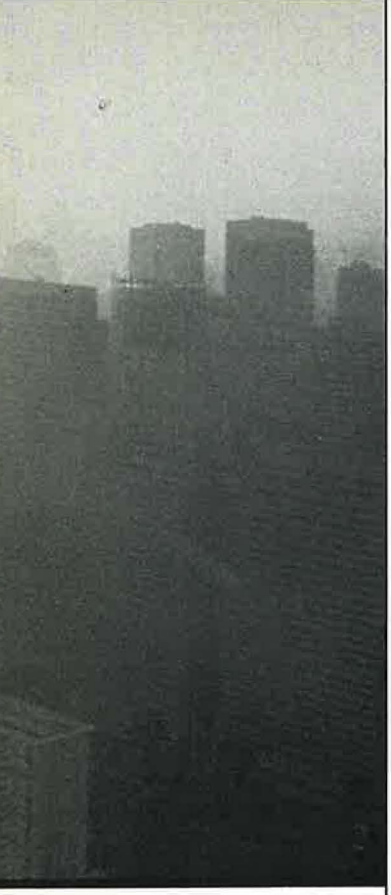

Air Quality and the Environment A TRB International Roundtable

SOUTH COAST AIR QUALITY MANAGEMENT DIS

CURTIS A. MOORE

Change—even profound transformation—may be in store for transportation in the near future. Four participants delivered this message at the International Roundtable convened at the 70th Annual Meeting of the Transportation Research Board.

The theme was Air Quality and Transportation. Panelists included Joris Al, Deputy Director for Air Pollution Policy of the Netherlands Ministry of Environment; Lars Hansson, Chief Economist, Swedish State Railways and Research Leader, University of Lund, Sweden; Richard Ackerman, an official of the World Bank; and Alan Krupnick, a senior fellow at Resources for the Future in Washington, D.C. All focused on the impacts of burgeoning concerns over global warming, urban smog, and other air pollution threats to the future of transportation—ultimately agreeing that the world was being propelled toward change in the movement of goods and people.

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Two Perspectives, Common Future

"Things cannot go on as they are," said Joris Al. It was a sentiment that all panelists seemed to share, despite their other, often substantial, differences.

For example, it was apparent almost from the outset that the four panelists fell into two camps on the question of how to make threshold decisions of whether, and how, to regulate pollutants from automobiles, trucks, planes, trains, and ships, which are leading causes of environmental threats ranging from global warming to urban smog.

Two of the speakers, one explicitly, the other less so, advocated a free-market approach of cost-benefit balancing—a system in which the lives saved and other benefits of controlling pollution are converted to monetary units, then measured against the costs of regulation, such as the aggregate price of catalytic converters.

The opposing pair agreed on the need for economic instruments, but rejected the notion of a market-dictated system of regulating on the basis of a strict balancing of costs against benefits.

"A free market," argued Al, "though propagated by some as the ultimate medicine for all diseases, will not work as long as the real environmental cost of all human behavior is not reflected in its price."

In a sense, however, this disagreement was irrelevant. For in describing their divergent approaches, the four sketched a

common transportation future that is almost certain to be profoundly different from that of today. Employing such colorful terms as "push and pull" controls and "different strokes for different folks," the four speakers outlined ambitious new programs ranging from heavy taxes on pollution to government-mandated controls over the content, quality, and marketing of fuels.

Eastern Europe

Perhaps the most far-reaching change was suggested, although without great detail, by Richard Ackerman. He described the environmental plight of eastern Europe, where "large areas of forests [are] thought to have been lost or irreversibly damaged, [and] most surface waters are unfit for human consumption."

Because the pollution is a byproduct of the inefficient use of energy and other inputs, "the whole environmental issue," said Ackerman "will have to be seen as part of a larger picture of economic reform and restructuring requiring a series of fundamental policy and institutional measures in several sectors and at all levels of government."

Ackerman attributed much of the Eastern bloc pollution to "the inefficient use of inputs."

"Valuable metal, plastics, cardboard, rubber, energy go in at one end," he said "and, if you will, Trabant cars worth less than the sum of these parts emerge at the other, together, of course, with huge amounts of air and water pollution."

Ackerman saw increased prices as a key to curbing pollution. "Higher energy prices will promote efficiency, and industrial restructuring will address the rest of the problems," he argued.

However, he stopped short of recommending widespread pollution control for its own sake. "There are open questions to what extent that at this stage one should recommend major investments in [pollution control when] the benefits accrue to other countries—for example Sweden—and from a health perspective, they are not the most serious," Ackerman commented.

Western Europe

The banking official's view of the need for pollution controls in eastern Europe contrasted sharply with those of two speakers from western Europe, Joris Al and Lars Hansson. So much pollution is transported across European boundaries—up to 90 percent of some pollutants in the Netherlands originate outside the tiny nation—that "one could say that import and export of air pollution is one of the most successful international trades in Europe," quipped Al. He and Hansson agreed that efforts to substantially improve air quality in their countries would be doomed to near certain failure unless pollution was curbed in eastern Europe as well.

"Even with the strictest practicable policy we can think of today," commented Al, "up to 80 percent of the forestry in the Netherlands will risk being affected by disease or die altogether by the end of this century." The stakes were not limited to the environment; he added, "Doing nothing would mean that roads, especially around and in cities . . . would be blocked by congestion for most . . . of the day."

He noted: "Especially for the transport of goods, which is sometimes called the motor of our economy, this would be devastating."

To contend with these threats, the governments of Western Europe have mounted a broad-based program designed to curb air pollution drastically. Tighter tail-pipe pollution standards for automobiles, trucks, and buses have been adopted, with more stringent ones on the drawing boards; inspection and maintenance programs to ensure that vehicles function properly in use are being put in place in many Western European countries; and variable taxes ensure that higher-polluting leaded gasoline costs so much more than the cleaner, unleaded brands that motorists have no incentive to cheat.

The Netherlands: Push and Pull

In addition, the Netherlands has unilaterally developed a series of "push and pull" measures to reduce growth in the number of vehicle miles traveled to about 35 percent by 2010. These new laws

- Restrict the construction of new roads, limit inner city parking spaces, and increase mileage-related costs of driving;
- Increase investment in the quality and quantity of public transport while encouraging car- and vanpooling, and construction of new offices and industries near public transit;
- Shift the transport of goods to less polluting forms such as pipelines, rail, and ships;
- Include measures to reduce the distance between home and work; and
- Minimize movement of trucks without payloads.

"The whole policy is based on the sound economic principle that space and environment are limited commodities, for the use or endangering of which it is fair to ask and pay a price—a price in which the real, including external costs, are included," explained Al.

Some measures target cities to "price parking out of the market," stated Al, adding, "you either walk or take public transit."

Sweden: Do the Right Things

Hansson said that Sweden had adopted comparable goals, through an approach he described as "to do things right and to do the right things."

Its heart is a wide-ranging system of pollution and other charges in which the least efficient and most polluting automobiles, planes, trains—and factories—ultimately pay higher fees in an attempt to both curb emissions and encourage new technologies.

"The basic idea is free competition in the transport market," Hansson explained.

"Put at its simplest, the Swedish system prices external costs such as air pollution and imposes them on users through a set of fees and charges," he added. The pollution fees are designed to help attain ambitious goals for reducing air pollution, because Sweden—like the Netherlands and most other Western European nations—has committed to sharply curbing emissions by the next century. The Swedish goals include reductions of oxides of nitrogen by 30 percent, sulfur dioxide by 80 percent, hydrocarbons by 50 percent, and, for carbon dioxide, a cap at 1988 levels.

Hansson cited the actions of Sweden's largest domestic air carrier, Linjeflyg AB (LIN), as an example of the policy's effect on industrial behavior.

When the charges were introduced in 1988, LIN replaced the combustion chambers of its fleet of Fokker F28's, reducing hydrocarbon emissions by 90 percent and nitrogen oxides by 15 percent. For an average flight of 380 kilometers (about 240 miles) the pollution charge dropped from $100 to $26.

The replacement program cost $4.4 million plus another $500,000 annually in operation and maintenance costs. But LIN saves $3.6 million a year in pollution charges.

"If the replacements are written off, for example, during five years and with a 5 percent real discount rate, the net return is 200 percent," said Hansson. Futhermore, the key element of the Swedish system is the pollution charge, "Without a charge there are only costs."

Sweden's policies, like those of most other nations, evolved originally to cope with smog and other urban pollutants. With the emergence of wider scale threats, Hansson said, "We must use another philosophy for long run effects; that is, to have an objective based on sustainable ecological balance, and that has been the point for the Swedish transport policy."

United States: Cost-Benefit Balancing

The Swedish view contrasted sharply with that of Alan Krupnick, who focused on smog and other urban air pollutants. He argued in favor of policies based on "cost-benefit" balancing.

"I'm looking for the pollutants to control that would deliver the largest net benefit to society. Then I'm looking for cost-effective means of obtaining those controls," he told the audience.

"As long as national air quality standards are generally set on the basis of protecting health rather than balancing costs and benefits, urban air quality policies will be inefficient," said Krupnick in a specific reference to U.S. policy, which requires that standards be set on the basis solely of protecting human health.

Krupnick was particularly critical of U.S. policy, castigating recent decisions to tighten the tail-pipe standards for automobiles and trucks. He said previous tail-pipe controls had "the perverse effect" of discouraging new car purchases and thus increasing emissions by 11 to 26 percent.

"Absent technological breakthroughs in emissions controls or reformulated gasoline," Krupnick contended, "the newest round of emissions reductions in the United States is likely to be even less cost-effective."

Developed and Developing Nations: Different Strokes for Different Folks

Krupnick said he had conducted a cost-benefit analysis to determine what pollutants should be controlled and how, yielding different blends of regulations for developed and developing nations—what he called "different strokes for different folks."

Developed nations, he said, should target so-called high emitters—the 10 percent of vehicles that some studies conclude could account for roughly 50 percent of urban air pollutants—and encourage the use of the new reformulated gasolines.

For developing nations, however, Krupnick offered a different prescription. They should eliminate lead from gasoline, reduce the sulfur content of diesel fuel, and employ transportation controls—programs such as high parking fees, no-drive days, and bans on vehicles in city centers.

"In any country," added Krupnick, "but particularly developing countries, scarce resources should be allocated to maximize net social benefits."

Even the pollutants regulated by developed and developing nations should differ, he contended: If "one wants to make gross generalizations," the pollutants of concern for developed countries would be volatile organic compounds, nitrogen oxides, and carbon monoxide; whereas leaded fuel, particulate matter, and sulfur dioxide would be targeted by developing nations.

Defining the Costs of Pollution

Hansson and Al, however, did not share Krupnick's enthusiasm for cost-benefit balancing.

"We have a responsibility to future generations. Is that only an economic issue for people living today?" asked Hansson.

One of Hansson's chief criticisms of strict cost-benefit balancing as the prerequisite of regulation was the impossibility of measuring some benefits. Citing global warming as an example, he asked, "Can we evaluate pollution when we don't know all the effects?" He added, "we're not quite sure about the greenhouse effect—but when we are sure of the consequences, then it will be too late."

Al's view was similar. Although there might come a time when the prices of goods incorporate their environmental costs, that isn't the case today. "In the meantime," Al added, "we feel that government intervention via pricing and regulatory measures cannot be avoided."

Exactly how such long-standing tensions will eventually be resolved is unclear. What is becoming increasingly apparent, however, is that agreement on the proper philosophical underpinning may be irrelevant. For in one nation after another—Eastern bloc and Western, developed and developing, European and American—the question confronting policy makers is not whether to control air pollution, but *how*.