SUSTAINABLE TRANSPORTATION

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Definition: Sustainable transportation is achieved when needs for access to people, services, and goods are met without producing permanent harm to the global environment, damage to local environments, and social inequity. This implies rates of use of non-renewable resources that do not exceed the rates at which renewable substitutes are developed and rates of emission and of concentration of substances that do not exceed the assimilative capacity of the environment.

Unsustainable Present Transportation System

Road Transport Energy Use: In the industrialized world, the largest share of transport activity and transportation energy consumption is by road vehicles: 81% in US, 83% in Europe, 87% in Japan. These countries, along with Canada, comprise the OECD countries. The US and Canada use three times the amount of energy used in transport than other OECD countries.

Road Transport Ownership: Between 1950 and 1990, the global number of vehicles used for personal transport grew ninefold, from 75 million to about 675 million vehicles. During the same time, human population doubled. While 450 million more owned a vehicle in 1990 than in 1950, the number of Earth residents not owning a car increased by more than two billion.

Use of Road Vehicles: In 1990 freight and passenger activity levels per person in the US were approximately twice those in western Europe: 11,589 miles and 5,412 miles by private auto per capita.

Air Transport Energy Use: Air transport accounts for about 13% of oil consumption for transportation, and OECD countries account for some 70% of aviation fuel consumed.

Dependence on Finite Fossil Fuel Sources

Oil Dependence: The world's transportation systems are almost entirely fueled by oil. Transportation comprises about half of the use of oil products (60% in OECD countries) and is everywhere the most rapidly growing type of oil use. The use of oil is increasing the fastest among non-OECD countries. 60% of the oil used in the US is imported. Transportation consumes 70% of the oil used by the US and generates a third of its carbon emissions.

Energy Use: Since 1970, energy use per capita for moving people has remained approximately constant in the US and increasing elsewhere. Energy use per capita for moving freight has increased everywhere.

Inefficiencies of the Car: 87% of the fuel energy in gasoline is dissipated as heat and noise in the engine and drivetrain or lost to idling and accessories such as air conditioners. Only 13% of the fuel energy is delivered to the wheels, but more than half of that heats the tires, road and air. Just 6% of the fuel energy actually accelerates the car (and all this energy converts to brake heating when you stop.) And because 95% of the accelerated mass is the car itself, less than 1% of the fuel ends up moving the driver.

Growth in CO2 Emissions: Worldwide, carbon dioxide emissions from transportation increased by 30% between 1979-88 while emissions from all other human activity fell by 2%. During the same

period when many sectors were making significant progress in increased efficiencies, new vehicles became larger, more powerful, and less efficient.

Achieving Sustainable Transportation

Addiction to Cars: Automobile dependence refers to an innate disposition of humans to engage in motorized travel and to the reliance on automobiles use for essential activities such as may be found in rural areas or low-density suburbs.

Transition to Sustainable Transportation:

1. Giving non-auto infrastructure higher priority than auto infrastructures
2. Developing landuse patterns that minimize the need for travel
3. Placing greater emphasis on community rather than individual values
4. Placing greater emphasis on urban rather than suburban living conditions

Importance of Increasing Urban and Suburban Densities: People who live in the denser inner parts of an urban area travel much less than people who live in less dense outer regions. Presently, urban (and rural) sprawl dominates land development, continuing a pattern of low intensity land use and associated high levels of transport activity. Plans for land development are needed to limit urban and rural sprawl so that highway construction can curbed, helping to reduce destruction of natural habitat and farm lands.

Importance of Full-Cost Pricing: Users of all kinds of vehicles pay less than the full social costs of their use. Several unpaid costs and subsidies include costs of municipal services, road construction and maintenance, land values, congestion, accidents, waste disposal, water pollution, land use impacts, barrier effects, resource consumption, noise, and air pollution. If the unpaid costs and subsidies were added to ownership costs, ownership costs would increase $2.11 per mile.

The transportation decision-making process needs to anticipate environmental and social impacts of transportation-related decisions by improving impact assessment and using life-cycle analysis rather than trying to react to them after the effects have occurred. This will result in considerable cost savings since transportation decisions often involve costly, long-term infrastructure investments. The community must identify and recognize public subsidies (hidden or otherwise) to all modes of transport to make better decisions.

Importance of Open and Integrated Decision-Making Process: Citizens need to be informed about transportation options and impacts and involved in decision-making so that the needs of different sectors of the community can be understood and accounted for. Transportation decisions should also be integrated into an overall community environmental protection, health, energy, financial, and land-use planning. Citizens need opportunities for training to recognize the full costs and benefits of transportation choices. Also, they need full access to information relevant to transportation decision-making.

Importance of Alternative Transportation Options: Especially in the more developed regions of the county, pedestrian and cycling paths should be provided as attractive and safe alternatives to cars. The availability and attractiveness of rural public transit options need to be improved.

Resources: OECD Proceedings: The Vancouver Conference: Toward Sustainable Transportation, March 1996; Scientific American (9/05).

Louise Gorenflo prepared this fact sheet, the 16th in a series to encourage civic involvement in community problem-solving. Contributions made to The Learning Community are tax deductible. You may send your contributions to or request information from The Learning Community at 184 Hood Drive, Crossville TN 38555 (484-2633.)