ENERGY POLICIES AND NATIONAL ECONOMIC DEVELOPMENT

Shawn King,
Charlotte,NC,USA

Keywords: Consumer, economy, emissions, energy consumption, environment, foreign investment, national energy policy, industrialization, national security, system reliability

Contents

Summary

National energy policies are necessary for countries to keep in constant reminder of certain objectives and aspirations. Goals and strategies typically found in national energy policies include improving the efficiency of an energy system, ensuring against energy disruptions, promoting energy production and exploration, protection of the environment, and promoting economic development and growth.

1. Introduction

National energy policies are developed to assist nations in achieving a myriad of broad-based goals. Some of the goals may even seem contradictory. Goals and strategies typically found in national energy policies include improving the efficiency of an energy system, ensuring against energy disruptions, promoting energy production and exploration and protection of the environment. However, the main goal of any national energy policy is economic development. Though not explicitly named as a goal, every country utilizes energy policy to promote economic development and growth.

Countries want their economies to grow and prosper. Much emphasis is placed on the strength or weakness of the economy in a country. In the United States, we have seen the 1999 news dominated by the “irrational exuberance” of the booming economy, only to find the 2001 news focusing on long unemployment lines, a recession and rising energy prices. Energy and the economy are inextricably linked. Without energy sources, goods and services could not be manufactured or delivered. High energy prices tend to negatively impact the economy as goods and services cost more to produce, deliver and buy. Without a strong economy, demand for energy decreases. Prices fluctuate.

Exploration and development of energy sources become less attractive to investors, continuing the cycle of strained supplies once the economy becomes more robust. Countries develop national energy policies as a method of addressing these and other issues on a large scale.

2. National Energy Policy: Ways and Means

Nations that develop a national energy policy follow similar frameworks, though their strategies for achieving them may be different. Most countries tend to include the following in their policies:

- Improve the efficiency of the system: make more productive use of energy to enhance economic performance while protecting national security;
- Ensure against energy disruptions: protecting the economy from external changes and threats and improve internal infrastructure;
- Promote energy production and consumption that respect the environment;
- Expand future energy choices;
- Cooperate internationally on global issues.

Strategies used by nations to achieve these goals vary. The U.S. depends on its world influence and diplomacy to ensure against supply disruptions in oil markets. Germany effectively uses taxes to decrease use and dependence on imported oil. India pushes for external investment in providing energy choices for its citizens.

Each strategy is not without risk, however. Taxes may be repealed in the event of an economic downturn. The current political tensions in the Middle East may thwart U.S. efforts to promote stability in the region and drive up oil prices. Outside investors may be reluctant to invest in projects where the rate of return can easily be placed in jeopardy. Policies and strategies must change with the economic and political climate, with economics driving the political changes. Energy is a critical component of the global economy and a global commodity, requiring everyone to have an interest in and focus on energy markets.

3. Direct Relationship between Energy and the Economy

The late 20th and early 21st century has seen unprecedented economic growth across the globe. Much of this was due, in part, to low energy prices. However, energy requirements have changed along with the economy. The economic success and the new energy requirements for the Information Age have dramatically increased demand for energy supply and energy reliability. Many societies saw real gains in standards of living. The United States experienced an increase of jobs at higher wages, real increases in personal income and corporate income, low inflation and greater expendable income. Other areas of the world saw similar trends.

Nonetheless, the favorable economic times also had their share of increase in energy prices and price spikes. Californians and western U.S. residents experienced rolling blackouts and disruption in electricity service as well as huge price spikes and general increases in electricity prices. Price increases for crude oil dragged down economies

heavily dependent on imported oil to meet energy supply needs. In 2000, protestors in Europe blockaded streets over prices of diesel fuel and gasoline. Americans paid over two dollars per gallon for gasoline in the summer of 2000, the highest seen since the 1970s energy crisis. The increase in demand for energy, the desire of countries that export crude oil to increase profitability of crude oil production and the focus on environmental impacts of automobile use through fuel taxes all contributed to the recent price fluctuations.

Energy plays a vital role in any country's economy. In the US, energy accounts for over seven percent of the GDP. We spend over 500 billion dollars annually on energy in the United States, or roughly 2 000 dollars for every person in the U.S The 1996 global market for energy supply equipment alone was over half a trillion dollars. The economy is directly affected by energy prices. Energy costs represent roughly sixteen percent of the U.S. Producer Price Index for finished goods and eight percent of the Consumer Price Index. This influences pricing for goods sold domestically and those exported. It also affects prices of good imported into a country. Economic growth increases the need for additional energy, even with conservation programs in place. Nations must also balance economic growth and the resulting need for additional energy with factors such as environmental protection and national security protection.

Businesses are directly affected by rising energy costs. Intense foreign and domestic competition in the U.S. prevented many businesses from being able to pass on to consumers the increase in energy prices. Profit margins suffered as a result. This decreased businesses' purchasing power and reduced the amount of dollars spent on capital equipment, productivity improvements and new job creation, all vital to continuing a growing economy. Energy-intensive industries are extremely sensitive to energy price fluctuations. Some companies chose curtailed production schedules or laid- off workers to compensate for the increased energy costs. Alcoa, a producer of aluminum and related products, found that electricity prices in 2000 were so high at its Washington state plant that it chose to shut down the plant entirely and sell the electricity it would have used on the open market for a greater profit than manufacturing aluminum. The Silicon Valley Manufacturer's Group estimated that its members lost over 100 million dollars during the blackouts that occurred in California during June of 2000.

Rising energy prices also can affect interest rates. The monetary policy of the United States Federal Reserve is to monitor inflation. Sharply rising energy prices that could contribute to a change in the inflation rate may influence the decisions of the Fed. Anticipation of these decisions may push up short-term interest rates, which raise the nominal borrowing costs for businesses and consumers. Rising energy prices may also raise expectation of lenders, resulting in higher interest rates for long-term borrowing. This can affect the amount of capital expenditures by businesses, potentially reducing the amount of new economic growth and productivity gains.

Interest rate changes also affects the global economy, as U.S. monetary policy has significant effects outside the U.S. borders. Many developing countries and those with less-stable economies may be more vulnerable to upward movements in U.S. interest rates. Higher nominal interest rates in developing countries tend to reduce the amount of

capital available to fund economic expansion. Rising interest rates may also affect current debt payments for these countries, reducing even further the amount of monies available for economic activity. Because many oil-importing countries finance oil purchases, increased rates due to increases in energy prices have a double whammy effect.

The recent increase in crude oil prices had a significant effect on economies of developing countries such as Thailand and Bulgaria but also in countries such as China, Korea and Brazil. Because of growing use of machinery or agricultural economies that are heavily dependent on oil, The Wall Street Journal estimates that a five dollar increase in a barrel of oil would have significant effects on trade balances, shown below as a loss of GDP.

Country	Percent of GDP
Bulgaria	-2.00 percent
Korea	-1.00
Thailand	-0.60
Poland	-0.60
China	-0.30
Brazil	-0.20

Table 1: Impact of a five dollar increase in a barrel of oil, on trade balances – shown as a loss of GDP in percent

Many of these countries "administer" oil prices, or fix them on a quarterly basis. The government must pay for any price increase. Conversely, other countries face riots due to rising fuel prices and must subsidize the cost of imports in order to retain political order. These are choices made from their energy policies.

National energy policies have components that are designed to directly address economic impacts from changes in energy prices. Each country determines its best course of action. Though there are coordinating agencies such as the International Energy Agency, which promote harmonization of national energy strategies, each country will continue to focus on its own economic needs first and addressing global issues second.

4. Indirect Relationship between Energy and the Economy

Energy is a component in everyday life and affects our quality of life. From transportation to communication, from farming to manufacturing, from heating and cooling our homes to cooking our meals, energy affects each and everything we do. Energy bills for the average U.S. citizen are divided between home expense and transportation expenses. About forty percent of a homeowner's energy bill goes towards heating and cooling. The remainder goes towards lighting, hot water, appliances and transportation. As a consumer, a homeowner has a choice whether to purchase energy efficient appliances, set the thermostat at such temperatures to save energy and whether to take public transportation or drive a sport utility vehicle to work.

Consumers generally first feel the strain of rising energy costs at the gasoline pump. Consumers indirectly influence the economy with behavioral choices – whether to drive or walk to work, whether to carpool, whether to open the windows or use the air conditioner. Rising energy costs chip away at the purchasing power of a household. The more income is used to pay for energy, the less is available for discretionary purchases. Consumers also tend to view upfront expenses, such as the higher cost of a more efficient water heater, as less desirable than paying the extra few dollars per month in operating costs, even if the costs are greater with the less efficient model. National energy strategies focus on modifying such behavior and economic impacts though the use of taxes, subsidies and regulations. Environmental regulations have had the most impact as well as controversy of the strategies employed under a national energy policy. Regulations have been adopted in many countries around the world to control emission of pollutants associated with burning of fossil fuels, such as sulfur dioxide and nitrogen dioxide. Regulations have also been enacted to reduce emissions from gasoline and diesel fuel. In the U.S., these regulations require that different types of fuel be used in different parts of the country, depending on air quality in those areas. Refineries have had great difficulty meeting demand for these special fuels while also meeting the demand for other products. No new refining capacity has been built in the U.S. for several decades due to the extraordinary amount of environmental regulations those facilities must meet. Power generation has shifted from using coal to natural gas, in part due to requirements of the Clean Air Act. Many industries have switched to natural gas or been required to switch for air quality improvements. This has led to significant increase in demand for natural gas. Price spikes were severe in 2000, causing some businesses to close their doors due to the inability to absorb the increased costs. While environmental laws and regulations are well intentioned, many consequences such as the over-demand for natural gas have not been well thought out at the time the rules are implemented, thus further illustrating the indirect relationships that exist between energy and the economy.

Many of the efforts in previous energy policies have been successful. In Germany, the higher tax on leaded fuel versus unleaded fuel helped to phase out the dirty gasoline that led to severe air quality issues. In the U.S., regulatory requirements for higher average fuel efficiency for vehicles have reduced consumption of oil by over two million barrels per day. Total energy consumption increased fourteen percent in the United States from 81.2 quadrillion Btus to 92.7 Btus since 1992 while the energy intensity of the economy has declined by twelve percent. Citizens of any country embrace low inflation, a balanced budget, high employment and communities free from air and water pollution. These areas also serve as good indicators of sound economies and functional energy policies. Comparing the energy policies and results of these policies of select countries can illustrate what had been achieved so far and areas where more work is needed.

-
-
-

Bibliography

Comprehensive National Energy Strategy, 1998
EIA: "Germany," December 2001
EIA, "Germany: Energy and Environmental Review," July 1995
EIA: "India: Environmental Issues," June 2001
EIA: "India," January 2002
EIA: "United States," October 2001
Garten, Jeffery. "Let's End Our Dangerous Dependence on the Saudis", Business Week, January 28, 2002
Kirschbaum, Erik. Reuters, "German Coalition at Odds on Energy Tax" March 8, 2001
National Energy Policy, 2002
Richardson, Bill. Secretary of Energy, March 1998
US DOE, "Powering the New Economy, "September 27, 2000
Wall Street Journal, "Where High Oil Prices Hurt the Most", Tuesday, Sept. 26, 2000

Biographical Sketch

Shawn King began her career at the U.S. Department of Energy's Conservation and Renewable Office. She was a Senior Environmental Engineer with the Virginia Department of Environmental Quality for 3 years, focusing on development of air quality attainment and emissions trading programs. Mrs. King became the Environmental and Quality Manager for Wright Chemical Corporation in 1995. In 1999, Mrs. King moved into marketing and sales of filtration products for Precision Fabrics Group and later with Air Purator Corporation.

Mrs. King has a BA in Environmental Science from the University of Rochester, where she graduated cum laude with honors. She received her Masters IN Business Administration from the University of North Carolina, Wilmington and was the recipient of the Norman Kaylor Outstanding Business Student Award. Mrs. King lives in Charlotte, NC with her husband, John and her son, Matthew.