

GREEN Transport

**EXPLORING ECO-FRIENDLY
TRAVEL FOR A BETTER TOMORROW**



Rani Iyer



From the desk of Dr R K Pachauri

Economic growth and development bring with it increased demand for mobility of people as well as transportation of goods and services. As a result, therefore, the transport sector worldwide has seen rapid expansion and diversification, with widespread growth in various modes of transportation including air, rail, road and water. In each of these there have also been rapid changes in technology and the evolution of unprecedented transformation.

Most of these modern means of transport are large users of energy, and hence emit large quantities of greenhouse gases, leading to climate change, environmental damage, noise pollution, health impacts, and changes in land use. We have used these “marvels of technology” on a scale and to an extent that they have affected the ecosystems of our planet significantly. A UNEP report published in *Our Planet on the Right Track* states, “We are now at a turning point – moving from the fossil fuel age towards renewable and clean energy. We are also at a juncture – evolving from industrial civilization towards ecological civilization”. This may be a sweeping and perhaps exaggerated observation, but we are clearly on the cusp of significant changes in the transport sector worldwide.

Meeting increasing energy demands while tackling the problem of global climate change is a growing challenge that has led scientists and industry to find alternative means by developing clean energy technologies, raising energy efficiency, and reducing emissions. Such efforts have now resulted in the advent of vehicles powered by renewable energy sources such as the sun, wind, bio-resources, hydrogen, and even a shift from liquid fuels to electricity. Cleaner fuels like CNG and LPG have already become significant sources of energy in transportation.

Of course, these advances present challenges and limitations, too. The production of biofuels on land, which is traditionally used to grow crops, would sharpen the conflict between producing food versus fuel. This is a complex issue in a world where food scarcity is a growing concern at the global level. Also, non-fossil fuel based vehicles are still in nascent stages of development, and alternative and renewable fuels are still generally costly, making them a somewhat distant reality for large scale usage.

However, the concept of “green transport” is being promoted by countries across the world. Sustainable transport policies are being implemented globally for cleaner, safer, and more affordable public transportation modes and networks. Public awareness and participation is an important part of the journey from concept to practice, based on viable technologies. Voluntary choices bringing about changes in behavior and lifestyles with enhanced awareness can make a difference. For instance, Copenhagen is a green city where more than a third of commuters cycle to work, school, or university everyday, making it the bike capital of the world. In countries like the Netherlands bicycles used number more than the population, and are commonplace throughout the country. This only proves that a radical shift in transportation modes can be brought about even without radical development of new technologies.

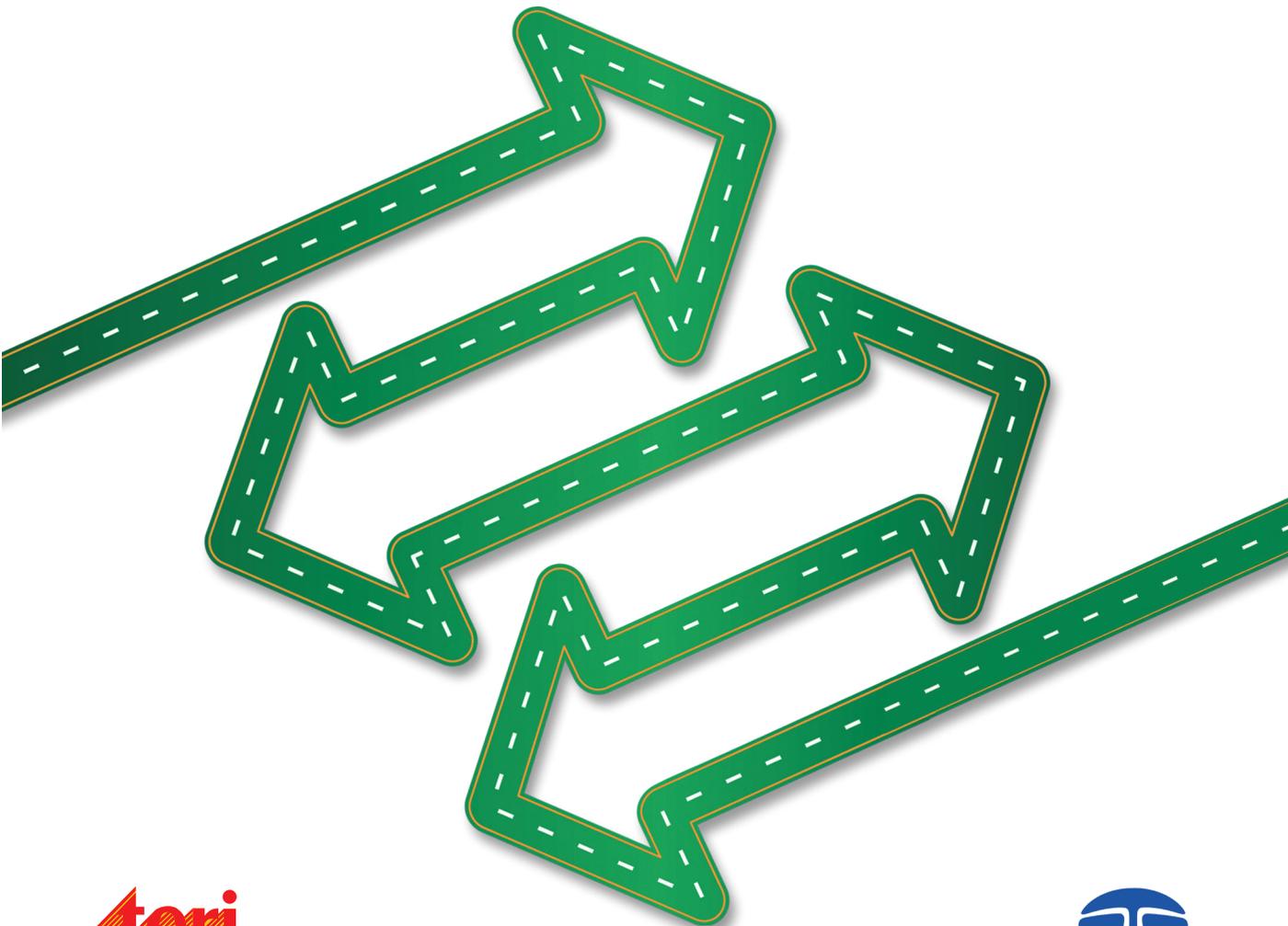
Green Transport explores the connection between “Green” and “Transport” and goes beyond exploring cleaner ways to travel. It offers insights into the benefits and impacts of alternative fuels and diverse new as well as old energy sources, highlighting new technological advancements and innovations, talking about success stories of amazing green cities across the globe, and much more. I hope this book will encourage young readers to make eco-friendly travel choices, such as walking, biking, carpooling, lessening the use of single occupant vehicles, using mass transit, etc. for a clean future for our planet and sustainable solutions for a better tomorrow.



R K Pachauri
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The Energy and Resources Institute

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INTRODUCTION

Sustainability means careful use of resources. The term “sustainable” means “conserving the ecological balance by avoiding depletion of natural resources”. In other words, our current usage of natural resources should be done in such a manner that there is enough left for future generations.

Green Transport presents history and environmental impacts of transportation. It also explores alternative ways to travel and transport, or green transport, without using fossil-fuel-driven vehicles. It explores ways of transport that cause minimal harm to the environment, use less fuel, and reduce congestion.

The things we buy from shops and markets are transported by vehicles from faraway places. Trains, ships, trucks, and airplanes are some of the vehicles commonly used in transportation of goods.

Vehicles can be broadly divided into two types: public transport vehicles (vehicles meant for the general public) and personal vehicles (vehicles meant for an individual or a family).

Rise in number of personal vehicles has resulted in congested roads. Accidents are common on such roads. It is also difficult for pedestrians and cyclists to move around safely on congested roads.

There are other reasons why personal vehicles have become a major problem around the world. Most of these vehicles run on petrol or diesel. This has created two major problems. First, these automobiles emit gases that harm human health and the environment. Certain chemicals from petrol also seep into the land, poison our waters, and persist in the environment for centuries.

Second, petrol and diesel took millions of years to form. Hence, these are also known as fossil fuels. Experts predict that we will soon run out of these fuels. Hence, we urgently need to look for alternatives.

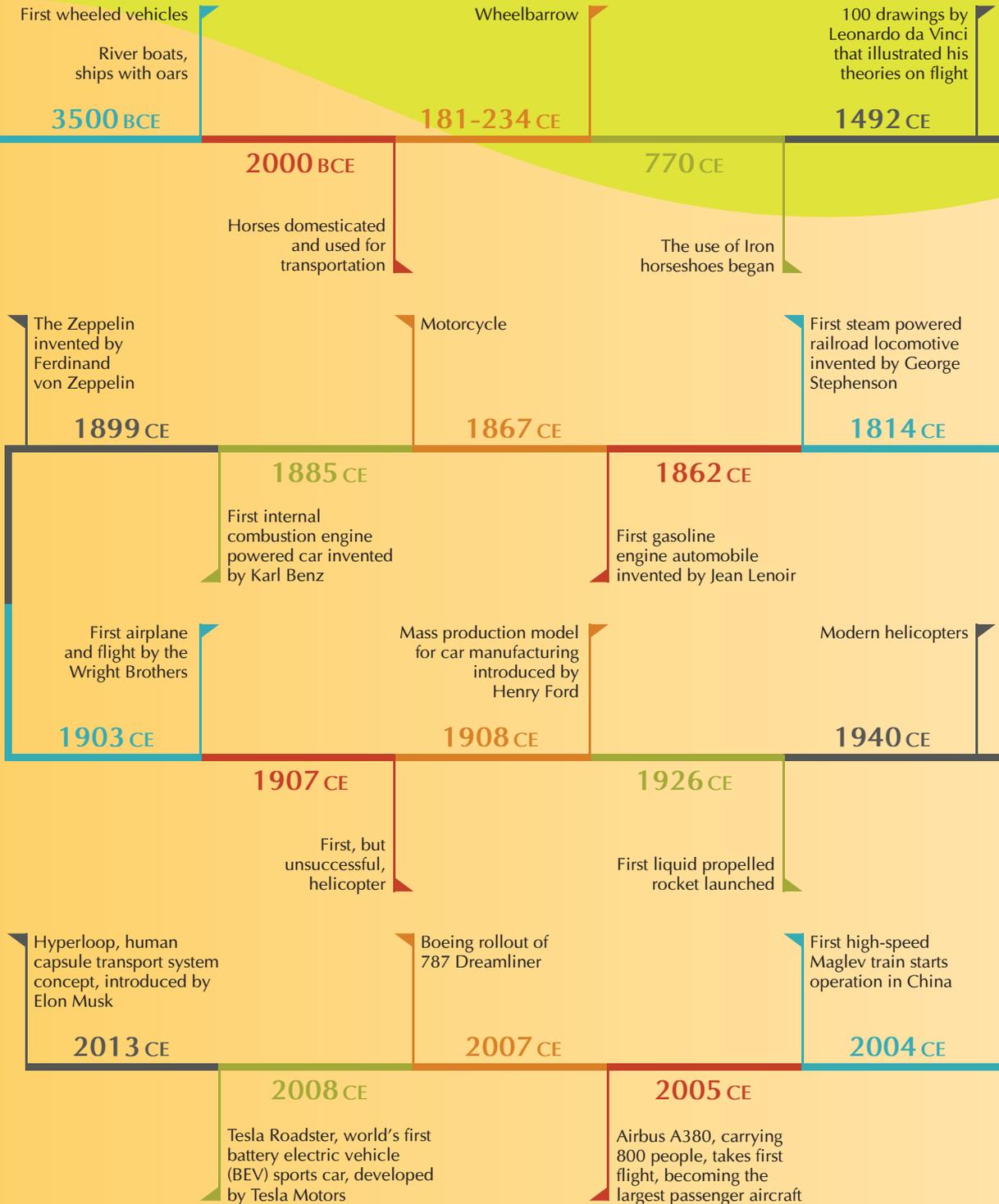
Walking and cycling produce no carbon output. One way to work around this issue is to use public or shared transport. Together, we still generate carbon footprint, but its size is relatively smaller. Scientists have calculated that all the personal cars in the world generate 15,000 tonnes of CO₂ annually, while public buses produce 28,000 tonnes of CO₂.

New models of vehicles, whose engines are designed to drive longer distances with less fuel, offer an option. Some vehicles also run on electricity or battery power. In some countries, the public transport system is being upgraded to encourage people to reduce their dependence on personal vehicles. In certain other countries, walking and bicycling are being promoted for local travel.

Let's explore the green way...

TRANSPORT

A TIMELINE





Submarine invented by Cornelis Drebbel

1620 CE

First self-propelled road vehicle invented by Nicolas Joseph Cugnot

1769 CE

Hot air balloon invented by Montgolfier brothers

1783 CE

1662 CE
First public bus system, with a horse-drawn, regular route, schedule, and fare, invented by Blaise Pascal

1783 CE
Demonstration of first paddle wheel steamboat by Marquis Claude Francois de Jouffroy d'Abbas

First steamboat with regular passenger service invented by Robert Fulton's Clermont

1807 CE

First steam powered locomotive developed for roads by Richard Trevithick

1801 CE

Steamboat

1787 CE

1807 CE

First hydrogen gas powered vehicle runs

1790 CE

Modern bicycles

First supersonic jet flight takes off

1947 CE

Bullet train transportation invented

1964 CE

World's first jumbo jet arrived at Heathrow

1970 CE

1956 CE

Hovercraft invented

1969 CE

First manned mission (Apollo) to the Moon

Concorde retired ending supersonic flight

2003 CE

Toyota releases Prius, the first petrolelectric hybrid car

2000 CE

Space shuttle launched

1981 CE

2002 CE

Segway, a self-balancing, battery-powered electric vehicle, invented by Dean Kamen

1994 CE

The Channel Tunnel opens

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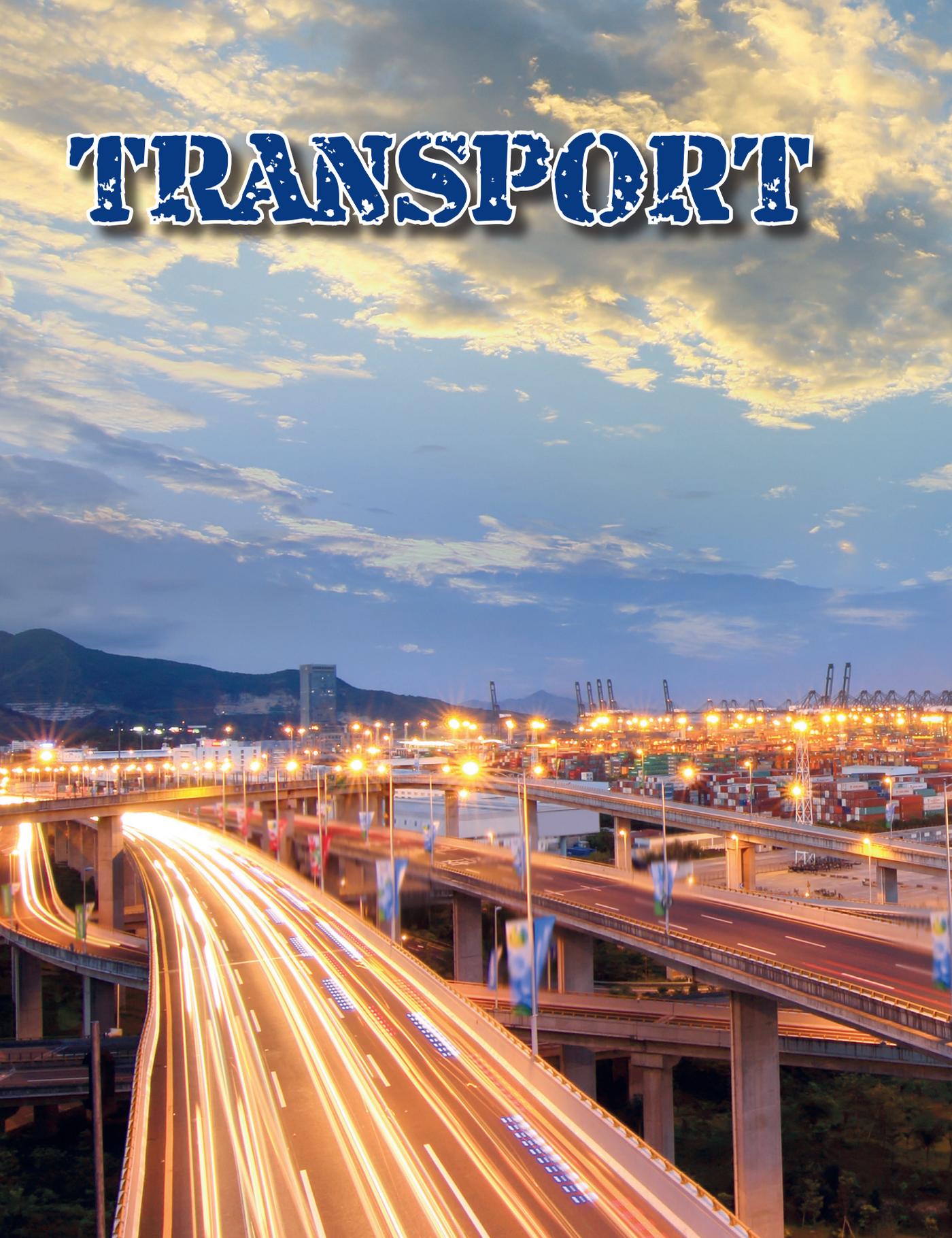
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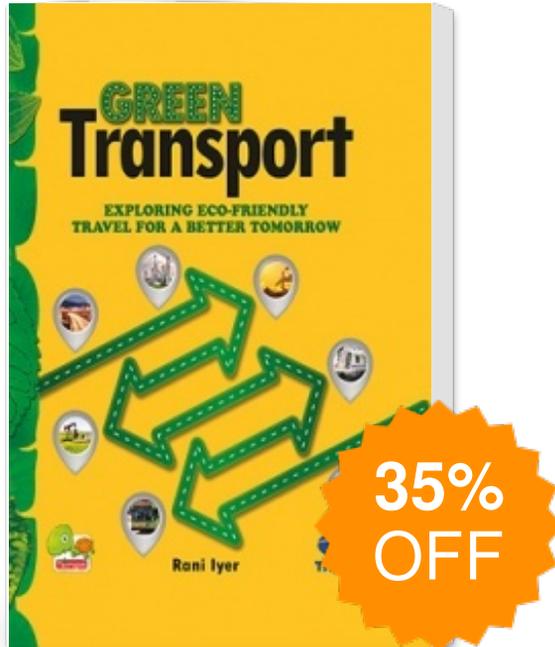
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TRANSPORT



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