SERVE THE PLANET 2018

Module 2: Study Circle Part 3

Energy Use in Daily Life: TRANSPORTATION
The purpose of this study circle is to better understand the impact of our transportation use on the planet, and how it can be used responsibly to make the planet more sustainable.
Meaning of Transportation

• The movement of people or goods from one place to another

• A vehicle or system of vehicles, such as buses, trains, etc., for getting from one place to another
Evolution of Transportation

https://www.youtube.com/watch?v=o-XPufM4i8E
Video duration – 1 min 44 secs
Modes of Transport

- Land
- Air
- Water
Elements of Transport

Vehicle
- Device used to move people and goods

Infrastructure
- Fixed installations that allow a vehicle to operate

Operation
- Entity which operates the vehicle
## Energy Sources in Transportation

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Transportation Modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>Cars, Motorcycles, Light trucks, Boats</td>
</tr>
<tr>
<td>Diesel Fuel</td>
<td>Trucks, Buses, Trains, Boats, Ships</td>
</tr>
<tr>
<td>Jet Fuel</td>
<td>Airplanes, Helicopters</td>
</tr>
<tr>
<td>Residual Fuel</td>
<td>Ships</td>
</tr>
<tr>
<td>Bio Fuel</td>
<td>Cars, Buses, Trucks, Boats, Ships</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Cars, Buses, Trucks</td>
</tr>
<tr>
<td>Propane</td>
<td>Cars, Buses, Trucks</td>
</tr>
<tr>
<td>Electricity</td>
<td>Cars, Motorcycles, Buses</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>Cars, Buses, Space rockets</td>
</tr>
</tbody>
</table>

*Source: The Royal Society Publishing*
Energy Consumption in Transportation

Source: The Royal Society Publishing

>96% from crude oil

~73% road transport

Light duty 52%

Marine 10%

Aviation 11%

Rail 3%

Bus 4%

Truck 17%

Other 3%

Gasoline 46%

Diesel 32%

Residual 8%

Biofuels 2%

LPG/CNG 1%
Environmental Impact of Transportation

Source: The Geography of Transport Systems
Environmental Impact of Transportation contd.

Source: The Geography of Transport Systems
Environmental impact of Transportation cont'd.

The transportation sector produces 25% of the world CO₂ emissions in 2015

Source: International Energy Agency
Environmental impact of Transportation contd.

https://www.youtube.com/watch?v=Heqd7IH7Z1A
Video duration - 1 min 38 secs
Environmental Impact of Transportation contd.

<table>
<thead>
<tr>
<th>Energy Consumption and Pollution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Pollution</td>
</tr>
<tr>
<td>Noise Pollution</td>
</tr>
<tr>
<td>Land Consumption and Landscape Damage</td>
</tr>
<tr>
<td>Ecological Degradation</td>
</tr>
</tbody>
</table>
Environmental Impact - CO₂ Emissions from Passenger Transport

grams of CO₂ per passenger kilometre

Note: The figures have been estimated with an average number of passengers per vehicle. The addition of more passengers results in fuel consumption - and hence also CO₂ emissions - penalty as the vehicle becomes heavier, but the final figure in grams of CO₂ per passenger is obviously lower. Inland ship emission factor is estimated to be 245 gCO₂/pkm but data availability is still not comparable to that of other modes. Estimations based on TRACCS database, 2013 and TERM027 Indicator.

Source: EEA report TERM 2014 eea.europa.eu/transport
Transportation and energy saving

Energy Efficiency
- More with less -

System efficiency
Organise land use, social and economic activities in such a way that the need for transport and the use of fossil fuels is reduced.

Reduce or avoid travel or the need to travel
AVOID/REDUCE

Travel efficiency
Make use of energy-efficient modes like public transport and non-motorised modes to reduce energy consumption per trip.

Shift to more energy efficient modes
SHIFT

Vehicle efficiency
Consuming as little energy as possible per vehicle kilometre by using advanced technologies and fuels and by optimising vehicle operation.

Improve the efficiency through vehicle technology
IMPROVE

Source: Energypedia
Ceiling on Desires on Transportation

“Though man is eager to attain peace, he confronts many obstacles in the path. Those who travel by train may be well acquainted with the slogan, “Less luggage, more comfort, make travel a pleasure.” Now, man is burdening himself with limitless desires. Because of this extra heavy luggage of desires, he finds it extremely difficult to carry on the journey of life. By such proliferation of desires, he loses his balance, moves far away from his goal, and even tends to go mad.

It is for this reason that I have been stressing the need for ceiling on desires. By limiting your desires, you can attain peace to a certain extent. You have to exercise a check on your desires and make comforts to get the Grace of the Divine.”

– Sathya Sai Baba (SSS 31.18: April 25, 1998)
Energy Saving Tips in Transportation

- Walk or ride a bicycle
- Take public transport
- Remove extra weight from car trunk
- Keep fuel filters clean
- Maintain tyre pressure
- Limit AC use
- Idle only when necessary
- Get regular tune-ups
- Carpool
- Choose shorter routes
- Live near to work
- Go for fuel-efficient cars
- Buy local products
- Reduce the number of vehicles
- Travel less, opt for conference calls
- Go for electric or hybrid cars
- Choose shorter routes
- Live near to work
- Go for fuel-efficient cars
Recap

https://www.youtube.com/watch?v=c4iVCJ00BYA&t=12s
Video duration - 2 min 47 secs
Recap

- Meaning of Transportation and its evolution
- Modes, elements and energy sources
- Environmental impact of Transportation
- Transportation and energy saving
- Ceiling on Desires and energy saving tips
In PART 4 of Module 2 study circle series, we will cover: Energy & Technology

- Technology - meaning, evolution, and advantages & disadvantages
- Environmental impact of energy use in technology
- Relation between technology and spirituality
- How can we practice ceiling on desires in relation to technology. Identifying our ‘needs’ versus ‘wants’
- How can Technology help the environment