sible would be useful, because both of these dimensions affect hospital availability during disasters. Furthermore, wherever possible, the personnel and facilities should be cross-linked; for example, estimates should be made of the types and numbers of trained personnel available in particular hospitals.

The basic organizational structure of health services is another important disaster-relevant resource. Thus the mechanisms and extent of national, regional, and local integration of health services should be documented. For example, if there are national or regional health directorates, there may be formal organization charts, aggregate personnel listings by specialties, and descriptive outlines of available specialized medical services. Such services as specialized laboratory facilities for epidemiological surveillance and storage and transportation facilities for vaccines, drugs, and other biological commodities should be documented. From a preparedness standpoint, there may also be formalized procedures for mobilizing these human and material resources during emergencies. In addition, the availability, extent, and reliability of health information systems should be documented so that full use can be made of existing systems. If there is, in fact, an epidemiological surveillance system, particulars concerning its methodology and coverage should be identified.

From the standpoint of disaster operations, the above kinds of health and medical data have clear relevance to both domestic and international disaster response agencies. The information is useful for predisaster preparedness and planning, for emergency relief, and for the organization of prolonged assistance, as well as for longer-term health programs. Many of these data are far more difficult to retrieve than simple aggregate measurements, such as the number of hospitals, beds, or doctors per capita. On the other hand, these easily gathered measurements are of little practical use.

The health and medical areas represent only one subset of likely disaster-relevant resources. The gathering of these types of data will require research within each developing country, as well as the use of international data archives. There are practical constraints on the collection of much of this information, and decisions need to be made about where it should be stored. At present it is necessary to determine the kinds of data that are relevant. The health facilities illustration suggests the need to gather data on disaster-relevant organizations. These include organizations whose tasks within the emergency period will be quite similar to those undertaken during routine or predisaster times. They also include those organizations that can be expected to be involved in postdisaster operations, regardless of their predisaster activities. The former would include organizations such as public safety (e.g., law enforcement, fire fighting) agencies, health and medical organizations, and departments of public works. The organizations included in postdisaster operations would include various agencies of government, voluntary relief agencies, civil defense organizations, and military forces. In all cases, inventories of staff composition, of geographic and administrative distributions, and of material resources would provide considerable insight into the disaster-relevant organizational profile of the society. It is also important to maintain general logistics data on existing communications systems (power sources, audio and video modes), transportation systems (land, air, water, and rail), and administrative requirements for intergovernmental transfer of funds, goods, and services.

Finally, there are other more general measures of economic development that logically suggest increased capability to cope with disaster. These development measures have two possible functions. First, although all the human and material resources that might be required to respond to disasters cannot be predicted, it could be argued that the more highly developed the society, the greater the availability of disaster-relevant resources. Thus one function of development data is to document the aggregate level of economic development at given points in time. Useful general measurements might include levels of industrial and agricultural productivity, rate of economic growth, gross national product, per capita income, literacy rate, median education, a variety of health measurements, and other standardized development data of this type. The second, and more important, function of data that reflect societal well-being is to provide the necessary baseline for estimating the long-term effects of disaster on societal development. These data must, of course, be monitored on a continuing basis to be useful for that purpose.

4. *Assessment of Agent Impact and Victims' Needs* The preceding three types of data requirements provide a multifunctional, predisaster baseline profile. As stated earlier, these data relate to a variety of preimpact activities such as prevention, mitigation, preparedness, planning, and warning. However, they are also relevant for postimpact decisions concerning appropriate mechanisms for external response. It should be explicitly noted that hazard, vulnerability, and resource profile data cannot be used as a substitute for specific postdisaster impact information; nor, obviously, can a computer system mechanistically make decisions for the AID/OFDA in responding to disaster. But, combined with a systematic postimpact assessment, the decision-making process can be enhanced to a considerable degree. This section will therefore divide the discussion of assessment of agent impact and victims' needs into two parts (1) the modeling of agent impacts; and (2) postimpact assessment.

a. *The Modeling of Agent Impacts* If one has sufficient data, it is now technically possible to combine the results of hazard analysis and vulnerability analysis in simulating natural disasters. This is done by assuming that a given type of natural disaster of particular intensity strikes a target zone having particular vulnerabilities. For example, in the case of earthquakes, it has been possible to establish probabilistic relationships between the level of shaking, the type of construction, and the level of damage to be expected. Such information can be presented in damage probability matrices for given building types.[19] This information, combined with the seismic risk for a given settlement, can provide an estimate of expected future disaster damage. Such an estimate can be expressed in terms of the total expected loss over a given future period, the average annual loss, or the probability of exceeding a catastrophic loss threshold during the period.[20]

The predisaster estimate of expected future disaster loss is a potent tool, because it brings together the two components of disaster risk (hazard and conditional damage probability) in a statement of expected impact. Thus it has been possible to establish probabilistically a series of conditional relationships that link expected damage to total property loss and incident losses such as fatalities, injuries, economic impact, and recovery time.[21]

This methodology for estimating disaster losses also allows an evaluation of the effectiveness of alternative mitigation actions in reducing losses. Actions affecting hazards, such as event modification or selective siting, can be incorporated into the hazard input, and actions reflecting the resistance of structures or lifeline systems can be incorporated into the damage probability component. With such an analytical methodology, it is possible to evaluate the estimated effectiveness of particular hazard adjustments and to assess the expected function of various disaster mitigation actions.[22]

Computer programs have been developed for the simulation of selected natural hazards such as earthquakes, hurricanes, and floods. In the analysis, loss potential is derived from the interaction of four factors: (1) a natural-event generator that determines the frequency and severity of natural events; (2) critical local conditions, elevation, soil conditions, slope; (3) population at risk; and (4) vulnerability. The model generates a geographic severity pattern associated with a given geophysical event, such as in earthquakes. Severity

[19] See R. V. Whitman, *Damage Probability Matrices for Prototype Buildings*, Seismic Design and Decision Analysis Report No. 8 (Cambridge, Massachusetts: MIT, Department of Civil Engineering Report R73-57, 1973).

[20] See B. Schumacher and R. V. Whitman, *Models of Threshold Exceedence and Loss Computations of Non-Homogeneous Spatially Distributed Facilities*, Seismic Design and Decision Analysis Report No. 30 (Cambridge, Massachusetts: MIT, Department of Civil Engineering Report R77-9, 1977).

[21] See D. J. Friedman, *Computer Simulation in Natural Hazard Assessment*, Monograph No. NSF-RA-E-75-002 (Boulder, Colorado: University of Colorado, Institute of Behavioral Science, 1975).

[22] See J. H. Wiggins, *et al.*, *Budgeting Justification for Earthquake Engineering Research*, Technical Report No. 74-1201-1 (Washington, D.C.: National Science Foundation, 1974). Also see California Division of Mines and Geology, *Urban Geology Master Plan for California: Nature, Magnitude, and Costs of Geologic Hazards in California and Recommendations for Their Mitigation*, Bulletin 198 (Sacramento, California: California Division of Mines and Geology, 1973).

patterns are adjusted to reflect local conditions. Population at risk specifies the number and geographic distribution of persons and buildings subject to the earthquake's impact, and vulnerability defines the susceptibility to loss on the part of the population at risk when an earthquake of given severity occurs. The overlapping and resulting interaction of a geophysical event severity pattern with the geographic array of population at risk determines the magnitude of the loss potential associated with the occurrence of a natural event.[23]

Modeling may be employed as a predisaster tool for purposes of mitigation and preparedness, but it also has potential use for postimpact assessment. For example, if one assumes the existence of data on local geological conditions; on the vulnerability of structures; on the population size, density, and distribution of the impact area; and on magnitude of the earthquake (now available almost immediately), it is now possible quickly to estimate the effects of impact with considerable precision. This, combined with data on capability and resources within the country concerned, allows one to delimit both the needs generated by a disaster and the potential roles of organizations prepared to render outside assistance. Similar possibilities exist for tropical cyclones and hurricanes, which, in contrast to earthquakes, can be tracked; the approximate area of impact for each can also be predicted.

A major problem associated with the use of natural-event simulation is, of course, the lack of information on the various populations at risk and their vulnerability to disaster-agent effects. It goes without saying that if these techniques are to be useful, the accumulation of this information must be given high priority. Gathering these data will require both sophisticated remote-sensing techniques and labor-intensive ground-surveying techniques, particularly in areas known to be subject to disasters. Simulation will be further improved with more complete understanding of the physical relationships of hazard mechanisms. However, the Committee does not imply that more adequate data will automatically result in a clearer relationship between disaster-generated needs and local as well as nonlocal responses. Although the situation would be markedly improved, this technique can only serve as a supplement to postdisaster assessment. Moreover, the Committee has noted earlier that assessment of disaster-induced needs is a subjective process and that the motives to seek and provide outside assistance are often only marginally related to objective measures of needs. The next section deals with postdisaster assessment.

b. *Postdisaster Assessment* Adequate postimpact assessment necessitates the objective measurement of the overall effects of disasters, specific victim needs, domestic (or internal) resources, and the organization of response within the impacted country. And there must be a reasonable con-

[23] See Friedman, *op cit.*

tinuous assessment of the emergency situation, i.e., there must be sustained information feedback about changes in postimpact needs and response modes. The modeling capacity discussed above has serious limitations for assessment purposes. Whenever and wherever possible, postimpact assessment remains the best source of information upon which to determine actions.

Although the need for factual information is commonly acknowledged, reasonably objective data are difficult to retrieve during the immediate emergency period. Expertise to conduct local surveys is often scarce. In general, the methodologies for rapid ground-survey assessment of needs are relatively crude. There are numerous constraints on the quick use of aerial reconnaissance and remote-sensing techniques. There are political problems involved in the use of external assessment teams. Local and international politics and emotional considerations are involved in the assessment of needs. The private and public communications media generate a large amount of misinformation and distorted information. In sum, postimpact assessment of needs is a chronic problem that defies a purely technical solution.

Problems in documenting health and medical needs are excellent cases in point.[24] Disaster relief generally overemphasizes medical and health needs. Considerable resources can be drained for inappropriate relief on the basis of myths or unverified reports. Typically a disaster of sizeable magnitude triggers the mobilization and convergence of the following: unsorted drugs in large amounts that are improperly packaged, medical volunteers lacking proper training or briefing, field hospitals, and an abundance of food items. Multivitamins, which do not meet actual deficiencies, are examples of expensive but largely useless items that are often shipped in large quantities to disaster-stricken populations. The mass vaccination of populations against typhoid is another case in point. Although massive typhoid inoculation is being increasingly defined as a useless and counterproductive procedure, little notice is taken of this admonition.[25]

Experience in recent disasters has shown that overreaction has many negative effects beyond being useless. It may divert energy, tax the energies of local officials, and jam the logistics networks to such an extent that effective intervention is delayed or made altogether impossible. The externally supplied temporary resources may also be far above local quality standards and therefore may create new levels of expectation, which cannot be fulfilled in the future.

[24] For an interesting general discussion of this problem, see C. de Ville de Goyet and M. F. LeChat, "Health Aspects in Natural Disasters," *Tropical Doctor*, Vol. 6 (1976), pp. 152-157.

[25] To illustrate, in the Guatemala earthquake of 1976, voluntary relief teams inoculated more than 85,000 persons. However, since no provision was made for a second required shot, the entire effort was rendered meaningless. See C. de Ville de Goyet, *et al.*, "Earthquake in Guatemala: Epidemiologic Evaluation of the Relief Effort," *Bulletin of the Pan American Health Organization*, Vol. 10 (1976), pp. 95-105.

Postdisaster assessment is of pivotal importance in linking assistance with genuine need. At the moment, the process of external assistance appears to be generally captured by the following scenario. Initially there are undocumented local requests for assistance. The validity of these requests is often questionable and they may not relate to any genuine need. They generally result from inadequate assessment of the characteristics of the situation by local officials, combined with political pressures on them to appeal for assistance. In response to these pressures, there is a tendency to rely on the usual stereotypes about the needs of victims (food, shelter, vaccines, medical equipment, blood, doctors, etc.).

Once requests for assistance are received, donors (foreign sources are the referent here because validation becomes more difficult as distance from the disaster site increases) may or may not check the validity of these requests. Logically, the need for validating them and determining priorities increases as the number of appeals for assistance multiplies and the number of donor agencies contemplating a response proliferates. In certain cases donors may wish to act even before requests for assistance are received, and they seek information on what needs are likely to exist. Hazard, vulnerability, and resource profile data along the lines outlined earlier would provide useful information for these types of unspecific responses. However, the present level of development of these systems is very low. Existing profile data have very limited usefulness. Reasonably useful logistics data (roads, airports, holidays, customs regulations, storage facilities, names of local officials) can be provided; but data on hazards, vulnerability, and short-term disaster-generated needs are likely to be inadequate, trivial, or nonexistent.

Donors also have a tendency to make the unwarranted assumption that certain commodities and services will certainly be needed. In part, at least, these unwarranted assumptions derive from the unreliability of local requests, from the fact that donor organizations are generally unable to program a specific type of assistance on the basis of preexistent data, and because the donor organizations are themselves under considerable pressure to respond. This situation is exacerbated by the large number of governments and uncoordinated relief agencies acting independently.

Hopefully this scenario is sufficiently detailed to indicate the omnipresent need for postdisaster information. To reiterate, projecting disaster-induced needs from profile data requires the kinds of inputs that were discussed earlier. But even with those kinds of data that can potentially provide standardized estimates of the scope and intensity of damages, it is still necessary to have postdisaster assessments on the precise geographic scope of damage, the number of deaths and injuries, the types of injuries, the communicable disease potential, the extent of damage to public facilities and local food stocks, and the degree to which the host country has mobilized its own disaster-relevant resources. Postdisaster assessment must therefore be viewed as a well-defined information system in its own right—with its own methodological rules, techniques, and an organized body of knowledge. Those in charge of gathering this information (local authorities, international teams, foreign experts, etc.) should be well trained in the types of data that are needed and in how these data can be collected and analyzed most efficiently.

The objectives of postdisaster assessment are to determine both the actual needs resulting from impact (e.g., the number of people injured by collapsed structures) and the possible needs that could arise (e.g., the occurrence of epidemics following interruption of water supply). One could perhaps arbitrarily identify two ways of generating postdisaster information: one involves a direct ground-survey approach, and the other involves indirect aerial assessment (both low-level and high-level) and information derived from space satellites. Space satellite imagery can depict both global and specific patterns of impact under certain conditions, but at present researchers must lean heavily on ground surveys and low-level aerial reconnaissance as the principal tools to assess victims' needs. The measurement of disaster-associated health and medical problems, in particular, is for the most part dependent on ground surveys.

In carrying out these surveys, the gathering of information should be geared to opportunities for action. For example, the number of deaths is an important measurement of impact, but it is irrelevant to assessing medical needs. The number of injured admitted to hospitals suggests a need being served rather than an estimated demand for medical services. The number of injuries is not particularly useful if there are no distinctions made between major and minor traumatisms, the types of injuries, and the types of health countermeasures required.

The survey techniques should be designed in such a way that a minimal amount of data can clarify boundaries of victims' needs, with provision being made for the gradual upgrading of information as time passes. In the health area, for example, this implies procedures that are valid but do not require elaborate sampling procedures. This also implies knowledge of where to look, how many people to examine, how to make sure they are not a biased sample of the victim population, and how to examine people with simple techniques.[26] The development of valid methods for rapid assessment of needs under highly adverse conditions in disaster-stricken societies will require considerable research and additional resources. The objective should be to de-

[26] An illustration of the latter is the great progress that has been made in measuring the nutritional status of famine-stricken populations. The nutritional status of a whole population can be estimated by simple methods that can be used by local people with adequate training. See, for example, L. E. Davis, "Epidemiology of Famine in the Nigerian Crisis: Rapid Evaluation of Malnutrition by Height and Arm Circumference in Large Populations," *American Journal of Clinical Nutrition*, Vol. 24 (1971), pp. 358-364.

velop standardized procedures for collecting data that can then be linked to operational decisions.

In summary, it is clear that disaster response would not be automatically improved simply by collecting more information. Large amounts of information on disasters are currently generated by governments, international agencies, voluntary relief agencies, and other groups. Much of this information is of questionable validity, and much of it is improperly collected, analyzed, and used. The Committee believes that valid and reliable hazard, vulnerability, and disaster-relevant resource analyses, combined with systematic assessment of agent-impact and victims' needs, represent a multipurpose information system whose development and use will contribute much to the objectives and underlying values of disaster assistance discussed earlier. The basic framework outlined here is depicted in Figure 1. Note that hazard, vulnerability, and disaster-relevant resource analyses as a group comprise a Predisaster Baseline Profile for any country included in the information system. As stated earlier, that baseline profile not only contributes to a variety of *predisaster* activities, it also allows for the modeling of disaster impacts (hence the arrow pointing to Assessment of Agent Impact and Victims' Needs). In so doing, the baseline profile provides a framework for delimiting the needs generated by specific disaster events. Assessment of Agent Impact and Victims' Needs similarly contributes to a variety of *postdisaster* activities. There is a distinction between specific and unspecific response modes to convey the fluid character of disaster environments and to convey the fact that external response will often involve a judgmental rather than a mechanistic decision-making process. For example, a request for assistance may be based on a need that is expected to develop as response unfolds but is clearly not yet documented. It is also clear that postimpact assessment is a continuing process that contributes to the development of longer-term recovery activities. Finally, the collection of systematic data on specific disasters obviously becomes a part of the baseline country profile (hence the arrow pointing to Predisaster Baseline Country Profile).

A few other issues merit brief comment. First, the Committee has outlined a perspective for a rational disaster response. The Committee has intentionally defined this framework as one in which the *information requirements are far in excess of present levels.* Much of the information considered to be relevant has not been sought, there are political constraints on its collection, and even where collected it may not be used in the administration of disaster response. The costs of collecting these data are substantial, and there are a variety of constraints on decision making that have no relationship to adequate information. However, the Committee believes that an analytical approach to disaster-related information problems is essential for assessing the reality of any disaster-response program and for offering positive recommendations to improve performance.

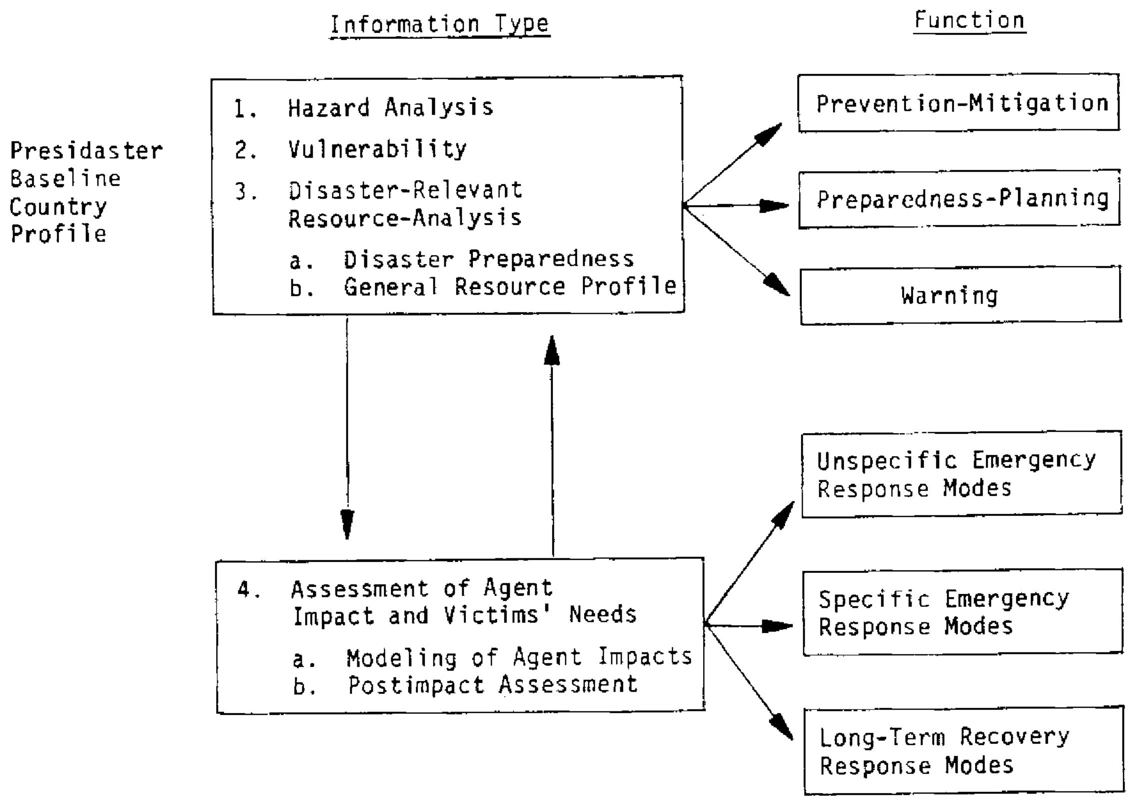

FIGURE 1 Types of disaster-relevant information and their functions.

Second, the Committee reiterates that the existence of adequate data does not imply highly programmed decisions. Disaster situations are far too complex for mechanistic response. Moreover, when one considers the multiplicity of participants involved in international disaster response, the organizational and coordinative problems involved are enormous. In taking the AID/OFDA as the decision-making referent, the Committee believes that this Office should relate its efforts to a broader system of responding units. It is therefore not a simple problem of the AID/OFDA gathering its own data. Rather the problem is to determine who should collect which types of data, where various types of data should be stored, and then to develop appropriate international distribution systems. These issues will not be simply solved, and they will demand continuing attention.

Finally, the evaluation of short- and long-term disaster responses would yield another type of information that has not been discussed. Postdisaster evaluation allows responding units to learn from their mistakes. However, there are no agreed-upon measures of effectiveness in this area, there is no agreed-upon methodology to evaluate performance, and there is consequently no organized collective memory that prevails from one disaster to the next. Improvements in all these areas must await the more systematic definition and measurement of disaster-generated needs. Once that problem is solved, researchers will then have some yardsticks to evaluate the assistance that is provided by external sources. Attention has therefore been directed to what is the logically primary conceptual problem.

Current Collection and Use of Information by the AID/OFDA

Having set forth certain information requirements for pre- and postdisaster assistance, we conclude this chapter by summarizing the AID/OFDA data management system.

When the U.S. disaster relief program became formally organized in 1964, no system existed for recording, storing, and disseminating data about foreign disasters; there was no explicit rationale for why such a system was needed; and no methodological ground rules existed for data collection and use. However, when the program began, it was obvious that the AID/OFDA required an organized body of information in order to function. During an actual disaster response the Office required information on the flow and disposition of requests for assistance so that it could keep track of what it was doing. With a mandate both to coordinate the U.S. government response and to relate that response to the actions of other governments, private groups, and organizations, the AID/OFDA definitely needed to inform others about its actions. And the Office had the bureaucratic requirement of documenting and justifying its actions. What needs were being served? What were the types of requests for assistance? How did the U.S. government respond, and what were the effects of its assistance? Finally, the staff hoped that, by maintaining a historical record, it could improve its own performance and perhaps provide guidance to other groups and organizations.

Disaster Reporting

From the beginning, high priority was placed on the development of a reporting system designed to keep the AID/OFDA, other offices in the AID, the Department of State, the Department of Defense, other federal agencies, voluntary agencies, international agencies, other governments, and other interested offices and individuals informed of current and past actions. In 1964 the staff developed a reporting system that consisted of Disaster Alerts, Disaster Memos, Mission Interim Situation Reports and Final Summaries, Disaster Case Studies, and Annual Disaster Reports.

Disaster Alerts notified recipients that a disaster had occurred and, if known, what the first U.S. government response would be. Disaster Memos reported changing situations in the disaster area; actions taken by the host government, the U.S. voluntary agencies, and international organizations; and financial data. These memos were also designed to report on problems encountered in carrying out relief actions and on what was being done to solve them. Disaster Alerts and Disaster Memos were subsequently replaced by what are now called Situation Reports, but the aim is to retrieve similar kinds of information. During any large-scale disaster, Situation Reports are distributed once a day to various U.S. government offices and to a large number of voluntary agencies. They are based on cables received daily from the U.S. Mission in the country affected by the disaster. The transmission and receipt of field cables takes only minutes; their distribution involves several hours.

Through the *Manual Orders*, Missions were instructed to send Interim Situation Reports and a Final Summary of each disaster. Guidelines of what to include in these reports were also provided in the *Manual Orders*, and these guidelines have been further elaborated in the more recent AID *Foreign Disaster Assistance Handbook.* Since the very beginning, it has been difficult to get the Missions to respond to requests for written summaries, and, as a later section will point out, the quality of these reports varies greatly.

After disaster operations have been completed, the AID/OFDA staff reviews all available material–Situation Reports; Mission disaster summary reports; cables; field reports; scientific and technical data from outside agencies; reports sent in by international agencies, by the American Red Cross, and by other voluntary agencies–and prepares a case report on the disaster. These reports were assembled first into semiannual foreign disaster reports (1964-1968), then into annual reports (1969-1971).

The decision to discontinue the annual report format was made in 1971. Disaster case reports are now issued on an individual basis, but their content is the same as those summaries contained in previous annual reports. It should be pointed out, however, that there has been a considerable time lag in the publication of case reports since 1974. The purpose of the latter annual reports was to provide a fiscal year statistical summary and a brief discussion of major developments and highlights in international disaster assistance. Utilizing this format, the AID/OFDA issued a combined report for fiscal years 1972-1973 in late 1973. No other annual reports have been issued since that time.

The above background suggests that the Washington-based case report is the cornerstone of the disaster-reporting system. All data sources are channeled into the preparation of synthesized case reports, and the annual reports that have been published thus far have either collated individual case reports or have briefly highlighted what is in them. It is difficult to judge the relative importance of the various data inputs to the preparation of case reports. It should be clearly indicated, however, that the framework for writing case reports directly follows the guidelines provided to the Missions by the AID/OFDA for writing Mission disaster summaries. This similarity suggests several conclusions: that the Mission summary report is potentially the most comprehensive data base available, that the AID/OFDA assumes that Missions have the resources necessary to gather these data and should therefore be accountable for them, and that the quality and thoroughness of Mission reporting is directly related to efficiency of the entire reporting system.

The AID/OFDA Computer-Based Information System

The potential use of automatic data processing to simplify reporting functions was initially considered in 1967. Exploratory discussions with technical experts were begun, but there was no great enthusiasm for computerization among the AID officials who were responsible for approving the project. The functions of such a system were not clearly stated. The AID/OFDA staff did not have the necessary skills to operate such a system, and no additional personnel could be made available from other areas of the AID. It was acknowledged that the amount of information being generated was becoming massive, but it was decided that the projected benefits of a computer data bank did not then justify its implementation and maintenance costs.

The climate for computerization became more favorable in the mid-1970's, and the impetus for applying automatic data processing came from the AID Administrator's office. A team of specialists was sent to the AID/OFDA in March 1974 to explore feasibility, outline a program, and make recommendations. The final decision to "automate disaster relief" was made by the AID Administrator and the Director of the AID/OFDA. There are four primary components to the recently initiated system. These include a disaster history file, country profiles, a procurement and logistics file, and an operations or crisis management file.

The disaster history file maintains a record of all foreign disasters to which the AID/OFDA responded from FY 1965 to FY 1975, plus selected major disasters dating back to 1900. The file includes agent-impact assessment data and a compendium of the types and monetary value of both internal and international disaster relief efforts. The primary data resources for the historical file are the various disaster-reporting mechanisms discussed earlier. The stated purpose of this file is to provide a quantitative base for projecting and predicting disasters and response requirements. All data entries have been completed and some analysis has been undertaken by both the AID/OFDA planning staff and by members of the CIDA. However, the AID/OFDA has made no systematic effort to determine if the functions for which this system was developed can be performed.

The country profiles contain information on the characteristics of disaster-prone countries. The profiles include a variety of demographic, economic, cultural, epidemiological, logistic, and disaster preparedness data that have been gathered from numerous cited and uncited sources. Approximately 30 profiles have been completed, and a total of 35 will eventually be produced. The processes of data collection and storage are being handled via outside professional contracts. Thus far the AID/OFDA staff has not undertaken an analysis of the country profiles, but members of the CIDA Panel on Review and Assessment of Available Information have examined those that have thus far been completed. The purposes of the country profiles have not been made explicit by the AID/OFDA, but the Committee assumes that the primary projected uses of these profiles are to gauge the internal capability of a country to respond to disasters and to provide logistical data helpful to the delivery of external assistance.

A procurement-planning subsystem has been programmed for the procurement and logistics file. This subsystem provides for the storage and retrieval of data on the commodities that can be furnished by various suppliers, together with data on availability, cost, and packaging considerations. Very few data have thus far been entered into this file because of limited time and money resources. The logistics subsystem was not developed under the aegis of the AID/OFDA, but was adapted from a Department of Defense transportation logistics model designed for broader AID use in 1974. This subsystem was used for an analysis of the Sahel region at the request of the Drought Office of the African Bureau. The model was not completed until after the Sahel disaster had waned, and there has been little subsequent interest in its refinement. In any event, the stated purpose of the procurement and logistics file is to identify the most timely and cost-effective means of procuring and transporting necessary relief supplies and services.

The operations, or crisis management, file is the last component of the system. The original purpose for this component was to program a large number of possible types of transactions so that they could be manipulated to meet the reporting requirements of the AID/OFDA. More specifically, this system was designed to monitor continuously any disaster in terms of requests or offers of assistance and their disposition. Although there was some testing of this system during the Guatemala earthquake of 1976, its operational utility has not been documented. Development of the system has been temporarily halted in favor of implementing manual recording procedures.

Although programming capability is available for all four elements of this system, it is clear that the historical file and the country profiles have been further developed in terms of data collection, storage, and potential use. The Committee's subsequent assessment will therefore focus primarily on these two components.[27] Any assessment of this system must be couched largely in terms of its future potential rather than its present uses. The system is new, and the AID/OFDA staff has necessarily concentrated its efforts on programming and data collection. There has been some discussion of the potential use of this system for disaster modeling and some appreciation of the data problems involved, but it appears that the AID/OFDA has completed only a limited amount of conceptual or empirical groundwork in developing this system.

[27]A detailed assessment of the AID/OFDA information management system, together with a series of recommendations for improvement of this system, are contained in the Appendix of this report. Recommendations 8 and 9, in Chapter 5, summarize this detailed assessment.