CSTEP

RISE OF THE AIR QUALITY JUSTICE LEAGUE



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CSTEP

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Preface

WELCOME, YOUNG SUPERHEROES!

You may have heard your parents or grandparents share stories about their childhood. They often talk about spending the entire summer playing outside, enjoying pleasant weather in their villages, and looking up at clear blue skies filled with thousands of stars at night.

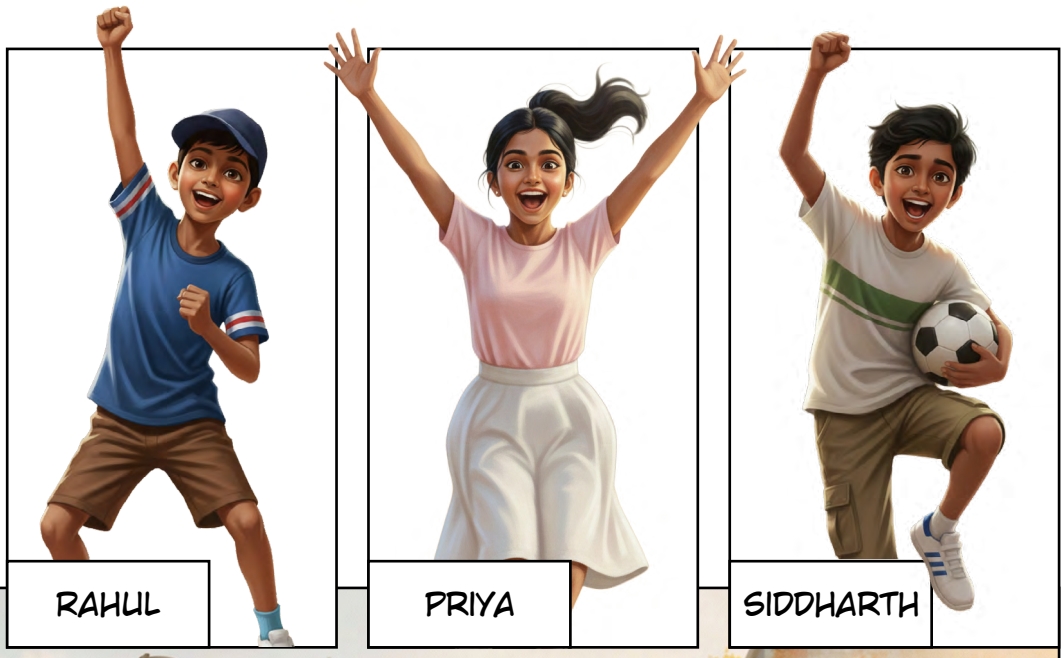
Today, however, the air around us often feels heavy, filled with dust, smoke, and pollutants. Industries, construction sites, vehicles, waste burning, and other activities release these pollutants into the air. Although they are tiny and hard to see, they can harm our health, our climate, and our future.

This is a story about three children who learn about the air around them, the causes of pollution, and ways to reduce it. Along the way, you will meet villains that spread pollution and superheroes who work hard to keep the air clean and fresh. Most importantly, you will discover how young heroes like you can be part of the solution.

Clean air will not return on its own: we must all work together to fight air pollution.

Are you ready to become a Clean Air Hero?
Turn the page and begin your mission!

EVERY EVENING, THEY MEET FOR AN HOUR OF FUN AND GAMES.











BUT TODAY, SOMETHING FELT...

DIFFERENT.


Where is Priya?
The Super-Goal challenge can't start without our best player!
Let us go to her house and find out
COUGH! COUGH!
I wish I could join them!
Hey Priya! Why are you indoors? Come on out!
Ma says NO!
My cough is getting worse, and she heard on the news that the air quality is bad again. She won't let me play outside.





I have a very bad cough, and I am having trouble breathing. Mummy says this is because of the dust and smog spreading in the air.





Hmm... I noticed that, too...

...The sky looks so grey these days. Even my throat feels scratchy when I'm outside.



How do you know if the air is good or bad?



Mummy told me something about the Air Quality Index or AQI. It's like a report card for the air around us!



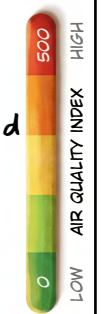


A report card for the air? What does that mean?





Scientists measure the tiny pollutants in the air using special instruments. If the numbers are high, it means the air is polluted and unsafe to breathe. That's how they determine the Air Quality Index—the higher it is, the worse the air!





Oh yes! Last week I saw on the news that the AQI was above 200, and they said that it's not good!

But what do those special instruments actually measure, and how do they even measure the quality of air?









Interesting question, kids! Scientists use instruments to check how clean or dirty the air is. Sometimes the air has tiny bits of dust and smoke or invisible gases that can make us cough or feel unwell.

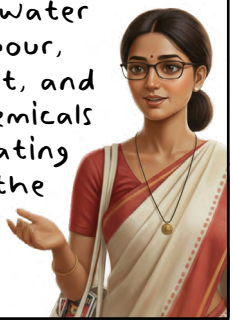
These are called pollutants, like PM10, PM2.5, nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide, and ozone.



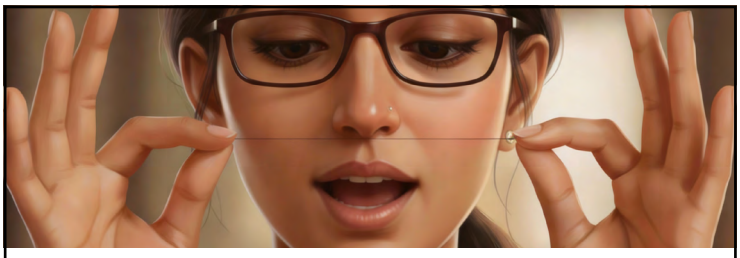
Didi! Didi! We were talking about air pollution. Can you tell us how machines know if the air is clean or dirty?

Oh! We have studied gases in school, but what are PM10 and PM2.5?

Particulate matter, or PM, are tiny particles of water vapour, dust, and chemicals floating in the air.







Very tiny! They are even thinner than a single strand of our hair! Our hair is around 50-70µm thick in diameter, but PM10 is smaller than 10µm in diameter and PM2.5 is even smaller than 2.5µm. The smaller they are, the more harmful they are for us, because these particles can easily enter deep into our lungs and even enter our bloodstream.







Look at that! All that smoke could choke an elephant!



COUGH! COUGH!





Vehicles and factories are polluting too! Once, while visiting my uncle with my parents, I saw big chimneys belching dark smoke, like evil volcanoes!

I went to the market with my mother a few weeks back...



...to buy new clothes for Diwali, and I saw dust flying everywhere from a construction site. My eyes started itching so badly that I covered my face with my mummy's saree.

You're right, kids!



The major sources of air pollution in the city are -

- Traffic
- Industries
- Construction

But there are many more, like burning waste and road dust.

Have you seen some people burning wood or coal for cooking? That also causes pollution.


Air pollution is very bad for our health. I have to wear this mask every time I go out! The doctor has even asked Dadi ji and Dada ji not to go out.
That's why clean air is so important. Air pollution can seriously affect our health, especially among children and older people.
It can cause asthma, coughing, wheezing, shortness of breath, and even serious heart and lung diseases.
Tiny pollution particles can enter deep into our lungs and lead to long-term breathing problems like chronic obstructive pulmonary disease or COPD.
That's so unfair! We should be playing outside and enjoying the fresh air, not worrying about air pollution!
THIS IS A VERY SERIOUS PROBLEM!
WE MUST FIND A WAY TO SHIELD OURSELVES.


YOU ARE RIGHT, SID. THESE AIR POLLUTANTS ARE LIKE SUPER-VILLAINS, AND WE NEED A PLAN TO FIGHT THEM! THE GOVERNMENT IS ALREADY TAKING MANY STEPS. IT'S LIKE THEY HAVE FORMED THEIR OWN SUPERHERO SQUAD:
THE AIR QUALITY JUSTICE LEAGUE
CAPTAIN CLEAN FUEL
FIRST, THE GOVERNMENT IS REDUCING THE USE OF PETROL AND DIESEL CARS AND PROMOTING CLEANER OPTIONS LIKE ELECTRIC AND CNG VEHICLES.
YOU MIGHT HAVE ALSO NOTICED FEWER OLDER CARS ON THE ROAD.
Meet the heroes!
CAPTAIN DUST PATROL
CAPTAIN CLEAN CHIMNEY
THE GOVERNMENT ALSO KEEPS A CLOSE WATCH ON INDUSTRIES TO MAKE SURE THEY DON'T POLLUTE THE AIR. FACTORIES MUST INSTALL SPECIAL FILTERS TO TRAP HARMFUL SMOKE BEFORE IT REACHES THE AIR.
THE GOVERNMENT HAS STRICT RULES FOR SUSTAINABLY MANAGING CONSTRUCTION WASTE. THIS ENSURES THAT THE SITES ARE PROPERLY COVERED WITH NETS TO PREVENT THE DUST FROM SPREADING.


And let's not forget
WASTE MANAGEMENT!
Through initiatives like the Swachh Bharat Mission, the government encourages everyone to segregate and manage waste responsibly, instead of burning it, based on the 7Rs!
REFUSE
REDUCE
REUSE
RECYCLE
RESPONSIBLE DISPOSAL
RECOVER
RETHINK
R1
R2
R3
R4
R5
R6
R7
7R BROTHERS
THESE 7R BROTHERS SOUND AWESOME! Each one has a special power to stop waste from turning into pollution!
Exactly! Together, they keep our surroundings clean and our air fresh.


BUT, DIDI, WHAT CAN WE DO AT OUR HOMES?
OH, I KNOW!
This is where WE join the fight!
In my housing society, we defeated the TRASH BANDIT all by ourselves!
YUMMY FOR EARTH
RECYCLE ME
BAD STUFF
The wet waste becomes NEW SOIL, and the dry stuff gets recycled into NEW MATERIALS! We don't burn the trash, so the TRASH BANDIT STARVES and can't make any smoke!
We are all responsible for SEGREGATING our waste! Wet waste goes in a green coloured bin, and dry waste in a blue bin!
Wet Waste
Dry Waste
That's great, Priya! All housing societies as well as restaurants and eateries should follow this.

And look at what I've made from our kitchen waste!

IT'S PURE MAGIC!



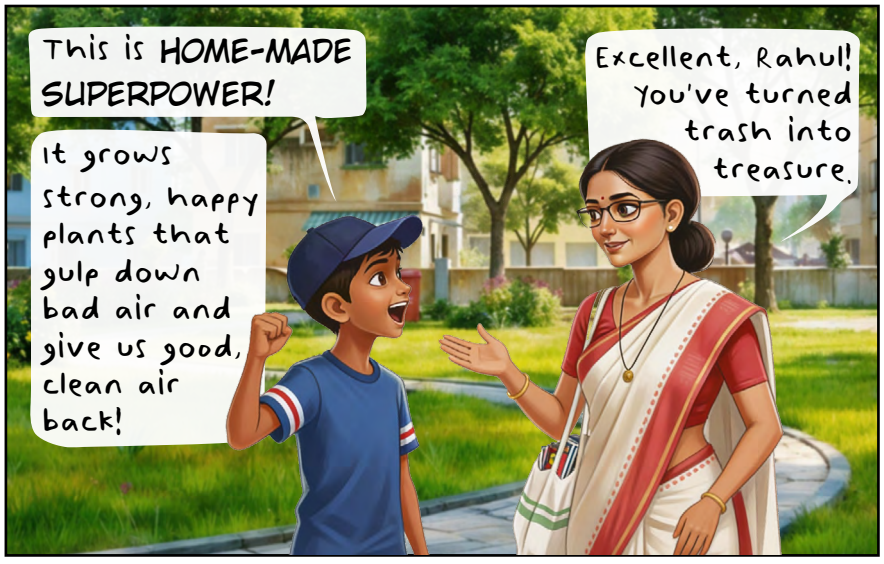




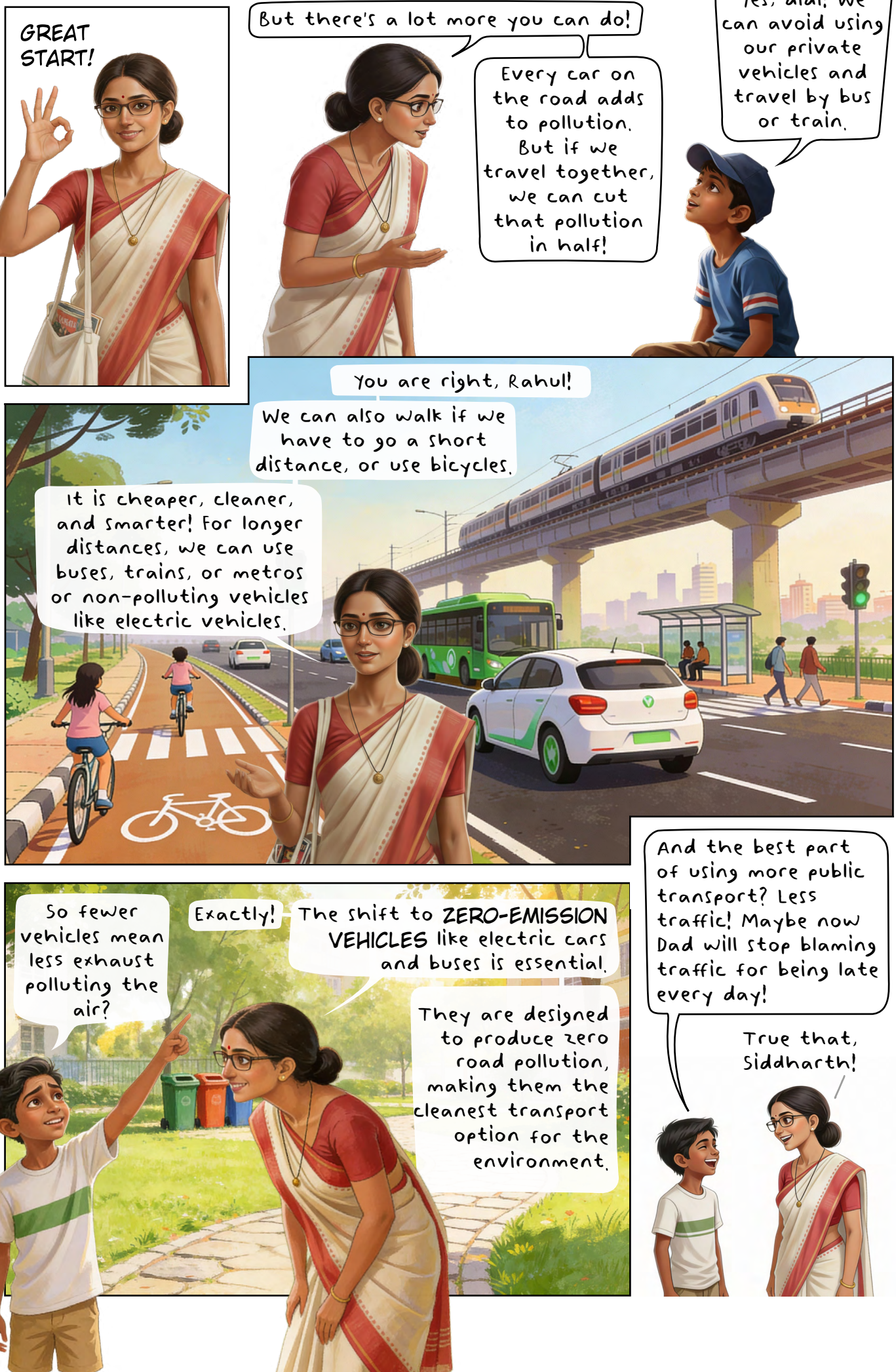
All residents in our apartment building also segregate waste into...

...two bins, green and blue. And then, our community *mali*[1] uncle takes dry leaves and composts them.

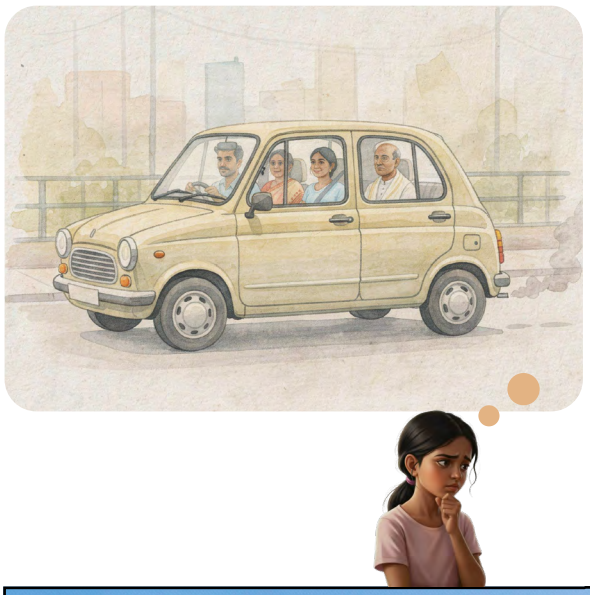


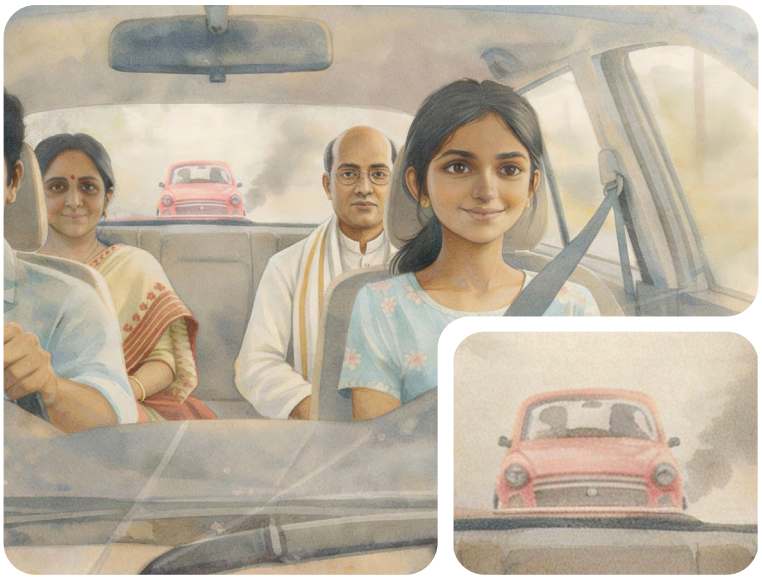


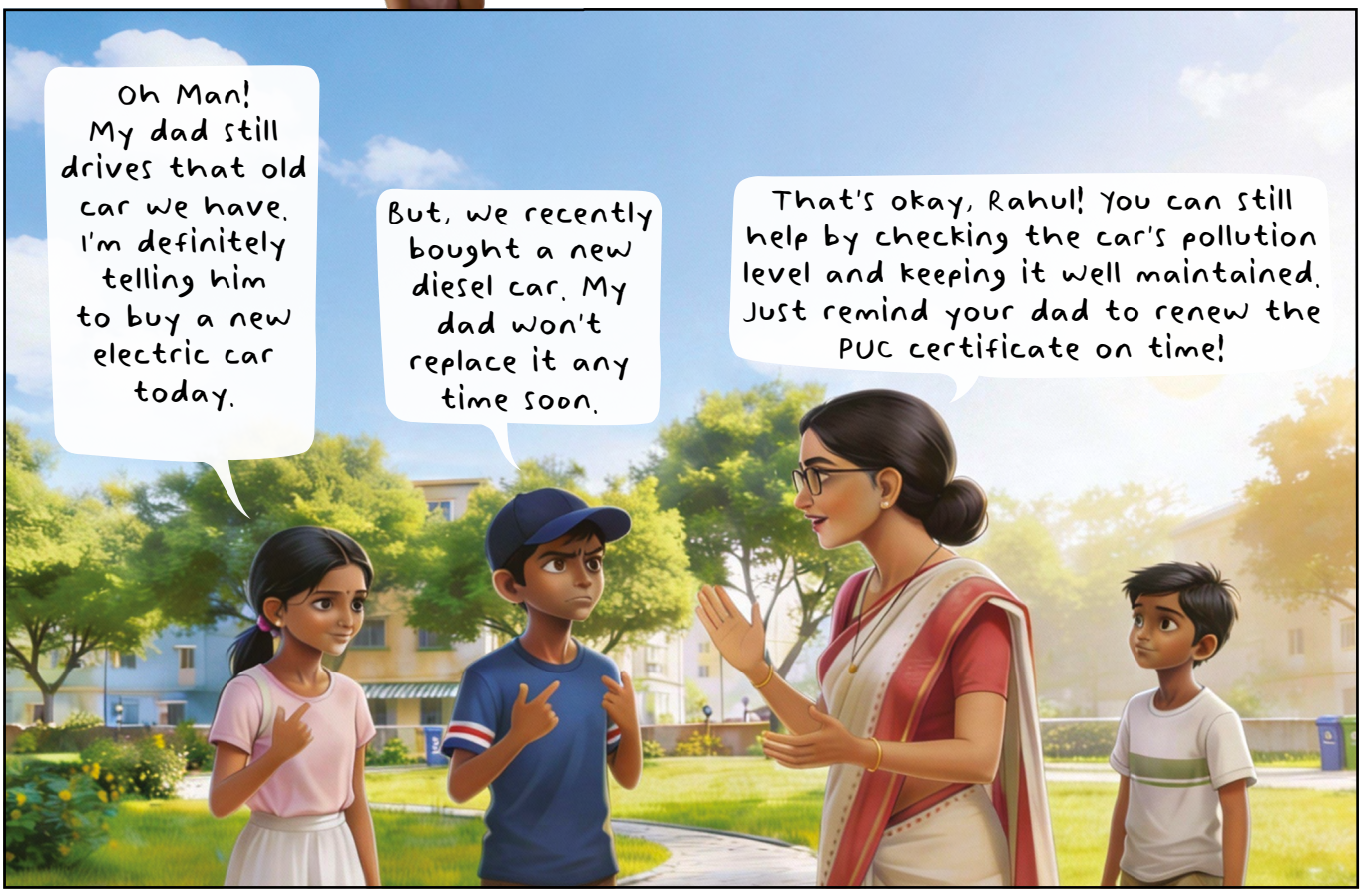
[1] Gardener


GREAT START!
But there's a lot more you can do!
Every car on the road adds to pollution. But if we travel together, we can cut that pollution in half!
Yes, didi! We can avoid using our private vehicles and travel by bus or train.
You are right, Rahul!
We can also walk if we have to go a short distance, or use bicycles.
It is cheaper, cleaner, and smarter! For longer distances, we can use buses, trains, or metros or non-polluting vehicles like electric vehicles.
So fewer vehicles mean less exhaust polluting the air?
Exactly!
The shift to ZERO-EMISSION VEHICLES like electric cars and buses is essential.
They are designed to produce zero road pollution, making them the cleanest transport option for the environment.
And the best part of using more public transport? Less traffic! Maybe now Dad will stop blaming traffic for being late every day!
True that, Siddharth!


But didi, what should we do with our older cars?
You can replace them with cleaner options like CNG cars or even better electric vehicles!
And when you scrap the old one, you can earn money too! The government gives special benefits for scrapping vehicles that are 10-15-years old and buying new electric ones.





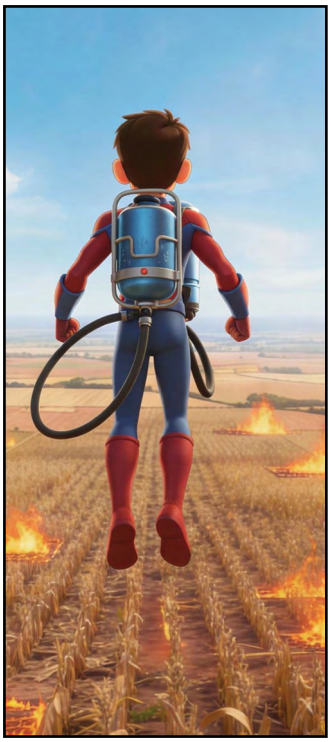

Oh Man! My dad still drives that old car we have. I'm definitely telling him to buy a new electric car today.
But, we recently bought a new diesel car. My dad won't replace it any time soon.
That's okay, Rahul! You can still help by checking the car's pollution level and keeping it well maintained. Just remind your dad to renew the PUC certificate on time!

But while cities are full of pollution...

at least people in villages must be breathing fresh, clean air, right?

Not always, Rahul. After harvesting the crops, some farmers burn the remaining waste, which causes heavy smoke. But the government now uses satellites to track fires and stop stubble burning.







Look! That's **CAPTAIN CLEAN HARVEST!**

He spots fires from space and saves the air before it turns smoky!

The Justice League of Clean Air is awesome!

I wish I could join them too!

Aparna didi, I've also seen many villagers using chulhas that cause a lot of smoke.

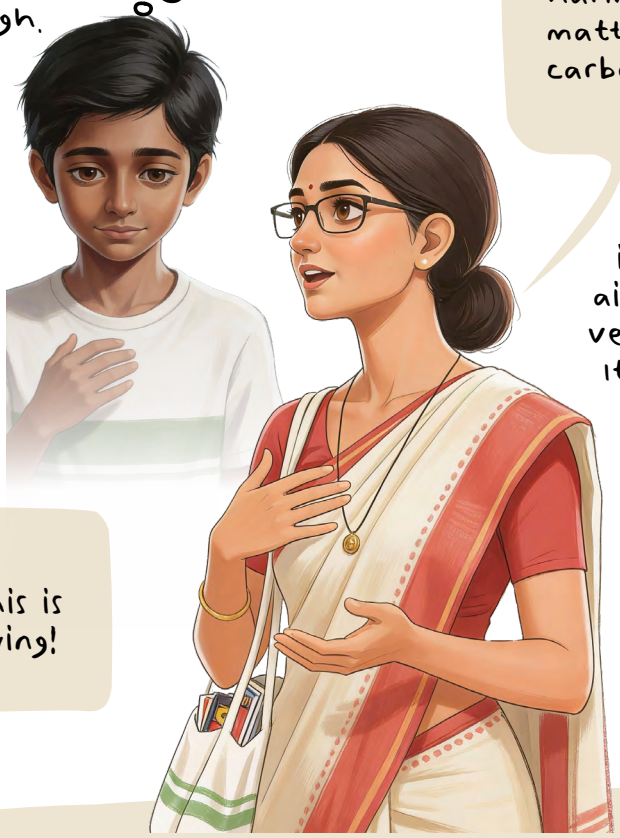




Yes, My Nani in the village always cooks food on a chulha. The smoke fills the whole kitchen, which gives her a bad cough.



When your Nani cooks with wood or cow dung, the smoke is full of tiny, harmful particles, called particulate matter (PM2.5), and gases like carbon monoxide.



Oh, this is terrifying!

This household air pollution is often much worse than the air outside, especially in poorly ventilated homes.
It affects women and young children the most because they spend the most time near the cooking area. Globally, this leads to millions of premature deaths every year from diseases like pneumonia, heart disease, stroke, and lung cancer.

But, don't be sad, Sid! She can switch to a gas stove or a smokeless chulha and use a solar water heater at home. Although LPG cylinders are very expensive, the government supports women so they can easily get a cylinder at lower prices through schemes like the Pradhan Mantri Ujjwala Yojana.

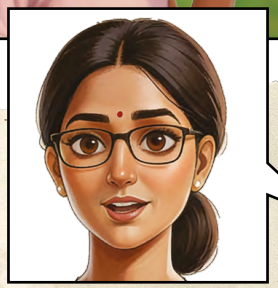


Aparna didi, does air pollution impact more than just people's health?

Of course, it does!

When there is too much sulphur dioxide in the air, it can cause acid rain.

Acid rain doesn't just affect nature—it can also corrode buildings, monuments, and statues....



...And it doesn't stop there. Ozone reduces photosynthesis in plants, making them weak and affecting their growth. Even animals can have serious health impacts due to high air pollution.



That is so sad! Air pollution is bad not only for us but also for animals and plants.



It's like the whole environment gets sick because of air pollution.



(SIGH) Air pollution is a serious problem, and humans are responsible for it.



But do you know... air pollution can be caused by nature as well?

WHAT!? How does nature cause air pollution?



VOLCANIC ERUPTION

WILDFIRES

Volcanic eruptions and wildfires release thick smoke and ash.

Even huge dust storms from deserts can add to air pollution.



BUT REMEMBER, THESE NATURAL SOURCES CONTRIBUTE FAR LESS POLLUTION THAN HUMAN ACTIVITIES AND OCCUR ONLY DURING CERTAIN SEASONS.

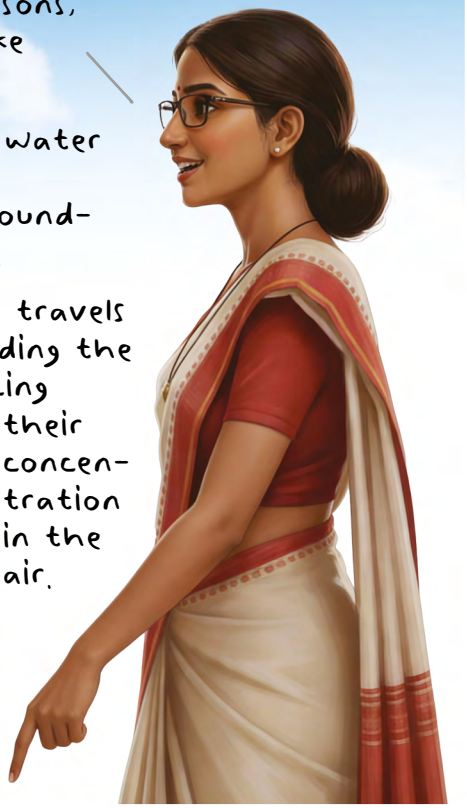
SANDSTORM



Because in other seasons, nature is able to take care of some of it....

...When it rains, the water droplets settle all pollutants to the ground- like washing the sky.

And in summer, wind travels long distances, spreading the pollutants and reducing their concen- tration in the air.













Sid, monsoon lasts only for 4 months. But unfortunately, our polluting activities continue all year.

In winter, the air is colder and wind speed is low, so the pollutants remain in the air.



NATURE TRIES ITS BEST TO CLEAN THE AIR,
BUT IT CAN'T DO IT ALONE.
WE MUST WORK WITH NATURE,
NOT DUMP ALL THE RESPONSIBILITY ON IT.

We should avoid all dirty, polluting activities and adopt clean practices. This will definitely clean our city's air!

Correct, Priya! These practices will reduce pollution a lot. But ... they can't clean it completely.

Why not? If we stop all dirty and polluting activities, shouldn't our air become totally clean?

I wish it was that simple. But the air doesn't stay in one place. It moves...

...flowing from one city to another, from one village to the next.

AIR HAS NO BOUNDARIES.

EVEN IF WE STOP POLLUTING,...

...THE SMOKE FROM OTHER PLACES CAN STLL COME HERE...

...AND POLLUTION FROM OUR CITY CAN TRAVEL TO THEIRS, TOO.

The solution is

THE AIRSHED APPROACH

ALL CITIES, TOWNS, AND VILLAGES IN A REGION AND EVEN NEIGHBOURING STATES MUST WORK TOGETHER. ONLY THEN CAN POLLUTION BE CONTROLLED COMPLETELY.

LATER THAT EVENING...

RAHUL'S DAD RETURNS FROM WORK WITH A SURPRISE GIFT...

WOAH!

So many firecrackers! I will burst all of them during Diwali!

Wait Rahul! What are you saying?

Bursting crackers will create more pollution!

Yes, Rahul! Firecrackers create harmful smoke and make it hard to breathe. We should celebrate festivals in a clean way.

The court has also ordered the Government to make strict rules for banning firecrackers.

Now, bursting firecrackers, and even their sale, is prohibited.

SIGH

YEAH! YOU ARE RIGHT. I will never burn any firecrackers again.

GUYS! LET'S GATHER ALL OUR FRIENDS AND FORM A SUPERHERO SQUAD TO CLEAN OUR AIR!


AIR QUALITY
JUSTICE
LEAGUE
CLEAN AIR HEROES!!

In a bustling city, two young boys, Siddharth and Rahul, eagerly wait for their star player and friend, Priya. But Priya finally arrives, wearing a mask, coughing and struggling to breathe as rising air pollution in the city takes a heavy toll on her health, stealing away the joy of a carefree childhood.

Guided by Aparna Didi, the trio uncovers a hidden enemy – air pollution, its sources and dangers, and the power of solutions.

Determined to bring back clean air and blue skies, the children take an oath to become Clean Air Heroes!



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