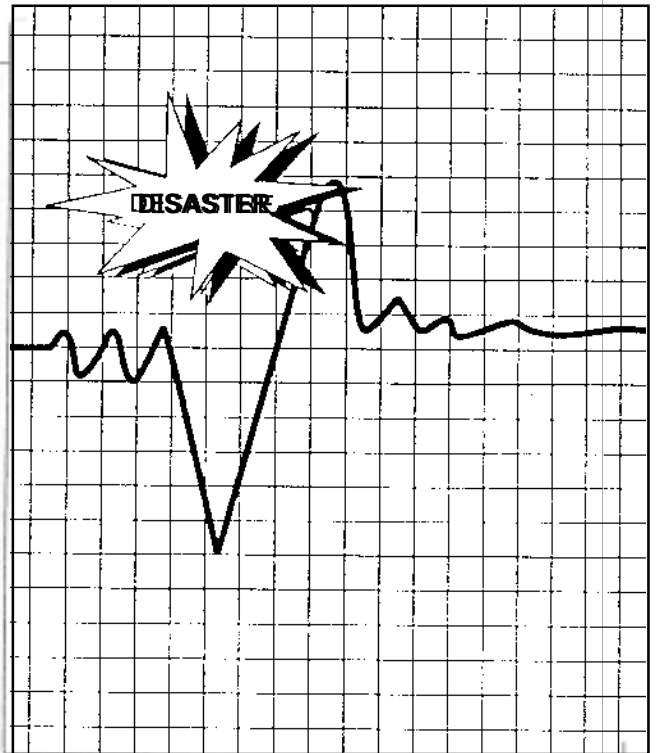




2nd Edition

Disaster Economics



■ Disaster Management Training Programme

Disaster Economics

2nd Edition

Module prepared by Ross Bull



DHA

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United Nations reorganization and the Disaster Management Training Programme

Since this module was written, there have been reorganization within the United Nations system. This section describes these organizational changes and explains the expanded role of the United Nations in Disaster Management.

In December 1991 the General Assembly of the United Nations adopted resolution 46/182* establishing the **Department of Humanitarian Affairs (DHA)** in order to strengthen **“the coordination of humanitarian emergency assistance of the United Nations”** and ensure **“better preparation for, as well as rapid and well-coordinated response to complex humanitarian emergencies as well as sudden and natural disasters.”** The Department incorporates the former UNDRO as well as former UN emergency units for Africa, Iraq and South-East Asia. The Secretariat for the International Decade for Natural Disaster Reduction (IDNDR) also forms part of the Department.

With regard to complex emergencies, DHA often operates in the grey zone where security, political and humanitarian concerns converge. Policy planning and policy coordination are performed in New York, where DHA works closely with the deliberative organs of the United Nations and with the political, financial and economic departments of the Secretariat.

The Geneva Office (DHA-Geneva) concentrates its activities on the provision of emergency operational support to governments and UN operational entities. It is also responsible for the coordination of international relief activities related to disaster mitigation. It continues to handle the UN system’s response to all natural disasters.

An Inter-Agency Standing Committee (IASC) chaired by the Under-Secretary-General for Humanitarian Affairs has been established pursuant to General Assembly resolution 46/182. It associates non-governmental organizations, UN organizations, as well as the International Committee of the Red Cross (ICRC) and the International Federation of Red Cross and Red Crescent Societies (IFRC). The Executive heads of these agencies meet regularly to discuss issues relating to humanitarian emergencies. An inter-agency secretariat for the IASC has also been established Within DHA.

Several Special Emergency Programmes (SEP) have been organized within the Department, including the Special Emergency Programme for the Horn of Africa (SEPHA), the Drought Emergency in Southern Africa Programme (DESA), the Special Emergency Programme for the New Independent States (SEP-NIS), as well as the United Nations Office for the Coordination of Humanitarian Assistance to Afghanistan (UNOCHA).

DHA promotes and participates in the establishment of rapid emergency response systems which include networks of operators of relief resources, such as the International Search and Rescue Advisory Group (INSARAG). Special attention is given to activities undertaken to reduce the negative impact of sudden disasters within the context of the International Decade for Natural Disaster Reduction (IDNDR).

The Disaster Management Training Programme (DMTP), which was launched in the early 1990s, is jointly managed by DHA and UNDP, with support from the Disaster Management Center of the University of Wisconsin, on behalf of an Inter-Agency Task Force. It provides a framework within which countries and institutions (international, regional and national) acquire the means to increase their capacity-building in emergency management in a development context.

* Copy is included in *The Overview of Disaster Management Module*.

■ INTRODUCTION

Purpose and scope

This module is about the economics of disasters. It shows how economic analysis can be used to advise decision-makers about alternative policy options. Some policies may cost little and achieve much. Some policies are expensive in the short run but save money in the future. Some policies save funds in the short run but cost much later. This module is written for the policy analyst – the person who has to advise government, UN, NGO and community leaders regarding hard decisions about how to spend limited funds to achieve maximum results.

The economics of disasters is easily brought home by the following simple example. In Jamaica, a public housing project known as “Poorman’s Corner” was being built by the Jamaican National Housing Trust. The 120 units were completed about the time that Hurricane Gilbert struck the island. Each of the units suffered partial or total roof damage compounded by vandalism in the aftermath of the storm. Lack of hurricane straps between roof and walls, undersized (and too few) roofing nails and low quality aluminium roof sheeting were identified as the technical reasons for roof failure. Repairing the units cost almost one quarter of the original construction cost and seven months of rental income was lost during the rehabilitation process. It is obvious that building the housing units right the first time would have prevented substantial direct and indirect costs and would have freed funds for other development projects.

In this module, economic terms have been used in such a way that the concepts are comprehensible to readers from all professional disciplines and backgrounds. If you wish to obtain more detailed information about a particular subject, please refer to Annex 2 for additional reading. A glossary is provided at the end of the module. The glossary contains many terms that you will find useful in understanding economic analysis concepts.

Overview of this module

The module has three parts. **Part 1** gives a quick review of what economics is about, describes the quantitative tools that facilitate economic analysis, gives an overview of the rational decision-making process that economists recommend, and considers how disasters might be analyzed from an economic point of view. **Part 2** considers five selected disaster scenarios which highlight key policy issues and the trade-offs which must be taken into account during economic analysis. **Part 3** considers alternative ways in which disaster relief and rehabilitation projects may be financed. Finally, there is a summary of key points from the module at the end of the text.

It is impossible to write a document which comprehensively covers disasters of every type and characteristic. The module may not address a particular category of disaster with which you are familiar or primarily concerned. However, the important point is to review the key issues discussed in the module, with a view to assessing how the disaster-related procedures followed in your own country could be improved.

Training methods

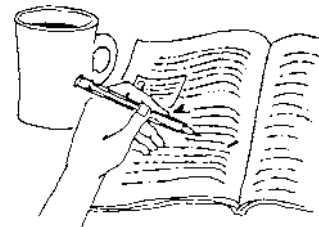
This module is intended for two audiences: the self-study learner and the participant in a training workshop. The following training methods are planned for use in workshops and are simulated in the accompanying “training guide”. For the self-study learner the text is as close to a tutor as can be managed in print.



Workshop training methods include:

- group discussions
- simulations/role plays
- supplementary handouts
- videos
- review sessions
- self-assessment exercises

The self-study learner is invited to use this text as a workbook. In addition to using the margins for note taking, you will be given the opportunity to stop and examine your learning along the way through questions included in the text. Write down your answers to these questions before proceeding. This will ensure that you have captured key points in the text.



PART
1

DISASTERS AND ECONOMICS

After reading this section and completing the exercises, you will be able to:

- *Identify some of the key questions central to an economic analysis of policy options in disaster management.*
- *Describe the practical thought process that economic analysis requires.*
- *Identify consequences of disasters in economic terms.*
- *Describe the constraints that policy makers in developing countries face in making mitigation and recovery decisions.*
- *Identify economic policy instruments available to decisionmakers.*
- *Analyze sectoral needs for disaster recovery.*

What is economics about?

Economics is about how and why to spend resources in one way instead of another i.e., the rational allocation of resources. It involves establishing the assumptions under which it is possible to justify expenditure on production, service delivery, consumption or infrastructural investment.

The need to clarify assumptions underlying expenditure decisions applies regardless of whether a government official is preparing a national development plan or emergency rehabilitation and recovery programme, or a household head is deciding how much of his or her disposable income to allocate to food, rent or savings. The issue of allocating scarce resources between competing demands is a function of priorities, (as well as technical feasibility), and priorities will vary between individuals, government departments and political parties.

In order to allocate government-controlled public sector resources, alternatives and options have to be reviewed, and questions asked. For example:

- How much should be spent, on what, where and when? Another way of looking at this is to decide what not to spend money on, that is, which expenditure proposals can be ignored completely or deferred?
- Will the process of resource allocation be primarily through direct government expenditure or through the creation of an “enabling” policy environment intended to stimulate private sector consumption, production, savings and investment?
- Will changes in a country’s institutional framework be required to permit the implementation of any proposed public sector investment or policy initiatives?
- Which balance of government revenue, concessional and commercial borrowing, grant assistance and relief aid will be most desirable and feasible for financing the public sector expenditures being proposed?

**LEARNING
OBJECTIVES**

Q. What are the main questions asked through economic analysis?

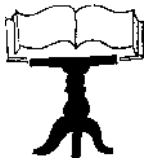
A. _____



The quantitative focus

Many disaster-related decisions are matters of life and death which defy strict economic analysis. But, many decisions are not of this magnitude and lend themselves to hard economic analysis based on the use of quantitative methods.

QUANTITATIVE ANALYSIS



Quantitative analysis, as undertaken in the course of economic analysis, usually involves the preparation of projections of demand and supply. Without these, it is impossible to ensure that sufficient production, service delivery or stock holding capacity will be installed to meet anticipated demand. Projections will, in the absence of reliable data, have to be based on “best guesses”. Best guesses are based on assumptions regarding how individuals, family groups, and organizations will behave under certain conditions. As supply and demand are clearly influenced by price, it is usual to focus quantitative analysis on identifying and analyzing all the costs that go into determining the price of a good or service to the consumer and the producer. This is necessary in order to be able to assess whether:

- the returns to the producer/laborer from a particular activity are sufficient to ensure production beyond subsistence requirements; and
- consumers will be able to afford goods and services provided by producers, once all transport costs, marketing margins and taxes have been included.

Quantitative analysis is undertaken to create numerical data which can be used to aid in comparing and evaluating investment and policy alternatives. What might initially seem an obvious solution to resolving a problem could turn out to be only one of several alternatives. Equally, there may be no investment option which, at first sight, is clearly preferred to all others.

Q. What should determine the price of a good or service?

A. _____



The practical thought process

Where government has to allocate expenditure, (including labor costs), the analytical method will generally included these seven tasks:

1. It is important to rapidly obtain a clear understanding of the background to the present situation, and asses why an allocation of additional resources is required, thus generating policy goals.
2. Having assessed the scale of the problem under consideration, it is important to start building up a list of alternative interventions to be considered by government during the process of choosing between options.
3. A quick appraisal of alternatives within the list will be required, focusing particularly on the technical and financial feasibility as well as the cultural and political constraints of each investment or policy option.
4. Estimates of the costs and benefits associated with investment and policy alternatives will be required, including an assessment of the opportunity costs (trade-off) involved. This will often involve the computerized aggregation of capital, technical assistance and recurrent costs.
5. The financing possibilities associated with the options under consideration will need to be considered, to ensure a balance between available resources and existing budgetary commitments.
6. Policy interventions by government need to be chosen, identifying who or which institution will be responsible for implementation, and defining over which time period interventions will be implemented.
7. Finally documentation will need to be finalized, in order to present the government's proposals and resource requirements to potential funders.

Economic analysis as applied to disasters

“The value of property lost to disaster (the absolute value of direct costs) is higher in developed than in developing countries, but losses as a percentage of national wealth are 20% higher in developing countries. Disasters particularly hurt developing countries, because poverty and disasters are mutually reinforcing, undermine incentives for development, and particularly hurt the nonformal sector.” (Anderson)

When estimating the economic consequences resulting from a disaster, it is common to identify direct, indirect, and secondary effects. **Direct effects** include damage to property and loss of income to persons, business enterprises, and communities. These may be further defined as:

- Losses of capital, such as the destruction of housing, factories, means of communication (bridges, roads, railways, telephone system), and community infrastructures (schools, hospitals, churches, electricity networks, sanitation system).
- Loss of stocks intended for final consumption or for intermediate production units.
- Production losses which will result in a reduction in income; for example poor harvest, destruction of crops, death of livestock, or closure of small businesses.
- The costs of emergency relief and repairs.

Many developing countries are forced to operate almost entirely under crisis management, with no room to plan beyond the short term.

Each of these direct losses may have **indirect effects**, for example, if a factory is closed because of an earthquake there will be:

- Reduction in activity of suppliers without alternative markets.
- Reduction in purchases of goods and services by people who have lost their jobs.
- Reduction in national income through reduction in tax revenues.

Further, both direct and indirect effects result in **secondary effects** which may appear some time after the disaster and might include:

- Epidemics
- Inflation
- An increase in individual and family income disparities and imbalances in the economic health of different regions in the country
- Economic opportunities lost as a result of the redirection of economic activity
- Ecological changes
- Negative changes in the balance of payments

For an excellent discussion of disaster economic effects, a review of current theoretical issues and a description of cost/benefit mitigation estimation techniques, see the DHA publications listed in Annex 2.

Figure 1 identifies some of the consequences of a human-made or natural disaster, indicating how the consequences might be measured and some of the associated tangible losses that might be involved.

Q. Consider a recent natural or human-made disaster with which you are familiar and identify five of the most costly consequences of that disaster.

A. _____



ANSWER (from page 10)

Which projects should be funded and which not? Will government funds be used directly or will enabling policy be sufficient without direct funding? What institutional arrangements are necessary to accomplish the policy objectives? What is the optimum balance of tax revenue, debt, and grants?

ANSWER (from page 10)

Supply and demand. At the same time, the producer should be able to make a profit, and the consumer should be able to afford the good or service.

This module has deliberately limited the discussion of economic theory because policy and investment decisions in developing countries are more likely to be affected by real world concerns than theoretical prescriptions. Developing countries often have substantial debt; weak public sector institutions which are frequently over-staffed yet unproductive; and a labor force which has limited skills and consequent low salaries.

Political and socio-cultural factors in developing countries are, therefore, major determinants of response to any disaster situation. In addition, many developing countries are forced to operate almost entirely under crisis management, with no room to plan beyond the short term.

Within this imperfect framework, developing country policy makers have to try to optimize use of human resource and other factors of production, in order to stimulate economic growth and development. Disasters, whether natural or human-made, disrupt the already fragile process faced by these countries, in that they damage or destroy production capacity and temporarily paralyze activities at national, regional or sectoral level.

The economic analyst's task is to work with the policy maker to identify and review alternatives, analyze the trade-offs, and assist decision makers to select the best option available.

As a first example, consider disaster relief, where humanitarian considerations are likely to be initially paramount. Here, economic analysis can be of assistance in assessing costs and benefits of various relief options. For example, it may be more efficient, (that is, cheaper overall), for government to give one time cash grants to affected families and individuals, instead of buying foodstuffs which recipients later sell for cash at a discount. Similarly, while donated foodstuffs may help in the relief effort, they could act as a medium term disincentive to farmers, making them uncompetitive if local food prices fall as a result of the inflow of food aid. Indeed, some grants-in-kind may cost more than their face value, in terms of the resources used in storing and distributing stocks.

Real world constraints in developing countries do not usually permit the luxury of leisurely analysis, since affected people tend to put things back together again as soon as possible.

Figure 1

Potential disaster losses

Consequences	Measure	Losses	
		Tangible	Intangible
Deaths	Number of people	Loss of economically active individuals	Social and psychological effects on remaining community
Injuries	Number and injury severity	Medical treatment needs, temporary loss of economic activity by productive individuals	Social and psychological pain and recovery
Physical damage	Inventory of damaged elements, by number and damage level	Replacement and repair cost	Cultural losses
Emergency operations	Volume of labor, workdays employed, equipment and resources	Mobilization costs, investment in preparedness capability	Stress and overwork in relief participants
Disruption to economy	Number of working days lost, volume of production lost	Value of lost production	Opportunities, competitiveness, reputation
Social disruption	Number of displaced persons, homeless	Temporary housing, relief, economic production community morale	Psychological, social contacts, cohesion
Environmental impact	Scale and severity	Clean-up costs, repair cost	Consequences of poorer environment, health risks, risk of future disaster

Q. What is the task of economic analysis?

A. _____



As a second example, consider reconstruction, which has to be viewed in parallel with relief efforts. Reconstruction planning requires consideration of alternatives concerning what to rebuild, in what order to rebuild, and the institutional arrangements that must be created to ensure effective implementation.



The ability to conduct economic analysis is impeded, however, by several factors. The capacity of research institutions in developing countries is limited, and data are questionable. Improvisation is required, putting the emphasis on limited assessments, rather than medium-term analysis based on sound data, extensive analysis and wide-spread solution search.

Real world constraints in developing countries do not usually permit the luxury of leisurely analysis, since affected people tend to put things back together again as soon as possible. If policy makers ponder too long, they may be unable to intervene in any substantial way.

Salvaging building materials after a typhoon in Suriagao City, Philippines

UNDRO NEWS, Sept./Oct. 1984-UNICEF/S.H. Umemototo

Further, existing circumstances may preclude taking action to avoid what is obviously less than ideal. In Bangladesh, for example, the dangers of settling on delta islands are obvious, but population pressures allow few better alternatives. The policy maker therefore has to take a practical view in trying to improve the use of available reconstruction resources. The issue is generally one of determining which reconstruction has higher priority – for example, bridges washed away or damaged power generation and distribution equipment – and what is the least overall cost solution for getting damaged structures restored to an acceptable level of operation.

Q. What are some of the constraints that policy makers in developing countries face when making disaster related policy decisions?

A. _____



Another area in which economic analysis can be helpful is in assessing the cost-benefit aspects of investing in disaster prevention or mitigation. As all societies can now be helped to forecast and prepare for disasters, failure to invest in disaster prevention is both inefficient and wasteful. Optimum results may not be achievable, however, since residents will continue to build houses and economic infrastructure on precarious sites, and governments will continue to cut corners on the maintenance of infrastructure. However, if high pay-offs can be demonstrated from mitigation and prevention, it is possible to exert pressure on policy makers to bring about change, provided there is close coordination between donors, lenders, government and the public.

Parallel to these investment-specific issues, economic analysis requires:

- Evaluating the cost of disaster-related events and their impact on foreign exchange earnings and import requirements
- Discussing ways in which short term assistance can be obtained both to meet food and medical requirements, and service outstanding debt obligations
- Identifying how medium and long term policies need to be modified to accommodate any destruction, in terms of the conditions that might be attached to debt rescheduling or the use of concessionary credits.

Finally, while disaster specialists usually deal with the emergency or immediate phase of a disaster without the benefit of substantial economic analysis, they can utilize economic analysis in damage assessment to determine how short term relief and medium term reconstruction and rehabilitation can be financed. It is important to recognize short and long term perspectives may result in different conclusions. Where the former tends towards getting things moving again physically and as quickly as possible, the latter is more likely to look at which activities or structures are worth protecting and/or reinstating, and which are not worth replacing – being less concerned with getting things going again **at any cost**. The long term perspective will focus on alternatives and assessing the costs and benefits associated with each.

In practice, the disaster specialist should create feasible, practical and workable solutions which will resolve problems quickly, permanently and cost effectively. Such solutions usually require innovation because a solution which has been successfully tried and tested in another country will need to be adapted to local disaster and cultural conditions.

Is disaster economics different from economics?

Having looked at the short of economic questions the policy analyst is likely to face, does he or she receive any special help from economic theory in trying to allocate resources efficiently under a disaster scenario? While economic principles can be very helpful in evaluating policy options, there is no special subset of economics which is unique to disaster situations. In other words, the application of economic principles is the same when examining remedies to deal with national disasters as it is when reviewing (say) a failed parastatal grain marketing operation, which, depending on the scale of the failure, may turn into, or already be perceived as, a disaster. The challenge is to look at the alternative solutions available, and assess their costs, benefits and tradeoffs. In doing this, will there be an “optimal” solution?

As all societies can now be helped to forecast and prepare for disasters, failure to invest in disaster prevention is both inefficient and wasteful.

Optimal planning

Consider a disaster which involves the massive collapse of an urban area through seismic activity, including most of the essential public service infrastructure. A key decision in the short space of time in which action must be planned and taken concerns the order in which the urban area should be rebuilt. What is the critical path? Where do we start?

Clearly, there are options and alternatives. Decisions have to be taken to reject some and accept others. Probably the most important decision, however, is whether or not to reconstruct the urban area. If so, should it be rebuilt as it was before, or should it be modified? While this type of decision-making inevitably involves a fair amount of real life politics, it must also take into account the economics of the situation.

Under such a disaster scenario the opportunity exists to consider “optimal” planning i.e. re-planning resource use, rather than recreating the same structure of resource consumption which existed before the disaster happened: However, such an opportunity will only be brief, as there is rarely much time to replan **optimally**, change the “old order”, or put things “right”.

The incentive structure

The dynamics of disaster relief and reconstruction poses a question for the policy analyst and decision-maker. Is the existing incentive structure adequate to encourage people to take part in the process of reconstruction? If not, why should members of a poor rural or urban household bother to participate at more than a subsistence level?

If incentives need to be introduced to stimulate participation, will the projected gainers and losers resulting from such policy interventions be those desired by government, the international community or the local population, or will the overall situation be “worsened”? In other words, will the **rich** get richer and the **poor** get poorer? Will there be a new **middle class**, and how big will it be?

Will there be a net gain to society? While many actors on the development stage, particularly non-governmental organizations (NGOs), are typically worried by local traders and entrepreneurs “profiteering” from disasters, does this really matter, so long as, following a disaster, economic activity gets going again quickly?

The overall picture

Exercise 1 provides a worksheet to help conceptualize what is involved when economics is linked with disasters. While there will be subsets and special cases not covered by Exercise 1, it roughly corresponds to reality and divides disasters into three broad categories:

- Floods, tropical storms, earthquakes and other hazards, which occur naturally, are unavoidable in the short term, and will probably have a fairly rapid onset.
- Floods, war, drought and environmental damage which are human-made, occur slowly, are avoidable in the medium term, and will have a cumulatively detrimental effect.
- Serious economic mismanagement, which is human-made, tends to

ANSWER (from page 14)

To help policy makers identify and review alternatives; analyze trade-offs, and select the best available option.

ANSWER (from page 14)

Developing countries often have substantial debt and limited uncommitted funds; weak public sector institutions; labor force with limited skills; a decision-making environment operating under crisis management conditions; limited research capacity and unreliable data; resourceful citizens that put things back together again quickly without waiting for government action; and many different projects which compete for funding.

occur slowly, is avoidable, and has a cumulatively detrimental effect.

Exercise 1

Instructions: Check the actions that are appropriate for response for the particular disaster type listed.

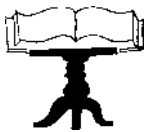
RELATIONSHIP BETWEEN DISASTERS AND INTERVENTIONS

1. SCENARIO: TYPE OF DISASTER		Natural			Human made			Economic
		Flood	Tropical Storms	Earthquake	War	Environmental Degradation	Drought	Severe Mis-management
2. POSSIBLE REMEDIES		Mitigation or Recovery Focus						Structural Adjustment
(A) Policy instrument alternatives		Domestic			International or Regional			
Domestic policy instruments affecting production, income, consumption, savings & investment decisions in the private sector	Direct taxes							
	Indirect taxes							
	Subsidies							
	Credit							
	Interest rates							
	Exchange rates							
(B) Investment alternatives								
Domestic investment in public infrastructure	Economic							
	Urban/rural							
	Services							
(C) Financing alternatives								
External and internal financing mechanisms	Concessional loan							
	Commercial loan							
	Grant assistance							
	Relief aid							
	Creative financing							
	Insurance payment							
	Debt rescheduling							

Exercise 1

Relationship between disasters and interventions

**STRUCTURAL
ADJUSTMENT**



It is important to make the distinction between natural and human-made disasters, because the remedies can differ. On the one hand, natural disasters are likely to have a national focus, and will be treated on a national basic, for example, the 1991 Mt. Pinatubo volcanic eruption in the Philippines. Also, while certain natural disasters, such as hurricanes, may cover more than one country, for example those in the Caribbean or Central America, the responsibility for recovery often rests at the international level. On the other hand, human-made disasters, e.g. downstream flooding in Bangladesh, caused by upstream forestry policies; war in the Horn of Africa; and drought and famine in the Saharan belt, may require both national and international resolutions.

While problems arising from natural and human-made disasters can often be resolved through investment and the policy for mitigation/prevention or rehabilitation/recovery, Exercise 1 notes a special case of human-made disaster – domestic economic mismanagement – which can only be resolved through some overall strategy of reform, generally called **structural adjustment**.

Structural adjustment interventions focus on policy reform, rather than simply physical investment. Key policy alternatives to be addressed under structural adjustment are summarized in Figure 2 and discussed in more detail in Part 2 of the module. Figure 2 notes that after choosing interventions they must be prioritized and then implemented over a period of years.

When deciding which is the right solution to resolve an actual or potential disaster, decision-makers will need to consider the use of the three categories of economic intervention referred to in Exercise 1. These are:

- Domestic policy instruments, with which to influence private sector decisions about production, income, consumption, savings and investment. These instruments usually cover pricing, direct and indirect, taxation, subsidies, credit supply, interest rates and the exchange rate
- Domestic investment in public infrastructure for the economic, rural, urban and service sectors.
- External and domestic financing mechanisms, with which to fund proposed expenditures.

While domestic policy instruments are not as easily applicable when trying to resolve natural disasters, they are likely to be appropriate when trying to resolve medium-term human-made disasters, particularly where commodity/incentive pricing could be used to prevent, stop or reverse damage due to flooding, drought or other types of environmental damage. In the case of structural adjustment, however, all three types of intervention are required.

Q. What are the major types of economic tools available to policy makers when intervening in a disaster situation?

A. _____



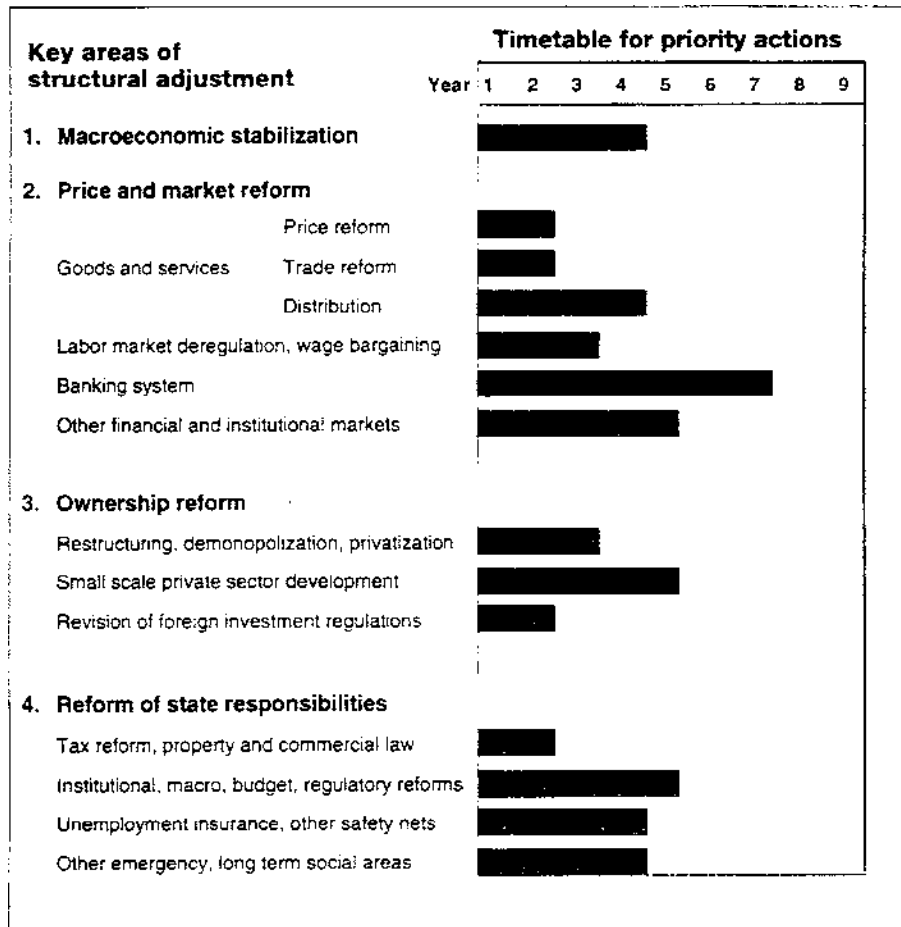


Figure 2
Structural adjustment planning guide

General and sectoral rehabilitation requirements

It is important to obtain an early indication of the total resource requirements implied by any disaster. Decision makers require quantitative information to decide, **first**, which sectors and geographical areas are to be assigned priority for rehabilitation and reconstruction, and, **second**, what are the funding requirements and possibilities.

It is important during the preparedness phase to develop sectoral baseline information in key areas where rehabilitation might be required. Following a disaster, estimates of sectoral need must be obtained, which will almost certainly require undertaking rapid urban and rural appraisals. These needs must be analyzed in the light of their foreign exchange requirements.

Naturally, there are variants in the ways that sectors are described. The United Nations Development Programme (UNDP) utilizes fourteen different sectors in its programmes. The UN Economic Commission for Latin America and the Caribbean (ECLAC) has developed a comprehensive damage assessment methodology which enables the accurate estimation of damage in all economic and social sectors. This uses sectoral classifications which are consistent with Latin American economies and divides total damage between public and private sectors. ECLAC makes a distinction between **direct** damage to capital stock, buildings and inventories, and **indirect** damage, which includes production losses, higher costs and diminished incomes in the service sector. A secondary assessment of the impact of a disaster shows its effect on the country's future macroeconomic development, as well as its (in)ability to finance necessary rehabilitation requirements.

Whichever approach is used, it will broadly include a phased estimate of financial and physical need, identifying both local and foreign exchange costs. Having estimated overall loss and damage, the planner and policy analyst must then identify the resources required to achieve relief and rehabilitation. Resource requirements should cover:

- Building, plant, machinery and other infrastructural requirements, covering government, local government, government corporations and semi-government institutions.
- Commercial and residential requirements (urban and rural), including moveable properties, such as vehicles.
- The grant, food and medical supply requirements of affected families, children, injured and disabled.

As a part of this analysis, and prior to implementation of any rehabilitation programme, each decision should be screened to evaluate whether or not to undertake proposed investments because:

1. It is not essential to replace damaged or destroyed assets on an equivalent basis.
2. Where assets are replaced, rehabilitation must be cost-effective.
3. The replaced asset must contribute (directly or indirectly) to its maintenance and other recurrent costs.
4. The highest priority rehabilitation should take place first, leaving lower priority reconstruction until later.
5. Construction start-up should not be permitted until it is clear that the rehabilitated infrastructure, when completed, will be capable of delivering all the outputs and services on which any expenditure appraisal was based.

Q. Why is it important to screen each public sector investment?

A. _____



ANSWER (from page 16)
Domestic policy instruments like taxes, subsidies, price and interest rate manipulation; domestic investment in public infrastructure; financing mechanisms like loans and grants.

Summary

The following main points have been made in Part 1.

- ✓ As all societies can be helped to forecast and prepare for disasters, society's failure to invest in disaster prevention is both inefficient and wasteful.
- ✓ As the impact of a disaster is frequently felt most by private sector individuals, their households and the private enterprises for which they work, any government rehabilitation plans must, therefore, have private sector support.
- ✓ There is no special subset of economic principles available to the disaster specialist which is different from those used to examine options in other areas of development economics.
- ✓ There is inherent tension in the recovery process between the sometimes opposite goals of getting things moving again as quickly as possible and determining which activities and assets are worth protecting and reinstating, and which are not worth replacing.
- ✓ The goal of disaster economic analysis is to create durable, innovative, feasible and workable solutions within the overall development process that will resolve problems quickly and cost effectively.
- ✓ The incentive structure under which people work and produce must be adequate to encourage people to participate fully in the process of recovery.
- ✓ Natural disasters are likely to have a national focus, while human-made disasters may require regional or global intervention.
- ✓ There is a special case of human-made disaster, domestic economic mismanagement, which can only be resolved nationally through some overall strategy of policy and legislative reform, generally called structural adjustment.
- ✓ Although extensive analysis is often required to consider economic trade-offs, disaster situations require quick assessments of the total resource requirements, and estimates of sectoral need will almost certainly require undertaking rapid urban and rural assessments.
- ✓ It is essential that a readily applicable checklist of necessary conditions exists prior to a disaster, which will allow government to satisfy itself that a) all feasible alternatives have been examined on a consistent basis, b) proposed public sector rehabilitation is justified in the light of priorities, and c) proposed rehabilitation is integrated with government policies for controlling public expenditure.
- ✓ When preparing a recovery programme, it is important to ensure that the costs of maintaining rebuilt infrastructure are included in the national budget because there is no point in reinstating national assets if they are not going to be maintained.
- ✓ Principles of post-disaster resource allocation must be agreed upon and used to guide (rather than dictate) economic rehabilitation.
- ✓ The design of the recovery programme should, as far as possible, incorporate arrangements for flexible implementation at the local level.



PART 2

ALTERNATIVES DISASTER SCENARIOS

After reading this section and completing the exercises you will:

- Understand how economic analysis can be applied in a disaster situation to identify policy options on a case by case basis.
- Recognize some of the economic differences between different types of disasters.
- Be better able to devise interventions for different types of disasters.

Part 2 summarizes five disaster scenarios: the general multi-sectoral disaster, the disaster caused by economic mismanagement, disasters involving displaced populations and refugees, the disaster which leads to food insecurity, and disasters involving environmental damage. Each scenario provide:

- a brief, general **background** to the scenario
- an overview of some **alternatives and trade-offs** to consider in determining how government should respond to the disaster.

The general multi-sectoral disaster

Background

General multi-sectoral disasters might be caused, for example, by floods, tropical storms, earthquakes, or tornadoes. When the disaster strikes a widespread geographical area, problems may be especially severe for affected farmers and small businesses. The damage might include:

- death and injury to business owners, their families, and employees
- damaged and lost productive assets
- inadequate local supplies of necessary raw materials, food stuffs, and services, and insufficient foreign exchange to purchase imports of these goods and services
- damaged physical and market infrastructure, including processing, storage, and transportation
- disruption of marketing activities and outlets
- inability to make loan payments, as well as lack of income and savings for immediate consumption and investment

Many types of interventions will be required to solve these problems, including resources to finance: a) credit lines to farmers and small businesses, which will allow the restoration of damaged and destroyed housing and other capital assets; and b) the rehabilitation of damaged public sector infrastructure necessary to support production, consumption and the provision of basic needs. In addition, time-limited grants will be required for displaced and affected populations to cover their immediate living requirements.

LEARNING OBJECTIVES



Officials inspecting ruins of school building in Cangyuan province, China

UNDRO News, Nov/Dec 1988

Given this background, it is possible to identify four reasons which justify government involvement in economic rehabilitation in the post-disaster situation:

1. A large proportion of the labor force will be unemployed, causing loss of output income, and who subsequently must rely on cash and in-kind assistance for food, clothing, in commercial food imports.
2. The balance of payments will have been damaged, because of the loss of export earnings, as well as a general increase in commercial food imports.
3. Government revenues will have been reduced, as a result of lower taxes resulting from lower incomes.
4. Government staff will often still be in salaried posts, but unable to work, causing an unproductive drain on government resources.

Alternatives

Government will need to consider alternative policy and investment initiatives, to be able to develop a public sector rehabilitation program. In reviewing these alternatives, attention is likely to focus on addressing certain questions, some of which are summarized below. In particular, the analyst will want to compare the quantifiable and non-quantifiable benefits and costs of the various alternatives identified.

1. Is the private sector supplying inputs and technical advice to the satisfaction of rural and urban consumers? Should any public sector input on service-delivery mechanism be terminated, perhaps because it will compete with the private sector? Does government wish to retain control over strategic or security-oriented assets or services which require rehabilitation or reconstruction?
2. Where proposals exist to replace or repair a damaged asset, such as a regional research or training center, is there clear unmet demand for its services? Could the private sector provide such services? If so, would any enabling action be required by government?
3. Where public sector infrastructure is involved in providing a service that can, in principle, be offered by the private sector, such as a regional hatchery, central poultry station or livestock / small ruminant stud farm, can the activity be transferred to the private sector? Should it be financed with a credit strategy associated with the rehabilitation program? If so, under which interest and capital loan repayment conditions would credit be made available to the borrower?
4. Is the rehabilitation or repair of local level infrastructure, e.g. a regional hospital, going to guarantee the immediate supply of needed services? If not, how are those services going to be provided, by whom, and over which period of time, and what is the role of government in ensuring that those services are available.
5. Is infrastructure requiring rehabilitation, such as a bridge, conditional on implementation of an overall program of rehabilitating all damaged public infrastructure, or can the bridge's repair be justified on a stand-alone basis?

6. Does infrastructure have to be fully replaced, or is a temporary “patch and repair” solution feasible, given existing priorities and budgetary restrictions?
7. Is the disaster likely to occur again? If so, what financial incentives or legal requirements need to be created to ensure that rebuilt structures can withstand another event?
8. Will insurance and existing resources be sufficient to finance a rebuilt business sector? Will subsidies and other credit schemes be necessary?

Q. Consider a major multi-sectoral disaster with which you are familiar. Identify a major policy decision that government had to make with regard to whether or not to restore disaster-destroyed assets to their pre-disaster condition.

A. _____



Disasters caused by economic mismanagement

Background

Many African countries – for example Benin, Madagascar, Mali, Mauritania, Niger and Togo – have been characterized since their independence by an overvalued currency, which has led to cheap import and difficulty in exporting agricultural commodities, excessive government expenditure, and too much parastatal control over producer prices and commodity marketing. This has led to a cumulative economic “disaster” and over 30-40 years of increasing rural and urban poverty, characterized by less and less incentive for farmers to produce for the urban market. This, in turn, has led to urban shortages, where commodities are only available at excessively high prices, partly as a result of private sector and parastatal seasonal hoarding. It is now evident that a similar situation has been evolving in the Central European States (CESs) since 1945. In both Africa and Europe, economic mismanagement has been compounded by serious environmental mismanagement.

The principal solution to this type of ongoing disaster is some form of **structural adjustment** which focuses on:

- promoting a market-oriented economy
- rehabilitating growth potential in key sectors
- removing infrastructural bottlenecks
- strengthening management of the national economy
- raising government revenues and controlling government expenditures



Food distribution in Niger.

UNDRO NEWS July/
 August 1984.
 CWS/Jon Otto

- implementing a comprehensive social policy to assist vulnerable rural and urban households, especially those whose vulnerability was increased by structural adjustment reforms

A schematic representation of some of the key points highlighted in structural adjustment is summarized in Figure 2 on page 17.

Alternatives

Government will need to consider alternative policy and investment initiatives, and their trade-offs, during the process of designing a structural adjustment package that is supported by the World Bank and the International Monetary Fund. Structural adjustment requires that specific targets be set. The following discussion identifies some of these targets.

1. A flexible and realistic monetary exchange rate as to be maintained. This raises questions regarding what level the rate should be and how long it should control where the exchange rate is controlled this might require:
 - Holding the differential between official and parallel market rates of exchange to less than a given percentage. This raises questions about which percentage and which parallel market rate should apply.
 - Ensuring unrestricted access of the private sector to foreign exchange through weekly currency auctions with the attendant questions of who should organize the auctions and under which conditions.
2. Interest rates must be high enough to reduce non productive and non-essential borrowing, bring inflation under control and mobilize domestic financial resources. But, how high must the rates be and how will the rates be raised?
3. Taxes on imports and domestic production have to be adjusted to eliminate any bias in favour of imports. But, what should those levels be?
4. Export taxes have to be simplified and reduced, as well as eliminated where they affect significantly the demand for exports. Acknowledging this, the analyst must still decide on which export commodities to focus, what the tax level should be, and in what order and over what time period the adjustments should be made.
5. Measures to encourage efficient export of goods and services, including tourism have to be provided. This could take the form of government or private sector overseas export trade/tourism centers.
6. Does the price of all commercial and food aid imports include the full cost of transportation, margins, insurance, losses and import duty? As the cost of imported food increases, is domestic agriculture able to compete with food imports? Is government going to implement a strategy of **self-reliance** i.e. ability to pay for necessary imports with export earnings, or **self-sufficiency** i.e. accepting inefficient domestic production as the price to pay for achieving domestic security over supplies of selected food and other commodities?
7. At what level should public utility charges be set to insured that short term operating, maintenance, and replacement costs do not require substantial public sector funding? Can public utility delivery be transferred to the private sector? Under which conditions would this be possible? Would any existing activities need to be liquidated?



8. What size core civil service is required to deliver required services in an efficient manner? Can positions be eliminated and government expenditures cut? What salary increases must be offered to those civil servants that retain their positions?
9. To what level should major excise tax rates e.g. on petroleum, tobacco and alcohol be raised? What type of institutional strengthening is required to improve levels of tax collection?
10. Which projects should be included in a newly designed public investment program? Are these projects consistent with government's objectives, as well as its sectoral strategies, macroeconomic projections, debt scheduling commitments and overall policy initiatives?
11. Which public enterprises and parastatals can be liquidated? Which can be privatized and restructured? Which can be sold to foreign and national investors? Under which terms can this occur?
12. What type of social policy, including employment-generating programs, targeted feeding programs, and income transfer schemes will be most cost effective in protecting poor rural and urban vulnerable groups seriously affected during the transition phase of structural adjustment?
13. What program of legislative and democratic reform is required to complement the economic initiatives undertaken during structural adjustment?

Q. Consider a country which has experienced long term economic mismanagement with which you are familiar. Identify a policy intervention that government might be forced to make to rectify the situation. Identify both the positive and negative consequences of that decision and describe an intervention that might lessen the impact on the affected people in the country.

A. _____



Disasters involving displaced populations and refugees

Background

Many unstable situations result in substantial population migration. Sometimes this migration results from natural disasters, like floods or earthquakes, and sometimes from human-made disasters, like desertification and war. In some situations, particularly where war and food insecurity are combined, many of the migrants cross national boundaries and become refugees. There are, in all these cases, substantial economic consequences to the individuals forced to move, as well as to the communities and countries from an to which they move.



Silopi camp

UNHCR/A. Hollman
Refugees, June 1991

In the special case of refugees, there are three “durable” solutions proposed by UNHCR to reestablish refugees in viable communities.

Voluntary repatriation, or the re-establishment of the refugee within a community in his or her own country, is considered the most desirable solution. Where voluntary repatriation is impossible, **local settlement** in the country of first asylum is the next most appropriate approach to promote both self-reliance and viable integration of refugees. Most local settlements are in rural areas, at either spontaneous or planned settlements. The criteria for seeking resettlement in a third country derive not only from conditions in the country of origin, but also in the country of first asylum. Some countries permit temporary asylum, on condition that **resettlement to a third country** will be undertaken as soon as practically possible. Ethnic political or economic reasons may render local integration impossible, requiring the need to find a third country.

Populations moving internally in a country face several of the same solutions. They may find an existing local community in which to resettle and restore their lives; they may move to a previously uninhabited area and create a new community; they may move back to their original homes; or they may seek permission to move to another country.

Alternatives

Each of the potential solutions identified has economic consequences and humanitarian trade-offs. When governments accommodate migrants in spontaneous or organized (permanent or semi-permanent) local settlements they invariably incur costs to cover infrastructure as well as additional food requirements and basic needs.

The migrants themselves are often subject to exploitation by the host country and local communities. However, they also bring certain benefits with them. For example, once refugees are settled locally, they are a source of local purchasing power, and provide skilled and unskilled labor.

If governments desire to integrate migrants they may incur additional costs for retraining, health, education, housing and social security, which will be partially offset by purchasing power and labor/skill benefits.

Where expatriate populations are expelled suddenly from a host country, and have to return home, or go to a third country, (e.g. Palestinians,

Filipinos, Bangladeshis, or Yemenis working in Gulf States) they will lose their sources of income. Reduced remittance income will have a serious effect on family dependents and the balance of payments in the expatriate worker's home country. Such people may be forced to flee without taking their personal goods and other assets. On the other hand, if they bring savings with them, there may be an asset increase to their new or home countries. Overall, the cost to reintegrate returning persons may be very high and significantly strain existing service systems.

Population movements, especially when they involve refugees, are a sensitive political issue as well as a major humanitarian concern. Thus, it is difficult to be sure how to weigh the costs and benefits associated with a particular policy option. Certainly, the trade-offs will be heavily influenced by political considerations, even if all the costs and benefits can be quantified.

Q. Choose a recent population displacement with which you are familiar. Identify the economic consequences to the displaced persons and their new communities.

A. _____



Disasters leading to food insecurity

Background

Food security disasters have occurred in several countries, particularly in Africa, but also now in selected CES countries. The achievement of national food security requires that people have access to sufficient quantities of food, when they need it and at a price they can afford. In attempting to achieve national food security, three principal conditions (established by FAO) need to be satisfied:

1. The global supply of food stooffs (domestic production plus imports) should be adequate to meet national demand.
2. Fluctuations in seasonal food supply should be minimized, and reflected in relatively stable seasonal food prices.
3. The population should have access to food supplies, either through adequate real income or, if this is insufficient, through targeted feeding programs.



Waiting for food aid in Guerra Province Chad

LRCS/Lilane de Toledo
 UNDRO News, Nov./Dec. 1984

In many countries, these three conditions for achieving food security are not satisfied at the national level, because a price and trade regime has not been established which ensures available food supplies are adequate to meet national demand.

An overall food balance is not achieved, either when domestic production is inadequate, or there is insufficient foreign exchange with which to buy commercial food imports. As relief food aid cannot be sustained in the long term, supplies available through this source will not provide a permanent solution. In food-insecure countries, prices fluctuate seasonally, because of private sector hoarding. Also, local income levels are frequently inadequate to purchase available food supplies at prevailing food prices.

However, even in countries where the three food security conditions are satisfied at national level, nutritional problems might still exist at the microeconomic, household level especially among the most vulnerable group i.e. pregnant and lactating women, as well as children under 5 years of age. In this situation, in addition to poverty, nutritional problems may exist because of inadequate knowledge of good nutrition and weaning practices. Nutrition related problems also occur in areas isolated from principal marketing routes. Geographic isolation limits trade, and reduces the opportunity for income generation and regional exchange of products, including fruit and vegetables, with which to diversify and improve diets.

Alternatives

Government must consider alternative means of intervening in the **food system**, covering production, harvesting, storage, processing, transportation, wholesaling and retailing. In order to make a full assessment of the alternatives which are available, including trade-offs, government must systematically undertake the following procedures:

1. Analyze the country's physical resource base, in order to assess production possibilities for food and other export crops.
2. Prepare domestic resource cost calculations to show the comparative advantage between growing food or export crops and other production technologies.
3. Use both sets of information, as well as estimates of population growth, to determine production and productivity targets for food and export crops as well as to set commercial and concessional food import targets.
4. Prepare farm budgets for different crops and technologies to identify the price at which it is profitable for the farmer to produce and invest.
5. Prepare a cost structure analysis of the food system including production, storage, marketing, processing, and distribution for alternative food crops, particularly in those areas of the country where food security is weakest, and where cross-border trading is most important.
7. Define government's ultimate objectives for food security, as well as its strategic policy objectives for increasing domestic food production, stabilizing food flows and increasing food access.

Having followed this procedure, government can then evaluate alternative investments, policy instruments and regulatory measures to determine their expected impact on government's food security objectives.

Alternatives to be reviewed during this process could focus on:

- Does government wish to follow a policy of self-reliance or self-sufficiency (see definition number six on page 24)?
- If government opts for self-reliance, can it compete on world markets with other exporters who already have established markets in developed countries?
- Is large scale food production more efficient financially and economically than smallholder production?
- In order to achieve food security, what balance of stock holding internationally, nationally and locally is most cost effective?
- What is a feasible target date by which to eliminate all food aid?

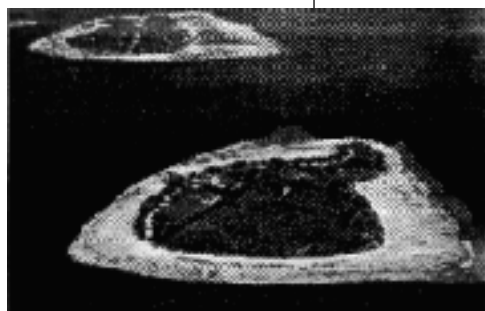
Having reviewed questions such as these, and taken a view on which is its preferred option, government can then formulate an investment program, identify project ideas, and confirm their local currency and foreign exchange requirements. Government can then discuss the proposed investment program with potential multilateral and bilateral donors, as well as NGOs.

Q: Identify a recent situation that you are familiar with where there was a problem of food security. What actions did the government take? What were the economic consequences of the actions?

A. _____



Disasters involving environmental challenges



Vilingili island, a suburb of nearby Male island.

Michael Friedel,
"Sustainable Development
and the Environment" UNDP

Background

In reviewing disasters which involve environmental challenges, it is worth considering a specific example, taken from the Maldives. This small island nation state consists of 19 atolls, made up of about 1,200 coral islands scattered over a wide expanse of the north central Indian Ocean. Most islands are small, with a diameter of less than 1.6 km. The islands are flat, and generally have an altitude of less than 2.5 meters.

Approximately 55,000 people, (or 25% of the total population), live on Male, the capital. This large population has occurred because of a high national birth rate of about 3.5% per annum. There has also been inward migration to Male, because of (a) past failure to decentralize economic growth to the outer atolls, and (b) the concentration of resource allocation and decision-making in the capital. Population growth has generated a large demand for housing and public sector infrastructures which has been sited on newly reclaimed land.

Given the average altitude of the islands, Maldives faces the potential of rising tide levels, caused by global warming. An abnormally high tide occurred nationally between 10 and 15 April, 1987. Most of the damage occurred in Male, and included washing away sea walls and eroding approximately one third of newly reclaimed land. Private houses and the airport terminal were also damaged. The total national loss caused by this high tide was estimated at around US\$ 10 million (1991 prices). The country suffered further high tide damage in June, 1988, and was affected by serious storm damage in May, 1991.

Under these circumstances, government has had to consider investing in mitigation, in order to prevent future catastrophic disasters. In 1987, the government of Maldives requested Japan to assist in identifying the damage that had been caused by that year's high tide.

On the basis of the Japanese recommendations, a breakwater was constructed in the south of Male. In 1992 it was proposed to reinforce this investment by constructing a sea wall at selected sites. This would require 3,000 cubic meters of mass concrete, armored with wave dissipating concrete blocks. The sea wall project was estimated to cost around US\$ 28 million (1991 prices).

Construction of this wall would have to be closely coordinated with past and proposed projects, to ensure consistency and economies of scale. This is particularly true of the Male land reclamation project, launched in 1979 and completed in mid 1986. The project reclaimed 59.7 hectares of land in the shallow reef flat on the southern and western sides of Male and was used to provide land for homeless families, schools, a new hospital, a power plant, a harbor for inter-island shipping and fishing boats, a sports complex and other public facilities.

The total cost of the public sector investments that could be destroyed, if the mitigating sea wall is not built and the sea rises, is around US\$ 70 million (1991 prices). In addition, there would be damage to private sector housing and enterprises.

Alternatives

Clearly, government must consider, and evaluate the trade-offs between a number of options, some of which are summarized below:

1. Should Male be the only island to be protected?
2. Should infrastructural and governmental (and thus population) decentralization be speeded up?
3. If decentralization takes place, will there be sufficient funds available to protect all the islands where new infrastructure is established?
4. Is it, in fact, better to increase the concentration of resources on Male, rather than decentralize, giving Male full protection at the same time?
5. If development is concentrated on Male, and given that the local water table on Male is falling fast, what water purification options does the capital have?
6. Is it better to pay for expensive mitigation investment, or take a chance that global warming will not occur?
7. If the mitigating investment could be grant-financed, should Maldives become grant dependent on a single country?
8. Do the advantages of surrounding Male with a sea wall outweigh locating the wall at selected sites?
9. Although there is no income or corporation tax in Maldives, should Male’s population pay a specially introduced tax or insurance premium to contribute to the cost of the mitigating investment?
10. As tourism is now the main foreign exchange earner, (superseding tuna fishing and exporting), should funds be spent on protecting tourist islands against global warming, possibly financed by a tax on tourism?
11. Given that Maldives is increasingly experiencing illegal dumping of environmentally-damaging garbage, will a policy of compelling tourist islands to compact and burn their own waste lead to prohibitive holiday charges, forcing tourists to go to other destinations?

Q. Consider a disaster-prone country with which you are familiar. Identify a major asset that is vulnerable to disaster damage. Describe a mitigation investment which would reduce disaster related consequences. Estimate its cost and what it might save.

A. _____



Failure to identify the alternatives and their intended and unintended economic consequences leaves the policy analyst and decision-maker in the unenviable position of having few choices and a relatively limited understanding of the likely outcomes of proposed interventions.

Conclusion

Part 2 has provided several specific disaster scenarios. Each of these scenarios is realistic and drawn from the author's real world experience. Each scenario has its own internal dynamics and potential solutions. This suggests that each disaster faced by the policy analyst is a unique event requiring unique solutions.

The important point, however, is that each scenario, when analyzed from an economic point of view, has alternative solutions and each of these solutions has trade-offs. Failure to identify the alternatives and their intended and unintended economic consequences leaves the policy analyst and decision-maker in the unenviable position of having few choices and a relatively limited understanding of the likely outcomes of proposed interventions.

The importance of economic analysis is the analytical framework, i.e. the questions asked by the analyst. What should be done right way, what can wait, and what should not be done – these are the key questions.

PART **3**

FINANCING OPTIONS

After reading this section and completing the exercises you will be able to:

- *Describe eight different types of creative financing tools that can be used to enhance disaster recovery and pay for recovery project financing.*
- *Identify some of the counter productive aspects of various creative financing tools.*

While disaster relief, rehabilitation, and mitigation may be economically, socially, and morally worthwhile, hard cash is required to permit implementation. As money is most likely to be limited, policy makers must identify and prioritize projects. Having obtained an idea of the scale of finance required to implement a relief, rehabilitation, or mitigation plan, funding options can be reviewed to determine the balance of foreign exchange and local currency costs that will be involved.

Eight alternative and complementary possibilities for developing disaster-related financing are reviewed below. First, the traditional financing route followed in developing countries is discussed. This typically involves NGO relief aid, followed by bilateral and multilateral assistance. After this discussion, seven separate types of “creative financing” possibilities are reviewed.

- debt swaps
- blocked funds
- trust funds
- triangular food aid
- disaster insurance
- revolving funds
- Central Bank assistance

The traditional route

Where a disaster requires immediate relief aid, this often will be financed through the UN, the EC, a country’s bilateral trading partners, and NGOs, such as OXFAM or Save the Children Fund. However, it is almost inevitable that the medium term financing of a disaster recovery programme will have to be a part of a national development plan or rehabilitation programme. **Such a plan or programme will detail the country’s overall objectives, its resource base, the principal constraints to development, its overall development strategy, individual sector strategies, a proposed public investment programme (PIP), plan implementation proposals, and proposals for subsequent monitoring and evaluation.**

LEARNING
OBJECTIVES

Discussion of a plan or program document will often take place at a meeting of major multilateral or bilateral donors. At such meetings, it is likely that the World Bank will have prepared a “country economic memorandum”, setting out priority issues which need to be addressed. At the same time, sectoral studies are likely to be available with which to focus sector lending. UNDP is also likely to have formulated a **country indicative planning figure** (IPF).

Assuming proposed PIP projects are assessed as viable, (under an acceptable macroeconomic policy framework), concessional loan and grant funds will be required to start project implementation, although certain issues might need to be resolved before loan or grant financing becomes effective. Where pilot projects are required, prior to full project start-up, funds are available through, for example the World Bank’s **project preparation facility** (PPF). The possibility also exists with the World Bank, Inter American Development Bank and Asian Development Bank to refocus existing loans for the purpose of rehabilitation and reconstruction.

Debt Swaps

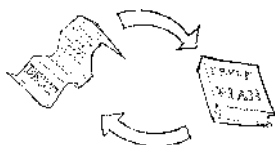
Most major commercial banks in developed countries have held, or still hold, hard currency debts from third world countries, particularly in Latin America. It is unlikely that these debts will ever be paid in full. Some banks have declared as unrecoverable losses a very large percentage of the outstanding commercial debt. Some cannot afford to do this, however, because of the effect it would have on the bank’s balance sheet. Those which have written off the debt, but still keep it on their books, still have to face the issue at a later date of what to do with such debt. Debt swaps provide a mechanism to help bank’s receive a small return on their initial investment outlay.

In principle, if a non-governmental organization (NGO), or an international agency, (say, UNHCR or UNICEF), can buy outstanding country-specific commercial debt at a deep discount, i.e. for considerably less than its face value, this debt can then be repaid in local currency with a favorable rate of conversion to provide funding for program operations by an NGO or international agency in the disaster affected country.

The most frequent swaps to date have related to the transfer of equity and land, as part of high priority policies towards (a) privatization, (b) expansion of either productive infrastructure or the national capital base, and (c) development of tourism. Such policies tend to be less inflationary, but require new money and local hard currency partners. In addition, present debt can be swapped for incremental foreign exchange earned or saved through future increased domestic production. There is also increasing interest in debt swaps to meet basic needs, local training, increasing self-sufficiency, environmental improvement, water supply, child health, education development, reforestation and heritage development.

There are four steps involved in debt swaps:

1. Approval is obtained in principle from the debtor country for the debt swap to take place. This will involve negotiations with the debtor country’s Ministry of Finance and Central Bank. These two institutions will have to agree to the exchange rate to be applied in covering debt into local currency, the conditions of payment, and the method and time frame for the utilization of the proceeds.



Debt swaps provide a mechanism to help bank’s receive a small return on their initial investment outlay.

Negotiations will also involve a local NGO or international agency. This third institution will receive funds and manage an agree program, and must be credible from the point of view of donors and tax authorities in the creditor country.

2. The debt instrument and its term will have to be identified. The market price for the debt outstanding will be determined either through auction or by using existing markets where third world debt is bought and sold. In these markets, the debts are sold below their face value and there is opportunity to negotiate additional price reductions.

Funds for debt acquisition by an NGO or international agency can come from donation by a creditor bank, sale at a preferential price, donation of cash for debt purchase, or some combination of all three. The final solution will have to take into consideration the tax and accounting positions of the various parties in both creditor and debtor countries. While commercial banks desire an acceptable return on loans outstanding, they may agree to indirect returns in the form of positive public relations rather than direct financial gain.

The conversion of the debt may involve issuing local currency bonds or cash payments, or a combination of both. Issuing bonds can help ensure that the inflationary effect of debt swaps is minimized.

3. The title of the debt must be transferred:
 - The title may pass to the NGO in the creditor country which can then donate it to its counterpart NGO in the debtor country.
 - The creditor country NGO may donate funds to the debtor country NGO in order to acquire the debt.
 - The debt may be donated directly to the debtor country NGO to be held on behalf of the counterpart NGO in the creditor country.
 - The title may pass to an international agency.
4. The NGO/international agency action program must be seen to be executed in accordance with an accepted program of implementation.

As an example, consider the first **debt for environmental concerns swap**, which was undertaken in Bolivia in 1987. Conservation International bought US\$ 650,000 of Bolivia's commercial bank debt, using Citibank as its agent. The debt was purchased at a discount of approximately 85% of its face value, i.e. at 15 cents to the dollar. Conservation International agreed to cancel Bolivia's obligation to pay the debt of US\$ 650,000 in exchange for Bolivian government agreement to:

- Give maximum legal protection to over 4 million hectares of tropical forest and grasslands.
- Create an operating fund, in local currency, to manage this area, worth US\$ 250,000, made up of a contribution of US\$ 100,000 from the Bolivian government directly, and US\$ 150,000 by USAID, from its local currency PL480 funds.
- Establish a national commission responsible for implementing the environmental program.
- Administer the operating fund through both the Bolivian Ministry of Agriculture and a Bolivian NGO, nominated by Conservation International.

There are specific **drawbacks** associated with **debt swaps**. Ideally they should (a) generate additional new funds that would otherwise be unavailable, and/or (b) increase the effectiveness of the use of existing funds which have already been programmed. Swaps are not useful if a debtor country NGO does not exist, if the international agency involved does not operate effectively in the country, or the swaps do not meet the objectives of debtor country governments and the NGOs/international agencies involved.

The value of swaps will also depend in the opportunity cost associated with alternative investments, possible exchange rate fluctuations, and the inflationary effects on the debtor country of such swaps. The advantages and disadvantages of debt swaps are discussed by Greene, particularly as they affect NGOs.

No single debt swap solution is capable of being replicated in all countries. All swaps are unique and depend on negotiators being creative and flexible there are a number of common problems:

1. All parties need to be convinced that such transactions are consistent with existing short and long term expenditure priorities.
2. There will be a need to avoid additional ongoing or recurrent costs associated with the expenditure program.
3. Swaps will need to be compatible with regulations covering the operation of NGOs and international agencies in both debtor and creditor countries.
4. Swaps have to generate significant additional resources to justify switching scarce staff time away from existing programs.
5. Complex swaps require economically sophisticated personnel in the debtor country at several different stages.
6. There may need to be clarification concerning the tax obligations of participating banks, NGOs, and international agencies.
7. The swap may be inflationary.
8. The commercial bank in the creditor country is likely to want to structure the swap in such a way that it does not become entangled in costly administrative issues.
9. The use of experienced brokers, volume traders and commercial lawyers as intermediaries in negotiating swap is likely to be expensive, although there are examples where the relevant services provided by these professionals have been provided free, or at nominal charges.

No single debt swap solution is capable of being replicated in all countries. All swaps are unique and depend on negotiators being creative and flexible.

Q. Choose a country with which you are familiar. Does it have any outstanding commercial debt which it cannot repay and is never likely to be able to repay in full? Identify a project that might be appropriate for a “debt swap”.

A. _____



Blocked funds

As commercial bank debt exposure in Africa is not very large, the scope for using debt swaps there is less than in Latin America. An alternative to debt swaps, more appropriate to Africa, relates to “blocked funds”. Blocked funds will generally belong to private investors, (for example, who have given export credit guarantees), who must inevitably wait in the queue until foreign exchange becomes available. Blocked fund swaps become possible when a debtor country government approves the repatriation of dividends or equity, but is unable in practice to facilitate such a decision because the necessary foreign exchange is not available.

These blocked funds, therefore, are only of use in the debtor country as a means of financing local currency expenditures. The principles for “unlocking” such funds are similar to those related to “swapping” commercial debt outstanding, and can be acquired through donation, secondary sale or auction. It is estimated what, presently, blocked funds amount to several billion US dollars world wide.

Blocked funds also may be the result of restrictions imposed by donor countries on the use of profits resulting from concessional sales or other aid programs. For example, following the earthquake in Thamar, Yemen in 1982, the United States engaged in a PL480 grain sale to the government of Yemen. The US sold grain to the Yemeni government who in turn sold it to consumers. The US AID required that the profits from the sale of the grain be deposited in an account of the Central Bank of Yemen and that these funds be used to finance housing reconstruction after the earthquake.

Triangular food aid

Donor and recipient countries and food agencies have shown increasing interest in devising ways of drawing on food produced in one developing country to provide aid in another developing country.

Between 1983 and 1988, transactions of this type increased from 443,000 tons to almost 1.2 million tons of grain equivalent. These transactions grew from 4.5% to 8.9% of total cereals food aid over the same period. In sub-Saharan Africa, over the same period, such transactions increased from 9.4% to 24.6% of all food aid in that region, and from 64% to 77.4% of all transactions world wide. The most general form of transaction has been the **triangular food aid transaction** or TFATs can, in principle, be generalized to any appropriate commodity; for example, animal fodder, cement or coal.

In triangular transaction, a donor agency buys food with cash from its food aid budget in one developing country for shipment to another developing country where it is used as food aid. This contrasts with food aid provided by a donor from its own food stocks or from its purchases from a developed exporting country or on the open international market. Triangular transactions combine two forms of aid and trade: foreign exchange is provided to the supplying country while food aid is given to the recipient country.

For trilateral (or barter) operations, instead of purchasing food with cash, a donor provides a food commodity which is exchanged in one developing country for a different food commodity that is shipped, usually at the donor’s expense, to another developing country, where it is used as food aid.



Triangular transactions combine who form of aid and trade: foreign exchange is provided to the supplying country while food aid is given to the recipient country.

Such a transaction combines two forms of aid: the source country has foreign exchange benefits through not having to buy commercially the food commodities provided for the exchange, minus the value of the exchanged commodity, while the recipient country receives food aid. This type of transaction tends to be used mostly by grain exporting donors with limited flexibility to use their food aid budgets to purchase commodities in developing countries.

Donors use triangular operations to strengthen food aid programs because such programs increase cost effectiveness, speed up delivery, and provide food commodities more in keeping with the food habits and customs of beneficiaries. Donors also use such food operations to enhance economic development. Additional demand stimulates increased food production and fosters intra-and inter-country trade.

Food aid of this type can involve triangular transactions, trilateral operations, local purchases, food exchanges, or swap and barter arrangements, all of which have two common features. First, they use food from a developing country in food aid operations, and, second, in most cases, they draw on donors' budgeted financial resources or commodities specifically earmarked for food aid operations.

Other types of transactions are also available. **Local purchases** of food commodities are made with cash from donor agencies' food aid budgets, and the commodities purchased are used as food aid in the same country. Under **local exchanges/swaps**, a commodity (say, wheat) provided by a donor to a recipient country is exchanged for another commodity (say, maize) available in that country, which is then used in a food-aided development program or project in the same country. Local transactions remain small in comparison with triangular transactions.

The benefits of triangular and trilateral transactions include:

- Stimulating increased food production by creating additional demand.
- Promoting exports and increasing foreign exchange receipts.
- Fostering inter- and intra country trade and food security.
- Supporting food strategies and food security plans and programs by helping countries manage occasional food surpluses.
- Encouraging the improvement of transport, storage and logistics.
- Strengthening food management and administration.
- Assisting in the restructuring and liberalization of markets.

There are drawbacks in using TFATs. These include:

- Wide fluctuations in production and lack of accurate information, which make advance planning difficult.
- Inadequate transport, storage and other logistics, as well as poor quality control, management and administration, which makes it difficult to establish firm delivery schedules.
- The immediate disposal of surpluses above the current level of effective demand can lead countries to invest inadequately and inefficiently in storage and stocks.

Experience shows that TFAT operations are complex and their implementation must be carefully monitored. Distinctions should be made between their effects in supplying and receiving countries and between emergency operations and development activities. More attention should be

given to trading in non-cereal commodities, especially pulses and other minor traded foods, to complement cereals in the food aid basket.

TFAT prices should relate to international market prices and operate within and band of import/export parity prices, taking into consideration fluctuations in world commodity and foreign exchange markets. A pricing formula should be found to dampen the effects of volatile price movements in the short run for contracts that might take 6-12 months to complete. When a forward commitment is made to purchase food commodities in a source country for a number of years, a negotiation clause should be included in the contract which, while confirming the intent to buy, would contain a clause to review purchase prices periodically.

Close attention should be paid to the administrative costs of triangular transactions. This should ensure that a disproportionate amount of time is not spent obtaining relatively small quantities of food from non regular exporters through delivery routes that are not normally part of official trade.

While food aid transactions have been successful in transferring resources to supplying developing countries, they have mainly been carried out through parastatal marketing channels that often have incurred high costs due to inefficient operations. Transactions should more often be conducted directly with small producer through farmers' organizations, thus transferring benefits to them, and thereby stimulating increased production. Broader development benefits can be achieved by combining financial and technical assistance with food aid.

Adversely, financing additional food purchases in supplying developing countries can sustain inappropriate agricultural policies, leading to dependence on triangular food aid programs to stimulate increased food production and trade. Inappropriate pricing of food aid transactions and local purchases can create distortions in resource allocation and protection that are not sustainable when food aid ends. Stimulating regional trade subsidized by food aid purchasing operations can result in trade diversion that works against comparative advantage. A substitution of food aid for financial aid might therefore take place with insufficient consideration given to the opportunity cost of that substitution.

Q. What are some benefits of triangular food aid interventions?

A. _____



Transactions should more often be conducted directly with small producer through farmers' organizations, thus transferring benefits to them, and thereby stimulating increased production.

Trust funds

The 1990 Brady proposal to reduce developing country debt was consolidated by President Bush's initiative of June, 1990. His "Enterprise for the Americas" strategy towards debt forgiveness lent strong support to the use of commercial debt swaps. In addition, agreement to reduce the volume of sovereign debt outstanding was conditional on the introduction of policy

Disaster Economics



reforms, such as structural adjustment, movement towards free market prices, privatization and reduced parastatal importance. The Bush initiative also proposed creating environmentally-focused Trust Funds, which would be financed by interest paid in local currency on restructured loans of US lending institutions.

Trust Funds established to date have generally been under the administration of the UN and are increasingly being considered by the EC. Some donors are unable to establish bilateral programs of their own, either because they are insufficiently familiar with the country, or the size of the donor program would be too small to justify the costs involved in its development and administration. The Trust Fund establishes a financing mechanism to which such countries can contribute without the need to create a local development program.

In such cases, the Fund will contribute to securing an increase in the overall volume and quality of assistance.

Trust Funds have a number of characteristics:

- They offer a flexible source of development finance, which can be used for project design as well as the preparation of policy and program documents.
- They are a new mechanism for cost sharing, in that the programs of many donors are relatively limited and sufficient to permit only the financing of small projects, often at local level and with limited impact.
- They offer an alternative way of promoting multilateral and bilateral forms of development cooperation.
- They improve the quality of assistance received, in that an increasing priority is to move away from project financing to program-oriented relationships with donors, in which donor support is extended to sectoral or multi-sectoral programs of activity.
- They act as a focus for specific purposes, resulting from international appeal, particularly following on from a national or sectoral disaster.

Disaster insurance

Insurance programs can be effective tools both for providing assistance in the aftermath of a disaster and for promoting mitigation activities.

While most developing countries do not have comprehensive disaster insurance schemes, insurance has been a strategy for disaster recovery and mitigation for over a century. There is increasing interest in insurance as a means of restricting government's liabilities in the case of a disaster and as a tool for ensuring compliance with building codes and other mitigation measures.

When insurance programs are in place, material damage can more quickly be replaced; disaster survivors have more prospect of rebuilding their homes and businesses because they have cash from their insurance policy and don't have to wait for other types of assistance.

Insurance allows risk to be spread over a larger community. The burden of the hardest hit is reduced by the less severely affected who bear part of the cost (through premium payment) it also allows the cost to be spread over a



ANSWER (from page 41)

Triangular food aid transactions can stimulate food production; promote exports; help manage occasional food surpluses; improve food management systems; promote inter and intra country food security.

longer period of time. Insurance does not, of course, reduce the physical impact, but it may reduce psychological impact of a disaster by removing the uncertainty involved in financing recovery.

There are several important points to remember about insurance. First, insurance can be taken out on almost anything, subject to the premium being commensurate with the risk involved. Second, although insurance might be taken out to cover the full loss of a resource – whether it be an infrastructural asset, an annual crop, a livestock or fish population, or a plantation – claims are generally made for partial loss, rather than the full value of the loss. Third, insurance is a commercial proposition, i.e. intended to result in profit and, therefore, an insurance company is not obliged to offer insurance.

Disaster insurance policies have proven viable for a number of hazards including flood, tropical storm and earthquake. However, major disasters can be extremely costly to individual insurance companies. For this reason, reinsurance programs, which allow even wider spreading of risk, have recently proven essential.

The following discussion focuses on one specific type of insurance – crop insurance – as a means of understanding general issues involved in disaster insurance.

Crop insurance can be a source of finance with which to fund post-disaster rehabilitation. The potential for using this type of finance is significant, in that insurance is not yet widely used in developing countries. For example, in the 54 countries of Africa and the Near East, only 12 have introduced crop insurance schemes.

There are two levels of food security “disasters” in developing country agriculture where insurance might be more widely used.

First, there might be a national production shortfall of food crops which requires government to use scarce foreign exchange to maintain national food security. While developing countries can overcome this source of food insecurity by increasing their foreign exchange expenditure on food imports, this can hamper overall economic development. Food security schemes must, therefore, deal with fluctuations in food import expenditures. The objectives of the food security/insurance scheme devised by Konandreas, Huddleston, and Ramangkura are to permit developing countries to stabilize their food consumption and food imports.

Second, insurance can be used to support smallholder incomes which are reduced as a result of poor yields caused by natural or human-made disasters. Further information on the possibilities for using insurance to offset the financial implications of disaster are given in FAO’s 1991 Crop Insurance Compendium which provides:

- A world summary of crop insurance availability, with analysis by insured perils, sum insured, deductibles, reinsurance, loss assessment, insured crop and compulsory or voluntary participation. (An example for selected countries is given in Figure 3.)
- Regional reports summarizing the nature of crop insurance available in each region with regional statistics of crop insurance results.
- Country reports which detail crop insurance structure and representative crop insurance schemes. (Summarized for Bangladesh in Figure 4.)

Figure 3

Multiperil insurance schemes

Country	Crops Insured	Multiperil cover	Voluntary	Loss ratios for five years %			
ALBANIA	wheat, maize, rice	hail, storm, rainstorm, windstorm, flood, cyclone, snow, freeze	voluntary but compulsory for state enterprises	90	81	174	186
AUSTRALIA	bananas	cyclone, storm, flood, pest, disease, other natural events	automatic				
AUSTRALIA	apples, pears	frost, fire, hail, wind, flood, storm, sunburn, drought	compulsory	211	116	89	151, 137
BANGLADESH	wheat, rice, sugar cane, jute	flood, drought, cyclone, hail, pest, disease	voluntary	441	596	61	879, 1221
BARBADOS	sugar cane	fire, hurricane, earthquake, flood, riot, strike, vandalism	voluntary	197	54	4	10, 4
BRAZIL	cereals, pulses, vegetables, fruits, roots & tubers, sugar cane, wine, grapes, fibre crops	fire, flood, windstorm, hail, excessive rain, drought, frost, pest, disease, dramatic temp. change	voluntary	172	81	81	13
CANADA	collective programme for forages, cereals, honey	frost, hail, excess wind, hurricane, excess moisture, heat, ground freeze, flood, drought, snow, pest, disease	voluntary	33	23	184	16, 151
CANADA	36 crops including cereals, sunflower, rapeseed, mustard, sugar beet, legumes, alfalfa	frost, hail, wind, flood, excess rain, drought, pest, disease, excess heat	voluntary	22	192	369	91, 78
COSTA RICA	cereals, pulses, vegetables & melons, fruits, roots & tubers, fibre crops	drought, excess rain, flood, wind, volcanic ash, pest, disease, hail	semi-compulsory	79	37	80	692, 247
CYPRUS	deciduous, grapes, cereals, potatoes, citrus, forage crops	drought, frost, flood, rust (cereals)	compulsory	135	90	10	61
DOMINICAN REPUBLIC	rice, beans, maize, groundnuts, yucca, sorghum	cyclone, drought, earthquake, flood, excess rain, hail, tornado, fire, pests, disease	voluntary, but compulsory for those with loans				
HUNGARY	all standing field crops, vineyards, orchards	fire, hail, flood, frost damage	voluntary	92	125	82	191
INDIA	wheat, maize, rice, millet, pulses	all risks	voluntary, but compulsory with credit	216	261	1,034	896, 826
ISRAEL	vegetables, fruits, groundnuts, cotton, poultry, dairy, aquaculture	hail, frost, storm, heat, flood, birds, rain, cold	mainly compulsory	52	148	72	60
JAPAN	paddy rice, wheat, potatoes, soya-beans, red kidney beans, sugar cane, sugar beet, hops, tea	fire, hail, wind, flood, excess rain, drought, snow, pest, disease, earthquake, volcanic eruption, pests	compulsory for rice, wheat and barley, voluntary for others	15	152	28	

Representative Crop Insurance Scheme Report

COUNTRY	BANGLADESH	Company Name	Sadharan Bima Corporation	Sheet N°	1	
Crop(s) group insured	Wheat, rice, sugar cane, jute					
Perils covered for these crops	Multi-peril: flood, drought, cyclone, hail, pest, disease, insects					
Policy holder	Individual	Voluntary or compulsory	Voluntary	N° of Insured	N/A	
Basis of sum insured	Estimated crop potential yield					
Deductible or excess details	Deductible: 10% of sum insured					
Basis of premium calculation	Specific rate charged on 80% of crop value					
Automatic rating	None					
Types of linkages	Banks & credit organisations, Ministry of Agriculture, B.P.D.B. and Nationalised Commercial Banks					
Means of reinsurance	None					
Type of reinsurance	N/A					
Loss assessors	Loss assessment committee of local agricultural extension officer, loaning agency representative, plus person from Sadharan Bima Corporation					
Loss assessment procedures	Eye estimation and crop cutting according to needs					
Year	Premium	Total sum	Total	Premium	Loss	Loss
1990	330,275	9,735,308	1,455,456	3.39	15.0	440.7
1989	228,212	6,348,384	1,364,965	3.59	21.5	598.1
1988	1,021,132	2,948,536	620,373	34.63	21.0	60.8
1987	42,074	1,686,481	285,805	2.49	16.9	679.3
1986	41,109	1,108,400	131,874	3.71	11.9	320.8
1985	103,582	2,599,909	492,683	3.98	18.6	466.0
Notes: Currency unit = Bangladesh Taka						

Figure 4

Representative Crop Insurance Scheme Report

In order that crop insurance companies can provide cover for growers against peril and still remain in business, there are a number of policy issues which must be considered. These include:

- The choice and number of perils to be insured against as well as the number and type of crops
- Whether coverage is by individual, area, or group
- The period of coverage i.e. the whole growing season or a specific growth stage
- Whether insurance should be state operated, privately funded and self-supporting; or mixed public-private

Recently, it has been shown what multi-peril crop insurance operated by the public sector has been an expensive failure. This is because of very high administrative costs and politically-inspired inability on the part of government to charge fair premiums and enforce impartial loss adjustment. FAO's conclusions concerning crop insurance suggest the following:

- Most governments are not in a position to provide heavy subsidies to crop insurance. Most insurance schemes should, therefore, be private. The alternative parastatal body can only be successful if it has complete independence from political influence over fixing premiums and indemnities, and adjusting losses.
- Despite the attraction of offering all risk cover, crop insurance is more viable on a limited peril basis, provided it addressed the main concerns of growers.
- A scheme involving small farmers should be compulsory. It is possible to design a voluntary program for larger farmers, but the economies of scale must be such that the insurer can afford the level of field supervision necessary to avoid adverse selection.
- Commercial crops lend themselves most readily to insurance. Food crops grown at subsistence or non-commercial levels are extremely difficult to insure. Payments for perennial crops should be based on the loss of one season's production only.
- Financial transactions between the insurer and insured farmers are by no means frequent. This means that insurers should try to forge linkages, where possible, with organizations or firms which already have ongoing financial dealings with farmers, so that transactions can be carried out at minimum cost.
- There are no short cuts to sound loss adjustment. There must be adequate field presence, preferably in the form of trained agronomists in a supervisory role, with less qualified persons carrying out field assessments.
- Close contact should be maintained with reinsurers in order to assist in shaping programs so that reinsurance (which is normally essential as a portfolio grows) can be readily arranged.
- Public education is important for an insurance program. Education programs and publicity material should be used by insurers in order to ensure that their clientele can take full advantage of the insurance service being provided. These should also help to avoid situations where unrealistic expectations are nurtured by farmers regarding the benefits that insurance programs can provide.

Q. Why are insurance programs a potentially important disaster management program?

A. _____



Revolving funds

While funds will be available at a national level from multilateral, bilateral and relief agencies when a disaster occurs, certain of these funds must be channelled to disaster-affected households at the local level to help them rebuild houses, replace household goods, and return to income producing work quickly. Start-up capital of this type is likely to come from the creation of a revolving fund credit program, operated through government, the formal banking system, or local or international NGOs.

Where possible, it is preferable to use existing village level savings clubs such as “tontines” found, for example, in Togo and Cameroon. The establishment of a revolving fund may also involve the creation of a credit union movement at the local level which, over time, can be replicated nationally. Credit unions provide an on-site loan function, which is often lacking in existing formal government credit programs located outside the village.

Village credit unions have a further advantage over government or project-related credit programs. For example, the cost and time required to process a loan is reduced, because unions are centrally located. The credit union borrower’s loyalty to fellow members and savers promotes high turnover and low default rates. A further advantage of this type of local level finance is that it is generally directed at smaller entrepreneurs and farmers who are among those most likely to be hit hardest under a disaster scenario. Also, participation in such schemes is generally conditional on individuals engaging in some very simplified form of business/accounting training, which raises overall business management skills.

Revolving loan programs can provide needed capital for small business expansion and growth. These funds may help capture “relief dollars” that can be used in an ongoing way to promote development. Subsidized below market interest rates on such loans can provide incentives for new business formation or expansion of existing businesses.

A further advantage of this type of local level finance is that it is generally directed at smaller entrepreneurs and farmers who are among those most likely to be hit hardest under a disaster scenario.



Central bank assistance

Regional and sub-regional cooperation is possible as a way of obtaining external financing. For example, in Latin America and the Caribbean, agreements exist between Central Banks, under the Santo Domingo Agreement, to permit the Central Bank of an affected country to receive short term deposits from other Central Banks to assist in the alleviation of temporary shortages of cash resulting from a disaster.

Coordinating foreign disaster assistance

Having identified requirements for disaster relief and rehabilitation investment, foreign aid needs to be coordinated before and after it arrives. This requires the government to establish a data base of all aid inflows, pledged and actual. Protocols for handling aid inflow should be an important preparedness activity. Such a unit is necessary if some of the following counter-productive consequences of aid and concessional assistance are to be avoided:

- The drawdown and disbursement of aid is often very much less than total aid committed, so that aid tends to pile up.
- There is frequently too much aid, of the wrong type, arriving at the wrong time, in the wrong place, for the wrong sector.
- If aid is in the form of cash, it can adversely affect the balance of payments because it can overstate the true position of the country's foreign exchange reserves and its rate of exchange.
- While aid is usually accepted when it is free, it can seriously destabilize; for example, food aid can change consumption patterns, lead to inefficient domestic production, and create dependency. Also it is difficult to monitor government expenditure which has been financed through counterpart funds raised by the sale of food aid.

Q. True or false: It is acceptable to wait until after a disaster occurs to design protocols to handle and coordinate foreign disaster assistance.

A. _____



ASWER (from page 47)

Disaster insurance scheme provide a fast response private sector financing mechanism to promote recovery and can be used to inspire pre-disaster mitigation efforts.



SUMMARY

Key points raised in the module

From the point of view of the World Bank, a disaster is identified as an event that seriously disrupts a country's economic, causing it to modify substantially its investment programmes, (which will have a long term impact), and its economic policies, (which are likely to have an effect only in the short and medium term). In order to minimize such disruption, alternative investment and policy options have to be evaluated, and priorities identified.

Anderson suggests there are three reasons why the "disaster" variable should be included more fully in the development planning process. First, disasters are linked to poverty, which increases the likelihood that a crisis will turn into a disaster. Second, development can increase disaster proneness: for example, (a) industrialization can lead to disaster (for example, toxic emissions from Bhopal, the need to find dumping grounds for hazardous waste, and the use of oil pollution as an environmental bargaining chip in times of conflict), (b) rapid urbanization and human settlement may not be fully protected against seismic activity or flooding, and (c) overpopulation can lead to environmental deterioration and crisis. Third, development resources are often wasted out of failure to consider disaster proneness.

However, while it is correct to say that development planning should take account more fully of the "disaster" variable, in practice it is extremely difficult to establish the most appropriate balance between investment for either disaster mitigation or recovery. This raises two important points for development planning. First, the balance between mitigation and recovery investment will be a function of priorities, which, in turn, will vary between political parties, government departments and individuals. Second, it begs the question whether development planners should attempt to "optimize" after a disaster has occurred. That is:

- Should the disaster be used as an opportunity to rationalize the allocation of resources between and within sectors, with a view to changing the economy's production and consumption balance?

or alternatively,

- Should the economy be allowed to get back to work as quickly as possible, leaving until later an examination of key policy questions on how best to remove any price and supply distortions?

Finally, some key points that are likely to be left unresolved by economic analysis, but that are critical to successful program implementation, are:

- ✓ The challenging process of determining entitlements to identify which families should be eligible to receive grant, food, and credit assistance under a rehabilitation and recovery program (based on which terms, and using which criteria).
- ✓ Deciding how credit institutions and government should treat debts outstanding at the time of the disaster, and whether a moratorium should be applied (for how long, and to whom it should apply).
- ✓ Establishing which type of mechanism should be established to allow people at the local level to be involved in planning and establishing priorities.
- ✓ Determining how the process of rehabilitation and recovery should be monitored in order to minimize any divergence between approved and actual financial and physical work programs.
- ✓ Deciding what is the best way to coordinate concessional donor assistance, including retroactive financing, to ensure that internationally financed projects complement one another, rather than compete.

ANSWER (from page 48)

False. Protocols to coordinate foreign disaster assistance should be in place as part of preparedness activities.

■ **ANNEX 1**

ACRONYMS

DHA	Department of Humanitarian Affairs
FAO	Food and Agriculture Organization
NGO	Non-Governmental Organization
PIP	Public Investment Program
PPF	Project Preparation Facility
TFAT	Triangular Food Aid Transaction
UNDP	United Nations Development Programme
UNDRO	United Nations Disaster Relief Organization (now DHA-Geneva)
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children’s Fund
US-AID	United States Agency for International Development

■ ANNEX 2

ADDITIONAL READING

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Discounted cash flow techniques

Discounted cash flow (DCF) techniques allow the value of future benefits and costs to be converted to a single value represented in current dollars. DCF techniques are needed to (a) ensure the future stream of benefits associated with an investment will be sufficient to pay for the capital and operating costs of establishing and maintaining it, and (b) help choose between investment alternatives which may have different costs and benefits. Such techniques use a discount rate. Rate options include the money market rate of interest, the opportunity cost of capital and the social time preference rate. (See Gittinger.)

Net present value

The net present value (NPV) of an investment is one form of DCF technique. Assuming there is no budget constraint, investments are acceptable when the NPV is greater than or equal to zero; that is, when the discounted flow of benefits is greater than or equal to the discounted flow of costs.

Internal rate of return

The internal rate of return (IRR) of an investment is a second common form of DCF technique. The IRR shows the return of the capital used in an investment. Assuming there is no budget constraint, an investment is acceptable when the IRR is greater than or equal to a chosen discount rate.

Domestic resource costs

Another method referred to by Gittinger for evaluating between alternatives is to examine the domestic resource cost (DRC) associated with an investment or operation. DRC calculations require an estimate of domestic resources used in earning or saving a unit of foreign exchange. From a policy point of view, resources should be allocated only to those commodities or production systems where there is an international comparative advantage.

Economic consistency models

Theoretically, a price is determined when supply equals demand. Economic consistency models broadly attempt to break up the source of any supply, and show the groups in society responsible for demanding that supply. Two categories of consistency model are generally discussed: (a) social

accounting models (SAMs), show where production an income has come from, and how it has been used and spent; and (b) commodity accounting models (CAMs), which do the same thing, normally for food items, but expressed in terms of volume of commodity.

Revised minimum standard model

The World Bank has produced a consistency model called the revised minimum standard model (RMSM), the assumptions behind which can be adapted to meet the circumstances of individual countries. This model is usually available to any country wishing to use it. The model is based on standard accounting principles, and permits projections of, e.g., imports to be cross checked for consistency against expected changes in output, consumption, and savings.

Concessional borrowing

All countries require money to undertake investments and meet financial commitments. This money is either generated internally, through savings, or borrowed externally. It is generally financially impossible for most developing countries to borrow on international capital markets. International borrowing is usually at concessional rates, i.e. below market interest rates, offered by multilateral lending institutions such as the World Bank.

Parastatal corporations

In the post war/post colonial period, many governments decided that they, rather than the private sector, should control key areas of strategic production, distribution and pricing. Over the years, state controlled companies have evolved, (with a minimum of 51% share ownership), to produce energy, store grains and market food surpluses. Such organizations are parastatal corporations.

Exchange rate

All countries need to import items. In order to pay for these imports, countries must use foreign exchange, earned through exporting products or generating net service income through activities such as shipping, insurance or tourism. Although barter operations do occur, the general mechanism for paying for exports and imports is through the use of

foreign currency. An exchange rate is used which reflects the value of one country's currency against another. The stronger a country's currency, the more the exchange rate will be in that country's favor.

Remittance income

Employment opportunities in poorer countries are generally limited. Work opportunities may be abroad, in countries which are either labor deficient or sufficiently rich to foreign labor to undertake basic production and service activities. These foreign employees send income back to their families who live in their country of origin. In many countries, this type of remittance income can amount to a very substantial percentage of total income earned by nationals in employment.

Public investment program

There are many activities for which government must take, or chooses to take, responsibility. This is particularly true in poorer countries, where the private sector is likely to lack adequate investment resources and capacity. These activities may include public sector service delivery covering gas, electricity, water, transport, health and education. In order to ensure that no public investment project is started in these sectors until it has been properly appraised, it is normal to prepare a public investment programme (PIP) of projects which have passed criteria set by government. This procedure should ensure that only projects of the highest priority are started and, even then, only when budgetary resources permit.

Project preparation facility

Most public sector projects go through a project cycle, which traditionally includes identification, preparation, appraisal, implementation, monitoring and evaluation. Although government might identify good project ideas, it is often an expensive exercise to go to the second stage, that of project preparation. Without this level of detail, the selected funding agency will find it difficult to decide whether to lend money to permit project implementation. The World Bank has a project preparation facility (PPF) which helps countries prepare project plans. The PPF can also be made available to allow a project to be prepared on a pilot basis, prior to preparing the project on a larger scale.

Indicative planning figure

UNDP country programmes are usually costed over a five year cycle. The level of funding is defined as the country indicative planning figure (IPF). It gives Government a broad outline of UNDP resources available for development purposes.

Structural adjustment

Structural adjustment is defined as an attempt to effect a major change in an economy. It aims to get the economy back to a healthy state, improving its balance of payments over the medium term i.e. about five years. The main policy instruments used are incentives to increase production, saving, and investment in the public and private sector, together with supporting monetary and budgetary policies.

Direct cost

Direct costs are those costs immediately attached to the procurement of services or goods, i.e. the purchase price. Direct cost for the reconstruction of a building, for example, is the total of all material and labor costs for the project.

Indirect cost

Indirect costs are all costs associated with any goods or services beyond the intrinsic value of the thing itself. The indirect cost for the reconstruction of a disaster-destroyed building might be the loss of income to the workers in the building who cannot report to work or the service personnel who take care of the building.

Opportunity cost

Opportunity cost is a term used to capture the idea that if funds are spent on one activity, (e.g. repairing a building) those same resources are unavailable for another project (e.g. building a school or clinic). The opportunity to build a school or clinic is lost when the funds are used to rebuild or repair. If mitigation measures had been taken in the construction of the building, the likelihood of having to spend money on repair and reconstruction would be lessened.