

THE PROBLEM OF ENERGY CONSUMPTION

Denys Smolennikov

Sumy State University, Sumy, Ukraine

Nowadays the problem of energy consumption becomes extremely urgent in the whole world. As most of energy resources are nonrenewable. And energy consumption worldwide increases every year.

If looking at a prioritized list of the top 10 problems, with energy at the top, we can see energy is the key to solving all of the rest of the problems – from water problem to population growth problem:

1. Energy. 2. Water. 3. Food. 4. Environment. 5. Poverty. 6. Terrorism and war. 7. Disease. 8. Education. 9. Democracy. 10. Population

Take the second problem on the list, for example: water problem. Billions of people all round the world live without reliable access to clean water. The problem can be solved with the use of energy resources. Our planet has huge resources of water, but most has salt in it, and it is often thousands of miles away from where we need it. It's possible to desalinate the water and pump it vast distances. But without cheap energy, there is no acceptable answer.

Energy likewise plays the dominant role in determining the quality of our environment, the prevention of disease, and so on, down the entire list of global concerns. In short, energy is the most important factor that impacts the prosperity of any society.

World energy consumption is projected to increase by 57 percent from 2004 to 2030. Much of the growth in worldwide energy use is expected in developed countries. In contrast to the developed countries increase in energy consumption undeveloped countries and countries in transition is projected to be more modest. In the Eastern Europe countries and the countries of former Soviet Union (EE/FSU) energy demand in the industrial and transportation sectors is projected to grow on average by 1.6 percent per year from 2002 to 2025.

Fossil fuels (oil, natural gas, and coal) continue to supply much of the energy used worldwide, and oil remains the dominant energy source, given its importance in the transportation and industrial end-use sectors. Non-fossil fuel use also grows, but not as rapidly as fossil fuel use. The outlook for non-fossil fuels could, however, be altered by state policies or programs, such as environmental laws aimed at limiting or reducing pollutants from the combustion of fossil fuel consumption and encouraging the use of non-fossil fuels.

World **oil** use is expected to grow from 78 million barrels per day in 2002 to 103 million barrels per day in 2015 and 119 million barrels per day in 2025.

Natural gas is projected to be the fastest growing component of world primary energy consumption. Natural gas consumption worldwide increases in the forecast by 1.9 percent per year on average over the projection period, from about 100 trillion cubic feet in 2004 to 163 trillion cubic feet in 2030. Rising world oil prices increase the demand for natural gas, as it is used to displace the use of liquids in the industrial and electric power sectors in many parts of the world. Industrial uses throughout the world are projected to make up 43 percent of total natural gas use in 2030.

World **coal** consumption is projected to increase from 5,262 million short tons in 2002 to 7,245 million short tons in 2015.

Worldwide, electricity generation in 2030 is projected to total 30,364 billion kilowatt-hours, nearly double the 2004 total of 16,424 billion kilowatt-hours.

World **net electricity** consumption nearly doubles in the More than one-half (59 percent) of the projected growth in demand occurs in the developed countries, where electricity use increases on average by 4.0 percent per year from 2002 to 2025, as compared with 2.6 percent per year worldwide.

Carbon dioxide is one of the most prevalent greenhouse gases in the atmosphere. Anthropogenic (human-caused) emissions of carbon dioxide result primarily from the combustion of fossil fuels for energy, and as a result world energy use has emerged at the center of the climate change debate. World carbon dioxide emissions are projected to rise from 24.4 billion metric tons in 2002 to 30.2 billion metric tons in 2010 and 38.8 billion metric tons in 2025. Much of the projected increase in carbon dioxide emissions occurs among the developed countries, accompanying large increases in fossil fuel use. The developed countries account for 68 percent of the projected increment in carbon dioxide emissions between 2002 and 2025.

Economic growth is one the most important factors to be considered in projecting changes in the world's future energy consumption. Over the 2004 to 2030 period, world economic growth (real GDP) is projected to average 4.1 percent annually. Economic activity, as measured by gross domestic product (GDP) is expected to expand by 5.1 percent per year in developed countries, as compared with 2.5 percent per year in the mature market economies and 4.4 percent per year in the transitional economies of EE/FSU.