That natural disasters are not entirely "natural" is now the basis for continuing research into methods for disaster mitigation. As the work of the Disaster Research Unit recognised, disaster is the result of ecological processes.

"Disaster marks the interface between an extreme physical phenomenon and a vulnerable human population. It is of paramount importance to recognise both of these elements. Without people there can be no disaster" (O'Keefe et al 1976).

"As therefore there are two principal constituents in a natural disaster... it follows that the nature of each has a part to play in the creation of a disaster situation. Just as intensity and depth or wind strength, rainfall and tide level, determine the force of natural phenomena, so does the location, status of development, population density and state of preparedness of a human settlement" (Lewis 1977b).

The work of the Unit was successful in identifying the elements of planning required for comprehensive precautionary strategies and included short term, medium term and long term factors in its synthesis. Activity against the impact of disaster was to be as ecologically related to environment and socio-economic factors, as were the disasters themselves shown to be. But planning is more of a practical process of implementation than an unrelated "academic" pursuit; as the article in 'Nature' concluded:

"The time is ripe for some form of precautionary planning which considers vulnerability of the population as the real cause of disaster - a vulnerability that is induced by socio-economic conditions that can be modified by man, and is not just an act of God" (O'Keefe et al 1976).
The development of an applied science of precautionary planning aimed at the mitigation of natural disaster impact in developing countries, has proceeded during the last five years on the basis of an assumed vulnerability to disaster. That this assumption is real is verified, if only by disasters that have occurred during the same period. Earthquake in Nicaragua and Guatemala, tropical cyclone in Honduras and Andhra Pradesh, volcanic eruption, flood and tsunami. The assumption has been sufficient for the development of planning strategies for long term and shorter term activities (Lewis et al 1976) which now have a methodological structure which can go no further, requiring opportunity for implementation which will in turn provide case study material to feedback, test and enrich its theoretical source.

The awareness that natural disaster is likely to occur, based on history or geological or climatological knowledge, is all that is required to apply precautionary planning theory. Given a location in which to apply itself, the first step would be to analyse vulnerability, assess its creation and cause, and recommend its reduction by a variety of options open to it, and within the limitation of means and resources available to it. With opportunity, feedback from such assignments would eventually contribute, through the pursuit of case study material, to the establishment of precautionary planning method. The formation of the subject would be somewhat haphazard, and pragmatic, depending upon opportunity, or would be extremely slow, results from numerous assignments or field studies being required before sufficient material had accrued for cross-reference or analysis.

The results of a "Study in Predisaster Planning" (Lewis 1975b) were an early attempt to relate some preliminary ideas for precautionary planning strategy with an actual location. With the fore-knowledge that the Bahama Islands were prone by some degree to tropical cyclone, the islands were examined
for a wide spectrum of disaster possibility including hurricane, but also epidemic, aviation accident, maritime disaster, fire and industrial accident. Possibility of disaster occurrence, whether 'natural' or 'man-made' was examined in relation to locality, population, social groups, economic and commercial activity and the current state of awareness amongst the public and in government. Recommendations, taking account of available resources, were made for governmental and non-governmental organisations towards an improvement of precautionary planning practice. Whilst the study was not undertaken for the Bahamas Government, a close working relationship was formed with senior government officers and a revised administrative structure for before, during and after emergency was developed with them. The modicum of local success that this project received would require repetition in half-a-dozen other locations for a routine method to be worked out. This one project took eighteen months in all to complete.

In an earlier, and more elementary paper (Lewis 1975a) a method for the precoordination of 'indigenous resources' was described. It was recognised that some resources of manpower, equipment and/or materials and supplies would be available in any situation of any socio-economic status, and that for want of 'preplanning' they could become immediately and locally available in a disaster emergency:

"The purpose of this aspect of pre-planning is to enable a community or region to quickly assess what is likely to happen by way of disaster event or what has happened to what and to where, and to compare overall relief requirements with what is readily available" (Lewis 1975a).

The paper, being concerned with a method for indigenous resource survey, and use in emergency, did not go further to relate those resources to socio-economic status or to the requirements for the development process to improve
indigenous resource content and quality. To have made a relationship between local resources for locally provided and administered supplies and disaster relief is an early and elementary form of predisaster planning and to include a method of so doing, as well as a theoretical statement of purpose, was so much in advance of its time in relation to international awareness and response to predisaster planning that it has not yet been incorporated in preparedness strategy.

The Bahamas Study went further and instead of 'indigenous resources' referred to an infrastructure of life support systems which it recognised had, as in most contexts, been developed with little regard for hurricane, the major probable natural disaster event. It also recognised that the components of such an infrastructure were the material, when directed for such purposes, for precautionary strategy. It recognised further that infrastructural development could cause or exacerbate disaster, albeit "man-made disaster", if it was undertaken unaware of its potential in that respect. Moreover, in its exhaustive analysis of social and economic conditions throughout the Bahama Islands, the Study recognised the relationship between those conditions and the capacity, as well as the need for the carrying out of precautionary strategies against disaster.

What the Bahamas Study did not do, because it was directed towards short and medium term strategies, was to consider how long-term planning might create an adjustment to and an improvement of social and economic factors, and on the one hand reduce vulnerability to disaster and on the other provide additional or imported resources for the mitigation of disaster. Many of the recommendations of the Study said or suggested as much, but the relationship was not stated. Vulnerability was considered as a static state and reduction of it as it existed in 1975 was seen, not as an immediate process,
certainly one that required time and resources to put right, but not as a vulnerability which would imperceptibly increase through lack of attention to long term factors, even at the same time as short term factors were being adjusted.

The social and economic factors of vulnerability therefore clearly have a priority over the social and economic factors of precautionary strategies. Nevertheless, that the relationship exists at all is not commonly understood even as part of precautionary planning and mitigation policies, when these exist. The plea for predisaster planning to become part of development planning was made by the Disaster Research Unit in 1975, (Baird et al 1975) in a paper which concluded:

"The processes of 'development' must first become enlightened with regard to disaster probability and recognise their capacity for a most dangerous role in disaster cause and exacerbation. Next, predisaster planning must be incorporated into development planning if it is to have any lasting value; for if as a process it is applied in isolation it will become merely a palliative dealing with the symptoms and not the causes of disaster".

However, whilst it is appropriate to identify a certain pointlessness in applying short term strategies to short term factors whilst long term factors being unattended to, continue to increase vulnerability; it is also appropriate for attention to each to be conceptually separated. Whilst socio-economic status is the key to protection against attack by removal of conditions which invite disaster, and by creation of capacity to absorb, ameliorate and recuperate:

"There are two principal areas for activity to counteract disas- ter, remembering that conditions have already been created
causing some populations to be at risk, some of these will have already experienced disaster, which in turn will have taken its toll of whatever capacity there may have been to ameliorate and recoup, and social economic status will have been reduced by disaster. The circle is vicious. One area of activity is in the gradual removal of conditions which invite disaster. The other is to prepare and establish strategies for preparedness for communities already at risk" (Lewis 1978).

If, therefore, vulnerability to disaster could be analysed and assessed in specific locations, and if that analysis were able to take account of economic and social factors, as well as environmental ones, the results of such a study could be made to become the basis for comprehensive programmes of precautionary planning which would take into account both the need to reduce, by long term strategies, continuation of accrued vulnerability and the need to strengthen and assist existing resources for mitigation of eventual impact. Moreover, field analysis could automatically identify areas of specific vulnerability and reasons for its creation which it may then be possible to reduce or remove. Certainly, it would become possible for resources available for programmes of disaster mitigation to be used to match more closely to areas of specific risk and need, and any impressive and potentially wasteful generalisations concerning vulnerability to disaster would have more chance of being overcome. Warnings against impending or imminent disaster occurrence could be conveyed more precisely to areas of greatest risk and need, with chance of being more efficient and successful, and therefore with increased and accrued reliability, more successful each time.

Vulnerability analysis is the critical pre-requisite if land use planning is to take account of disaster risk. This has been recognised by the
Office of the United Nations Disaster Relief Coordinator (UNDRO 1977b) but although, as is described, vulnerability may be kept to a minimum due to controls exercised by land-use planning "through the application of measures to steer development away from areas exposed to severe natural phenomena", whilst recognising the social implications of vulnerability analysis the "compendium of current knowledge" restricts its uses of vulnerability analysis to land-use, and excludes land-use by people & Social vulnerability comes secondary to land vulnerability. If vulnerability analysis could be made to include the socio-economic factors of people as well as the environmental aspects of land, then it could serve both the planning of future communities and the replanning, use, organisational, and precautionary strategies of existing communities. In another publication by the United Nations Disaster Relief Coordinator (UNDRO 1977a), the implementation of results from vulnerability analysis is taken slightly further but the use of results by communities is seen as a secondary result of analysis, not as an integral part of vulnerability analysis itself. "Composite vulnerability analysis" might well be made to include socio-economic factors as well as environmental ones!

Were it to do so, where a methodology has been devised, it would be necessary for vulnerability assessments to acknowledge their amorphous constituents by updating procedures. In relation to developing and changing social and environmental conditions, physical and climatological environmental factors can be said to be static. Hence the relative ease of their assessment by established seismological and climatological method, but hence, also, their disassociation with people and consequent lack of reality.

How can a methodology for comprehensive vulnerability analysis be devised to take into account social and economic factors as well as environmental ones? What are "social and economic factors"? Moreover, how can they be recognised and assessed in the field and at local levels?
The construction of a methodology is now part of continuous research and field-testing (Lewis 1977a) and reference to studies of socio-economic factors has provided some useful material from which a number of interesting conclusions can be made. (Whilst social and economic factors do exist, there is little point in academic separation of them; for these purposes they may be taken together as "socio-economic" factors).

Population density is probably the most obvious of socio-economic factors—that is, the densities of population in a given land area subject to analysis and assessment. Further, in order to assess whether this factor is of increasing or decreasing value, figures of population growth rates will also be needed. The location of different sectors of the population will also be an obvious factor when related to environmental factors of vulnerability. Study of location will produce further factors. Obviously, dwelling construction will be important as will its degree of permanence, not only permanence, or not, due to quality of construction, but whether or not the dwelling and its inhabitants intend to be permanent. Are they nomads or migrants? Whether they have recently arrived or whether they have lived in the same place "for generations" has significance here. Whether that significance has a bearing on 'primary vulnerability' to the creation of disaster, or whether it is of greater significance together with other aspects of locational analysis to a 'secondary vulnerability' due to the absence or not of resources for preparedness or for use in relief and reconstruction in the aftermath of disaster is worth considering. The primary socio-economic factors of vulnerability are nevertheless, population density and population growth, location and construction.

In again putting aside environmental factors by an attempt to focus attention on socio-economic factors of vulnerability, it is clear that location is the critical factor. By multiple decision concerning location, so
population density and thus population growth, is achieved; and as has already been suggested, traditional or long-term decision of location may affect construction. Population density will contribute towards a development of location, and development of location will encourage permanence and permanent construction. Location development, therefore, appears to be the crux of vulnerability analysis.

Moreover, with further reference to theoretical analysis of vulnerability, if low socio-economic status produces socio-economic marginality, and if marginal societies and communities become the most prone to disaster, at what point do socio-economic factors produce vulnerable conditions? Is it only their relationship with environmental factors that creates vulnerability or can socio-economic factors be identified as directly contributing to vulnerability?

"If however, long term reductions in disaster proneness are to be achieved it will be necessary to achieve a reduction in the rate of the marginalisation process. To be totally effective, pre-disaster planning must include an analysis of the existing socio-economic condition of the population" (Baird et al 1975).

Theoretical analysis would suggest that it is general or overall socio-economic status that is the primary factor. Within that status there are elements which have a bearing on secondary vulnerability in preparedness infrastructure.

How, therefore, can overall socio-economic status be identified? What are the indicators of socio-economic status that can be recognised and assessed in the field as significant contributory factors to vulnerability.

The most frequently quoted indicator of any kind is of course the figure of Gross National Product (GNP) and Gross National Product per head, which as
items of information are of sufficient 'status' to warrant most of an atlas
to themselves (World Bank 1976). As the name implies, however, the figure
is of national product in which there are considerable inconsistencies con-
cerning exchange conversion and the spread of socio-economic status amongst
populations (Elkan 1976).

In any case, whether identifiable in the field or not, whilst GNP per capita
may be the best single indicator of difference in socio-economic status, it
has to be supplemented by others. Elkan (1976) goes on to suggest such addi-
tional indicators as average expectation of life at birth, energy consump-
tion per head, average literacy and provision of durable consumer goods
(distribution of passenger motor vehicles). Recognising the "piecemeal"
nature of these indicators, he quotes the use of such 'non-monetary' indicators
as steel consumption, cement production, the number of letters sent, the
stock of radio receivers, of telephones, motor cycles and the consumption
of meat as 'explanatory variables' to predict real per capita consumption—
and thus socio-economic status.

GNP is thus inadequately as an indicator of national development, and the
United Nations Statistical Year Book (UN 1976) gives very much more informa-
tion, some entered by category but all maintaining national significance.
Table One shows a selection of those items with more obvious social signifi-
cance (those with economic emphasis having been excluded for these purposes)
and there is a strong complementarity between some of them and those suggested
by Elkan, though national figures for average expectation of life at birth
have to be sought from the UN Demographic Year Book, Table 20 (UN 1975).

However, whilst some of these items do suggest a possibility for identifica-
tion in the field, most do not. Local socio-economic indicators must be
identifiable in the field. Can these be interpreted in the field or are
there comparable indicators more appropriate to field use?
The work with greatest relevance, so far, to this line of enquiry is a report by the United Nations Research Institute for Social Development of a programme which was established to measure real development progress at the local level in developing countries (UN 1973). The term "real" is intended to indicate an emphasis on non-monetary indicators and whilst concerned with methods for measuring progress the report is nevertheless concerned with "the question of the formulation of new indicators (or the re-formulation of old ones) for the measurement of real progress at the local level (and) . . . the organisation that is required for the continuous collection, processing, analysis and presentation of information from the local level for the use of the planner and policy maker". The report states that some of the data are "notoriously difficult to collect" (personal income distribution) or are amongst "the best guarded secrets" (numerical strength of social groups and the size of land holding). It acknowledges that "the significance of an indicator can depend very much upon the local context" but the report also states that "At the village level, . . . one can find real data, without extensive income or expenditure surveys that describe aspects of distribution and in particular the participation in development of the lower castes or classes".

Whilst less concerned with change or 'progress' than with status at any particular point in time, the overall 'climate' of change in which indicators are being identified and assessed may be important. Whether a community is in a period of decline or in a period of growth will have a bearing on overall 'moral' as well as on future assessments. Indicators of this 'climate of change' may be the degree of migration, the depletion of families and under-use of dwellings or simply vacant dwellings. (Immigration does not necessarily mean growth, by simple contrast, figures for population density, persons per room (etc) will indicate the degree of overcrowding.)
Figure Two shows the considerable range of proposed indicators of development, their appearance, disappearance, depletion or enlargement over time being the proposed measurement of progress. Their presence at any particular time being the indicator of socio-economic status at that time. For cases where communities are so small or rural for these indicators to be directly relevant, the subsidiary list of "distance to the nearest" indicator will become applicable.

As will be seen from Table Two, indicators have been grouped as communal or domestic indicators; and in some cases have been repeated to serve both headings. Thus we now have national indicators, (which could be made to apply regionally if required to do so) communal indicators, and domestic indicators, for use according to the scale of vulnerability analysis and assessment to be employed.

Not all indicators will be applicable to any one location, but all will serve for inclusion on check-sheets for vulnerability analysis surveys. It may also be necessary to acknowledge that the absence or low performance of any indicator does not imply low development status, many having local significance only (ie Western style dress.)

So far, this study has been concerned with the total state of socio-economic development status as a contributory factor, or factors, in the field assessment of vulnerability to natural disaster and the identification of indicators of socio-economic status in the field. What will have been obvious to specialists in disaster mitigation, however, is that many of the components of the socio-economic condition and many of the indicators themselves, will have a direct bearing, by their presence or absence, on the vulnerability of a community.
The construction of dwellings is not only an indicator of socio-economic development, it has a direct bearing on what impact the environmental factor of vulnerability will have. It becomes a factor in its own right not simply a contributory indicator. Building construction has in fact been identified for some time as perhaps the most important preventive element in recommendations for precautionary strategies. The Office of the United Nations Disaster Relief Coordinator has produced a handbook on building measures for minimising the impacts of disaster (UNDRRO 1976). The Disaster Research Unit also recognised building construction as a prime factor in disaster mitigation (Lewis 1975a). Furthermore, as was recognised at the commencement of this study "the state of preparedness of a human settlement" is also a determinant of losses due to natural disaster. Preparedness takes a number of forms, all of them elements of contingency planning - the short-term component of precautionary planning; the degree of preparedness is thus a contributory element to the social factor of vulnerability but the degree of preparedness can be determined and constrained by resources available to it and to the available infrastructure for preparedness. Preparedness also rapidly becomes socio-economic therefore.

Infrastructure for preparedness has been identified as being essentially facilities for oral and logistic communication in radar surveillance (for hurricane) radio and telephone communication, the provision of ambulances (and fire-fighting equipment?), landing facilities for boats and planes and hospital and medical facilities (Lewis 1975b). The extremely close relationship between these aspects of preparedness, as a contributory element of vulnerability reduction, and field indicators of socio-economic status, is obvious.

Further, in 1973, indigenous resources were recognised as a valuable constituent for disaster relief, and a working method for their pre-coordination
consequent effective deployment was developed (Lewis 1975a). Resources likely to be available in some degree, although not all in any one place, included:

- police, ambulance and fire-fighting stations
- sea-port and harbour facilities
- airports
- railway stations and depots
- public transport depots
- commercial vehicle depots
- construction plant and materials
- TV stations, radio stations, mobile radio equipment
- telephone exchanges
- hospitals
- drug warehouses and stores
- food warehouses and stores.

The extremely close relationship between these elements of one aspect of preparedness, and field indicators of socio-economic status (Table Two) is again obvious.

That there is a relationship between disaster mitigation and development has been discussed for some time. The precise nature of that relationship can now be seen between both strategies for prevention and strategies for preparedness. The difference between those two aspects of strategy is that, on the one hand, the relationship between the elements of preparedness and development is coincidental requiring only coordination between the products of the development process, the "infrastructure of preparedness" and the formulation of preparedness strategies. On the other hand, however, the relationship between prevention and development requires not only resources, either indigenous or from external aid, but also integration with preventive strategies from within.
The study of predisaster planning previously quoted (Lewis 1975b) was analysed "first to review and analyse the 'everyday' situation of where the Bahama Islands are, what they consist of, how many people live on them, what they do for a living, how they communicate with each other and how they are governed". Then: "what the effect of any of the probable disaster events is likely to be on the community now and in the future taking into account the programme of development as a whole". It was essential to know the normal before disaster abnormal could be assessed.

Self-help requires self-knowledge. Whilst traditional international disaster relief can be mobilised by metropolitan governments and intergovernmental and non-governmental agencies from outside the stricken country, programmes for disaster mitigation must be initiated and mobilised from within each vulnerable country, region and community, albeit with external assistance. Comprehensive vulnerability analysis will be at the commencement of the method; and planned development programmes will be the medium for implementation.
<table>
<thead>
<tr>
<th>Reference Table</th>
<th>Per Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Population</td>
</tr>
<tr>
<td>18</td>
<td>% Population Increase</td>
</tr>
<tr>
<td>18</td>
<td>Surface Area</td>
</tr>
<tr>
<td>18</td>
<td>Population density</td>
</tr>
<tr>
<td>19</td>
<td>Expectation of life at birth</td>
</tr>
<tr>
<td>26</td>
<td>Tractors in use</td>
</tr>
<tr>
<td>143</td>
<td>Energy consumption per capita</td>
</tr>
<tr>
<td>157</td>
<td>Motor vehicles in use</td>
</tr>
<tr>
<td>165</td>
<td>Mail Traffic, Domestic</td>
</tr>
<tr>
<td>167</td>
<td>Telephones: number in use per 1,000 inhabitants</td>
</tr>
<tr>
<td>189/90</td>
<td>Average annual rate of growth</td>
</tr>
<tr>
<td>192</td>
<td>Per capita National Income</td>
</tr>
<tr>
<td>207</td>
<td>Housing Conditions:</td>
</tr>
<tr>
<td></td>
<td>a) % dwellings with one room</td>
</tr>
<tr>
<td></td>
<td>b) average number of persons per room</td>
</tr>
<tr>
<td></td>
<td>c) % dwellings with water piped inside building</td>
</tr>
<tr>
<td></td>
<td>d) % dwellings with any type toilet</td>
</tr>
<tr>
<td></td>
<td>e) % dwellings with flush toilet</td>
</tr>
<tr>
<td></td>
<td>f) % dwellings with electric light</td>
</tr>
<tr>
<td>208</td>
<td>Health:</td>
</tr>
<tr>
<td></td>
<td>a) Population per bed</td>
</tr>
<tr>
<td></td>
<td>b) Population per physician</td>
</tr>
<tr>
<td>216</td>
<td>Daily Newspapers:</td>
</tr>
<tr>
<td></td>
<td>a) Number</td>
</tr>
<tr>
<td></td>
<td>b) circulation per 1,000 inhabitants</td>
</tr>
<tr>
<td>218</td>
<td>Radio and TV:</td>
</tr>
<tr>
<td></td>
<td>a) radio per 1,000 inhabitants</td>
</tr>
<tr>
<td></td>
<td>b) TV per 1,000 inhabitants</td>
</tr>
</tbody>
</table>
**TABLE TWO  Indicators of Socio-economic Status**  
(United Nations Research Institute for Social Development)

<table>
<thead>
<tr>
<th>A. COMMUNAL INDICATORS</th>
<th>B. SERVICES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government representation</td>
<td>petrol station</td>
</tr>
<tr>
<td>district office</td>
<td>school</td>
</tr>
<tr>
<td>civil registry</td>
<td>college</td>
</tr>
<tr>
<td>agricultural</td>
<td>prison</td>
</tr>
<tr>
<td>health</td>
<td>barracks</td>
</tr>
<tr>
<td>welfare</td>
<td>hospital/health centre</td>
</tr>
<tr>
<td>police</td>
<td>factory</td>
</tr>
<tr>
<td>telegraph</td>
<td>building contractor/</td>
</tr>
<tr>
<td>post office</td>
<td>lumber yard</td>
</tr>
<tr>
<td>public square/plaza</td>
<td>agricultural implements/</td>
</tr>
<tr>
<td>bandstand</td>
<td>new dwellings</td>
</tr>
<tr>
<td>clock tower</td>
<td>temporary dwellings</td>
</tr>
<tr>
<td>public benches</td>
<td>disused dwellings</td>
</tr>
<tr>
<td>statuary</td>
<td>railway station</td>
</tr>
<tr>
<td>public lighting system</td>
<td>airfield</td>
</tr>
<tr>
<td>bar/restaurant</td>
<td>bus station</td>
</tr>
<tr>
<td>hotel/inn</td>
<td>theatre/cinema</td>
</tr>
<tr>
<td>bakery</td>
<td>library</td>
</tr>
<tr>
<td>barber shop</td>
<td>museum</td>
</tr>
<tr>
<td>butcher shop/meat supply</td>
<td></td>
</tr>
<tr>
<td>market hall/covered market</td>
<td></td>
</tr>
<tr>
<td>resident priest</td>
<td></td>
</tr>
<tr>
<td>church/temple</td>
<td></td>
</tr>
<tr>
<td>sportsfield/stadium</td>
<td></td>
</tr>
<tr>
<td>commercial recreation/</td>
<td></td>
</tr>
<tr>
<td>billiards</td>
<td></td>
</tr>
<tr>
<td>Health:</td>
<td></td>
</tr>
<tr>
<td>hospital/health centre</td>
<td></td>
</tr>
<tr>
<td>doctor: resident/visiting nurses</td>
<td></td>
</tr>
<tr>
<td>drug store/pharmacy</td>
<td></td>
</tr>
<tr>
<td>ambulance service</td>
<td></td>
</tr>
</tbody>
</table>
Production:
- subsistence
- commercial
- immigration
- tubewell
- craft
- home industry
- manufacturing
- centralised industry

Habitation:
- proportion of dwellings:
- masonry construction
- mud
- timber
- wattle
- frame and weave
- thatched roof
- sheet roof
- tile/shingle
- single storey
- two-storey
- single room
- two rooms
- three or more rooms
- 3 or more occupants/per room
- with piped potable water
- electricity
- flush toilet

Rural communities:
- distance to nearest:
  - metalled road
  - post/telegraph office
  - bus stop
  - primary school
  - middle school
  - higher school
  - public library
  - charitable dispensary
  - health centre
  - hospital
  - dentist
  - family planning information
  - midwife
  - veterinary hospital
  - town
  - market (periodicity)
  - agricultural extension office
  - source of electricity
  - tube well
  - protected water supply
  - cold storage
  - fertilizer depot

Urban communities:
- distance to nearest:
  - library
  - public park
  - factory area
  - shop area
  - inoculation centre
  - family planning unit
  - drainage
  - details of damage and water supply

B. DOMESTIC INDICATORS

Dwelling construction:
- masonry
- mud
- timber
- wattle
- frame and weave
- thatched
- sheet
- tile/shingle
- single storey
- two-storey

Dwelling size:
- single room
- two rooms
- three or more rooms

Family size:
- adults: ages
- children: ages

Occupants per room
- How long has family lived here?
- Piped potable water
- Flush toilet
- Electricity
Radio
TV
Telephone
Car/pickup
bicycle
motor bike/scooter
boat
cart
oxen (number)
other animals (number)
use of fertilizer
purchased implements

bed
shoes
Western style of dress

size of land-holding:
1h/1-5h/3-5h etc
number of land parcels
owned/used
owned and tenanted by others
shared
tenanted
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