Energy: An Environmental and Economic Dilemma; Seminar 4: Developing an Energy Policy

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ENERGY
AN ENVIRONMENTAL AND ECONOMIC DILEMMA

4. DEVELOPING AN ENERGY POLICY[1]

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With energy supplies rapidly diminishing, a change in American lifestyle is inevitable. Not too long ago we read about all the wealth that practically free sources of energy would provide.

We read about great utopias, the burden of abundance and how we would adjust to future wealth. We wondered how to encourage energy use to keep our Gross National Product growing. But suddenly, now in 1977, the world looks different, and our whole policy outlook must be altered.

INTERDEPENDENCE OF RESOURCES AND INSTITUTIONS

We canont continue to use resources unwisely. Traditionally, they were treated as unrelated commodities to be used, sold, transformed, transferred and subdivided. Not only have we regarded resources carelessly, but we have managed them poorly.

The interdependence of our resources becomes evident when production-consumption and institutional subsystems are superimposed on the resource base (Figure 1).

Policymaking, therefore, is unthinkable without scrutinizing the trade-offs involved. Ecologists emphasize that for everything taken from the environment, a cost is incurred somewhere: in institutions, the production-consumption system or the environment.

Some changes over the last 20 years include: more centralized government and business systems; greater interdependence between the community and outside world; more resources removed from the environment; more unprocessed human and industrial waste returned to the environment, and urban growth, which has reduced the rural population to under 4 percent.

More than ever before, every policy has implications for energy use, and every energy policy has implications for all other aspects of American life. An energy policy cannot be developed separately from a food policy or an environmental policy. Environmental decisions are already affecting energy, unemployment and economic dislocation.

Urban growth, for instance, increases material and energy flow into the environment (Table 1). Careful manipulation of rural development policy will retard this process to slow metropolitan growth, but it will also signal a change in rural government and business.

Though many such problems are multijurisdictional, solutions and preventive measures need not be. Many environmental problems can be handled close to home. Environmental policy has repeatedly been interpreted to allow states to adopt their own standards and trade-offs, provided they are not less rigorous than those the federal government sets.

This may be part of the reason why Michigan has been given the opportunity to decide if nuclear wastes should be stored in the state. The question is not one of nuclear energy policy, but rather how to adjust and deal with these decisions within the whole political structure.

Basically, before a policy can be formulated, we need to know the human potential to adjust, what is an acceptable quality of life and how we plan to deal with social control within the limitations of our institutions.

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[1] *From presentations by Jim Shaffer, Professor of Agricultural Economics; Raymond Vlasin, Professor of Resource Development; William Cooper, Professor of Zoology; and Herman Koenig, Director, Center for Environmental Quality—all of MSU—at seminars for community leaders of Genesee and Lapeer Counties during March and April, 1977, in Flint, MI. The series of four seminars was sponsored by Michigan State University's Cooperative Extension Service. Adapted by Bill Stout and Paul Parker, Department of Agricultural Engineering, MSU.*

Other titles in the series are: No. 1, Running Out of Energy (Extension Bulletin E-1173); No. 2, Energy and Ecosystems (Extension Bulletin E-1174); and No. 3, Energy and World Food Production (Extension Bulletin E-1175).

MARKET AND PLANNED ECONOMIES

All systems are significantly affected by economic reality. People place considerable importance in their decision-making process on prices, rewards and incentives. One critical problem now is how to allocate and price rapidly declining petroleum energy supplies. The market and relative prices provide some means of allocating energy and regulating prices. But allocation can become a political or administrative matter. Another possibility is to use both the market and planned systems to solve this problem.

If prices move upward too rapidly, we will impose a heavy burden on the lower and middle classes. However, if prices climb slowly, energy may not be perceived as a serious problem.

Without government intervention, prices of oil will probably increase slowly at first but as we approach the end of supplies, prices will increase very rapidly. The nature of this price-time path is really the most important question in the whole process of formulating energy policy.

If the price doubles within 10 years, more oil will be available 10 years from now than if oil stays at current prices. If the price triples, we will conserve more, it will last longer and prices will be lower in 20 years than if they stay low over the next few years.

We will be a lot better off if the price goes up in a predictable manner, with greater increases in the next 5 years to avoid price increases which will be very difficult to adjust to in the future.

MARKET PROBLEMS

It is impossible to expect the market system to always provide us with what we want. Uncertainty clouds the issue of energy economics. Supplies and future prices are uncertain: it is still uncertain how much oil there is, whether an alternative energy source is available or how much energy people are going to conserve, so the situation becomes more complicated than it would otherwise be.

There is another reason why the market does not always provide what is best: what is good for the in-

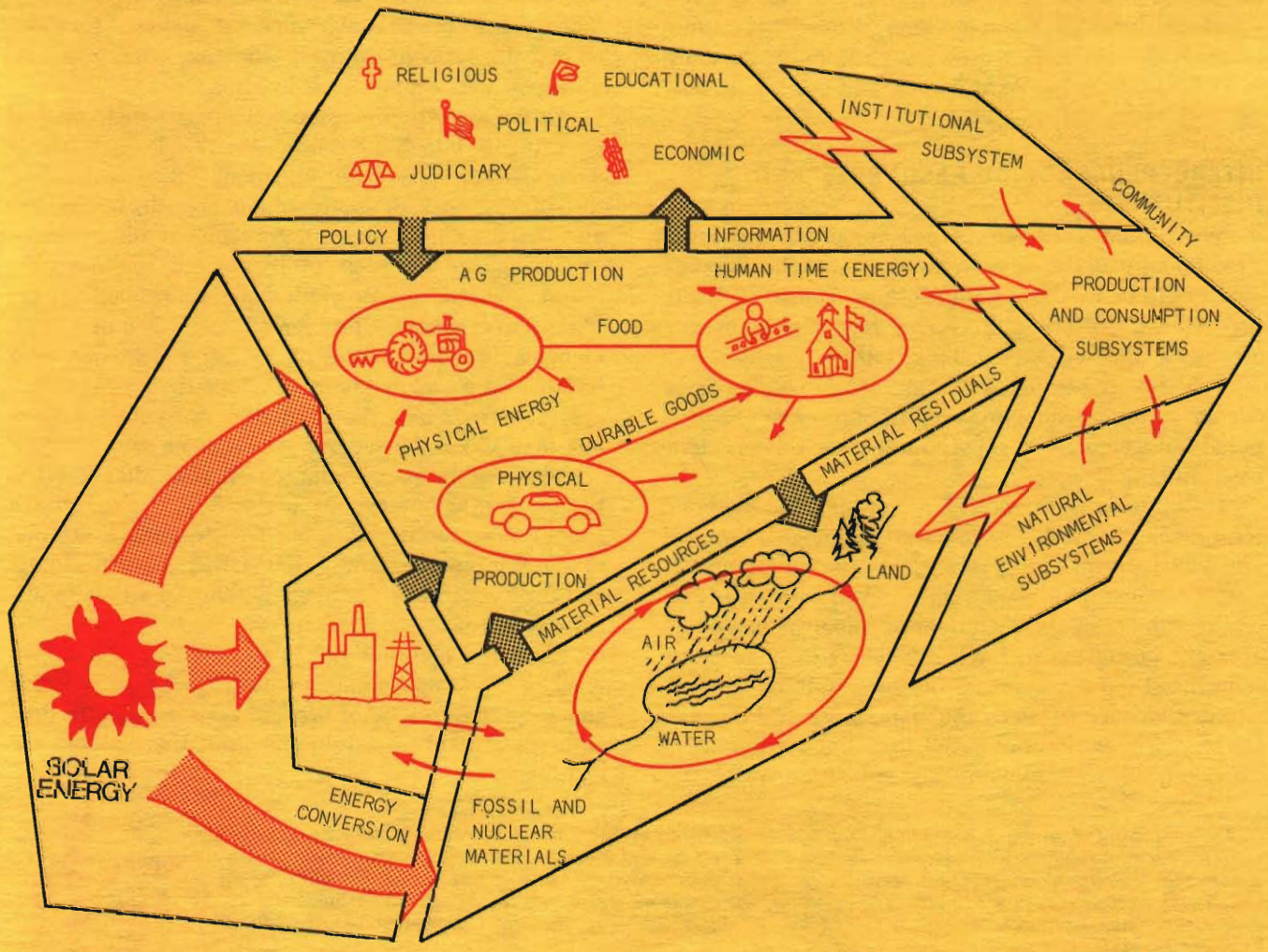

Figure 1—Conceptual model of a community and its linkages to the subsystems of the external environment (1).

dividual is not necessarily good for the group. For example, it may be in the best interest of one person to use gasoline freely right now before another uses it up, but this reasoning is not in the best interest of society.

A third assumption, the leave-it-to-the-market approach, is based on the premise that consumers have the information to make the best decisions. This assumption is invalid, because the information needed to make wise decisions is not available. For instance, consumers probably would not have spent a few cents extra for convenient aerosol deodorants if they knew their real cost was much higher, considering their effect on the upper atmosphere.

Because of these drawbacks, markets, as they now operate, do not allow smooth social and cultural transitions from current energy sources to alternative ones.

FIRST STEPS

So how can we change people's behavior? This country has consistently opposed a planned economy or governmental systems that restrict individual freedom. Laws which are not supported by the people will do little to stop pollution or inspire conservation. Until people are willing to adjust their lifestyles to accept legislation, Congress won't pass effective energy laws.

Understanding the problem is the first step. The government should develop an effective, reliable system to disseminate information. This will provide the people with a basic foundation for social change.

Policy will evolve in terms of the power that different interest groups have in influencing policy. Each group is lobbying in Washington now for the energy policy that best serves its interests. The trouble with the energy issue is that future generations will be most affected by the depletion of natural resources and they do not yet have a vote.

Because the benefits of conservation accrue to many people and the costs of conservation fall on the individual, individuals—each acting in immediate self-interest in the market—will not express a demand for conserving energy for the future. The market must be supplemented by political decisions to assure that everyone shares in the cost for the future social benefit of having energy available.

Immediate conservation measures can help us buy time to gain better understanding in areas that are now uncertain.

POLICY OPTIONS

Several policy options are immediately available through the market and government that will change energy consumption patterns:

1. **Research and development** — Government-sponsored research and development would spur discovery of new energy resources. Private firms shy away from research and development because their knowledge becomes available to other companies, making it difficult for them to recoup their investment.
2. **Taxes** — Taxes, rebates and investment credits can artificially raise and lower energy prices and deter or spur development of new energy sources.
3. **Regulations and standards** — The federal government has already set mileage standards for automobiles. Small home appliances must now be labelled for energy usage.
4. **Rationing** — This is the most direct form of government intervention, but its effectiveness would depend on public acceptance of the kind of rationing system adopted. (Would people be able to sell or trade ration coupons?)
5. **Government ownership of resources and/or government production of energy** — If not for government investment, nuclear power would not exist. The government also operates many hydroelectric facilities.

Finally, citizens can lobby, be informed and ask questions. This will give them the opportunity to decide who will pay the cost and who will receive the benefits, how the costs will be impacted and how the benefits will be distributed.

Table 1—Typical differences of urban climates from rural areas.

CLOUDINESS
5-10% more cloud cover
100% more winter fog
30% more summer fog
PRECIPITATION (effect may be more pronounced downwind from urban area at times)
5-10% more (total)
5% more snow
RELATIVE HUMIDITY
2% less (winter)
8% less (summer)
RADIATION STRIKING SURFACE
15-20% less
30% less ultraviolet in winter
5% less ultraviolet in summer
TEMPERATURE
0.5-1.0 degrees C, higher annual mean
1-2 degrees C, higher winter minimum
WINDS
20-30% lower mean annual wind speed
10-20% decrease in extreme gusts
5-20% increase in calms

Source: (2).

The difference in how we use our resources relates to how we use our own human energy and labor. We can best conserve by exchanging human energy for machine energy. People can walk or bike to the store instead of driving. Other people may grow and preserve some of their own food. Some people may decide to live close enough to work to walk or bike there. We can redesign our entire society. We can emphasize better social relationships and take pride in making things with our hands rather than ever greater consumption of limited resources.

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