

surface transportation policy project



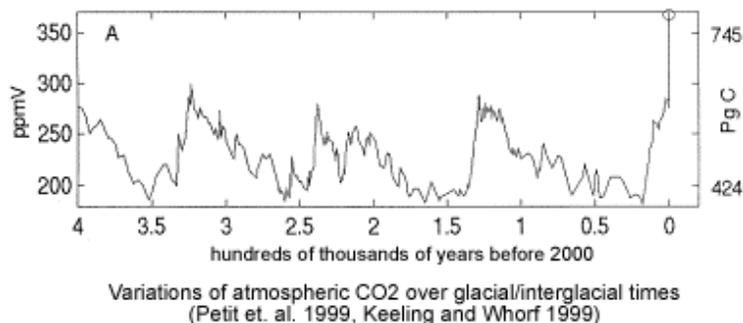
Transportation investments, services and incentives should meet our travel needs, promote economic prosperity and environmental justice, preserve and protect open space, scenic resources and agricultural land, protect and enhance the integrity of natural resource systems and wild places and improve air and water quality. Such efforts can promote resource efficiency and energy conservation, while reducing reliance on foreign oil and offering solutions to climate change.

–New Transportation Charter

America's reliance on the automobile has adversely affected our climate and influenced our foreign policy. The United States represents 25.5 percent of the world total consumption of petroleum (1999).^[1] The transportation sector's share of U.S. oil consumption is 65 percent - or 16.5 percent of total world oil use.^[2] The U.S. has 769 motor vehicles per 1,000 population compared to seven per 1,000 in India and eight per 1,000 in China. If other nations follow the lead of the U.S. and model their transportation systems and land uses on automobiles, climate change will rapidly accelerate. This will also accelerate economic inequity as affluent car-owners drive non-motorized and transit modes off limited public roads and streets. Overall mobility will be reduced and the entire transportation system will be less stable.

Fossil Fuel Combustion and Greenhouse Gases

Greenhouse gases (GHG) are naturally occurring in the environment and trap heat near the surface of the earth, creating a habitable atmosphere. Normally the gases are kept in balance through natural processes, but human activities (primarily fuel combustion) increase the greenhouse gases present in the environment, heating our atmosphere and leading to climate change. Carbon dioxide (CO₂), which accounts for 83 percent of GHG^[3], is the largest contributor to climate change, and the transportation sector is one of the largest sources of CO₂. Each gallon of gasoline burned pumps 28 pounds of CO₂ into the atmosphere – 19 from the tailpipe and nine pounds from upstream refining, transporting and refueling. Atmospheric carbon dioxide levels now exceed any historical precedent and are rapidly increasing. The U.S. transportation sector is both the largest domestic source of carbon emissions, and the fastest growing.



Nitrogen oxides, or NO_x, are particularly detrimental greenhouse gases, as they are a component of ground level ozone and last longer in the atmosphere than some other greenhouse gases. NO_x is released during “cold starts” – the first 15 minutes of driving a vehicle before the catalytic converter is fully operational.^[4]

The Environmental Effects of Global Warming

According to the Intergovernmental Panel on Climate Change (IPCC), the 1990s were the hottest decade of the 20th century, and probably the last 1,000 years. The IPCC further predicts that the earth's average temperature could increase by as much as 11° F during the next century,^[5] leading to record heat waves, droughts, an increase in frequency of severe storms, rising sea levels, and the migration of insect-borne tropical diseases like malaria. Even problems with the nation's food production systems are predicted.^[6]

In the past century, the sea level has risen 4-8 inches due to melting in the Arctic, and the frequency of extreme rainfall events in the US has increased.^[7] According to the United Nations Framework on Climate Change Convention, "rising sea levels could have the most dramatic and direct consequences" globally.^[8] This is particularly true for the U.S. where 54 percent of the population lives in coastal areas.^[9] Extreme weather is another serious threat. If a Class VI hurricane hit the New York City area, damage is estimated to exceed 10 percent of the entire GDP of the region.

Climate change is also expected to take a heavy toll on biodiversity. A study of outstanding natural areas by the World Wildlife Fund found that climate change will lead to mass migrations of those species that are fast enough to keep up with the rapidly changing climate. The report further finds that because so many species won't be able to move to new areas fast enough, as many as one-fifth of the world's most biologically rich areas could suffer "catastrophic" losses of species. Entire ecosystems could collapse.

Energy Consumption and Foreign Policy

Half of the oil used in the United States is imported,^[10] and the transportation sector represents two-thirds of US petroleum use.^[11] Americans spend over \$100,000 per minute to purchase foreign oil, making oil consumption an important part of the national trade deficit. This level of dependence is only expected to increase as we use up domestic resources.^[12]

According to the Intergovernmental Panel on Climate Change, in the past 25 years, "transport activity has grown at approximately twice the rate of energy efficiency improvements."^[13] Even worse, the growing popularity of SUVs and trucks has led to a decrease in fuel economy, and the total U.S. fleet's fuel economy reached its lowest point since 1980 in 2001.

The transportation sector's dependence on oil is not fully reflected at the gas pump; it also drives US foreign policy. The majority of the world's oil reserves, estimated at 65-75 percent, are controlled by OPEC member nations, making the U.S. vulnerable to price shocks in the oil market and economic recessions, which inevitably follow. The U.S. spends somewhere between \$55 and \$96.3 billion per year defending the world's petroleum sources, the repercussions of which cannot be ignored considering current security issues.^[14]

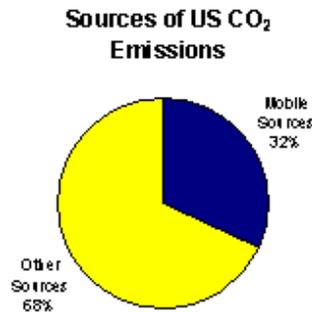
Land Use Planning and Transportation Choice

Spending policies which give priority to new roads naturally lead to more driving, while spending policies which emphasize alternatives to driving result in more walking, biking and transit use. The transit modal split is influenced by the more than 70 percent of federal transportation spending that goes to highways, with less than 20 percent directed to transit.^[15]

Currently only 2.5 percent of trips are made by transit.^[16] If we increased that number to 10 percent of total trips (about the European level), we could reduce U.S. dependence on imported oil by more than 40 percent - almost the same amount of oil we import from Saudi Arabia every year.^[17]

As communities become more sprawling and car-dependent, fuel consumption increases. Vehicle Miles Traveled (VMT) increased 132 percent between 1970 and 1998 and, in spite of fuel efficiency improvements, fossil fuel consumption increased by 53%.^[18] The US Department of Transportation reports that, more than 50 percent of

the total increase in driving in the US from 1983 to 1990 was due to factors related directly to sprawl – more and longer trips taken by the same people. Increases in population over that period account for only 13 percent of the total increase in driving.^[19]



Planning communities to provide multiple travel choices can reduce VMT and the “cold starts” emissions that are especially destructive to the climate. A five-year study from Oregon on Land Use, Transportation and Air Quality (LUTRAQ) estimates that if highway funds were redirected towards transit and pursuing transit oriented development over a 20 year period, it would produce 8 percent less driving and 27 percent more transit, biking and walking trips. In turn, these results could be expected to achieve one-quarter to one-third of the CO₂ emissions reductions that would be required to return emissions from transportation in the study area to 1990 levels by the end of the next decade.^[20]

Strong governance measures, including connecting transportation to land use decision-making, could result in dramatic reductions in VMT and, therefore, carbon emissions. One study of a proposed transit-oriented development (TOD) project in Atlanta estimated that VMT generated by the project would be less than 50 percent of VMT levels of the same project located at the urban fringe.

Transportation in Developing Countries

The importance of institutional reform (regional planning) and compact development is even more important in countries with immature transportation systems, far exceeding the benefits of technology and alternative fuels, including hydrogen fuel-cell commercialization. According to a recent study by the Pew Center for Global Climate Change, “(transportation) technologies that work in developed countries may not work in developing countries due to their expense, maintenance needs, fuel availability, or need for high levels of institutional support.”^[21] The report goes on to state “other types of initiatives, not based on technology, are potentially more significant (for greenhouse gas reduction). The authors conclude, based on the four case studies prepared as part of this series of reports on transportation in developing countries, that initiatives based on institutional reform are more likely to revolutionize transportation. An enhanced level of coordination between transportation agencies and governments with land use control could lead to dramatic improvements in transportation efficiency and reductions in vehicle usage in ways that have rarely been seen in the past.”^[22]

Despite this conclusion, U.S. international transportation policy is largely based on exporting highway planning processes and road technologies to other countries. U.S. export credits largely support new highway construction as a way to promote U.S. business interests, not sustainable transportation systems. No known U.S.-funded program promotes integrated transportation and land use planning, or institutional reform, as an element of our international transportation assistance programs.

[1] <http://www.nef1.org/ea/eastats.html> (National Energy Foundation)

[2] International Energy Agency, *Scenarios for a Clean Energy Future*, 2000, p. 6.1.

[3] http://www.eia.doe.gov/oiaf/1605/ggrpt/executive_summary.html#carbon (Department of Energy)

[4] Parker, Terry, “The Land Use-Air Quality Linkage: How Land Use and Transportation Affect Air Quality”, California Air Resources Board, 1997.

[5] *The Policy Makers Summary*, International Panel on Climate Change, 2001.

[6] <http://www.icta.org/ctanews/ghgstat.htm>

[7] www.epa.gov/globalwarming/climate

[8] <http://unfccc.int/>: Climate Change Information Sheet 15

[9] <http://spo.nos.noaa.gov/projects/population/population.html> (National Oceanic and Atmospheric Administration)

[10] <http://www.fueleconomy.gov/feg/oildep.shtml>

[11] International Energy Agency, Scenarios for a Clean Energy Future, 2000, p. 6.1.

[12] Ibid

[13] <http://www.ipcc.ch/pub/tar/wg3/index.htm>: Climate Change 2001: Mitigation, Conclusions.

[14] <http://www.icta.org/projects/trans/rlprexsm.htm>

[15] US Department of Transportation, *Our Nation's Travel: 1995 NPTS Early Result Report*, Washington, DC, September 1997, p.13.

[16] Ibid

[17] APTA study, "Conserving Energy and Preserving the Environment: The Role of Public Transportation".

[18] (John Horsley, Global Climate Change...) Bureau of Transportation Statistics.

[19] US Department of Transportation, *Travel Behavior Issues in the 1990s*, A Report of the 1990 National Personal Transportation Survey, Washington, DC, July 1992, p.14.

[20] 1000 Friends of Oregon, *Making the Connection: A Summary of the LUTRAQ Project*, LUTRAQ Technical Report, Volume 7, February, 1997, p.15.

[21] Sperling and Salon, ed., Transportation in Developing Countries: An Overview of Greenhouse Gas Reductions Strategies, Pew Center for Global Climate Change (2002), at 18.

[22] Ibid at 20.

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