The doubling time for the human population is easily calculated by dividing the number 70 by the annual rate of increase. Thus, at a 1 percent rate of annual increase, the population will double in 70 years (70/1). At a 2 percent rate of annual increase, the human population will double in 35 years (70/2). The current worldwide annual increase of about 1.2 percent will double the world human population in about 58 years.

HUMAN POPULATION CHARACTERISTICS AND IMPLICATIONS

The human population dilemma is very complex. To appreciate it, we must understand current population characteristics and how they are related to social, political, and economic conditions.

ECONOMIC DEVELOPMENT

The world can be divided into two segments based on the state of economic development of the countries. The **more-developed countries** of the world typically have a per capita income that exceeds US $10,000; they include all of Europe, Canada, the United States, Australia, New Zealand, and Japan, with a combined population of about 1.2 billion people. The remaining countries of the world are referred to as **less-developed countries** and typically have a per capita income of less than US $5000. The population

of these countries totals almost 5.5 billion people, nearly 3 billion of whom live on less than US $2 per day. While these definitions constitute an oversimplification and some countries are exceptions, basically this means that the majority of Asian, Latin American, and African citizens are much less well off economically than those who live in the more-developed countries. Collectively, the more-developed countries of the world have relatively stable populations and are expected to grow by about 5 percent between 2008 and 2050. The less-developed regions of the world, however, have high population growth rates and are expected to grow by about 47 percent between 2008 and 2050. (See figure 7.12.) If these trends continue, the total population of the less-developed world will increase from the current 5.5 billion to over 8 billion by 2050, when this region will contain over 86 percent of the world's people.

MEASURING THE ENVIRONMENTAL IMPACT OF A POPULATION

Human population growth is tied to economic development and is a contributing factor to nearly all environmental problems. Current population growth has led to

1. famine in areas where food production cannot keep pace with increasing numbers of people;
2. political unrest in areas with great disparities in the availability of resources (jobs, goods, food);
3. environmental degradation (erosion, desertification, strip mining, oil spills, groundwater mining) caused by poor agricultural
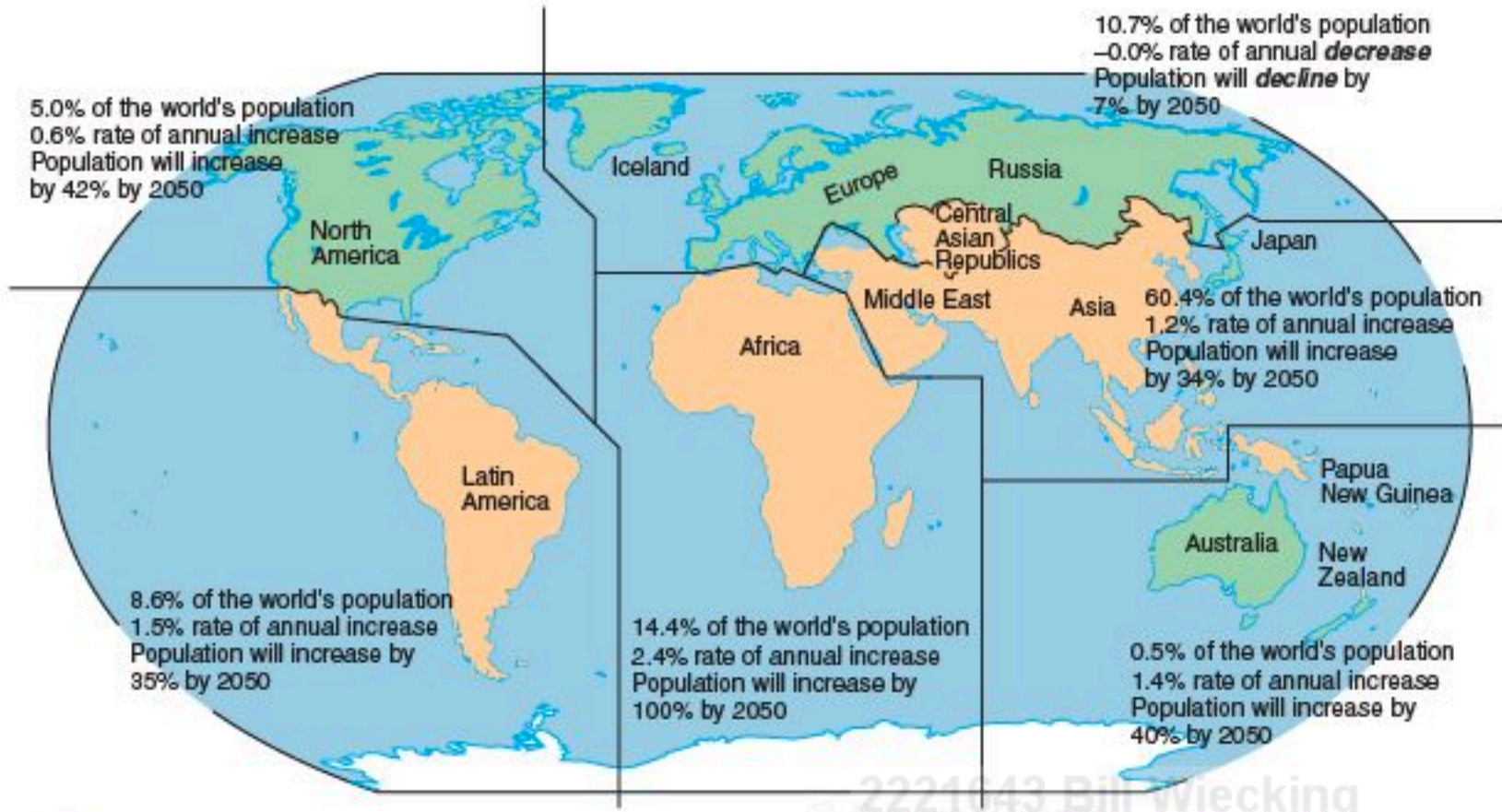

5.0% of the world's population
0.6% rate of annual increase
Population will increase by 42% by 2050

10.7% of the world's population
−0.0% rate of annual *decrease*
Population will *decline* by 7% by 2050

60.4% of the world's population
1.2% rate of annual increase
Population will increase by 34% by 2050

8.6% of the world's population
1.5% rate of annual increase
Population will increase by 35% by 2050

14.4% of the world's population
2.4% rate of annual increase
Population will increase by 100% by 2050

0.5% of the world's population
1.4% rate of annual increase
Population will increase by 40% by 2050

FIGURE 7.12 **Population Growth and Economic Development (2008)** The population of the world is not evenly distributed. It can be divided into the economically more-developed and less-developed nations. The more-developed nations are indicated in green and the less-developed in tan. Currently, about 83 percent of the world's population is in the less-developed nations of Latin America, Africa, and Asia. These areas also have the highest rates of population increase. Because of the high birthrates, they are likely to remain less developed and will constitute about 86 percent of the world's population by the year 2050.