

POPULATION AND NATURAL RESOURCES
IN THE ASIA/NEAR EAST REGION

EXECUTIVE SUMMARY

This paper presents population issues affecting natural resources in the ANE region. A major thrust of the paper is the growing trend in the region toward urbanization.

The paper makes three key points:

- 1) Feeding, housing, and caring for the region's population will continue to exert excessive demands on the nations' resources;
- 2) Rapid urbanization in the region creates a set of stresses both additive and different from those created by the absolute numbers of people in the region; and
- 3) The changes in the region are such that the current AID focus and practices seem appropriate for the immediate future.

Among factors discussed are the effect of competition for resources, the disappearance of arable land, and the potential for technological solutions to create new problems. Urbanization characteristics such as monetization, which are different from rural characteristics, create new sets of problems, but the fact of urbanization may also offer new opportunities for assistance. Of special import is the infrastructure, particularly the health infrastructure.

Under the prevailing circumstances in the regions, AID's past successes in social marketing can be especially useful.

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PURPOSE

This paper is intended to stimulate discussion within the U.S. Agency for International Development of population issues in the Asia/Near East (ANE) region as those issues affect the region's resources. No attempt is made to provide solutions (except where they are inherent in the issues). Resources such as capital and education are also addressed in other papers in this series but are included here where they are intimately interrelated with the interaction of population patterns with natural resources.

INTRODUCTION

The total population of the 18-nation ANE region is growing, even though much of the region does not have adequate food for its people today. The cities within the region as well as many of the nations continue their explosive growth -- ten of the 18 nations will be predominantly urban by the year 2000 -- even while the rural areas continue to add to their absolute numbers. Today, there is not a single resource of which the region as a whole has abundance: not capital*, not skilled labor, not clean water or sanitation, not arable land, not management. It is estimated that effective measures to halt desertification in the Near East must be undertaken within two years if there is ever to be recovery.

Even where valiant attempts are made to relieve such situations as overcrowding of the cities or shortages of food or to improve economic conditions, the results often vary hopelessly to disastrous. For example, Djakarta was relieved of more than a million of its slum dwellers, transported to workable lands away from the capital; by the time those settlers were relocated, more than two million more had moved in.

The Aswan Dam has become so silted it can not produce full electrical power, the Nile flood plain is no longer fertile, and by the time the dam was completed the population had grown so far beyond original projections that the added farming land was already inadequate. Even worse, the new lands recovered have now become so saline from irrigation that their crop yields are rapidly diminishing. Further, water-associated disease has increased.

*Some of the nations of the region have a valuable oil resource, but all of the countries that have relied on oil in the past two decades have had to curtail budgets in recent years.

India could not relocate great numbers of its people away from the cities: there is neither provision nor realistic opportunity for any more of the irrigation which is needed to open up arable land to sustain them. Further, India, technically, produces enough food for its population (although massive numbers of its people are malnourished because of distribution and income problems), reducing the motivation to move people from the cities to farms. And, to compound the problem, India, with its already great rate of population increase, finds that it has drastically undercounted and thus underestimated its current population.

Exhibit 1 pictorializes the region's historical and projected absolute population growth. It shows a population curve which shows no signs of leveling off under likely conditions. An immediate issue, in response to the population projections per se, is that of food. If the projections are correct, food must be produced (or imported) not only in greater quantity but at an increasing rate of increase. Even though technology may ultimately solve many of the food problems of the very poor, the example of the Aswan Dam demonstrates that solving the problem quickly enough to keep up with the future may be very difficult. Surrounding the key issue of food are a host of subordinate issues, including desertification and soil loss. Exhibit 2 shows the increase for the region as percentages, demonstrating that the additional resource demand to be expected in the next decade will at the very least continue to create the crisis atmosphere that has accompanied recent localized or national catastrophes.

Exhibit 3 shows the increasing urbanization in the region. Urbanization itself makes it more difficult and expensive to provide potable water, sanitation, affordable food and shelter, and protection from disasters (natural and man-made). Urbanization, coupled with a very high growth rate in the region, presents problems that differ in effect, scope, complexity, and perhaps even in kind from the village-level problems of a largely rural area. Thus, urbanization itself is an issue, surrounded in turn by subordinate issues.

I. THE EFFORT TO FEED, HOUSE, AND CARE FOR INCREASING NUMBERS OF PEOPLE IN THE REGION IS OVERSTRESSING THE ENVIRONMENT

Where, and under what circumstances, population grows determines much of the effect of that growth, so that generalizations, even on the regional level, must be approached carefully. (J. Brown, p.46.) In the last section of this paper, issues specifically related to urban population growth are addressed -- population growth in the context of the surrounding environment and social, economic, and political conditions. In

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Exhibit 1

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Exhibit 2

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Exhibit 3

this section, the issues presented result from the addition of large numbers of people to the populations of the 18 ANE nations.

The effects of population growth are felt in two ways. The first comprises those effects which are the direct effect of more people in a given area. The second is made up of indirect effects which arise as a result of responses by society or individuals to the absolute numbers of people and their competition for resources.

o Competition for Resources is Adversely Affecting the Resource Base

The most obvious direct effect of a greater number of people population in a given area occurs when there are too many people to be fed with the available food resources. (In a monetized economy, lack of work can create this situation; in a subsistence agriculture economy, the simple inability of the area to produce adequate food crops for whatever reason may be the cause.) Other direct effects are overloading of the infrastructure -- medical services, transportation, schools, and so on. These and other direct effects can be alleviated directly, with more doctors, with free or subsidized food, with more teachers, or with whatever direct and straightforward solution is available at the time. The solutions may have long-term consequences, or they may be economically or politically difficult, but in so far as the problem of the moment, they can at least be envisioned, planned, and effected. Indirect effects of population growth are usually not simple. In effect, all solutions to indirect population problems involve stabilizing the population or changing the cultural response.

o Arable Land is Disappearing

In all countries of the ANE region, there is increasing competition for resources of all kinds. In terms of natural resources, most attention is given in the literature to the depletion of soil and the destruction of forests in response to the need to produce more food. Even where arable land is used to a large extent to produce export crops (rather than to feed the population) the increased pressure on the land is attributable to the numbers of people who must be provided for. (World Resources, p.56.) The end result of soil destruction will ultimately be a further worsening of the nutrition problem existent in many of the ANE countries as productive land continues to disappear. (Exhibit 4 is the food and nutrition status of the countries of the ANE region.) As productive land disappears, those ANE countries with

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Exhibit 4

a large agricultural shortfall will only experience worse Exhibit problems feeding their people.) For example,

- o In Nepal, steeper hillsides are being pressed into service to provide food. As a result, the remaining topsoil is being washed down into India, ~~Pakistan~~, and Bangladesh, causing problems of siltation in those countries. (L. Brown, p.38.)

- o Salination of ANE land under irrigation has reduced its productivity and destroyed much of it for future use. Waterlogging of lands not suitable for intensive cultivation has a similar effect. (C. Humphrey, p.202.)

- o The destruction of forest to provide food-producing land in tropical ANE countries is at best a doubtful solution, since tropical forest soil is typically thin, with a productive life of only a few years. Java, for example, faces an ecological emergency because of destruction of the tropical forest. (L. Brown, p.20.)

- o India produces enough grain for its population and to export. However, much of Indian agriculture is still subsistence level, and in this case the cropland base in India is being eroded because of lack of political support for conservation. Village dwellers can muster little concern for the future when immediate survival is the question. (L. Brown, p.171.)

- o Sustainable growth requires targeting those who live on marginal lands, resource-poor women and men who rely on uncertain rain in areas where farming is difficult. South Asia must be one area of concentration of U.S. aid and attention, because of its heavy concentration of poverty. (The Phoenix Group, p.16.)

- o Where no severe damage to cropland has yet occurred, the question arises as to just how small farms can become and still produce enough to support a typical ANE family. In many ANE countries, the dominant inheritance pattern is of equal division of the land among the sons, although in many instances the inherited land is consolidated for management (usually by the eldest son, as has been practiced in Egypt), with other sons migrating to the city or out of country to find work and send money back to the family remaining on the farm. (World Resources, p.78.)

o Solutions Based on Agricultural Technology May Cause New Problems

Technology as an answer to the problem of making finite resources serve a continually growing population must be examined on a case by case basis, often with too little experience to provide guidance. The original green revolution was the direct cause of loss of soil resource because of the need for heavy irrigation and the use of chemical fertilizers (instead of the rotation of crops.) The "new" green revolution seems to have fewer problems, but no models exist to predict all of the possible side effects of any such massive change. (World Resources, p.4.)

Low-input agriculture is a promising long-term solution to the soil-depletion problem, but even so it does not solve the problem of the need for mechanization if farming is to be profitable. The growing population must be fed on the one hand and employed on the other; small farms are labor intensive, but they do not produce the needed quantities of food. Even in rural areas, mechanization is growing as farms are consolidated. Accidents will undoubtedly be a more major cause of death, particularly among the working-age population. (United Nations Food and Agriculture Organization, p.14.)

o Although Some of the Effects are Uncertain, Whole New Sets of Problems Appear to be Demanding Attention

The gradual aging of the population in the ANE region will cause a demand for a different set of resources, and this group will probably receive attention in the areas of food, social services, health services, and so on, because of the political influence of the elderly. At the same time, the lowered infant mortality rate throughout the region increases the demand for food, services, and education specific to the young. Supporting these two disparate segments of the dependent population may be difficult.

Successful past efforts to control morbidity, such as the control of malaria in many countries, and efforts to eliminate the worst problems of malnutrition introduce an entirely new mortality equation. Not only will chronic diseases, diseases of the elderly, and accidents account for a larger proportion of the causes of death, but the whole spectrum of adult diseases will become more important.

In India, 70 percent of all surface waters are polluted. The rural water pollution situation has not materially improved in much of the ANE region, and the urban situation is worse. (J. Brown, p.33.)

If ANE nations continue to turn their labor to industry and to emphasize export agriculture, a larger portion of the nations' food will have to be imported along with its different dietary makeup and its chemicals, which may affect populations in unpredictable ways. On the other hand, agricultural diversification policies, if they succeed, may make it possible to avoid these problems altogether.

II. URBANIZATION PLACES SPECIAL STRESS ON RESOURCES IN THE ANE REGION

The ANE region trend toward urbanization places strains on resources that are different in both quantity and kind from those presented by the rural areas. A significant factor is that the region's urbanization is largely a function of immigration. Immigration, typically, involves relatively young adults; in the ANE region, women of child bearing age represent a significant portion of the urban immigrant population, so that the urban birth rate is somewhat higher than might otherwise be expected. Inter-country migration is apparently not a major problem because it approximately evens out between countries.

One of the principal problems attendant on urbanization is that the urban population is more visible, more volatile, and much more likely to be given political attention. In addition to that factor, however, there are characteristics of the ANE region urban population that impact on resources simply because it is an urban rather than a rural population. That is, the removal of people from the rural environment to the urban creates specific problems. Exhibit 5 shows the current and prospective urbanization trend for the countries of the ANE region.

o Monetization Accompanies Urbanization and Creates Special Problems

Urban centers in the ANE region have a higher per-capita formal income than do rural areas. This creates a price pressure which extends to food and fuel as well as other goods and services, creating special problems for the rural population, with its lower cash income. The most obvious answer for the rural population, subsidies, is directly in conflict with the traditional mores of agricultural societies. Indeed, one of the favored solutions of recent years has been the imposition of price controls on the crops most in demand by the population, discouraging farmers from growing those crops and encouraging a black market in them. (Parenthetically, the informal income characteristic of the urban population is a parallel of the rural

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Exhibit 5

self-help opportunities, such as raising food crops for the family in addition to the market crops or the erection of shelter for only the cost of materials. Informal income may serve only to raise the urban immigrants upward toward their previous economic condition from which they fled to the city in the first place.)

Where rural solutions to ANE region problems have proved satisfactory, there is not yet evidence that all can be modified to meet urban needs. An example is the reference to shelter above, or the gathering of forest residue for cooking. In the latter instance, a dispersed rural population can gather firewood for a long time without exhausting the resource available within a reasonable walking distance. City dwellers, all competing for the same resource in the same area, quickly find that they either must rely on other people to supply their needs or they must travel unacceptable distances for the resource.

Women migrants to the cities find more opportunities to earn money than in rural areas. Since women spend more of their earnings for food than do men in the Third World, food prices continue to rise, causing more hardship in rural areas, causing more need for migration to the cities, and so forth. (Humphrey, p.81.)

Rural health delivery systems, which had begun to make inroads into solving problems in that environment, in some cases are receiving less governmental attention than urban systems based on First and Second World models. Rural clinics are relatively inexpensive in comparison. In recent years, AID has directed its resources to the rural areas more than to the cities; it may be more appropriate to more evenly balance the distribution of resources.

Cottage industry, which had been a source of survival in many villages, is disappearing in some instances. In India, Thailand, and Indonesia, for example, hand loomed textiles can not compete with the mechanized textile industry in those countries. (World Resources, p.57.)

o Urban Problems That Differ from Rural Problems Need New Solutions

Industrialization, mechanization, and gradual aging of the population are all accompanied by changes in the causes of death and the resources utilized to treat and eliminate cause of death. There is insufficient data on which to base statistical conclusions, but it is known that industrial waste is a potential cause of deaths from cancer, in particular, as well as of other conditions and diseases. In all nations, eliminating industrial

pollution is costly and can, in the extreme, cause plant closings and loss of jobs. While in the long run that condition might be exactly right, it is not acceptable to those immediately affected.

There is no experience model on which to base solutions to the specific problems of the urban slums appearing around cities all over the world. These problems include water, sanitation, and health problems associated with crowded conditions, but they also include all of the other aspects of poverty: malnutrition, interrupted education, lack of access to fuel, lack of training for the available jobs, child labor to help support the family, lack of access to medical care, and so on. (Humphrey, p.210.) In fact, the Third World slums may represent a golden opportunity to study means of alleviation of these conditions while the economy is still developing and has not hardened into a culturally protected form.

Major problems are developing in the ANE region in the areas of sanitation and potable water as the demands of more and more people overwhelm the systems for providing water and treating waste. While these problems are greatest in the cities, they are also present in rural areas. (Robinson, p.67.)

Water and sanitation problems are incrementally more difficult as population concentrates in larger and larger cities. Among the reasons for prompt attention to these areas is the pragmatic one that the diarrheal diseases cause massive waste of nutrition -- up to 30 per cent loss. The saving of resources by eliminating these diseases is similar to the effect of conservation on energy supplies. (USAID, Nutrition, p.7.)

Air pollution of sufficient magnitude to warrant concern is a function of cities and industry. In the ANE region there are already cities with significant pollution problems -- such as Bangkok, Ankhara, and Lahore, among others. The problems in these cities will only grow worse over time, and other cities inevitably will join the list. Many characteristics of the ANE region contribute to the certainty that excessive air pollution will occur. Uniformly, the cities of the region permit industrial air pollution to continue unchecked rather than risk losing the industry. The automotive fleet is inefficient. Fossil fuels are used in large quantity for cooking.

o The Mere Fact of Urbanization May Create New Opportunities for Assistance

Even though rural populations will continue to increase in absolute numbers, the greatest growth in the ANE region is predicted to be in the cities. With doubling times as low as 25

years in some countries, whatever problems urbanization causes will occur rapidly. (Berry-Caban.) Growth in the smaller cities of the region may be less spectacular than that in the megacities (those which are expected to reach populations in the tens of millions) but will probably account for the major portion of the urban expansion. (United Nations Fund for Population Activities, p.12.) This phenomenon presents a potential opening for leveraging assistance; there is less existing infrastructure to be protected or retrospectively paid for, the sheer numbers are not so overwhelming, the immigrant "squatter" population is less likely to be forced onto totally unsuitable land, and there are potentially fewer pre-immigration problems to be taken care of.

A major characteristic of the larger cities in the region is the development of large squatter populations. It is important and useful to distinguish between these squatter groups and the slum dwellers of the same cities. Squatters generally are lumped with slum dwellers, but it has been pointed out that the squatters are in fact upwardly mobile and ambitious, solving their own problems in a direct way which does not drain the resources of the city to which they have attached themselves until such time as the city formalizes their impromptu communities. (Of course, once the squatter communities are formalized, they pay taxes and thus pay for their own public services.) (Berry. p.89.) It is important to all organizations involved in providing assistance to the developing nations that the squatter is as approachable as the village counterpart and thus may provide an opportunity for programs which are difficult to implement in other parts of the urban environment, particularly in the slums. (Basham, p.90)

o Urbanization Negatively Impacts the Entire Resource Base

Urban slum dwellers in the developing nations typically cause a ring of deforestation and desertification around the cities they occupy. Not only do they forage for fuel directly, but they are a market for cheap and traditional fuel brought into the city by entrepreneurs. When the easily available deadwood has been cleared, trees are felled and, eventually, roots are recovered as well, leading to total and usually irreplaceable loss of tree cover. (World Resources, p.48.)

The exodus of men from the Himalayan foothills not only did not lessen the load on the fragile environment but was accompanied by an unexpected decline in rural per person productivity. It is difficult to imagine that this decline was because the women, children, and elderly were less able to maintain the area's intricate soil terraces, tasks they have customarily been assigned.

Farm mechanization contributes to male migration, as workers

are displaced by machines, although the absence of productive land is the principal cause.

o Urbanization is Changing Society and Its Support Structure

Policies of Third World governments often give priority to urban areas, indirectly encouraging the urban migration that is causing the trouble in the first place. A major problem of urbanization in the Third World is that as much as 30 per cent of the population may be illegal squatters. Squatters will not have been provided for in the city's infrastructure planning and may negatively affect all municipal services as a result. They multiply urban problems of housing, water supply, sewerage, refuse collection, transportation, food, fuel, and medical and other services. (USAID, p.3.)

Urban slum children may be an economic asset, earning money through such occupations as shoe shining and errand running. The motivation to reduce family size may be lessened as a result. (Robinson, p.138.)

With urbanization has come an increase in publicly provided goods and services, which may amount to as much as one-fourth of the gross domestic product. The strain on economic, managerial, and technical resources is enormous.

The diet improvements and urban sewage, garbage clean-up, and water improvements of the late Nineteenth and early Twentieth centuries are the cause of mortality decline in that era. These resources are now being taxed to the extreme in the ANE cities and will undoubtedly have to receive even more attention in the future, as will new problems such as industrial waste and environmental degradation.

The problems of uncontrollable migration to cities of the ANE region are compounded by the financial problems of the nations which are debtor nations. As people attempt to survive with very little assistance, the fragile environments suffer along with the people.

III. THE CURRENT FOCUS OF AID CONTRIBUTIONS APPEARS TO BE APPROPRIATE FOR THE CURRENT SET OF ANE COUNTRY CIRCUMSTANCES

Successful current AID programs, if continued, can help to solve the population and resources problems of the ANE region. For example, family planning in all of its aspects continues to be of immense value. If the poor ANE region nations can develop stable, well-trained populations, they can eventually reduce poverty and be able to import food and fuel instead of using their most fragile

lands simply to survive. Over the long term, the fragile lands can be recovered using low-input agricultural technology so that as world food demand grows the ANE countries can provide more and more of their nutrition needs from indigenous sources.

In the immediate time frame, appropriate decentralized technology, unlike the huge centralized technological systems that are so important to politicians' vanity, can help to reduce the stress on resources. More efficient (and cheaper) stoves, for example, can help to hold off some desertification simply by making more efficient use of the scarce wood resource. Turning even a small amount of agriculture to human or animal powered drip irrigation could delay salination build up in an area that hasn't already turned to saturation types of irrigation. The continued improvement in infant mortality can free health resources to be used for prevention and treatment of urban-related morbidity (and mortality).

These are only examples, of course. They do not pretend to point toward new solutions. Rather, the implication is that successful existing programs should not be abandoned while new ones are being developed.

The role of social marketing -- one of AID's most successful methodologies -- can be immense in helping eliminate some of the population and urbanization problems of the region. Many of the possible solutions are politically sensitive or culturally difficult. In these instances, the experience AID has in social marketing can be invaluable. In a more general sense, social marketing is quite commonly the difference in the developing countries between the success of a technological approach and its utter failure. It is very likely that very few totally new solutions need be invented for AID to provide real, valuable assistance to the countries of the ANE region but rather that the existing solutions need to be made acceptable to governments and populations.

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