



“Summary of article by John E. Young and Aaron Sachs: Creating a Sustainable Materials Economy” in Frontier Issues in Economic Thought, Volume 2: The Consumer Society. Island Press: Washington DC, 1997. pp. 296-299

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Current patterns of consumption in industrial countries involve unsustainable levels of virgin raw material use. This article examines the requirements and prospects for a transition to a sustainable economy based on the reduced use, reuse, and recycling of materials.

SOCIETY'S CONSUMING PASSION

Industrial countries account for about 20 percent of the global population, but consume about 80 percent of many vital materials. Although technological advances have kept material prices low, growth has exacted an increasing environmental cost in both extraction and disposal of these materials. Around the world, mining moves an estimated 28 billion tons of soil and rock annually, ruining whole mountains, valleys, and rivers. Four primary materials industries – paper, plastics, chemicals, and metals – account for 71 percent of toxic emissions from U.S. manufacturing. Cutting wood for paper and other materials plays a major role in deforestation; since 1950 nearly one fifth of the world's forested area has been cleared. The impacts of chemical and plastics production include hazardous waste dump sites and industrial accidents that have resulted in released toxic chemicals. Raw materials industries are also among the world's largest energy consumers, with mining and smelting alone taking an estimated 5 to 10 percent of global energy use.

Extractive industries have caused environmental problems at a local level for many centuries, but the scale of the problems has expanded with the rapid economic growth of recent years. U.S. consumption of virgin raw materials was 14 times larger in 1991 than in 1900, while the population only tripled. Much of the growth in per capita resource use occurred in the 1950s and 1960s. Demand for raw materials now appears to be leveling off in industrial countries, but is still rising worldwide. The continuing increase is a result of both population growth and increasing per-person use of materials in newly industrializing countries.

Materials use occurs within an antiquated legal and regulatory framework that often subsidizes and promotes consumption. Some U.S. policies date back to the frontier era; the 1872 General Mining Act, for example, still gives miners the right to purchase mineral-bearing government lands for \$5 an acre or less, and does not require royalty payments or reclamation expenditures. Former colonial powers often provide development assistance for primary commodity exports from the countries they once controlled. World Bank and International Monetary Fund planners generally advocate heavy investment in commodity exports. Public agencies, at the other end of

the materials cycle, have often subsidized landfills and incinerators far more extensively than recycling facilities.

BUILDING A SECONDARY MATERIALS ECONOMY

Sustainability requires a shift from today's throwaway culture of convenience and planned obsolescence to an approach that designs products to reduce material use and seeks value in reusable goods. Bottles and containers could be reused dozens of times before being recycled and remanufactured; composted organic wastes could be plowed back into gardens and farms; recycled paper mills and metal smelters could come to outnumber their virgin material counterparts. Cities, where secondary resources are found, would then become a more important source of materials than mines or forests.

This transition will require a mobilization of capital, skill, and commitment on a scale usually seen only in wartime. An obvious starting point would be to eliminate the current subsidies for virgin materials extraction, and to tax polluting industries to cover the full environmental cost of their activities. This would raise virgin material prices to more realistic levels, providing market incentives for materials efficiency. Other initiatives could include making households and businesses pay the full cost of disposing of their waste, and developing the infrastructure needed to support recycling and reuse on a broader scale.

It will ultimately be necessary to go beyond recycling, to make basic design changes that reduce overall material throughput by eliminating waste and inefficiency at the source. Since the energy crisis of the 1970s, new technologies have made it possible to cut energy use by 75 percent or more in many applications; the same can be done for materials use. For example, wood consumption could be cut in half by a combination of technologies already available, ranging from improved sawmill and housing construction techniques to two-sided photocopying in offices.

As recycling programs expand in both North America and Europe, policies are needed to create markets for the materials that are collected. Secondary content requirements and procurement standards are among the quickest and most effective market stimulation measures. Economic and community development financing programs can be oriented toward secondary materials industries. Commodity markets for recycled materials, in their infancy today, must be strengthened at a national level.

ECONOMIC OPPORTUNITY

The transition to a sustainable materials economy may initially be difficult, but will eventually create many opportunities for employment. Recycling rather than landfilling one million tons of waste creates 1,000 new jobs, and many additional jobs in related activities will open up in an economy dedicated to reuse and recycling. While labor costs will rise, capital costs will fall, making secondary industries a good investment even by conventional measures.

The jobs lost in extractive industries and related sectors are comparatively small in number, and are unstable in the best of times. Logging and mining towns are often little more than quickly

constructed frontier outposts, becoming virtual ghost towns when the nearby resources (hence jobs as well) are exhausted. Today, for example, metal mining employs only 0.1% of the workers in the American West. Tourism, which depends on a healthy landscape unscarred by industrial waste, is now much more important to the economies of all of the U.S. western states.

Recycling, reprocessing, and repair services have in fact been among the world's most reliable "growth industries" in recent decades. Supplies of recycled metal, paper, and other materials have grown rapidly in the U.S. and other nations, becoming an important part of existing industrial processes. Secondary industries are generally far less polluting than their virgin raw materials counterparts, contributing environmental as well as economic benefits.

The current materials economy is a worldwide system; as a result, change in that system must be global as well. Improvement in materials efficiency is most urgent in the industrial nations, but is important in poorer countries as well. Developing nations will need new technologies and assistance from wealthier countries, particularly since virgin material exporters will be hit hard by a reduction in worldwide materials use. Money that now goes toward funding virgin materials projects could be redirected toward retraining displaced workers and shifting them into growing industries.