Throughout the world, many countries are taking steps to slow their population growth. For example, in Kenya, which has one of the fastest growing populations in the world, large families have been the norm for many years. Because economic conditions are worsening, however, many parents are worried about supporting large families and are taking action. Between 1984 and 2010, the average number of children a Kenyan woman bore dropped from 7.7 to 4.6, according to the Population Reference Bureau. Even though only 38% of women currently practice family planning, 75% of those polled would like to.

Even more encouraging news comes from the northern African nation of Morocco. In 1980, women in this country had an average of seven children. In 1995, that number dropped to four. By 2007, it had
Many advocates of sustainable development put their faith in technological improvements: new energy-efficient homes, new high-mileage vehicles, pollution-free factories, water-efficient fixtures, energy-efficient appliances, and others. They contend that such innovations can allow both our economy and our population to grow and still permit us to reach a sustainable state. They often use the term sustainable growth, especially in an economic arena, to convey their belief in this idea. Their argument boils down to this: By conserving and managing resources properly, we can provide access to energy and food indefinitely. In short, all consumption patterns can be made sustainable simply through conservation.

Using your critical thinking skills and the knowledge you have gained so far, analyze this viewpoint. Is it valid? If not, what principles of sustainability does it violate? Provide some hard evidence to back up your arguments.

Hint: To explore this issue, you will very likely want to gather some additional information on the subject. Two sources that may be of assistance are “Using Less and Still Running Out” by Mark W. Nowak, published in the National Association of Environmental Professionals News (November/December 1995) and “Can Technology Spare the Earth?” by Jesse Ausubel, published in American Scientist (March/April 1996).

dropped to 2.4 where it remains today. In Morocco the use of contraceptive measures, devices, or techniques that reduce the chance of fertilization, has increased to 63% of all married couples. This progress is even more encouraging when one considers Morocco’s social system, in which women are relegated to an inferior role and gain status primarily by bearing children.

9.1 Achieving a Sustainable Human Population: The Challenges

Achieving a sustainable human population involves two basic challenges. The most immediate is finding acceptable means of slowing the growth of the human population, in order to create a stable population size. Many proponents of sustainability, however, argue that slowing growth and reaching a stable number may be insufficient in the long run. These individuals maintain that the human population already exceeds the Earth’s carrying capacity. Further additions would result in even more severe environmental deterioration, especially if people sought higher standards of living. The second, long-term challenge, then, may be to find ways for the human population to decrease in size naturally.

Is the human population already unsustainable? Chapters 1 and 8 outlined many symptoms of the crisis of unsustainability—facts demonstrating that humans are living beyond the carrying capacity of the Earth. Consider a few statistics regarding the state of the world’s people to add to the list. Today, about one-fifth of the world’s people—over 1.4 billion people—live in extreme poverty. They are inadequately fed and sheltered. Many of them live in cities, where they wander the streets begging for food or stealing what they can. At night, they sleep in alleyways in makeshift cardboard shelters. Another 2 billion of the world’s people live on the edge, with inadequate food and shelter and few amenities. In many cities, four families live in a two-room apartment and share a water tap with 25 other families. Many have no sewage systems and defecate in the street.

All told, nearly half of the world’s population is in bad shape. Strenuous efforts to improve the economic condition of the world’s poor, in hopes of increasing personal wealth, have failed to keep up with population growth. More and more people fall into poverty each year. Because of these facts and the deteriorating condition of the environment, many observers believe that stopping human population growth now is essential to reduce further suffering, environmental pollution, and resource depletion.

Stopping population growth, reducing population size, and pursuing sustainable economic plans, all discussed in this chapter, can help break the vicious cycle of poverty and environmental destruction. However, the road ahead will be long and difficult. Even if we could miraculously reach replacement-level fertility today, the world population would continue to swell, adding 2 to 4 billion people before it stopped growing, in large part because of the lag effect described in the last chapter. Human conditions would very likely deteriorate, as would the condition of the environment.

KEY CONCEPTS

Most people consider the main challenge of achieving a sustainable human population to be finding acceptable means of reducing the population growth rate, to allow the world population to stabilize. Many others, however, argue that in order to live sustainably on the Earth, we must eventually reduce human numbers through humane, socially acceptable means, notably family planning.
9.2 Stabilizing the Human Population: Some Strategies

Over the last few years, experts on population have come to realize that slowing growth and achieving a stable population will require more than education on birth control and easy access to contraceptives and family planning. Most experts agree that we must apply a number of additional remedies; and the closer they are to the roots of the problem, such as poverty, lack of education, the inequality of women, and poor health care, the better.

**KEY CONCEPTS**

Stabilizing the human population will require a number of measures besides access to contraception and family planning that attack the root causes of rampant population growth.

### Economic Development and the Demographic Transition

For many years, economic growth was viewed as one of the most powerful forces for slowing or even stopping population growth. How does economic development slow growth? Economic growth creates jobs and increases personal wealth. People can then afford decent housing, food, and education. Poverty and disease are often reduced or nearly eliminated. As incomes rise, fertility rates decline. This scenario has been repeated dozens of times over the past couple hundred years in what are now the more developed countries (MDCs) of the world. In all of these countries, population growth was brought under control as economic conditions improved. This phenomenon is called the demographic transition.

The demographic transition takes place in four stages (FIGURE 9-1). The present-day industrial nations have progressed through all four. In Stage 1, birth rates and death rates are high. In this phase, the population is stable because high birth rates and death rates cancel each other out. In Stage 2, improvements in health care and sanitation (brought about by technological development, including advances in medicine and improving economic conditions) cause death rates to begin to fall. However, birth rates in Stage 2 tend to remain high. The discrepancy between the birth rates and death rates results in a period of rapid population growth. In Stage 3, as the country continues to develop economically, birth rates begin to decrease, and population growth slows. Finally, over time, birth rates and death rates come into balance. Population growth is stopped in Stage 4.

The decrease in birth rates in Stage 3 can be attributed to several factors. Perhaps the most important is the shift in people’s attitudes toward children. Preindustrial farmers view children as an asset because they help on the farm and often support their parents in old age. With industrialization and the inevitable migration of families to the city, however, children become an economic liability.

Because of competition for living space, each child means that more money has to be devoted to necessities. If the children do not work, they create an additional financial drain on the family. As a result, smaller families generally prevail.

If economic development has brought about a demographic transition in so many countries, helping them to stabilize or reach a state of extremely slow growth, it should also work for less developed nations in Asia, Africa, and Latin America. Right?

Unfortunately, the evidence suggests that it will not. At least four reasons for the failure of economic development to effect a timely demographic transition become apparent.

First, the economic resources of many of the less developed countries (LDCs) are too limited to build the type of industry needed for a demographic transition. In some in-
stances, resources were heavily exploited during the era of colonialism, which contributed to the wealth and demographic transition of the more developed nations.

Second, the demographic transition in the more developed nations of the world did not take place overnight. For example, it took Finland over 200 years to approach a balance between birth rate and death rate (Figure 9-1). The less developed countries, with rapid doubling times, do not have the luxury of this kind of time.

Third, population growth in many LDCs outstrips economic growth. Recent studies show that a 1% growth in the labor force requires a 3% economic growth rate. Think of the economic growth needed to sustain populations growing at 2.5 to 3% per year. For many LDCs it has been hard enough to keep up with population growth; getting ahead has proven to be impossible.

The fourth reason is that the fossil fuel energy sources that were essential to the demographic transition in the more developed countries are diminishing and becoming ever more costly. Without the rich mines of England or the great oil deposits of Arabia and North America, the less developed nations will probably never experience similar economic growth.

Many of the world’s less developed nations are in Stage 2 or early Stage 3 of the demographic transition, with high birth rates and low death rates. Because a demographic transition brought on by industrialization is unlikely, the transition to stable populations must come about in other ways, most likely through family planning and small-scale sustainable economic development (Chapter 26).

**KEY CONCEPTS**

Economic development can be a powerful force for reducing population growth. Although economic development caused a shift in population growth in the more developed nations, this change took many decades and substantial resources, which the less developed nations of the world do not have.

**Family Planning and Population Stabilization**

To help usher a transition to Stage 4, most population experts believe that less developed nations must institute aggressive family planning programs. **Family planning** allows couples to determine the number and spacing of offspring. For these countries, family planning programs can accelerate the decline in the birth rate that occurs slowly through economic growth and the demographic transition. Some researchers believe that family planning programs are responsible for a 40 to 50% decline in fertility rates in the less developed nations since the 1960s.

Family planning programs offer various means of birth control. **Birth control** includes any device, method, or chemical designed to reduce births in a population. Generally, birth control measures fall into three broad categories: (1) **abstinence**, refraining from intercourse; (2) **contraceptives**, chemicals, devices, or methods that prevent sperm and egg from uniting; and (3) the most controversial, **induced abortion**, the intentional interruption of pregnancy through surgical means or drug treatments.

Family planning programs vary considerably from one nation to another. Most of them offer education on birth control along with clinics that dispense contraceptives or perform abortions (Figure 9-2). Family planning programs may be either privately run or state sponsored. Planned Parenthood in the United States, for example, is a private, nonprofit organization with clinics in many cities. It offers low-cost medical care, contraceptives, and abortions.

State-sponsored family planning programs lie on a continuum, from the purely voluntary to the compulsory. **Voluntary programs** as a rule make birth control information and methods available to the public at low cost. There is no promotion on the part of the government. People choose the type of birth control and family size they want.

Family planning programs promoted by governments are called **extended voluntary programs**. In these programs, governmental agencies may hand out information on birth control and child spacing. State-sponsored programs can be either voluntary or compulsory, depending on the level of government involvement.
控制人口数量 提高人口素质

FIGURE 9-3 Family planning poster in China. This poster, extolling the virtues of the one-child family, is a familiar sight in China, a nation of 1.3 billion people. China’s government has a strong interest in reducing the nation’s birth rate and eventually reducing the overall population size in an effort to temper resource demand and reduce environmental destruction. Special healthcare workers travel to villages offering advice on birth control. Similar posters are found in India, Thailand, and other Asian countries.

In recent years, China’s one-child family planning policy has been relaxed. Concerned about potential problems that could be caused by China’s aging population, the coastal city of Shanghai enacted a two-child family policy. This measure was taken to encourage families to have more children to ensure an adequate workforce as current workers retired. For a discussion of another aspect of population growth control, see Spotlight on Sustainable Development 9-1.

KEY CONCEPTS

Family planning measures permit couples to determine the number and spacing of children to determine family size and are vital to global efforts to reach a sustainable human population.

Small-Scale, Sustainable Economic Development, Jobs for Women, Better Health Care, and Improvements in the Status of Women

Although less developed nations may lack time, funds, and resources needed to promote economic development to reduce fertility, many now understand that small-scale, community-level economic development can raise individual wealth and can protect the environment if carried out in a sustainable manner. This subject is discussed at length in Chapter 26.

Recognizing that family planning works only if people want fewer children, the United Nations Fund for Population Activities (UNFPA), a leader in promoting family planning throughout the world, invests money in economic...
programs, especially those that provide employment for women. In Egypt, for instance, the UNFPA has made substantial investments in clothing factories that employ Egyptian women. The logic behind these and other activities is that working women often delay marriage and childbearing—and thus have fewer children.

In 1994, the United Nations sponsored the International Conference on Population and Development (ICPD), which explored many ways to reduce population growth, including steps to improve the status of women and health care. Although controversial, many efforts are underway to raise the social status of women, give them more say in
family decisions, and decouple self-worth and child production. Improvements in health care for women are also being widely promoted. Part of the reason behind this strategy is that improvements in health care may help lower infant death rates and thus will reduce the desire to have more children.

**KEY CONCEPTS**

Small-scale sustainable economic development, jobs for women, efforts to promote equality, and improvements in health care for women are all vital components of a global strategy to reduce fertility and population growth.

### Sustainable Populations in the More Developed Countries

Many people think that curbing population growth applies only to the less developed countries, where 90% of the present growth occurs. Observers point out, however, that the high per capita consumption of the MDCs puts enormous strains on the Earth’s environment. The environmental impact of a nation is often approximated by this equation:

\[
\text{Environmental Impact} = \text{Population Size} \times \frac{\text{Per Capita Consumption}}{\text{Resource Use per Unit of Consumption}} \times \text{Pollution and Resource Use per Unit of Consumption}
\]

Population size is a major determinant of impact. If lifestyles are similar in two populations, 1 with 10 million and 1 with 1 million people, the larger population will have 10 times the environmental impact of the smaller one. The larger population uses more resources and creates more pollution.

Per capita consumption is also a major determinant in environmental impact. In the MDCs, especially the United States and Canada, the per capita consumption (the amount of resources each of us uses) far exceeds consumption in the less developed world. As you learned in Chapter 8, a single American or Canadian uses 20 to 40 times more resources than a citizen of the less developed world and has 20 to 40 times the environmental impact.

To understand the implications of this statistic, let’s look at it in another way. Each year, approximately 83 million people join the world population, 75 million in the LDCs and 8 million in the MDCs. The paltry 8 million new residents of the more developed nations, however, will consume as many resources and produce as much waste as 160 to 320 million residents of the less developed nations. Widespread pollution, species extinction, and global resource depletion are three results of the more developed nations’ higher standards of living. Because of this, population stabilization is as important (perhaps even more important) in the MDCs as it is in the less developed nations. As the Population, Resources, and Pollution model (Chapter 7) tells us, population stabilization strikes at the root of environmental destruction.

**KEY CONCEPTS**

Although most of the attention on curbing population growth is focused on the less developed nations—the largest sector of the global population—the more developed nations have an important role because of their high level of per capita consumption and environmental impact.

The third element of the equation, pollution and resource use per unit of consumption, also affects the impact of a given population. The amount of energy required to meet human needs varies. Providing electrical energy from solar panels uses far fewer resources and produces much less pollution than burning coal. To understand this component of the equation, imagine two populations, each with 1 million people. If population A relies on strategies outlined in this book such as recycling, renewable energy use, mass transit, energy efficiency, and so on, its use of resources and production of waste could be 50 to 90% lower than population B, which is on the traditional, unsustainable path.

**KEY CONCEPTS**

The impact of a population depends on many factors, most importantly, the size of the population, per capita consumption (how much citizens consume on average), and the resources used and pollution produced to meet needs.

### Sharing Knowledge: Another Role to Play

By using fewer resources (being frugal), using resources more efficiently, developing technologies and methods that reduce or eliminate pollution, and reducing population growth, the more developed countries can also make enormous progress toward a sustainable future. Frugality and efficiency are often viewed as ways of freeing up resources for the less fortunate people of the world. The logic behind this belief is that if the wealthy nations use less, there would be more for people of the LDCs. This, in turn, would greatly reduce current disparities and growing tensions between the haves and have-nots.

Garrett Hardin, author of numerous books and noted environmental thinker, however, contends that global sharing of resources is not the answer to global sustainability. First, the residents of the less developed nations generally lack the financial resources to purchase surpluses. Hardin argues that the rate of growth and needs of the 5.9 billion residents of the less developed nations far exceed the capacity of the more developed nations to help—food donations could not feed the world’s hungry. Even a 10% reduction in the demand for food in the United States, if it could be effected, would not come close to meeting the needs of the world’s hungry and poor.

According to Hardin, the MDCs have an important role to play in bringing about population stabilization. They can assist the LDCs by sharing their knowledge of such things as birth control, sustainable agriculture, health care, and sustainable development. Financial assistance to help achieve sustainable development might also go a long way. Table 9-1
lists some additional suggestions for the more developed countries.

**KEY CONCEPTS**

The industrial nations can do many things to help build a sustainable future—for example, reducing their own growth, use of resources, and pollution. They can also assist less developed nations through financial aid, especially for family planning and sustainable development, and by sharing information and technical expertise.

### Creating Sustainable Populations in the Less Developed Countries

Most of the LDCs recognize the need for population control and have implemented policies to reduce population growth. Support for these programs comes from a variety of sources. One of the major players in the international effort to promote family planning in the less developed nations is the International Planned Parenthood Federation (IPPF), a nonprofit organization established in the 1950s. The IPPF disseminates information on family planning and provides various kinds of assistance to countries.

Another major source of financial support for family planning is the UNFPA. The UNFPA doles out about $161 million a year to less developed nations for reproductive health, including family planning programs.

Foreign assistance programs sponsored by more developed countries also play a key role in meeting population goals. Germany, Japan, the United States, and other countries all donate huge sums of money for various programs, including sustainable development and family planning. The United States donates money through the U.S. Agency for International Development (USAID). USAID currently spends about $650 million on family and reproductive health programs, which includes family planning.

Even international lending agencies help out. For example, since the 1960s, the World Bank, which is largely financed by the United States, has offered financial aid to LDCs with population control policies; it has recently stepped up its support.

Although many hundreds of millions of dollars are provided for family planning, it is far from sufficient. In addition, spending on family planning has actually fallen in the past decade or so because of inflation. Today, many countries with active family planning programs provide most of their own financing. In fact, for every $1 of foreign aid received to promote family planning, less developed nations typically spend about $4 of their own money. Few of these governments, though, spend more than 1% of their national budget on family planning services—far below what is needed, according to some proponents.

Despite the obstacles facing the LDCs, family planning makes good sense from environmental and economic standpoints. Depending on the country and the program, each birth averted by family planning yields a savings of between $15 and $200 per year in social services. Estimates in the United States suggest that every dollar invested in family planning saves the LDCs at least $3 in

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**Table 9-1**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Rationale</th>
<th>Benefits</th>
</tr>
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<tbody>
<tr>
<td>Stabilize population growth by restricting immigration and by spending more money and time on sex education and population awareness in public schools.</td>
<td>High use of resources taxes the environment. Immigrants create a serious strain on the economy and create social tension in conditions of high unemployment. Education helps citizens realize the importance of population control.</td>
<td>Limiting resource use leaves more for future generations and less developed countries.</td>
</tr>
<tr>
<td>Provide financial assistance to less developed countries for agriculture and appropriate industry. Aid should come from government and private sources.</td>
<td>Economic growth in less developed countries will raise the standard of living and aid in population control.</td>
<td>The rich–poor gap would narrow. A decrease in sociopolitical tension and resource shortages would result.</td>
</tr>
<tr>
<td>Provide assistance to population control programs.</td>
<td>Better funded population programs can afford the increased technical assistance and community outreach programs necessary to provide information to the public.</td>
<td>This could result in faster decrease in population growth.</td>
</tr>
<tr>
<td>Make trade with less developed countries equitable and freer.</td>
<td>Freer trade will increase per capita income and raise standards of living with little effect on home economy.</td>
<td>A higher standard of living and increased job opportunities could result.</td>
</tr>
<tr>
<td>Concentrate research on social, cultural, and psychological aspects of reproduction.</td>
<td>Techniques available today are effective and reliable. What is needed is more motivation for population control, especially among poor countries.</td>
<td>Money will be better spent; research of this nature may help facilitate family planning in less developed countries.</td>
</tr>
</tbody>
</table>
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health and welfare costs in the first year. Table 9-2 lists population control strategies for less developed countries.

**KEY CONCEPTS**
Numerous private and governmental organizations such as the International Planned Parenthood Federation and the United Nations Fund for Population Activities spend millions of dollars a year to support programs to slow the growth of the population in LDCs through family planning and sustainable economic development.

### 9.3 Overcoming Barriers

Achieving a sustainable human population will not be easy. Many barriers lie in the way. This section describes three major obstacles: (1) psychological and cultural, (2) educational, and (3) religious barriers.

**KEY CONCEPTS**
Three primary barriers lie in the way of achieving a sustainable human population: psychological and cultural, educational, and religious.
In the less developed countries, children are generally valued by their parents, especially in rural areas, in part because they assist with chores and provide a degree of social security for parents in their old age. Because mortality rates are high in most LDCs, having many children also increases the likelihood that some will survive, but with decreases in death rates as a result of improvements in health care such as vaccination, nutrition, and sanitation, the reason for childbearing is becoming less significant. 

Traditional views of family size often change slowly, even in light of changing conditions. In India, for example, larger families are still the norm even in economically developed regions. Although India’s government officially promotes families of two or three children, many parents still see the ideal family as two sons and a daughter. The problem is that in trying to reach this goal, couples have, on average, 3.4 children. “One son is no sons,” one Indian argues. “To be sterilized is to tempt fate,” another asserts. Until people begin to realize that one son is enough and that the son will probably survive, India’s population will continue to grow, swelling to 1.1 billion in 2005.

Having children is a psychologically enriching activity for many people the world over. Sociologists report that in many LDCs men and women are admired for the number of children they have. As a result, social acceptance and other psychological factors result in the birth of many children that may never have adequate food, clothing, shelter, and education.

Children are psychologically enriching in the MDCs too. However, many citizens of MDCs, even those who love children and put stock in family life, realize that children are an economic drain. In 2009, the U.S. Department of Agriculture estimated that it will cost a family in the United States $384,000 per child. Families making $98,120 a year or more will spend about $238,000 to raise a child, including education through a publicly subsidized college. Families making $98,120 a year or more will spend about $384,000 per child.

### Psychological Barriers

<table>
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<td>Develop effective national plan to ensure better dissemination of information and availability of contraception and other methods of population control. Do not rely on one type of control.</td>
<td>Each country better understands its people and thus can design better programs to spread population control information and devices.</td>
<td>More effective dissemination of information and, probably, a higher rate of success.</td>
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<tr>
<td>Finance education in rural regions, emphasizing population control and benefits of reduced population growth. Seek to change cultural taboos against birth control and cultural incentives for large families. Develop appropriate industry and agriculture, especially in rural areas to reduce or eliminate the movement of people from the country to the city.</td>
<td>Education can help make population control a reality.</td>
<td>Slower population growth, more effective use of contraceptives, and more incentive.</td>
</tr>
<tr>
<td>Seek programs of development that attain a maximum spread of wealth among the people. Integrate population policy with economic, resource, food, and land-use policy to achieve a stable state. Seek funding from the United Nations and more developed countries.</td>
<td>Development must not just help a select few because benefits may not trickle down to the needy. Finite resources require wise allocation and use; success in the long run depends on attempts to achieve a sustainable future.</td>
<td>This will result in a higher standard of living, better health care, and impetus for control of family size.</td>
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<tr>
<td>plans of this nature yield good distribution of income and help the needy rather than a select few.</td>
<td>Longevity and permanence are attainable if policies are integrated and take into account the requirements of a sustainable society.</td>
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### TABLE 9-2 

**Population Control Strategies for Less Developed Countries**

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### KEY CONCEPTS

In the less developed countries of the world, children are often seen as an asset to their parents, and childbearing enhances a woman’s social status. Having many children seems desirable because mortality tends to be high, too. These psychological factors contribute to larger family size and rapid growth.

In more developed nations, children are valued but are viewed as a bit of an economic drain, and a woman’s status is not so heavily dependent on childbearing.
Educational Barriers

Lack of education is also a barrier to lowering fertility and reducing population growth. As a rule, the lower the level of education, the higher the fertility (FIGURE 9-4). Education influences fertility in all nations, rich and poor, in one of several ways. First of all, because education takes considerable time and energy, women often wait till they are finished to get married. The longer they postpone marriage, the fewer children they will have. Second, educated men and women often pursue careers. This also causes couples to postpone marriage and childbearing. In most women, the childbearing years occur between ages 15 and 44; thus, a woman who graduates from college at age 21, marries, but delays having children until she is 30, has decreased her childbearing years by half. She will have half the number of years to produce offspring. Men and women who lack educational opportunities or who choose not to go to school generally marry younger and pursue careers that do not interfere with childbearing. Thus, the period of childbearing is much longer than for couples that pursue higher levels of education. Third, educational programs can also help raise the literacy rate, making it easier for people to understand the benefits of family planning as well as the instructions that accompany contraceptives. Fourth, education improves economic opportunities and, as noted previously in this chapter, shifts attitudes toward larger families. Because of these and other factors, improvements in public education may be an essential component of a successful population stabilization program.

Religious Barriers

Religion may also be a powerful force in reproduction. Buddhism promotes family planning in Thailand. The Catholic religion, on the other hand, forbids all “unnatural” methods of birth control, such as the pill, the condom, the diaphragm, and abortion. Theoretically, the Catholic Church guides the sexual practices of approximately 1.2 billion people. Recent surveys show, however, that the use of contraceptives by Catholic women, especially in Western nations, is nearly as high as that among non-Catholics. In Latin America, many priests speak out against the Vatican’s official policy.

Birth control is a generally undiscussed subject among other religions. However, in many of the Eastern and Middle Eastern religions, which compete with one another for followers, birth control is not advocated. The total fertility rate in Iraq is 4.1.

If family planning programs are going to work, they must address these three obstacles. Consider some examples of ways to surmount the psychological and cultural obstacles. In many Middle Eastern countries where family planning is culturally unacceptable, birth control can be promoted as a means of spacing births to improve maternal and child health. This new direction appeals to more people and broadens the base of support for family planning programs. Thus, a couple who may not relish the thought of slowing the growth rate of their country can surely understand the benefits family planning brings to them in improved economic conditions and maternal and infant health.

Attitudes toward family size and childbearing can be changed, especially from within the culture by women themselves. Especially important are ways to improve the status of women and to give women a say in the economic decisions of a village, described earlier.

9.4 Ethics and Population Stabilization

To many people, reproduction is a basic human right. To deny the right to reproduce is to deny one of the most fundamental and important of all human activities. To other people, population control measures violate deep religious beliefs or cultural norms. For various ethnic groups, family planning may even have overtones of genocide. To help you sort out the debate and make up your own mind about the ethics of population stabilization, this section addresses an important ethical question: Is reproduction a personal right? Arguments
from both sides of the issue are given to help you formulate your own view. We begin with advocates of family planning.

Some proponents argue that the right to reproduce at will should be curtailed when the rights of the individual interfere with the welfare of society—that is, the collective rights. More people means more suffering for everyone and more environmental destruction. Others who argue in favor of population control focus on the welfare of the unborn. Ecologist Paul Ehrlich, for example, notes that we “must take the side of the hungry billions of living human beings today and tomorrow, not the side of potential human beings. . . . If those potential human beings are born, they will at best lead miserable lives and die young.” He argues that we cannot let humanity be destroyed by a doctrine of individual freedoms conceived in isolation from the biological facts of life.

Along these lines, ecologist Garrett Hardin argues that the integrity of the biosphere and the Earth’s carrying capacity should be the guiding principle in the debate. We must recognize that the condition of the planet determines the well-being of all living things, including humans. Hardin suggests that we have a moral obligation to future generations to protect the biosphere, the life support system of the planet. Human population control is viewed as a way of honoring this obligation.

Proponents of this viewpoint do not ask whether it is ethical to control population growth, but rather whether it is ethical to let the human population continue to grow unabated. They note that if we permit population to grow, it will very likely cause a massive deterioration of the environment and rob future generations of the opportunities many of us now enjoy. It will also cause the extinction of many species.

Opponents say that individual rights are paramount. To limit family size takes away personal freedom. No one has a right to tinker with such a basic freedom. Moreover, to counter arguments about suffering and deterioration of conditions, they say that we need to find ways to accommodate new people—improve economies, health care, food supplies, and other areas to make conditions better. We can, they say, have more people and not ruin the planet. We need to grow smarter. For a debate on the subject see the Point/Counterpoint in Chapter 8.

Although debate over population stabilization continues today, most countries favor the sustainable viewpoint—that population stabilization is necessary and that the collective rights of present and future generations take precedence over individual rights. While few countries put strict limitations on family size, most encourage smaller families, leaving the decision to the parents. Acting out of this belief, many nations have mounted programs to promote family planning and make contraceptives available to those who want them—even those who cannot afford them. Many of the countries that promote family planning are striving to slow the rate of growth, reach a stable state, or, in some instances, decrease their population size.

KEY CONCEPTS

Many people think that the right to have children is a fundamental personal freedom. Others believe that the collective rights of present and future generations to a clean, healthy environment and adequate food, shelter, and clothing supersede individual rights.

9.5 Status Report: Progress and Setbacks

One of the most encouraging trends in environmental science these days is the decline in population growth rates. As shown in FIGURE 9-5, world population growth rates...
have declined impressively since the early 1960s, falling from 2% (doubling time 35 years) to 1.2% per year in 2007, where it remains today. The decline in growth rates has occurred in many countries, both rich and poor. Many less developed countries such as China, Korea, Taiwan, and Costa Rica, for example, have contributed significantly to this decrease. China’s growth rate fell from 2.5% in the 1960s to 1% in 1999. By 2007, it had fallen to 0.5%, its current rate. Growth rates in the more developed countries have also fallen in the past two decades (Figure 9-5). Today, nearly 80 MDCs have nearly stationary or shrinking populations.

Two of the most encouraging steps were the International Conference on Population and Development held in Cairo, Egypt, in 1994, and the Fourth World Conference on Women held in Beijing, China, in 1995. The Cairo Conference set forth a global strategy to improve the status of women and reduce fertility. The World Conference on Women addressed many of the cultural and psychological factors that stand in the way of progress. Its plan of action calls for measures to enhance women’s rights and responsibilities in all levels of society and to improve their social standing. It also calls for measures to increase educational opportunities for women.

Despite this good news, there are some areas of grave concern. One of them is that population growth has resulted in a massive buildup of people in urban areas, who become susceptible to the spread of infectious disease. This is especially troublesome in less developed nations. Poor air quality in LDCs may lower immune system function and unsanitary conditions increase the risk of exposure to new and deadly disease-causing organisms. Increased mobility, largely via jet airliners, may also serve as a means of spreading disease internationally.

Another discouraging trend is the increase in death rates. Researchers estimate that approximately one-third of the decline in the annual global population growth rate is the result of rising death rates, largely from AIDS, acquired immune deficiency syndrome. AIDS is a disease caused by the sexual transmission of a virus (HIV) that attacks the immune system. Although HIV infection rates are under 1% in the more developed nations, the incidence in populations in sub-Saharan Africa are astounding, ranging from 17.8% in adults (age 15–49) in South Africa to 25% of the adult population in Swaziland, according to data from the Population Reference Bureau. Further declines in the growth rate are projected by the United Nations because of AIDS, but also because of declining groundwater and food supplies, which are setting the stage for a potentially massive increase in death rates.

Another discouraging bit of news is that today, nearly one-third of the world’s population is under the age of 15 and is soon to enter its reproductive years. Worldwide, contraceptive use is substantial, but demand still greatly exceeds availability (FIGURE 9-6). In addition, population growth in Africa, Latin America, and Asia is still fairly rapid. Even though population growth has declined, a 1.2% growth rate still results in the addition of about 83 million people every year. Most of the new growth in the coming decades will occur in the less developed nations, which are ill equipped to feed and house the new residents. Widespread hunger, poverty, and environmental decay are likely to occur.

Human civilization need not end in an explosion of people, but many experts agree that we can improve only if we hold our numbers within the carrying capacity of the Earth. This means stopping the growth of the human population and very likely achieving a smaller population size. To do so will require a multitude of approaches from family planning to sustainable economic development to improvements in education, the status of women, and health care. By attacking the problem at all fronts, we have a better chance of achieving success and creating a sustainable future.

I cannot believe that the principal objective of humanity is to establish experimentally how many human beings the planet can just barely sustain. But I can imagine a remarkable world in which a limited population can live in abundance, free to explore the full extent of man’s imagination and spirit.

—Philip Handler
CRITICAL THINKING

Exercise Analysis
As noted in previous chapters, population growth is one of the driving forces of environmental deterioration. In other words, it is a root cause. Even with new ways of doing things, more people generally means more pollution, more resource use, and more environmental disturbance. No matter how carefully we conduct our affairs or how efficiently we use resources, human society will always have an impact on the environment. The more of us there are, the greater the impact. However, the impact depends on per capita consumption, resource demand per unit of production, and pollution output per unit of production.

Here’s where the issue gets confusing to many people. Being more efficient is absolutely essential to creating a sustainable society. So are efforts to reduce our output of pollution. Technological innovation can have a major beneficial impact on our future. These savings, however, can be easily offset by population growth. Energy efficiency measures can substantially cut energy demand, but those gains can be offset by growth. Recall from the last chapter that the U.S. population may increase by nearly 50% by the year 2050. So, if we cut energy demand and the output of pollution by 50%, population growth would result in no net gain.

This kind of reasoning helps us understand the need for sustainable technologies coupled with population stabilization—and perhaps, as some advocates suggest, efforts to eventually reduce the size of the human population by means that are acceptable and, of course, humane.

Is the notion that all consumption patterns can be made sustainable through conservation and other means valid? Probably not. What principles of sustainability does it ignore? It ignores the fact that the Earth is a finite source of resources. Limits are very real and must be reckoned with, if we are to create a sustainable existence.

CRITICAL THINKING AND CONCEPT REVIEW

1. Critically evaluate this statement: “The world cannot support the people it currently has at a decent standard of living. Thus, efforts should focus on helping the less developed nations industrialize. Population growth will decline as a result, so family planning programs are not necessary.”
2. Define family planning. Make a list of the three major types of family planning programs. Give examples of each. What are the weaknesses and strengths of each?
3. The United Nations appoints you as head of family planning programs. Your first assignment is to devise a family planning program for a less developed country with rapid population growth, high illiteracy, widespread poverty, and a predominantly rural population. Outline your program in detail, justifying each major feature. What problems might you expect to encounter?
4. Describe ways in which more developed countries might aid less developed countries in stabilizing population growth.
5. Discuss attitudes about the value of children in less developed countries. How do these views differ from those in more developed countries?
6. If you are considering having children, what factors influence the desirable size of your future family?
7. Discuss reasons why the total fertility rate tends to be lower among more educated women.
8. Discuss general ways to ensure a high rate of success in family planning programs.
9. Do we have the right to have as many children as we want? Should that right be curtailed? Explain your answer.
10. Make a list of the pros and cons of population growth. In other words, what are the benefits, and what are the adverse impacts? You may want to look at U.S. population growth and global population growth separately.

KEY TERMS
abstinence
birth control
collective rights
contraceptive measures
contraceptives
demographic transition
extended voluntary programs
family planning
forced family planning programs
induced abortion
United Nations Fund for Population Activities (UNFPA)
U.S. Agency for International Development (USAID)
voluntary programs
REFERENCES AND FURTHER READING
To save on paper and allow for updates, additional reading recommendations and the list of sources for the information discussed in this chapter are available at http://environment.jbpub.com/9e/.

Connect to this book's website: http://environment.jbpub.com/9e/
The site features eLearning, an online review area that provides quizzes, chapter outlines, and other tools to help you study for your class. You can also follow useful links for in-depth information, research the differing views in the Point/Counterpoints, or keep up on the latest environmental news.