they use or contract must be free to use these resources. Not only must such resources as building materials and equipment, manual and managerial skills, building land and financing, be accessible, but their users must be free to employ them in ways that answer their own requirements. Local control, therefore, requires central planning and an administration of law that guarantees everyone equitable access to essential resources and freedom to use them in ways that do not reduce the freedom of others to do the same. As the proposed division of levels of action and levels of authority suggests, housing action by locally self-governing organizations rests on the basis of services provided by municipal government, and these in turn require the national government to maintain access to resources.

2. Alternative forms of participation

352. Popular misconceptions of participation in housing tend to equate it with the self-help construction of new dwellings. This emphasis on new construction is perhaps reasonable in rapidly urbanizing countries. Nevertheless, in many cities of the developing world, for example Bombay and Mexico City, the loss of low-rental inner-city housing through premature decay places a heavy burden on the low-income sectors that need it most. The error that participation is synonymous with self-help construction is reinforced by the false assumption that construction is more important than management and maintenance. In most industrialized countries, increasing concern over the premature deterioration of public housing has brought an awareness that management and maintenance are as significant to housing as initial design, construction or even finance. Preferred forms of modern housing greatly reduce the potential for participatory management and maintenance by making co-operative work by non-specialists extremely difficult, and ruling out any structural alterations. Finally, the over-emphasis on dwellings diverts attention from the importance of participation in the provision of utilities and services, and in the planning and management of resources.

353. Four significantly different contexts for participation can be produced by alternative combinations of decision-making and task-performance by the sponsors and the users of housing, assuming that consideration is limited to the sponsors of housing activities and the users of the goods and services produced. The first combination, in which sponsors decide and sponsors perform, is associated with fully-built centrally administered low-cost housing and there is no participation in any of the usual senses.

354. In the second combination, the sponsors decide and the users perform. Most sponsored self-help housing programmes and projects are of this type. There are many variations, but the most common is one in which the sponsor selects the site, plans the dwellings, and arranges the financing and the administrative procedures before the participants are chosen. There are also cases where management and maintenance are carried out by users according to the sponsor's instructions.

355. In the many cases of this kind in Latin America, the sponsor is usually the government, but in North America and the United Kingdom, the sponsor is often a private non-profit organization. The participants are sometimes self-selected, but the selection is more often done by the sponsor since it is unusual for groups formed by chance friendship or even blood ties to be sufficiently homogeneous for the standardized types of building and financing and construction procedures that such programmes require. Variations are possible and are often introduced, but they complicate administration and therefore tend to lead to delay and higher costs.

356. The results achieved by large conventional self-help housing programmes directly administered by central agencies do not appear to be as satisfactory as those of smaller projects. In the poorer countries, the scarcity of field personnel heightens the political and economic necessity for rapid and large-scale results. Projects are large in most cases, therefore, and highly standardized in form and procedures. Opportunity costs for the participants tend to be relatively higher than in wealthier countries. Projects are usually open only to those with regular incomes, but these sectors often prefer to hire labour rather than sacrifice their own working time. In many cases, a high proportion of "self-help" builders are in fact paid substitutes. Since there is no opportunity to make savings by self-management, costs are merely transferred to the sponsor which includes them in the subsidy. Given the artificially low price and the extreme scarcity of adequate housing of any kind, there is rarely any lack of apparent demand to participate in sponsored aided and mutual self-help housing projects. There is no way, however, in which centrally administered participatory programmes can make full or even adequate use of many of the resources used by unaided self-help builders.

357. The third alternative, in which users decide and perform, is by far the most common form of participatory housing, though it might be argued that the term is inappropriate, or should be limited to the direct and indirect participation of exogenous agencies and institutions in the mainly autonomous decisions and operations of the users. These often vast areas of self-generated and self-governing residential development have a high potential and often achieve standards normal for lower and lower-middle income urban districts. It is estimated that between one third and one half of the built-up areas of most cities in Latin America, and an increasing number of Asian and African cities, is composed of unauthorized urban settlements. By no means all are squatter settlements, at least in the legal sense. By far the greater part in Bogota, São Paulo and Mexico City, for example, are initiated by private developers who acquire the land legally from private owners, but subdivide and sell it at or beyond the margins of the law. Squatter settlements on a large scale occurs only when there are large tracts of publicly owned land available to squatters but not to commercial developers.

358. An example of this kind of settlement is one established 10 years ago on the outskirts of a large and fast growing capital city in Latin America. Its present population is about 10,000 and increasing rapidly. The current density of about 75 persons per hectare could double in a decade, if present trends continue. Most

of the dwellings, on plots of about 150 square metres in regularly laid-out conventional blocks, are built of brick and concrete. The only social characteristic distinguishing the locality from other lower and middle-income neighbourhoods in the city is that the great majority of the adults were born in the provinces. Most, however, migrated long before they moved to their present homes.

359. The settlement was founded by a group of inner-city renters who, threatened with eviction by a street-widening scheme, formed an association to provide themselves with other accommodation. The first task of the leaders of the association was to devise a means of acquiring land on which to build. They made a largely symbolic application to the government for land, knowing that it was against government policy to provide it (despite the fact that the government owned huge tracts of commercially valueless land). While going through these legally and politically significant motions, the association's leaders got down to the serious business of finding a site for a planned invasion. Eventually one was found, and the invasion was carried out with only nominal opposition from the authorities.

360. Immediately after the invasion, the site was surveyed and a plan for its subdivision drawn up. The plots were distributed by a mixture of lot, personal choice, bribery and subsequent exchanges. In general, those with the highest incomes got the sites with the highest potential value and the poorest were relegated to the margins. Protests were rare, however, as there is an obvious collective advantage in maximizing the incentives to invest by those with the most capital.

361. Once the site was occupied, and de facto possession evident from the inaction of the authorities, support for the organizing committee fell off. Not until such problems as the lack of electricity and a running water supply, and the high cost of water bought from privately-owned tankers began to be felt acutely was there any general motive for collective action and neighbourhood policy. After a few years, however, these demands grew pressing enough to regenerate the association, which began to agitate for recognition by the central government and for the provision of basic utilities and other services that the community had not been able to provide for itself. It had succeeded in establishing bus routes, a flourishing retail trade and market, and elementary schools (subsequently incorporated in the state educational system). It had failed to install an electricity supply despite a very substantial investment, or a piped water supply.

362. A third stage of development began with the intervention of the central government. Through the official recognition of the de facto settlement, the settlers obtained their top priority, security of tenure. The ex-squatters were glad to pay a moderate land tax confirming their possession. Recognition was followed by the municipalization of the settlement and the appointment of a mayor.

363. The government's programme of legalization was accompanied by an improvement programme whereby the utilities and other essential services that such communities are unable to provide for themselves are installed by government agencies. Though far from perfectly planned and administered - and although it failed initially to

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take advantage of the contribution that the community was able and willing to make, both in skills and labour time and in cash - it has been a popular and successful programme. Much progress has been made since towards the policy goal of providing government services in response to local community demands - as of right, rather than being dependent on short-term programmes subject to political whims and momentary changes.

364. The resources generated and mobilized by such self-governing settlers and urban developers are clearly immense, far greater than any government facing similar economic and institutional constraints could possibly control or manage directly. It could be argued that no conceivable form of government could achieve so much with so little, even without the externally imposed constraints that most urban squatters have to contend with.

365. The example also illustrates the principal limitations of local autonomy. Apart from certain defects in building design and construction, local "informal" competence is adequate - and wisely suspicious of technological innovations, the testing of which is better left to those who can afford the all-too-frequent failures. Poor, wasteful and sometimes dangerous use is made of materials by those who cannot afford skilled assistance. Such assistance is usually abundant, however, since exceptionally large numbers of construction workers tend to live in self-governing settlements where they can take advantage of their own resources not only to construct their own dwellings but to obtain employment and income. The common lack of infrastructure and services is a much more serious matter.

366. In one case studied, a settlement with a population estimated at 35,000 to 40,000 persons spent twice the total sum needed for a complete system of water mains during eight years of buying water from privately-owned tanker lorries delivering water subject to contamination. In another, a three-phase electric light and power network was installed for a population of about 10,000, complete with a generating station powered by a used ship's diesel engine. After running successfully for a few days, the engine broke down and was never repaired. The settlement was actually traversed by high tension lines delivering power to the city.

367. Where self-governing settlements represent a major part of city growth, new settlers generally have a wide choice of location even though amenities are scarce. Where there has been settlement on a large scale, despite its illegality, de facto security of tenure is considerable. When this is the case, there is a great variety of housing types. In the more established settlements, especially those that are relatively large, many of the characteristics and amenities of separate towns develop, together with an increasing variety of employment.

368. Settlers in the newer developments tend to be successful immigrants - families that have experienced a good deal of upward mobility within the lifetime of the adults, who see themselves to be better off than their own parents. They take considerable pride in the homes and settlements they have built. In many, and probably most, cases, these dwellings represent an equity equal to or higher than the conventional limit of mortgage lending - between two and three years' income.

Levels of satisfaction are high, therefore, and there is a high degree of tolerance for the often acute physical deficiencies of these areas. Studies of comparative attitudes and behaviour in self-governing communities and centrally administered housing projects occupied by people with similar socio-economic characteristics support the proposition that tolerance and satisfaction are greater in the former.

369. In the fourth alternative, the users of the housing decide and the sponsors perform. This is the alternative made use of by private developers and higher income owner-builders or buyers of new homes whose properties are publicly serviced. In cities where this has been the common practice, the principle is now being extended to those who need the services most and are most deserving of the subsidies (not to mention the capital gains) that they represent.

370. In their original form, however, centrally administered improvement programmes are simply indirect responses to popular demands. Where these demands are interpreted by central policy-makers, planners and administrators, and the projects are not carried out in direct response to locally specific demands, as many problems can be created as solved, at least in the short term. For example, standardized specifications and procedures can create hardships for the intended beneficiaries and even lead to the failure and loss of the capital investment already made. There have been many cases where offers of complementary assistance by local residents have been brushed aside, and the projects then suspended before completion because of lack of funds. Worse still are cases where mandatory improvements saddle the residents with debts they either cannot afford to pay or are unwilling to accept because they have other priorities or do not believe they are getting value for their money. The authorities responsible for such investments will find it harder even than the sponsors of low-income housing projects to recover the cost of their investments or even to keep them going.

371. This kind of problem can be avoided, as some more recent experiences in Peru have shown. In one major new settlement, on a site assigned by the central government, well over 100,000 inhabitants were served with graded streets, electric light and power, and a piped water supply to public standpipes, in the initial stages of settlement, in consultation with the settlers' association which formed an effective provisional local government. The cost of such basic installations can generally be borne either by the inhabitants themselves or by the government - certainly by a combination of public subsidies and local contributions. This example illustrates the principle of central response to local demands in terms of infrastructure. The same principle applies to other components of the man-made environment and supporting institutions such as schools, health services and the like.

372. The social and material returns on public investment tend to be inversely proportional to the scale and complexity of the operations involved. Experience has shown that there are seldom any positive returns on public investment in fully-built "low-cost" housing projects for low-income people. This is acceptable when subsidies are generally available but not when further investments depend on the recovery of those already made. Experience with installing public utilities and providing services, on the other hand, shows much smaller direct losses and often

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indirect returns through the widening of the tax base. The fact that many utility companies are privately owned and operated, even in low-income areas, shows that they can be profitable. The greatest returns, however, are from public investment in the provision of scarce basic resources. An example is the mortgage guarantee programme of the United States, often quoted as one of the most successful housing policies ever put into effect.

373. Centrally administered systems for providing resources (or services and infrastructure) must take care not to be too categorical. In some participatory housing programmes, loans are provided in the form of building materials rather than cash, on the basis of three common suppositions. First, bulk purchases by the sponsor are cheaper; second, local suppliers may cheat inexperienced lower-income buyers; and third, the participants are less likely to waste or misuse their loans if they are made in kind. Unfortunately, if the requirements for using resources are too specific, users have no room to adapt them to their own situations.

374. Local shortages of materials or monopolistic abuses by distributors may justify the setting up of an alternative supply system through a public agency. The agency then has a choice of competing with private suppliers on the open market, or limiting its supply to the participants in its own programme. Competition by a public agency can have a positive effect on prices, but only if its prices are truly economic and do not ruin the private commercial system. If this happens, there may be a net loss of local employment opportunities and, unless the public supply system is very efficient, a great risk of shortages and the development of a black market. The rationing of resources, like the direct supply of packaged services, tends to create its own diseconomies. The highly specific distribution required generates a disproportionately large administrative structure that is bound to inflate overheads.

C. Participation and the informal sector

1. A note on the informal sector

375. The formal-informal polarity is not the only one to occur frequently in discussions of the problems of human settlements. Other examples, some identical and some complementary, are monetary-subsistence, modern-traditional, and urban and peri-urban - rural. The formal sector, or its equivalent, is often assumed to be efficient while the informal is dismissed as parasitic. Since transactions are much more easily measured in the formal sector, the informal sector's economic importance tends to be discounted. Because it does not appear in statistics, many governments ignore the informal sector altogether in their economic planning.

376. The informal sector is epitomized, as far as human settlements are concerned, by the squatter. Another name is "marginal man" - a term that applies not only to the areas where these people settle but also to the physical and economic environments in which they live and the attitude of the authorities towards them.

377. "Marginal" as applied to shelter may mean any dwelling outside accepted legal and social standards. The concept of social marginality, applied to people, means that they are relegated to the margin of the social life of the country or settlement concerned. There are, of course, many difficulties and uncertainties surrounding the concept and its definition is far from absolute. In general, it can be argued that no marginality exists without the presence of other related phenomena, in the shape very often of oppression and exploitation.

378. Social marginality vis-à-vis institutionalized society is frequently accompanied by legal marginality. For example, although squatters are invaders they are often tolerated by the authorities, at least temporarily. Thus, for an indeterminate period the occupants of a squatter settlement live in fear of the enforcement of the law and of potential eviction.

379. Last but not least, there is economic marginality. In general, incomes and wages are lower in the informal than the formal sector. This is easily explained by the types of marginality discussed already: locational marginality, which makes access to markets difficult; social marginality, which gives rise to exploitation and disadvantageous terms of trade; and legal marginality, which hampers the protection and development of capital, and offers opportunities for further exploitation.

380. These components form a vicious circle. If the circle is to be broken, the attitude of the authorities must change. Mass participation in the development effort and in the benefits of development must be enhanced by strengthening the informal sector even at the formal sector's expense.

2. Informal construction activities

3d1. Some of the general characteristics of the informal sector have been defined as follows: ease of entry; reliance on indigenous resources; small scale of operation; labour-intensive and adapted technology. ^{38/} As far as entry to the informal construction sector is concerned, building is one of the few semi-skilled operations that squatters master quickly because of the pressing need for shelter. A self-help part-time activity can thus be extended to a full-time occupation almost automatically. Reliance on indigenous resources is a less striking characteristic, since the formal sector also makes use of indigenous raw materials. The nature of the construction industry is such that operation cannot easily be standardized and economies of scale are only rarely attainable, which allows the informal sector to compete more effectively than in other branches of activity. There are in fact cases, in maintenance work particularly, where the informal sector is more efficient.

^{38/} ILO, Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya (Geneva, 1973), p. 6.

382. Both sectors of the industry are relatively labour-intensive. Employment in construction has been estimated to account for 4 per cent of all employment in the monetary sector. It is estimated, however, that construction work accounts for 15 per cent of all informal employment. A survey of the Jhuggi-Jhonpri settlement of Delhi showed 43 per cent of all informal employment to be in the informal construction sector. 39/ In Jakarta, in 1967, out of a total of 33,000 workers employed by construction enterprises, over 70,000 or about 85 per cent, were working for unregistered enterprises, in other words the informal sector. 40/

383. A further characteristic of the informal construction sector is that professional designs are not normally used and the carrying out of the work is not professionally supervised.

3. Modern professionalism versus traditional models

384. Formal construction activities are very often paired with informal construction in the workers' spare time. In view of the unauthorized nature of the latter, this dual existence is a useful protection. Unauthorized construction activities, like the informal sector in general, is rarely supported by governments. Usually it is ignored and sometimes actively discouraged. The objections raised openly by the authorities tend to be over questions of standards and expertise. Unless a design is prepared by a professional architect or engineer, it is often regarded as below standard, although only a small minority of the world's buildings are designed by experts. 41/

385. Most governments accept the type of shelter provided by the rural population for itself. When the same type of construction begins to encroach on the metropolitan boundary, however, or appears in the form of squatter settlements, regulations are often adopted to outlaw it. These constraints extend to construction enterprises. Professional registration requires experience and this, as described earlier (chap. IV on the construction industry) can lead to discrimination. Unrealistic demands may be made on registered enterprises for social security for their workers, and the planning authorities' contract procedures may be cumbersome and overly bureaucratic. These place heavy burdens on the informal sector and are the main reasons why contractors remain unregistered.

386. It may be argued that government attitudes to both design and construction are the result of the imbalance between the city and the rural areas. Foreign models have led to the equation of modernization and industrialization with civilization and development, and thus to the predominance of the city for development purposes.

39/ "Urban slums and squatter settlements in the third world", (A/CONF.70/RPC/9), p. 24.

40/ A/CONF.70/RPC/9, table B, p. 22.

41/ See for example, C. Doxiadis, Architecture in Transition (London, Hutchinson, 1964). The writer's estimate is 5 per cent.

In the examples that follow, the rejection of formal expertise is accompanied by an attempt to change this exploitative relationship between the city and the countryside.

387. The following account of the transformation of the village of Liu Ling in the Shensi loess country south-west of Peking, between 1962 and 1969, is an example of the way in which rural reform has been interwoven with tradition in the production of shelter in China.

"In 1962 only the village school and the row of administration offices were stone caves. The rest were earth caves. The word 'cave' is misleading. It takes at least as much labour to build an earthen cave as to build a house. But the earthen cave is a better dwelling - the stone cave is an unusually stable and well-insulated house ... Now, almost half of the village households have moved into new stone caves ... built during the cultural revolution by the brigades building group. By rationalizing, costs have been brought down by about 10 per cent in the last three years ... Each family decides for itself when it wants to build and how large its home is to be ... The building team goes from one village to the next ... The building plan (of operation) is discussed at open mass meetings.

"The average building cost was 220 yen per cave (about \$75). People usually built two caves for their family and kept the old earthen cave as a storehouse or, in some cases, for older members of the family.

"The carpenter who made the windows was a professional. He composed the latticework in the window-vault individually for each family. No two new caves in the whole village were alike. He wanted each facade to suit its family - if there was some flower that the family was particularly fond of, he made a pattern with just those flowers for them." 42/

388. Liu Ling is situated in one of China's less-developed rural areas and is in no sense a "showcase" village. The changes made since 1962 illustrate a number of general policies regarding rural shelter. First, building construction is seen as part of a comprehensive effort at rural development. Plans are evolved and ratified locally by the people whose lives are affected by the programme. Traditional living patterns are respected and the process of improvement causes a minimum of disruption. Local craft skills are also respected and incorporated in the construction system and the best possible use is made of local materials. Lastly, a local type of building - the cave - is considered satisfactory for a number of uses - school, office, doctor's surgery, communal meeting place - in addition to its primary function as a dwelling.

389. The Tanzanian experience offers another example of the synthesis of tradition with a new indigenous approach to construction, and the rejection of the professionalism inherent in the "international style". The Government's acceptance

42/ Jan Myrdal and Gun Kessle, China: The Revolution Continued (London, Penguin Books, 1973), p. 19.

394. The major factors to be taken into account in evaluating the informal construction sector's impact are cost, employment, materials and technology, and cultural implications.

Cost

395. Since no statistics are kept for the informal sector, informal construction costs are difficult to calculate. Moreover, there are many still unidentified multiplier effects. The informal sector also makes use of many supplies such as earth and salvaged materials that are not subject to pricing in the formal sector. The retrieval and transportation of these materials frequently becomes a small industry in the informal sector. In many of the cities of the third world, a complete range of salvaged material, from bottle-caps to flattened tins and scrap timber, is available from a number of suppliers, equipped with hand-carts for transporting it and even, in some cases, offering credit.

396. A comparison of the cost of public housing and housing in a typical barriada in Lima, Peru, showed that by avoiding the interest charges and administration costs of public housing, popular dwellings saved 50 per cent. It was assumed that the individual purchasers paid more for their materials. The building workers in the barriada, on the other hand, used less equipment.

397. Some of the timber used in informal construction (for example, bamboo, mangrove poles, wattle strips, palm nervure) does not normally find its way into the modern building supply market. More of these materials should be produced. Problems arise when scarce supplies of more commercially valuable timber are tapped indiscriminately, or when it is not suitably cured.

398. A case occurred in Nairobi, Kenya, where large numbers of unauthorized speculative buildings were constructed of timber from new saw-mills. Not only was the timber unseasoned but it was treated with used engine oil as a termite repellent. This is an effective repellent, but it heightened the risk of fire already present in the crowded siting of the dwellings, and large areas did in fact burn down. Assuming that there were feasible alternatives to the used engine-oil, had the builders been given a minimum of technical and planning advice the waste could have been avoided, and a large amount of slightly more costly but also higher-standard shelter would have been provided. Nevertheless, this type of housing was able to accommodate more people in 18 months than the public and private sectors combined in the seven years after Kenya's independence.

Employment

399. The employment characteristics of the informal construction sector are also difficult to define, for the reasons already outlined. Elements of the monetary and the subsistence economies combine in the informal sector. In general, people with regular employment but incomes too low to allow them to purchase even the cheapest shelter can achieve very good results by combining the contracting of skilled labour and the purchase of standard materials with the self-help effort

of the indigenous "Swahili house" as an adequate urban dwelling is a recognition of the important part played by popular shelter in a comprehensive development programme.

390. The "Swahili house" is an example of a traditional rural dwelling costing about one tenth the price of a comparable brick or stone building. Under former colonial standards for east Africa generally, it was classified as unsuitable for urban areas, except in special cases.

391. In 1970, the urban population of Tanzania was only 8 per cent of the total population, and the capital, Dar es Salaam, with slightly less than 500,000 people, accounted for 43 per cent of the urban total. At the time, about half the capital's population was estimated to be living in squatter settlements. ^{43/} The type of housing considered illegal in 1970 is now recognized as part of the city's housing stock. Loans have been negotiated with the World Bank to improve existing areas of Swahili housing in the city, and to develop a national sites-and-service programme.

392. The Ujamaa village movement in Tanzania is directed towards consolidating the scattered rural population in new village settlements so that agriculture can be improved on a collective basis. The programme is very much influenced by Chinese development principles, although field-workers from Israel also helped in the development of co-operatives on the basis of their experience with kibbutzim. A complementary plan to reduce the primacy of Dar es Salaam involves transferring the capital 300 miles inland from the present location on the coast to the existing small town of Dodoma. This is a very interesting proposal, since Tanzania is one of the poorest of the developing countries and is therefore unlikely to attempt the type of project exemplified by the 1960 founding of Brasilia. Tanzania could be the first country to demonstrate its socialist principles by establishing a truly low-cost new capital which allows for the gradual improvement of amenities and takes into account the future development of the region in which it is situated, instead of creating an isolated haven for civil servants with a standard of living (and housing) conspicuously alien to that of the surrounding rural area.

4. The effectiveness of the informal construction sector

393. Since the informal sector plays so significant a role in the economy of the third world, efforts should be made to strengthen rather than harass or eliminate it (see chap. I, housing). Its significance lies in the fact that it "delivers the goods". In other words, it is thanks to the informal sector that there are not more people in the third world without shelter and basic services. The economic side-effects of its labour-intensiveness are too impressive to be dismissed with objections that pay is low and employment sporadic.

^{43/} World Housing Survey, (United Nations publication, forthcoming)
table B 16.

typical of the informal sector. The owner/user of the housing exercises a good deal of control over its construction, even those parts of it that are technically complicated and therefore contracted out. In addition to providing a feasible alternative to low-cost public housing, this mixture of formal and informal construction makes it possible to overcome the proverbial socio-psychological impasse of low-cost housing, which on the one hand is too expensive for those for whom it is intended, and on the other offers too little status for those who can afford to buy or rent it.

400. The industrialized countries are also beginning to exercise more use-control over the design, construction and maintenance of housing, though for different reasons. In most cases, the trend is the result of the increasing cost of specialized design and construction skills. More sophisticated technology and hand tools for decorating, plumbing and electrical installation enable unskilled individuals to exercise more control over their dwelling environment and at the same time to bypass the barriers imposed by the building industry through its closed crafts and professions.

Materials and technologies

401. It is generally agreed that most forms of popular dwelling, apart from the very makeshift shelters in central urban squatter settlements, represent an ingenious use of local materials to produce comfort and conditions appropriate to the climate. This is achieved partly through the layout and design of buildings and neighbourhoods, and partly through the use of well-tried materials.

402. For example, in hot dry climates, streets are narrow and shady and the buildings are contiguous, with thick, well-insulated walls of earth, lime plaster and the like. In hot humid climates, the buildings are mainly isolated, often raised from the ground on piles, and made of light-weight materials, such as grass and bamboo, that allow maximum air circulation.

403. Economy in the use of materials is also characteristic of indigenous settlements. For example, the palm trees of the Saharan oases are particularly versatile. They provide a suitable micro-climate for cultivation as the canopy of branches keeps a blanket of warm air near the ground by night. At the same time, they provide a variety of building materials. Because of its density and fibrous texture, the trunk is very useful for structural timber. The bark can be cut into short lengths and used between the beams. The nervure, which can be bent into a full circle, is often used as framing for arches, or for making furniture. A type of hemp from the trees is used to make matting and for insulation, and the leaves are woven into light screens and baskets.

404. Most indigenous building demonstrates a flexibility not often found in modern housing. In the absence of the constraints imposed by urban building regulations, mortgage companies and professional interests, the user of popular shelter can undertake repairs, extensions and improvements as they are needed and when he can afford them.

405. Traditional rural craft skills suffer from a combination of psychological and practical constraints when they are applied in an urban context. It is sometimes argued that formal training in craft skills takes too long and that such skills imply a wasteful and unproductive use of materials. Capital-intensive prefabrication, mass production and the use of new materials might seem to offer a viable alternative. It is true that an injection of capital-intensive technology could produce a particular number of "units" in a prescribed time, but over-all living conditions would not necessarily improve, nor would such housing be likely to respond to the changing needs of poor families.

406. It has been argued throughout the document that the provision of shelter should be viewed not as an independent activity but as part of a larger whole. The theory has been advanced that certain levels of action correspond to certain scales of organization or levels of authority, neighbourhood, municipal or regional, and national. A similar correlation might be posited for the three levels of technology: traditional, intermediate and advanced. Such a correlation strengthens the self-evident proposition that different levels of technology are appropriate for different functions: for instance, traditional technology for locally provided shelter, intermediate technology for municipally organized waste disposal, and advanced technology for a national system of telecommunications.

Cultural aspects

407. The effects of modernization are felt even by the more conservative sectors of the population who remain in the countryside. Nevertheless, it is true to say that indigenous rural housing comes closer to being an expression of national culture than the "low-cost" variations of western housing now so common in third world cities. Greater sensitivity to the aesthetic value of popular shelter is undoubtedly necessary, but at the same time there is a danger that traditional forms and methods will become fossilized in the kind of "museum village" that attracts urban tourists.

408. Unless the positive elements of popular shelter can be reinforced and reinstated within broader development objectives, a growing proportion of the world's population will be forced to rely on the unrealistic promises of national development plans to provide them with "decent" housing.

D. Summing-up

409. Public participation at the local government level should mean that all groups, majority and minority, have access to the planners and decision-makers. Throughout the world, the trend towards rationalization and efficiency is giving rise to fears that it will be increasingly difficult in future for the individual to express himself as an individual. The aim of strengthening local structures and encouraging participation is to involve people as individuals step-by-step in the development of their own communities.

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410. As far as participation in housing and local services is concerned, the most effective and necessary forms would seem to be participation by the central authorities in the shape of actions to ensure local and personal access to essential resources (including the freedom to use what is locally and personally possessed) and participation by the public in planning the services and infrastructure provided by the authorities.

411. There are two basic ways of organizing public participation in housing. One specifies what is to be done and lays down the procedural lines to be followed. The other sets limits to what may be done, and within these limits the individual is free to do as he chooses. The conventional centrally administered housing programme at one extreme and the supervised credit programme at the other illustrate the two approaches and the contrast between them. The credit borrower can do what he wishes - subject to certain minimum requirements - as long as he builds a house within given material limits. The successful applicant for a unit in a housing project, on the other hand, is tied to a standard unit at a given location, with a standard form of tenure and mode of payment. The former can combine his loan with any or all of his own resources to achieve the best match possible with his own priorities. The latter must adapt to what is given and use his other resources for other ends or lose the opportunities they represent.

412. Once an appropriate form of participation has been selected, an appropriate control system must be adopted. For example, the design and installation of a major utility system will demand central administration. The necessary hierarchy of a piped water supply system provides the parameters for the development of the dwelling environments supported by the system. However, if the same principle is applied to the dwelling environments within the area defined by these parameters, local and individual initiative will be inhibited and society will be deprived of a major part of the resources that should be available for development.

413. Steps to mobilize these resources, particularly human resources, can be taken relatively easily once government authorities change their attitude to the informal sector. Innovative thinking rather than innovations in building should be the objective as far as popular shelter is concerned.

414. Obviously, discrimination against the informal sector should cease. Licensing of building enterprises should be made much simpler and compulsory standards reduced to the minimum required to prevent health and safety hazards. If these steps, which would cost very little, were taken, the sector's own investment prospects with minimal state intervention would probably be enough to induce the banks to lend money. Alternatively, the state could provide backing for some of the most productive informal activities on an experimental basis.

415. The chief opponents of any encouragement for the informal sector are the advocates of advanced technology and of centrally co-ordinated, if not actually industrialized and prefabricated, low-cost housing. The conflict between formal and informal construction parallels that between urban and non-urban living standards and life-styles. This rigid antagonism to the informal sector may be the

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result of cultural pressure from the industrialized world, a sort of cultural imperialism common in the colonial era and still alive today.

416. For example, housing needs are a recurrent theme of reviews by national and international agencies. It is claimed that many hundreds of millions of dwellings will have to be constructed to wipe out the present deficit. At the same time, these reviews dismiss most rural or slum dwellings of the third world as unsuitable for human habitation. 44/ Given the incomes of these countries, both reactions are inappropriate.

417. The assumption that there is a world-wide housing "shortage", which can only be solved by building more "low-cost mass housing units", rests on a value judgement. Most people, apart from a relatively small number of street-sleepers, in fact have access to some form of shelter. Of course, the various forms of popular urban shelter are viewed with disdain by official housing agencies. It is only recently that any support has been voiced for the gradual improvement of slum and squatter areas as an alternative to public housing programmes. Even then, unless these improvement programmes and site-and-services schemes represent a genuine commitment by local governments and international agencies to co-operation with the low-income population, they could become merely holding exercises, designed to contain urban unrest and maintain an exaggerated standard of amenities in the "modern" sections of cities.

418. In a world in which only the industrialized minority can afford to be preoccupied with quality, while the less developed countries are chiefly concerned with survival, popular shelter cannot be discounted because of its pre-industrial origin in rural areas, or because it is not recognized as a commodity by the formal sector. A better understanding and a more sensitive appreciation of the social and cultural function of popular shelter would enable it to perform even more effectively.

44/ For a discussion of this point, see chap. II.