

BUILDING RESEARCH DEPARTMENT

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH

December 1980

REPORT

ON :

RURAL HOUSING IMPROVEMENT

IN INDONESIA

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3.3.1 Rural Housing Improvement in Indonesia

Introduction

Housing projects is an intergral part of human settlements like transmigration, resettlements of "traditional" communities, rural housing improvement, "Kampung" (Low-income urban settlements) improvement, low-income housing, site and services rehousing disaster areas.

Housing in Indonesia has gradually obtained higher priority in Government Development Policies. The main programme for the low income groups is Kampung Improvement in the Urban and Rural Housing Improvement in the rural area.

For a short period of 3 month training course at the Directorate of Building Research in Bundung, it was only possible for me to select for study only the main housing programmes. These are Rural Housing and Kampung Improvement. Other housing projects such as SITES & SERVICE, low-cost Housing, Transmigration project, have also been studied but did not go into details.

In view of the economic structure and condition in the rural areas as well as in the low-income urban settlements Indomesia and Thailand are almost similar. Hence the knowledge gained from this training course can be applied to and implemented in Thailand.

## RURAL HOUSING IMPROVEMENT IN INDONESIA

### 1. PROBLEMS RELATED TO RURAL HOUSING

#### 1.1 Population increase :

Population growth in Indonesia is estimated at more than 2.4 million per year. \* By the year 2000 Indonesia's population will not be less than 200 million. And more than 80% of the population live in rural areas. So not only does the number of houses is inadequate, but the quality of the houses is also poor.

According to the report on programme of peoples housing of Directorate of housing in the rural area, in so far as the size and plot is concerned, the villager is often much better off than the citypeople. But his house is much more primitive, even in comparison with the kampung dweller. In 52% of rural houses the floor consists of earth, 56% have bamboo walls only 2% have electricities. Actually in the rural area have not envisaged acute shortage of housing, the villager can built their own houses but the majority are very poor in quality. So the housing problem in rural area remains on improvement of existing dwellings to acceptable standard of hygiene, rather than one of providing new housing units on a large scale.

#### 1.2 Problem on hygienic environment

The villager lack of understanding about healthy housing and environment. Many houses are without windows, houses are often shared by people and their animals, 52% of rural houses the floor consists of earth and supply of clean drinking water is not available; etc. So in this situation so many people especially the children were sick. The conclusion can be drawn that the hygiene of the house and the environment has a big influence on its occupants.

\* HOUSING NEEDS AN OVERVIEN OF THE PLOBLEMS AND PROSPECTS IN INDONESIA

1.3 The problem of quality of house.

The villager lacks building ability and has inadequate understanding and skill in the technique of building houses. Generally, houses do not last long. Also lacking is the understanding of an organization for building activities to increase efficiency.

1.4 The problem of finance.

Because of insufficient finance, the villagers are still limited to cheap building materials which are generally of poor quality.

2. RURAL HOUSING POLICY

In regard to the general policy for the development of rural communities, the government has launched the so-called 10 points programme (PKF), in which every village must participate, the 10 points are listed as follows:

1. Family planning
2. Child care and education
3. Food
4. Clothing
5. Housing
6. Mental and physical health
7. Economy & finance
8. Administration & management
9. Materials spiritual welfare
10. Harmonic & helthy environment

With regard to the improvement of the rural housing, the situation depends not only on the role of the government but also rely on the peoples' own efforts and their tradition of mutual self-help (gotong rajong), the extent of the participation in the village community itself and the improvement of housing and village physical environment are the responsibility of the village people themselves. Due to the fact that their, has to help in

understanding and ability are limited the government responsible for giving guidance and aid.

The attempt to help and stimulate the villager to improve their housing condition and environment. In REFELITA 3 out of the roughly 60,000 villages in Indonesia 6,000 have been selected as demonstration units, spread over the country.

### 3. DEMONSTRATION PROGRAM OF RURAL HOUSING

Demonstration program of Rural Housing has been started in REFELITA 2 (the Second Five-year Development Plan 1974-1979) under responsibility of CIPTA KARYA'S Directorate of Housing,\* consisting of funds of Rp. 4 million per village for environmental improvement and made available to the households as small subsidies for upgrading their houses. The people themselves have to contribute to the program by their labour in gotong-royang.

An evaluation of the potential and typology of villages in Indonesia made by the Department of Home Affairs (Housing Survey in combining) through Rural Broadcast and printed material simultaneously, based on socio-economic, cultural and physical criteria has classified into three types, and the 1,000 villages from these three types have been selected as demonstration villages. Typology of villages.

1. Out of the self-generating undeveloped settlements or at first stage of development, constituting 27,260 villages, 125 have been selected as demonstration units.

2. Out of the self-help villages, transitional or at development stage of development, constituting 29,580 villages, 802 have been selected as demonstration units.

3. Out of the self-supporting villages, at a third stage of development constituting 1,160 villages, 73 have been selected as demonstration units.

The Program for these three categories depend upon their potential, the government aid program is as follows :

1. Traditional villages; the program is the improvement in environmental health.
2. Transitional villages; the program is the improvement in environmental health plus Housing improvement.
3. Self-supporting villages; the program is the improvement in environmental health plus Housing improvement, building of new houses and institutional development.

According to the plan drafted for 25 years, these will generally be 3 steps of development for the rural villages. The first : self-generating, a condition in which the village (traditional village) by its own initiative may try to develop itself, but despite the proven results due to inadequate availability, of material, capital and technical knowledge, extensive assistance from the government is urgent.

The second: self-help, a village (transitional) where sufficient skill and knowledge are available, but due to shortage of material and of low funds, optimum results can only be achieved by aid from the government.

The third: self-reliant, the ideal condition in which the government mainly needs to act as controlling agent, the village (self-supporting) has its own sources for material and skill.

#### 4. OBJECTIVE OF DEMONSTRATION PROJECTS

The general objective of demonstration program as mentioned above is to stimulate the people to improve infrastructure facilities such as roads, bridges, well etc; in REPELITA 2 (the government provided funds of Rp. 4 million per village for environmental improvement), and small subsidies of max 100 per household stimulated the people to invest a many fold of this sum in the improvement of their houses. The government will give the technical assistance,



technical guidance and training to increase the skills of the villagers and the forming of cadres in the community. The function of a demonstration project are.

1. To constitute a training area for rural housing development cadres. These cadres will then be expected to pass on their knowledge, skill and experience, on returning to their respective areas.

2. To be a research project in the form of a Field Laboratory where the results of the implementation of the prior planning can provide experience and teach methods of implementing a programme. The activities above include such aspects as development mutualcooperation organizations, community participation, collecting of funds, the technique and technology of housing development according to the mutual cooperation method.

3. To be one aspect of the implementation of a system of development. Experience gained and patterns discovered must be cast in a form which can be distributed and then put into practice in other areas where conditions are the same.

5. THE IMPLEMENTATION OF THE DEMONSTRATION PROJECT ON REPELITA 2 (1974-1979)

The rural Housing improvement projects in REPELITA 2 (1974-1979). The government has carried out 1,000 demonstration projects (pilot projects) in several parts of the country in an effort to upgrading of housing and general facilities. For these program an emphasis is given to the health aspects of human settlement. Each programme, the government provided the budgets cost of Rp. 4 million for housing, for sanitation and for access roads.

### Programs of Housing in demonstration project.

Programs of Housing for the villager have been established in two aspects. One for the improvement of existing of village houses, and one for the construction of new model village houses. The aim of both is to improve house design and construction with respect to health and privacy, to increase the building skills of the people, to promote the use of local building materials and to introduce new financing systems found in that area. That may help the existing mutual-selfhelp methods of cooperative house construction. Otherwise, they were also informed about basic principles of healthy housing and environment.

1. The improvement of existing of village houses which in adequate quality, to become more healthy condition. The houses will be selected by the village administrator for rehabilitation, the criteria for selection were among other things:

a. whether the house, in terms of hygienic and moral requirements, really needed rehabilitation.

b. whether if the government provides a sum of Rp. 15,000 (Rp. 30,000 at Desa Wanakerta Subang, westjasa village) as incentive the house owner would be willing to provide at least the same amount for the rehabilitation program.

c. whether the house owner was a well behaved villager.

(At kampung-CIELA, DESA-WANAKERTA, subang Regency in west jawa.

Out of the 60 houses in this village, 40 houses have been selected for rehabilitation.)

The work of rehabilitation includes :

a. Dividing the house into rooms, with at least 1 to 2 bedrooms. (Installing interior partitions) \* (55% of houses have only one room)

- b. Addition of windows and doors for light and ventilation.
- c. Improvement the floor. In Indonesia, temporary House and Semipermanent Houses estimated 86% of total Houses, the floor is river stones, earthen, wood, bamboo. Improvement of the floor such as raised the floor above ground or provided the floor out from bare-soil, plastering the floor or change the flooring materials etc.
- d. Replacement of outer walls from temporary building materials (bamboo strips or bamboo mat, grass) to become a permanent wall. (Brick, stone or lime block), replaced the old bamboo not by the new one, or restoration of outer wall by painted bamboo not with white wash, plastering bamboo etc.
- e. Replacement of roofing materials.
- f. Separate domestic animals away from the houses.

The restoration may be started by improving first the walls only, or perhaps the floor only, or if the owner is in a better economic position, many works of restoration can be improved at the same time.

## 2. The construction of new model village houses. The Housing policy in REPELITA 2

The new model village houses will be constructed as a means to demonstrate the use of "newly developed" local building material, as well as new ideas in housing design and construction technique only in the self-supporting villages. \* The example of new model village houses are constructed in Kendal the north-east of Yogyakarta in the year 1976, 2 model houses have been built. One of these, measuring 5 mx 7 m. (main part), 3 mx 3 m. (kitchen) and 3 mx 3 m. (stable) was constructed partly with voluntary village labour, partly by paid workmen, for a total cost of Rp. 117,504. The house had a foundation of river stones and floor of cement, with masonry, halfstone walls wooden door and window frames made of preservative-treated resinwood, and a roof of tiles on wooden framework.

The second house measured 8 mx 9 m (main part) and 3 mx 3 m (kitchen) and used similar materials in its construction with superior woods being used (preservatised secondgrade mahogany) glass windows, interior partitions, and ceiling of platted straw. This house also built with village help, cost a total of Rp. 144,852 including wages paid to labours.

The new model houses have been built as a kind of exhibition. The house will be occupied by selected family, who has shown very active share in the village development, or if there is no suitable candidate it will be as a village office.

B. Program for sanitation and for access roads. The basic aim of these program is

- : making available gutters for draining away dirth water or rain water.
- : to improve drinking water and making its available
- : providing the waste disposal places
- : the provision of public baths and toilets.
- : separate domestic animals stable away from house and providing its new stable etc.
- : program for improvement of access roads, the development of the village may begin in opening up the village from its isolation. Access to the village may be only a 2 m. path, in these program it will be improved to a 5 to 8 m. withstone roof or another, access able for an oxdriven vehicle, even for cars. When sometime any mechanical equipment is not possible to get, the widening of the village road may already mean a start gor better communication.

6. THE IMPACT OF RURAL HOUSING IMPROVEMENT ON DEMONSTRATION PROJECT.

According to the report of CIPTAKARYA (planning and Directorate general of Housing, building urban development)

REPELITATA 2 The demonstration program has been very successful in so far as the community became very motivated to improve their infrastructure like roads, bridges, wells etc. While rather small subsidies of max, \$ 100 per household stimulated the people to invest a many fold of this sum in the improvement of their houses.

Another report, the research on the impact of the demonstration in centraljawa informed that the most important factors leading to the success of the project are the participation fund provided by the house owner (33.73 %) and the role of the government (51.41%) consisting of information, training guidance, supervision and financial aid. The role of the government will be less in areas where the educational level of the people is higher, It noted that the success of such projects will depend very much on the executive officials and intellectuals who are willing to work directly in the rural areas. In brief, rural housing rehabilitation changes the mental attitude of the villagers to conform with the concept of village modernisation in breaking off many traditionalities. The project also have positive impacts in the socio-economical development of the community, and in Kendel (central jawa) 62 houses have been rehabilitated without any government aid. More skilled workers were produced in the process. The report also had concluded that rural housing rehabilitation has positive impacts on political, social economical fields. It is therefore hoped that a large scale rural housing rehabilitation program will be feasible. But its noted that a loan system (will be informed in the next item) for the rural housing rehabilitation program will not be feasible in the near future \* (at least for the next FIVE year) but its should be explored for a long-term housing improvement program in the rural areas.

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\* This research was conducted in 1974

7. THE TARGET OF RURAL HOUSING IMPROVEMENT IN REPALITA 3

Since its give the positive impacts of demonstration projects on REPALITA 2, on REPALITA 3 (1979-1984) governmental support will be given by continuation and extension of the demonstration program is an increased number of villages over the whole of Indonesia, including the outer islands. This program will again contain a combination of environmental improvement of the villages and upgrading of the houses, and these program still has to rely on peoples' own efforts through the system of mutual-selfhelp.

As mentioned above, in REPALITA 3, the demonstration villages will be expand, the target of rural housing will consist of 6,000 demonstration villages, covering

- 1,000 traditional villages
- 3,000 transitional villages
- 2,000 self-supporting villages

These program of rural housing (in REPALITA 3) will be financed by CIPTAKARYA with grants. For the implementation of the demonstration villages there will be available :

- Rp. 6.5 mln per traditional villages
- Rp. 6.0 mln per transitional villages
- Rp. 5.5 mln per self-supporting villages

8. ROLE OF THE GOVERNMENT ON DEMONSTRATION PROGRAM OF RURAL HOUSING IMPROVEMENT

The general policy of the government on rural development (which mentioned above in items No. 2) was outlined by the Minister of Interior and delegated for its implementations to the directorate general of Rural Development ( under the Minister of Interior), for these development program of rural areas, the Minister of Interior is the chairman and representatives from of her ministries or institutes are the members. But in the field of

Housing Rural Housing in particular although the rehabilitation of housing and the village environment is actually the responsibility of the village people themselves, but because of their limited understanding and ability, the role of the government is responsible for giving guidance (technical guidance) and aid (fund, tools). In this field, The Minister of Public Works and Electric Power is chairman representatives another minister such as the Minister of Interior, of Social Welfare, of health, of Industry etc. and 2 national institutes. The National planning Bureau the bank of Indonesia are the members.

Demonstration program of rural housing improvement has been started in REPELITA 2 under responsibility of the minister of Public works and Electric power and delegated for its implementations to CIPTAKARYA'S Directorate of Housing the Directorate of Building Research (DFMB) (The main centre of CIPTAKARYA'S research program, located in Bandung) will support these programs. The concrete targets will be derived from the needs of the implementation programs and more emphasis will be given to the transfer of the results of research through demonstration-projects to the consumers such as the villagers, hence the DPMP and Building Information Center (BIC) of the Directorate of Housing are closely cooperating with each other. It is intention that supporting activities in the field of research, training and information will be directed more at the practical needs of the housing programs to be completed, and this asks for an adequate coordination between the supporting and implementing agencies.

In REPELITA 3 the target of Rural Housing will consist of 6000 demonstration villages and the program will be financed by Ciptakarya with grants (that mentioned above in item No. 7 the target of Rural Housing improvement in REPELITA 3), the technical assistance has been provided through the provincial branches of CIPTAKARYA (Directorate of housing and Directorate of Building Research) and a big effort will be needed is training (Leadership

Course for the development of mutual-selfhelp housing). For participants sent to the causes government offices who are officials of the Social Science or Community Development Science, given tasks particular in the field of housing, or in Village Social development is general and participants from the people who should also be selected from those having leading positions, that is, the organisers of Village Social institutes or persons having influence among the people. Besides this, the people could be invited to look-on listen to speeches given during the course, in order to help make mutual self-help housing development more easily achieved. Hence the program will be supported from regional training centres in Jagya, Medan, Bandung, Ujung Dan Dang, Surabaya together with Building Information centre, while Jarhata will be the national development of this program. And in every province a Building Information centre will be established, while the existing BIC. will be up graded.

The demonstration program is supervised on Central and Provincial level by the coordinating body, in which the department of public works, of Interior, of Social Welfairs and of health take part.

#### 9. STAGE OF IMPLEMENTATION ACTIVITIES (Role of the Government)

In connection with giving guidance and aid to the village community in carrying out rehabilitation of housing and the village environment. The role of the government on the stage of implementation can be grouped into the following main activities.

- A. Information social conditioning
- B. Technical guidance (Instruction training)
- C. Extension service

Before reaching the operational stage in the implementation of the programme, the government has had to take to preparation stage; in this stage the role of the Directorate General of Village Community Development (Under the Minister of Interior was significant (importance) its task in the preparation stages are :



Research into potential and villages typology from the results of this research, the stage of development of villages in Indonesia (which number approximately 60,000) can be classified as follows.

a. Villages self-sufficient in man power or self-generating a condition in which the village by its own initiative may try to develop itself, but inspite of proven results, due to inadequate availability of material, capital and technical knowledge, extensive assistance from the government is urgent.

b. Self-help village or transitional : A village which has already sufficient skill and knowledge to do things, but due to shortage of material and of low economy, optimum results can only be achieved by certain aid from the government.

c. Self-supporting villages, the ideal condition in which the government mainly needs to act as a controlling agent. The village has its own sources already to find material and skill, in which government aid is an incentive and stimulous progress.

According to a strategy drafted for 25 years, rural villages in general will pass these 3 stages of development. For the demonstration projects, 1,000 villages have been selected in REPELITA 2 (See item 3 : Demonstration program of rural housing and in REPELITA 3, 6,000 villages have been selected as mention in the item No.7 (the target of Rural Housing improvement in REPELITA 3)

- Operation research, aimed at studying the operation of a complex system which consists of the people, tools, local building materials, and natural resources available, etc.

- Education, aimed at preparing trained government personnel from several-levels. Personnel from the national level will hold upgrading courses for provincial officials, personnel from provincial level will conduct courses and discussions for regional officials and personnel from the regional

level will instruct and train sub-district officials and village people who are going to be placed directly in the field (the demonstration projects).

In this way, the successful demonstration projects can be imitated by other village communities. This is how all man power from government officials to village people can be mobilized. (Because of the limited number of officials in villages, graduate volunteers will also be called into action).

After the stage of preparation, it comes to the stage of implementation activities which have mentioned above, the task of the government in each stages is as follows.

A. Information social conditioning. In this stage the role of the ministry of social welfare will be very significant. At this stage emphasis will be placed on making people understand the significance of housing and a hygienic village environment and the community way of life. As well as this, technical training will be given to cadres who will later spread their knowledge throughout the general community.

B. At the second stage, the major role will be played by the Directorate General of Housing, Building Planning and Urban Development ("CIPTAKARYA") of the ministry of Public works and Electricity which will conduct instruction and give technical advice to the people who already understand the significance of hygienic housing to building or improving their houses on a mutual co-operation.

C. At the third stage after housing been given instruction the village people, need to be guided and directed to conduct the rehabilitation of houses. At this stage the role of the Directorate General of village community Development of the Ministry of Interior will be the most significant. It will instruct the (to be referred to as U.S.D. and will be informed later) so that its members are able to improve housing and the environment. The role of other institutes will be to give technical advice in their respective fields.

10. PARTICIPATION OF THE PEOPLE (Role of the people)

As have mentioned above that improvement of the rural housing had to rely on peoples own efforts and their tradition of mutual self-help. The intention of local participation is that many people as possible are involved in the execution of development programme together with government services and it will raise the sense of belonging, sense of responsibility among community members and leaders. Hence the Village Social Institute (L.S.D.) were established in every village throughout Indonesia (as a people's institute) and were controlled by the Directorate General of Village community Development of the Ministry of Interior, this Institute is a local people's institute in the villages, has government recognition and support and is also recognized by the village Head, the organizer and the members of the organizing body are members of the community including important figures in the community, both formal and informal leaders, this institute is a collection of leading figures in the village community who can help to solve problems, overcome difficulties and carry the implementation of village development to a successful conclusion. The L.S.D. will be given the task of communicating between the government and the community and have another function as the following.

The tasks and functions of the L.S.D. are :

- a. To be the organization for community participation in supporting the government development programme.
- b. To be chanel of communication between the government and the community and also between different sections of the community.
- c. To be a chanel for increasing the skills of the village community.

- d. To be a channel for modernisation by changing the static and traditional thought patterns of the people so that think dynamically and rationally.
- e. To be a channel for increasing social welfare.

Types of participation, viewed from what is contributed, can be classified as follows :

1. Participation of ideas, shared in informal meetings, community meetings, door to door visit, etc.
2. Participation of energy (man power), shared in physical development such as building a community or village hall, mosques, rice-field irrigation, village dam, village streets and bridges, villagers' house and the like.
3. Participation of skills, shared in physical development, or in promoting small scale industry such as handicraft and the like.
4. Participation of money, goods and the like, shared in physical development, community development, etc.
5. Social participation, shared in cooperatives, "arisan", social funds such as fund raises to finance the religious ceremonies, death ceremonies, etc.

There are some conditions which are favorable to participation. These conditions to some extent perform as requirements for participation :

1. The existence of program implementation. If there is no program executed in a community, there will be no participation.
2. Sense of belonging, sense of commitment and sense of responsibility among the community leaders and members.

3. The clearness of the objectives of the programs that are suited to the community, and to the norms, values, and customs existing in a community.
4. The existence of pioneers who demonstrate their participation, motivate and persuade the others to do the same, organize and lead them in the participation.
5. The atmosphere of participation.

A favorable atmosphere will grow a good sense of participation. Participation of ideas will not exist efficiently and effectively if 2 - 3 persons dominate the meeting, or if some one delivers a speech in a manner of giving a sermon in a church. Participation of energy will not be efficient and effective if a few people just only are watching the others working.

There are some factors to raise a good participation atmosphere :

- 5.1 The recognition of individual authority, so that every person feels free to participate and develop his/her enthusiasm in the participation. Intervention of the others, especially who do not have authority, will turn the atmosphere into an unfavorable one.
- 5.2 Authority which is assigned to a group should not be intervened by others, individually or collectively,
- 5.3 Authority of someone or of a group should be used to influence other persons or groups to decide or to finish something.
- 5.4 Those, individuals or groups, who will be influenced by the decision of participation, should be involved in the process of decision making.

- 5.5 The existence of a feeling or belief that individual or group participation will be significantly relevant to his or their needs and to the community's needs as a whole.
- 5.6 The existence of communication based on equality. There is no subject and object, everybody is equal.

## 11. THE GOVERNMENT'S FINANCING PROGRAMME OF RURAL HOUSING

The attempt to finance rural housing must be a non profit making venture, to attempt housing development with the aim of making a profit is obviously impossible because, according to a banking system, the majority of the village populations are categorised as having poor credit qualifications. One method which is suitable with the pattern of village economic life is the mutual co-operation system backed by government assistance. Based on experience during the pioneering stages of the First Five years development programme (1969-1974) the system of aided mutual help (with attention being given to the adaptation of the aid and share of the prospective house owner) has been found practicable in several rural areas throughout Indonesia.

For the government's financing programme along with its other plans in the field of rural housing must be directed at accelerating the existing mechanism ( Regulation, procedure, Institution, LABOUR and capital) and raising the quality of the product through a system of aided mutual help. The activities on the financing programme of the government must be based on the ability and the stage of maturity of the community, the potential of the area and the composition of the income groups.

The sequence of the activities on the government financing programme is as follows. The first activity on the programme, namely bringing the people towards maturity with regards to the housing programme includes education and training of skilled personnel and field workers. This stage must be financed and implemented by the government.

The second stage of the programme, concerns activities connected with the use of local materials and their production. This stage includes activities concerned with improving the quality of building materials which are already directly in use, can be financed partly by the community and partly by

the government in the form of subsidy. The type of aid given by the government can take the form of experts, tools for the production of building materials and finance for the operation of the project.

The third stage of the programme is the giving of aid in the form of tools which can accelerate the construction rate and also raise the quality of the houses built. The tools which are durable can be used for another similar project. Its must be financed by an interest free government loan.

The fourth stage is the provision of social facilities which can stimulate and aid the implementation of the programme of housing improvement, both through a working unit in the project area and also through the possibility of expansion, must be financed completely by the government in the form of a subsidy. In this case the provincial government should provide the finance.

The fifth stage concerns activities directly aimed at the village home owner—namely, the giving of aid both for the rehabilitation of houses and the construction of new houses. This aid will be in the form of building materials or components for home-building and will also include advice and supervision. In accordance with the principle of community development the form of the aid must help the people to support themselves; thus the prospective houses owner must participate as much as possible, bearing in mind his financial capability. Therefore the form of the aid from the programme must be credit with the sorts of conditions which can be borne by the person receiving the aid.

## 12. TECHNICAL AND TECHNOLOGICAL ASPECTS.

### 12.1 Planning for village housing rehabilitation.

The programme will be directed towards the planning of hygienic houses and a hygienic environment. The technical aspects of planning which require attention are among others :



- planning a hygienic but simple houses, simple in construction so that it can be worked on through mutual co-operation without using experts. The house should as far as possible, be made from building materials found in that area.

- planning a hygienic environment by making available gutters for draining away dirty water or rain water, separating animal dwellings from the main house, making healthy drinking water available and other village facilities.

- planning facilities for the area together with the area which will be the centre of the village.

- All planning will be based on a consideration of the conditions and situation of the individual village as seen, for example, in customs and beliefs.

#### 12.2 The development of local building materials.

Government of developing countries must pay adequate attention to the development of the building materials industry which plays a major role in contributing to the success of building programmes and it is essential to encourage the use of local rather than imported building materials. The development and establishment of small scale and labour-intensive industrial manufacturing units should also be encouraged and supported in order to increase productivity and to improve quality. For that appropriate technologies for producing building materials should be developed utilising indigenous raw materials and resources.

Because conditions in rural areas vary and the sources of building materials are different. Therefore, more emphasis is placed on the need for surveys of natural resources to locate raw materials for construction. The different areas have different local materials of which optimum use can be made for housing development. Thus, intensive research into respective area to provide assistance to use of local raw materials, to increase production and

improve the quality in order to get more durable and better finished products, is essential. By promoting the use of local building materials, the use of outside building materials\* can be reduced. \* (For developing country in ASIA, Africa and Latin America, the value of imported building materials ranges from 5-8% of the total value of imports)

### 12.3 The use of appropriate technology.

In developing countries labour-intensive technologies have to be developed to overcome among others the problem of unemployment. For that reason it is often appropriate, although not economical.

The Indonesian economy still be directed basically towards the agricultural sector, With the future economic structure moving towards industrialisation, now Indonesia are at the transition stage, thus, the handing at village housing does not need to use purely traditional methods but technology used will be the sort which can open up new avenues of employment, which needs only a small amount of money, is simple enough to suit non-experts, cheap and easy to maintain and which also prepares the way for modern technology when the time comes.

\* From-development of locally produced building materials in developing countries.

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