

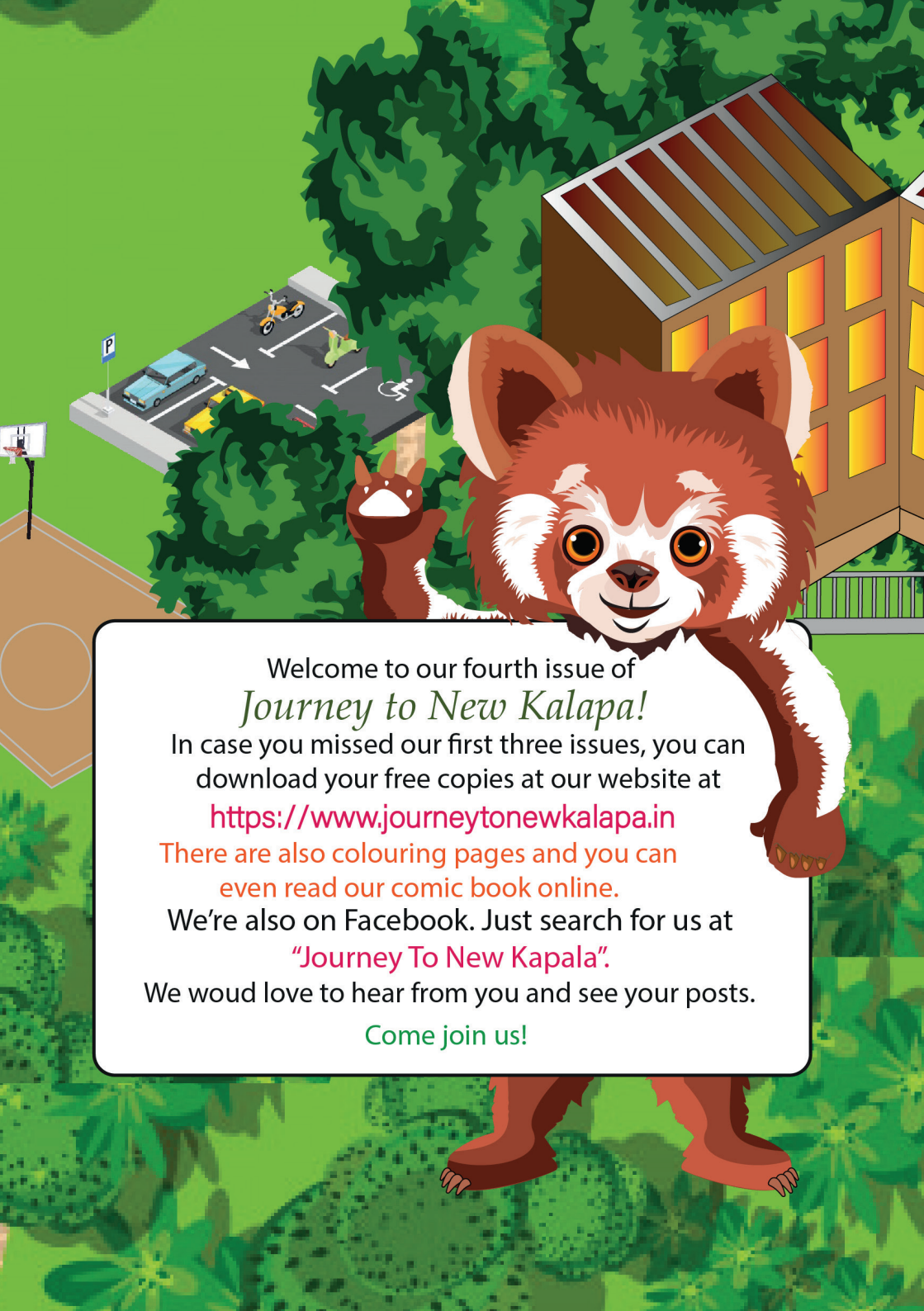
# JOURNEY TO NEW KALAPA

SAVING THE PLANET IN  
PARTNERSHIP WITH NATURE

Vol 1, Issue 4



**A Visit to the Science Exhibition**



Welcome to our fourth issue of  
*Journey to New Kalapa!*

In case you missed our first three issues, you can download your free copies at our website at

<https://www.journeytonewkalapa.in>

There are also colouring pages and you can even read our comic book online.

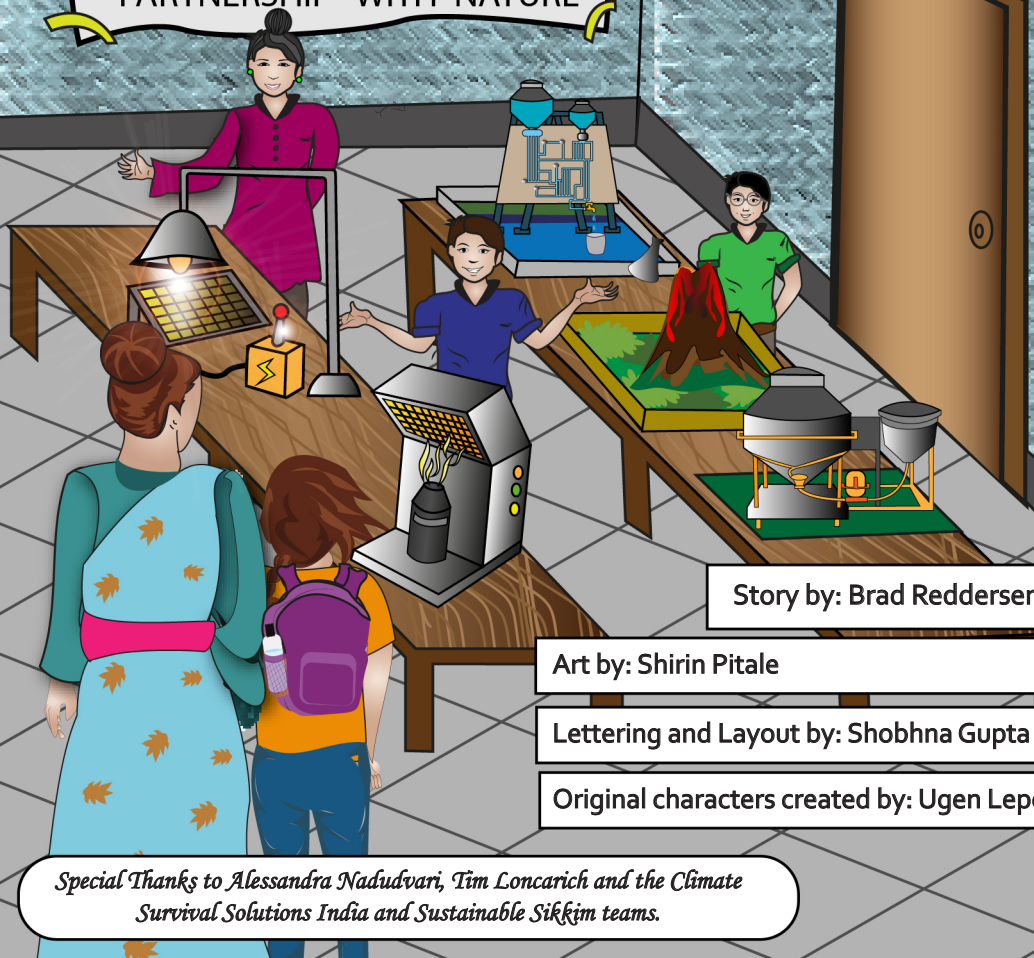
We're also on Facebook. Just search for us at  
*"Journey To New Kapala"*.

We would love to hear from you and see your posts.

Come join us!

# JOURNEY TO NEW KALAPA

SAVING THE PLANET IN  
PARTNERSHIP WITH NATURE



Story by: Brad Reddersen

Art by: Shirin Pitale

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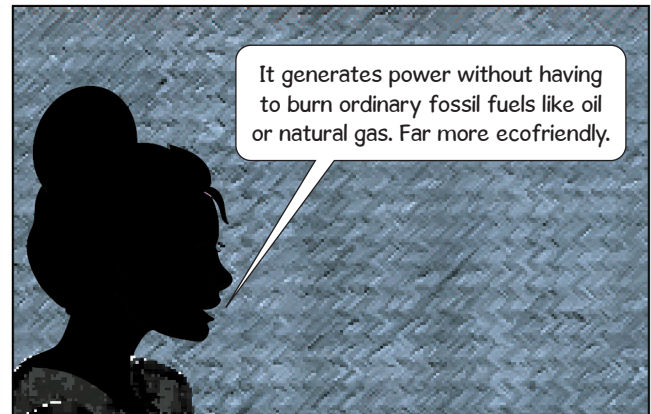
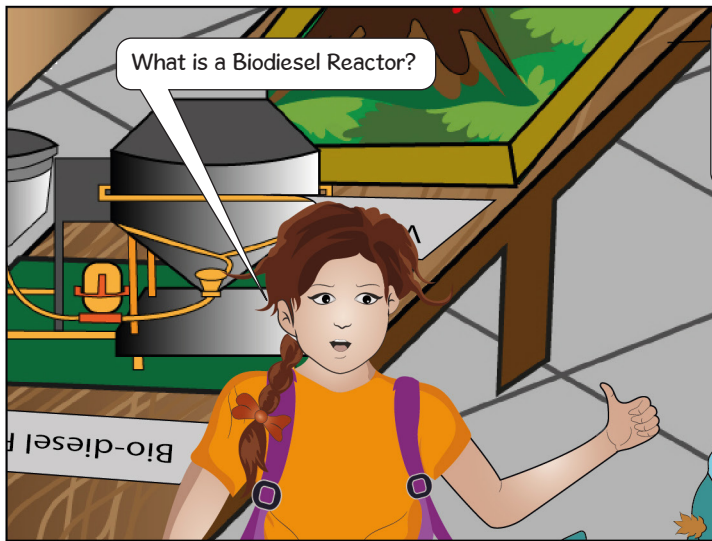
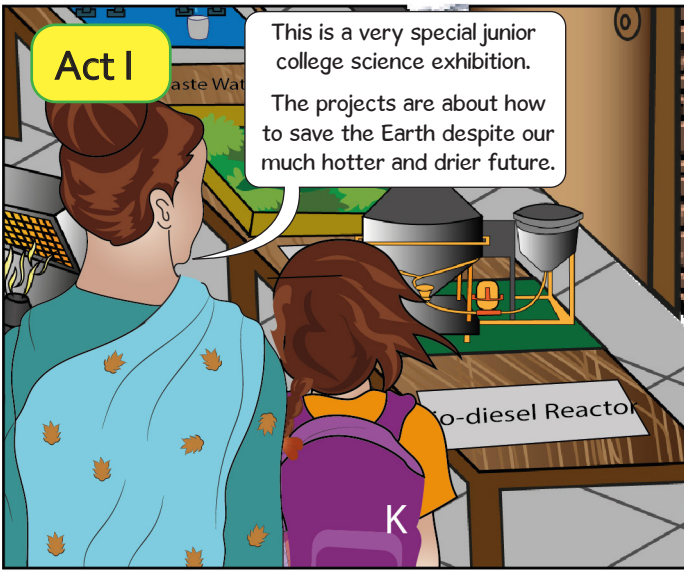
Original characters created by: Ugen Lepcha

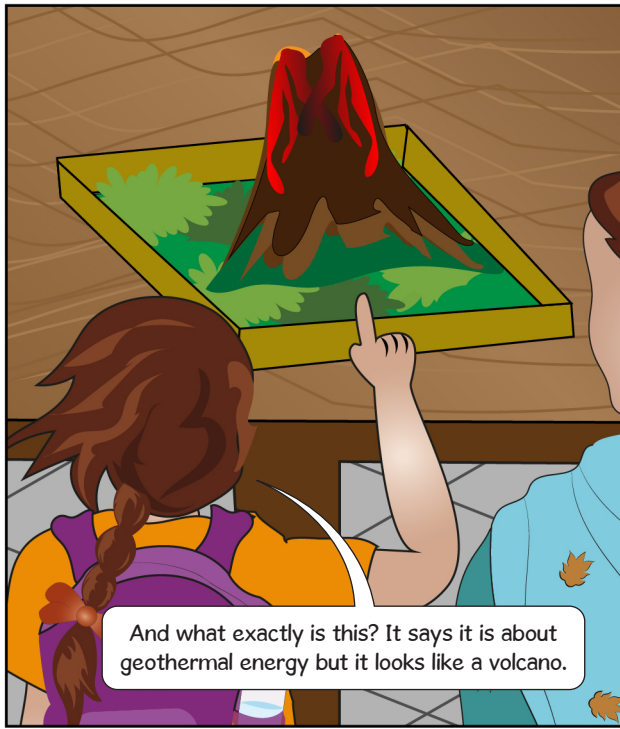
*Special Thanks to Alessandra Nadudvari, Tim Loncarich and the Climate Survival Solutions India and Sustainable Sikkim teams.*

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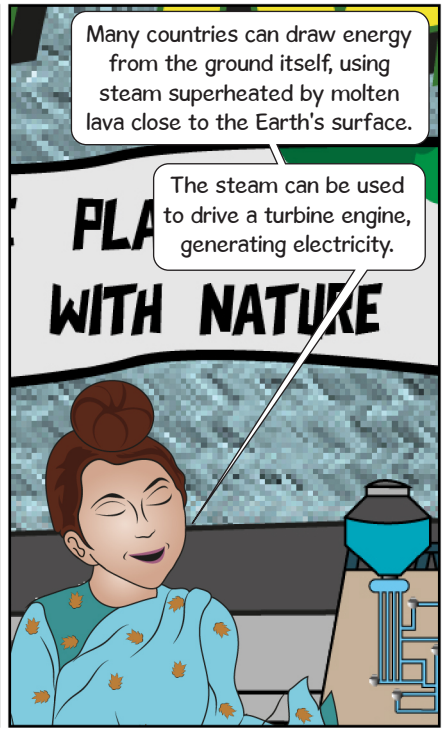
# Act I

This is a very special junior college science exhibition. The projects are about how to save the Earth despite our much hotter and drier future.





And what exactly is this? It says it is about geothermal energy but it looks like a volcano.



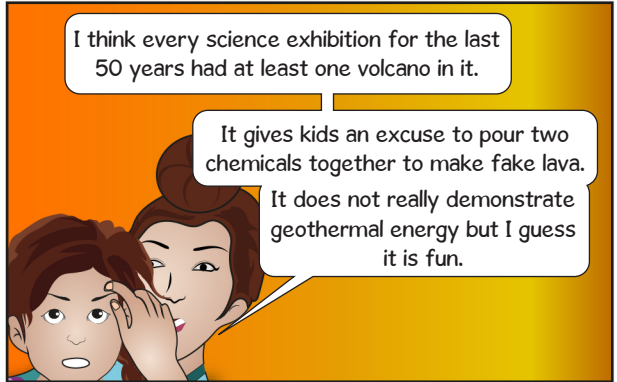
Many countries can draw energy from the ground itself, using steam superheated by molten lava close to the Earth's surface.

The steam can be used to drive a turbine engine, generating electricity.

**PLAY WITH NATURE**



But why are they showing a volcano?

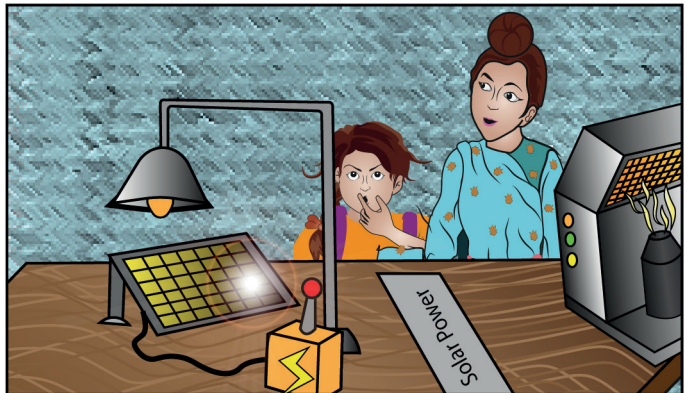
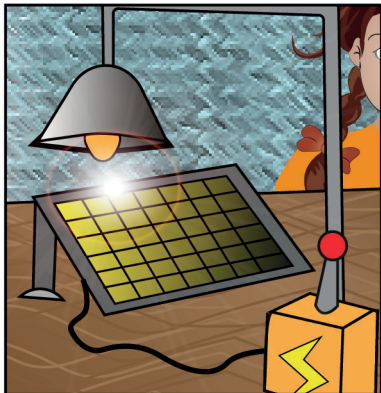
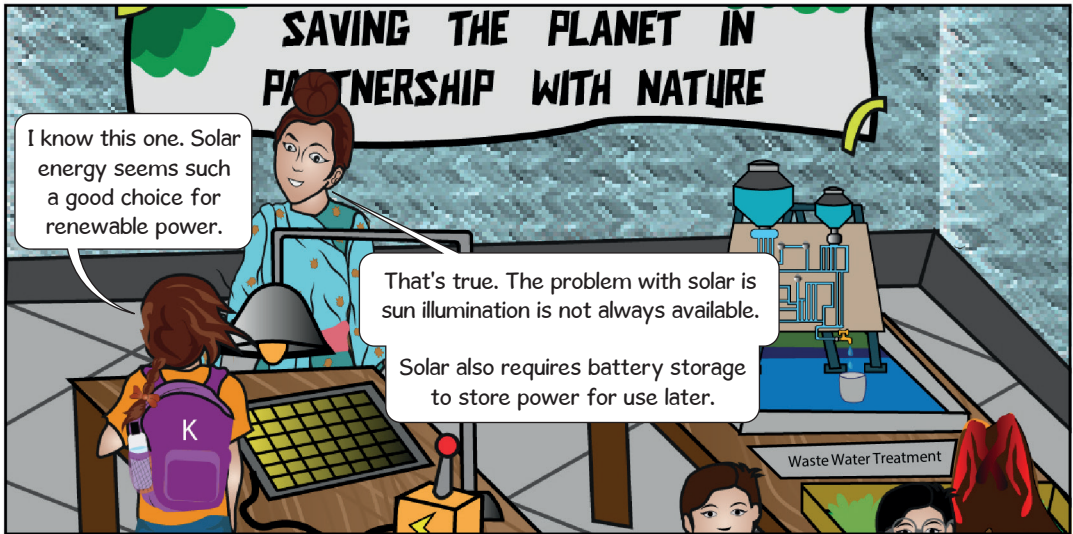
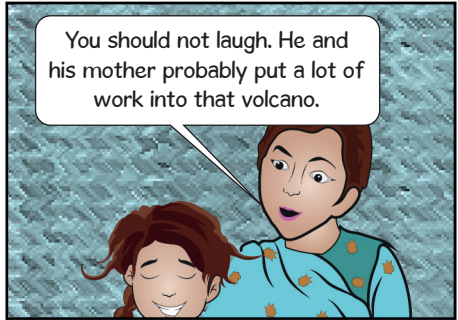


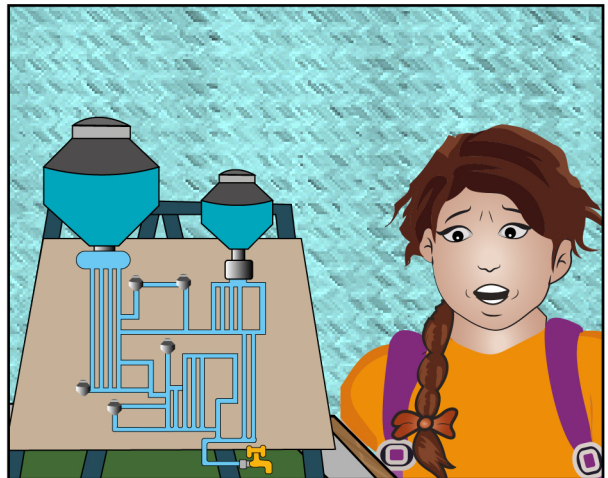
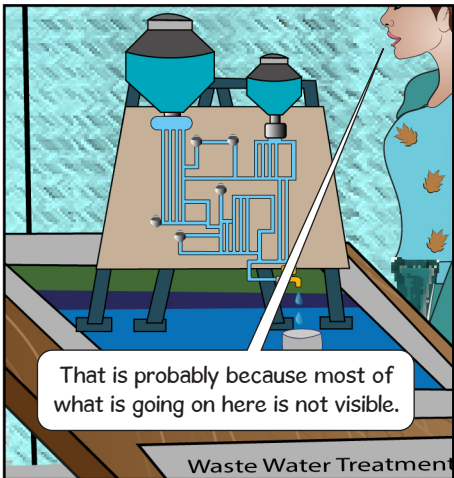
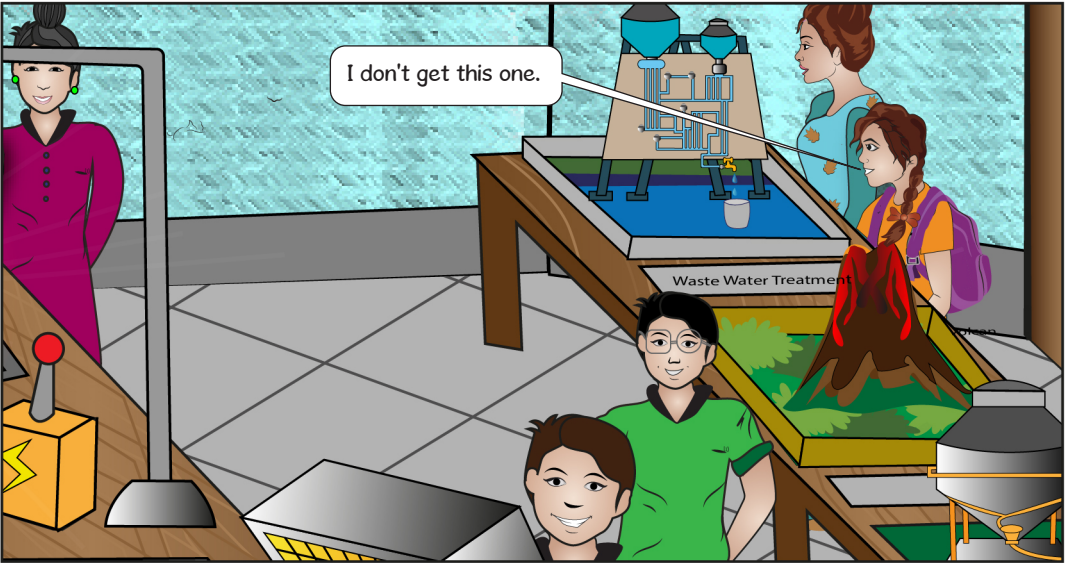
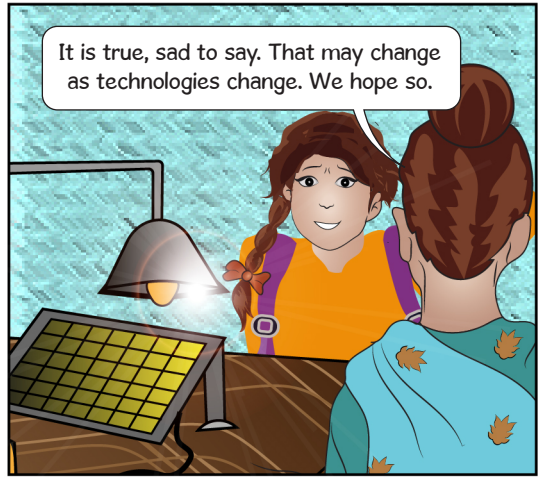
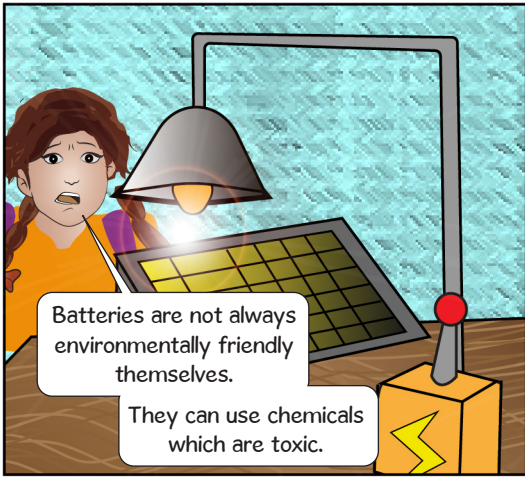
I think every science exhibition for the last 50 years had at least one volcano in it.

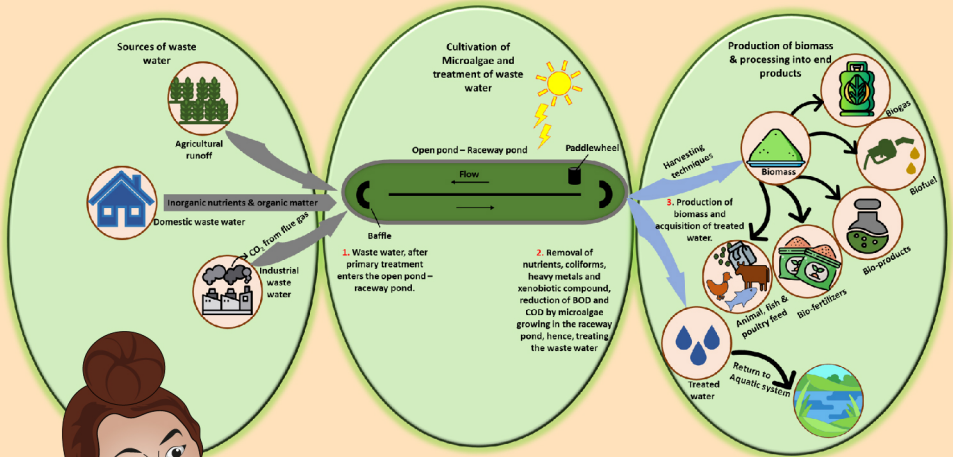
It gives kids an excuse to pour two chemicals together to make fake lava.

It does not really demonstrate geothermal energy but I guess it is fun.







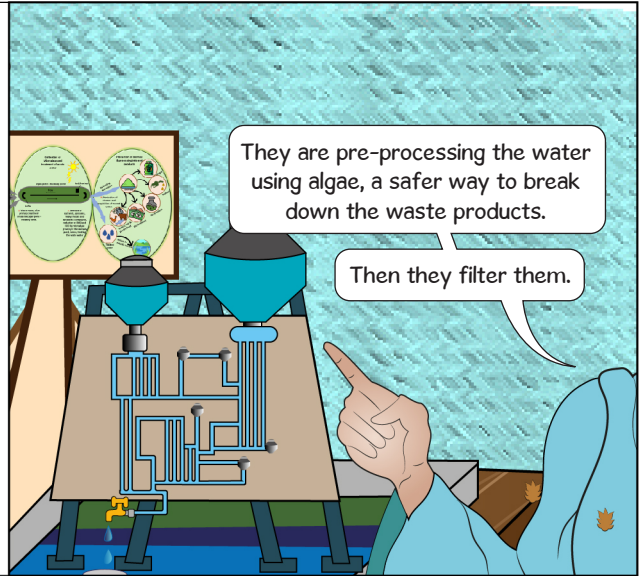


After we use water for washing dishes and such, or take showers, the old way of doing things was first to chemically treat it so it would be less harmful. Then we let it run off to the sewers.

That is harmful to the environment and wasteful.

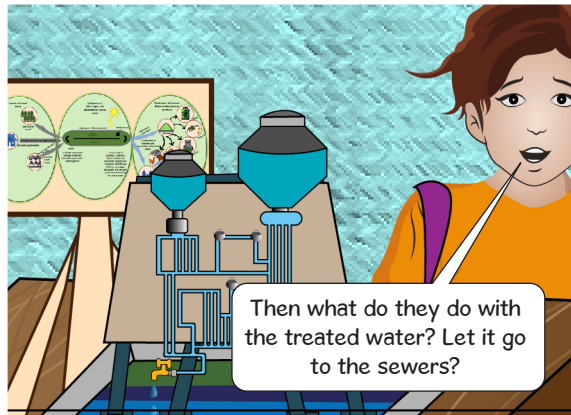
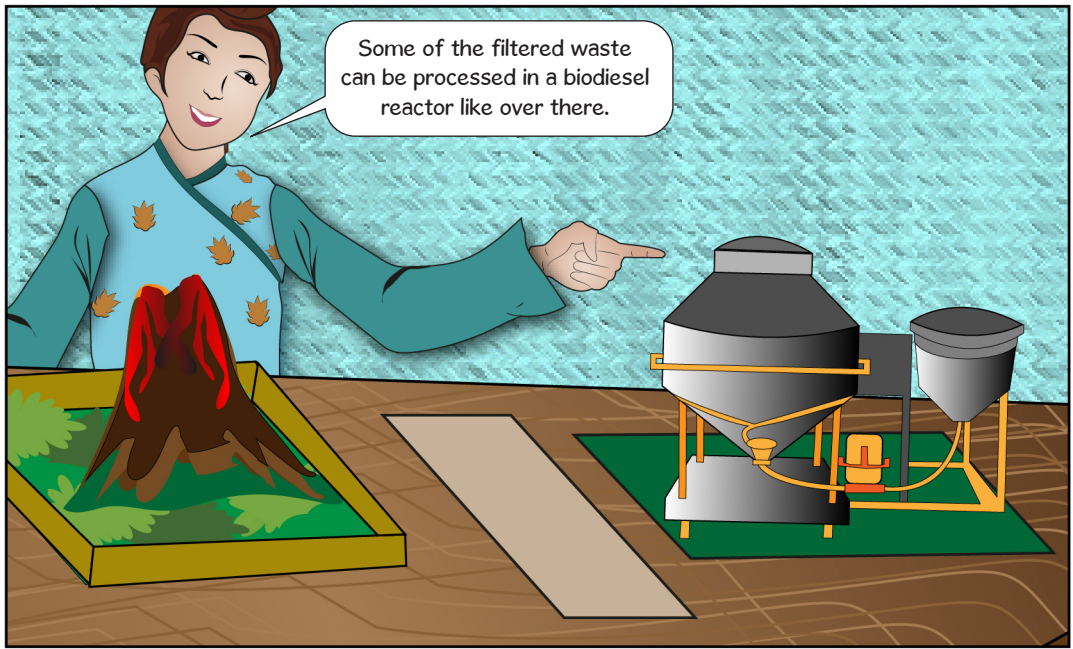


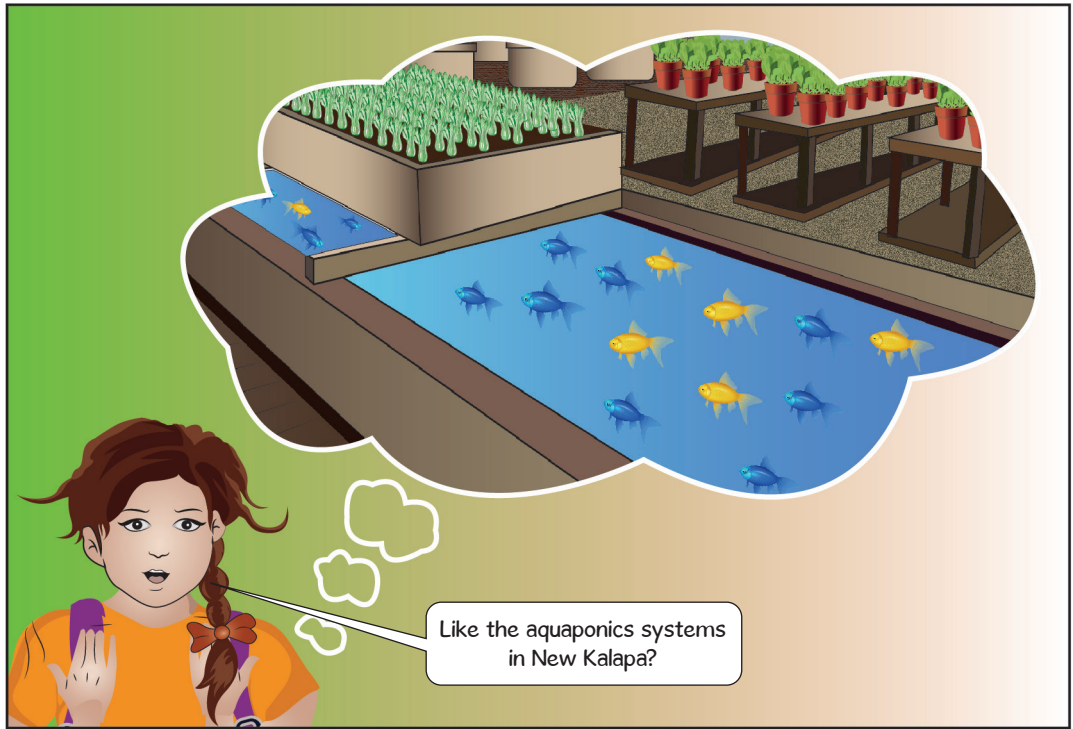
What are they doing here instead?



They are pre-processing the water using algae, a safer way to break down the waste products.

Then they filter them.







Is this the exhibit you were telling me about? The one we came to see?

Yes.



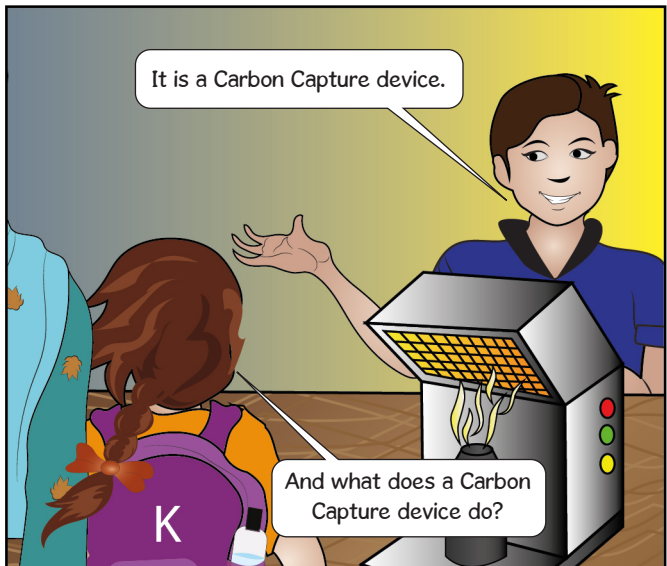
What do I say? I don't know what this is either.



Just ask what you want.

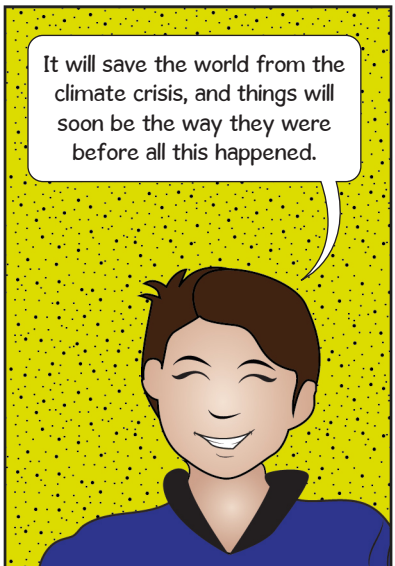


Can you tell me, what this gadget is and what it does?



It is a Carbon Capture device.

And what does a Carbon Capture device do?



It will save the world from the climate crisis, and things will soon be the way they were before all this happened.

## Act II

Meanwhile, Inside New Kalapa's Top Security Headquarters...



GANGTOK



NOVA SCOTIA



VANCOUVER



CEBU

**TO DO :**

Thank you for coming in. I know you wanted to be with Karma and your wife at the Expo.

It is fine, Srujana. They will learn what they need. Probably easier than if we were all there together.

What happened?



As you know, New Kalapa existed for many years in complete secrecy.



It had to be.



By the time we had the backing to build New Kalapa, the climate crisis was already far gone. Temperatures were way over the 1.5°C threshold people had hoped we could avoid.

Yes.



Massive melting in the Himalayas, Greenland, and the two poles were well on their way. Arctic ice is mostly gone, glaciers melting from underneath on Greenland, and Antarctica's giant ice sheets breaking away.

In India, even the monsoons which our farmers so far can rely on are at risk now.




Even then, with so much evidence of how the hotter world will change everything, there are still powerful forces determine to stop us.

Meanwhile, the fossil fuel industry is still bent on convincing everyone all will be okay.

That's part of what they're doing at the Science Expo?

Yes. They want to keep us burning more fossil fuels. Forever.





This is why everything we are doing, with the new energy sources, lowwater agriculture, algae innovations for wastewater treatment, needs to be kept secret for now.

They would first ridicule us in the media, then convince the public we were crazy. Next they would shut down our funders.




Indeed.



Okay.

I have remained quiet while you two agonize over the end of the world. But as much fun as this is for me too, you didn't drag us in here for a pep talk, right? Can you get on with it?



Pandero, manners please. I think Srujana is getting to her point.



I am.

As you know, our worldwide operations here at Himalayan Security and Investigations are constantly monitoring the world for possible threats to what we are trying to do here.

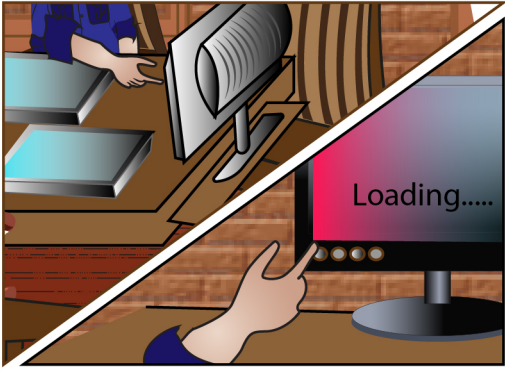


Yes. It is an extensive network.



Yesterday we had some bad news.

Rather than have me explain it, I am going to let our contact in Venezuela fill you both in.



Gabi? How are you? We have not spoken almost since you started with us a couple of years ago.

Muy bien, mi amigo.



I still do not know much Spanish. You promised me lessons.



I said I am doing very well, my friend. And yes, we will have lessons soon. It is good to see you both. I just wish it was under better circumstances.

What happened?

As you both know, I am an investigative journalist. A few months ago Srujana asked me to look into something.

It's way bigger than I thought.

She had intel saying I.G. Fargen had established a presence in Latin America.

The Indian company behind the drones that have been chasing us?

That's the one. We heard about it just as our team was breaking ground on our first New Kalapa category facility in the southern Hemisphere.

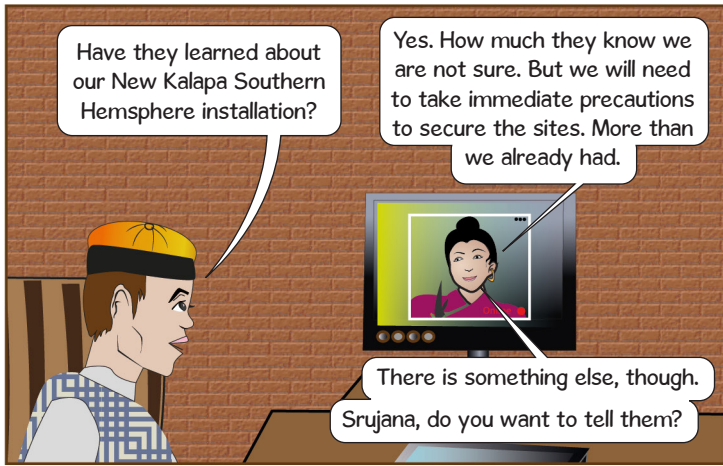
How did you discover they were there?

That is probably something we can talk about later.

There is something more urgent Gabi needs to tell you.

The intel we learned here is much more than I.G. Fargen having set up a group here.

Online ●



Have they learned about our New Kalapa Southern Hemisphere installation?

Yes. How much they know we are not sure. But we will need to take immediate precautions to secure the sites. More than we already had.

There is something else, though. Srujana, do you want to tell them?



I can, if you wish.



Don't leave us hanging here. What is it?



We have a mole. Someone has penetrated our organization. We do not know who it is.

But we've captured encrypted communications originating from inside our facilities. Responses came straight from I.G. Fargen.



This happened near you, Gabi? At the Latin American installation?

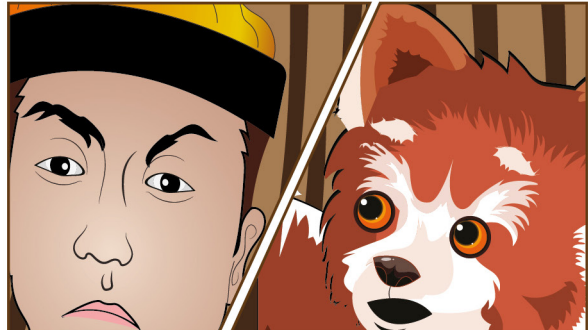
No. Not here.



Then where?



The mole is right here in New Kalapa India.



# Act III

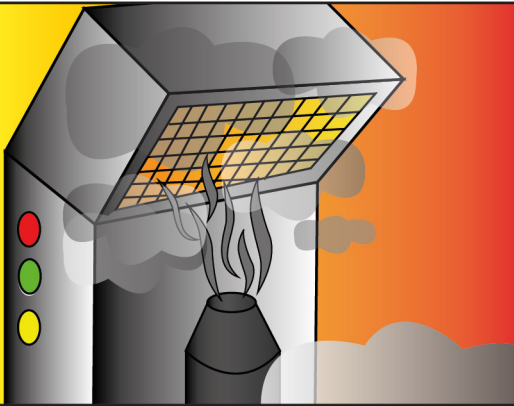
I know how you feel about carbon capture. Be polite.

How will this – carbon capture thing – save the world?

Imagine the beaker is a power plant running on natural gas or coal –

Like most of the power plants now in India.

That's right. Coal is the biggest source of power in the country.



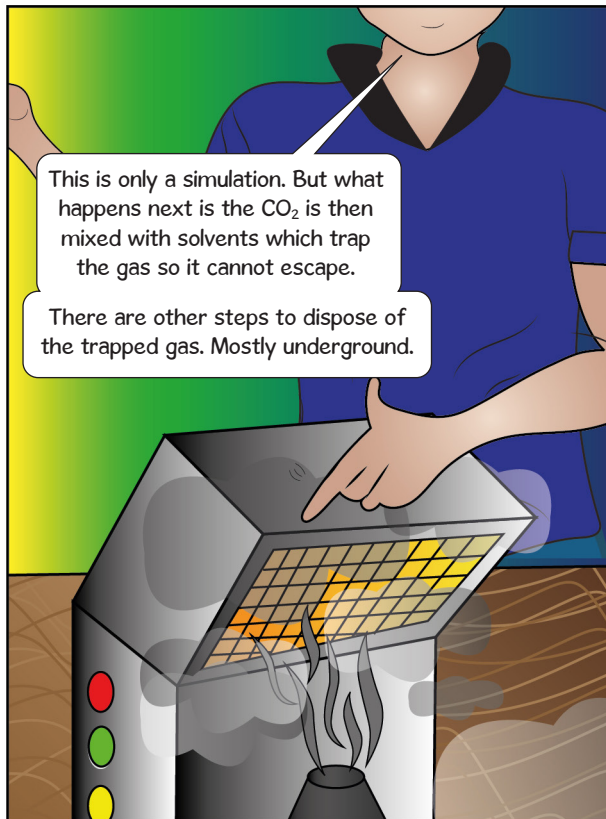
It is dirty.

Dirty? That's merely a cosmetic problem. What's important is that coal and other fossil fuels are plentiful and inexpensive.

But they dump carbon dioxide into the atmosphere and just make the climate crisis worse.

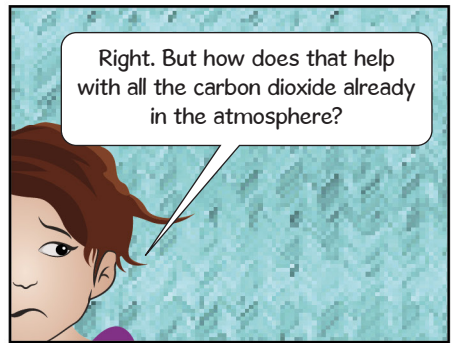
That's where the magic of carbon capture is so important.

Carbon dioxide is filtered off from the exhaust from the power plants.

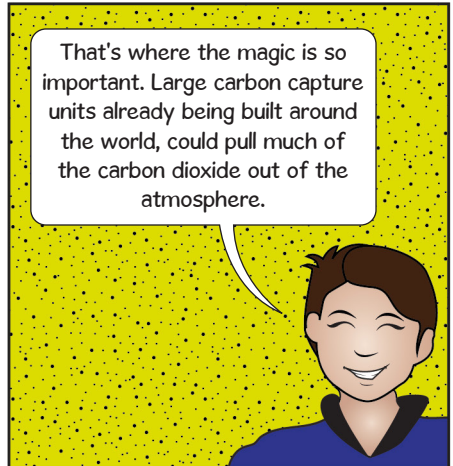


This is only a simulation. But what happens next is the  $\text{CO}_2$  is then mixed with solvents which trap the gas so it cannot escape.

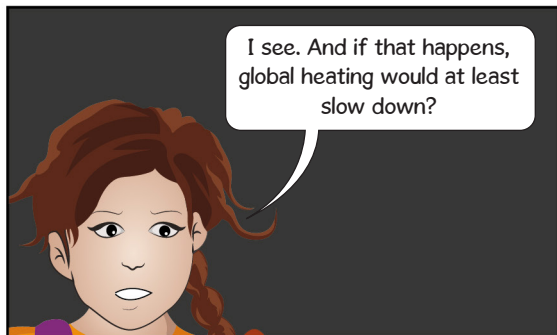
There are other steps to dispose of the trapped gas. Mostly underground.



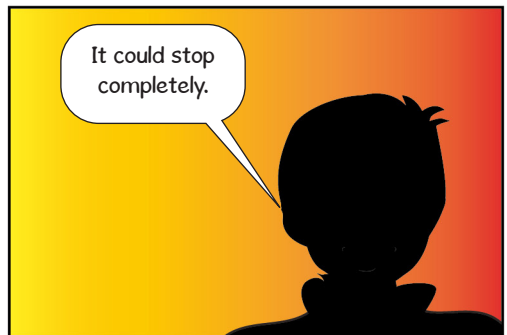
Right. But how does that help with all the carbon dioxide already in the atmosphere?



That's where the magic is so important. Large carbon capture units already being built around the world, could pull much of the carbon dioxide out of the atmosphere.



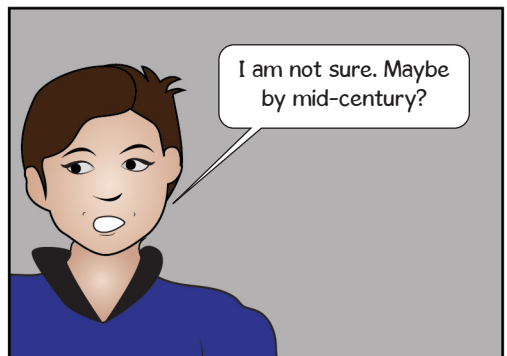
I see. And if that happens, global heating would at least slow down?



It could stop completely.



By when?

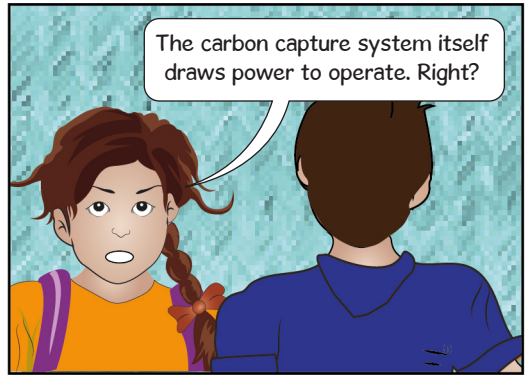


I am not sure. Maybe by mid-century?

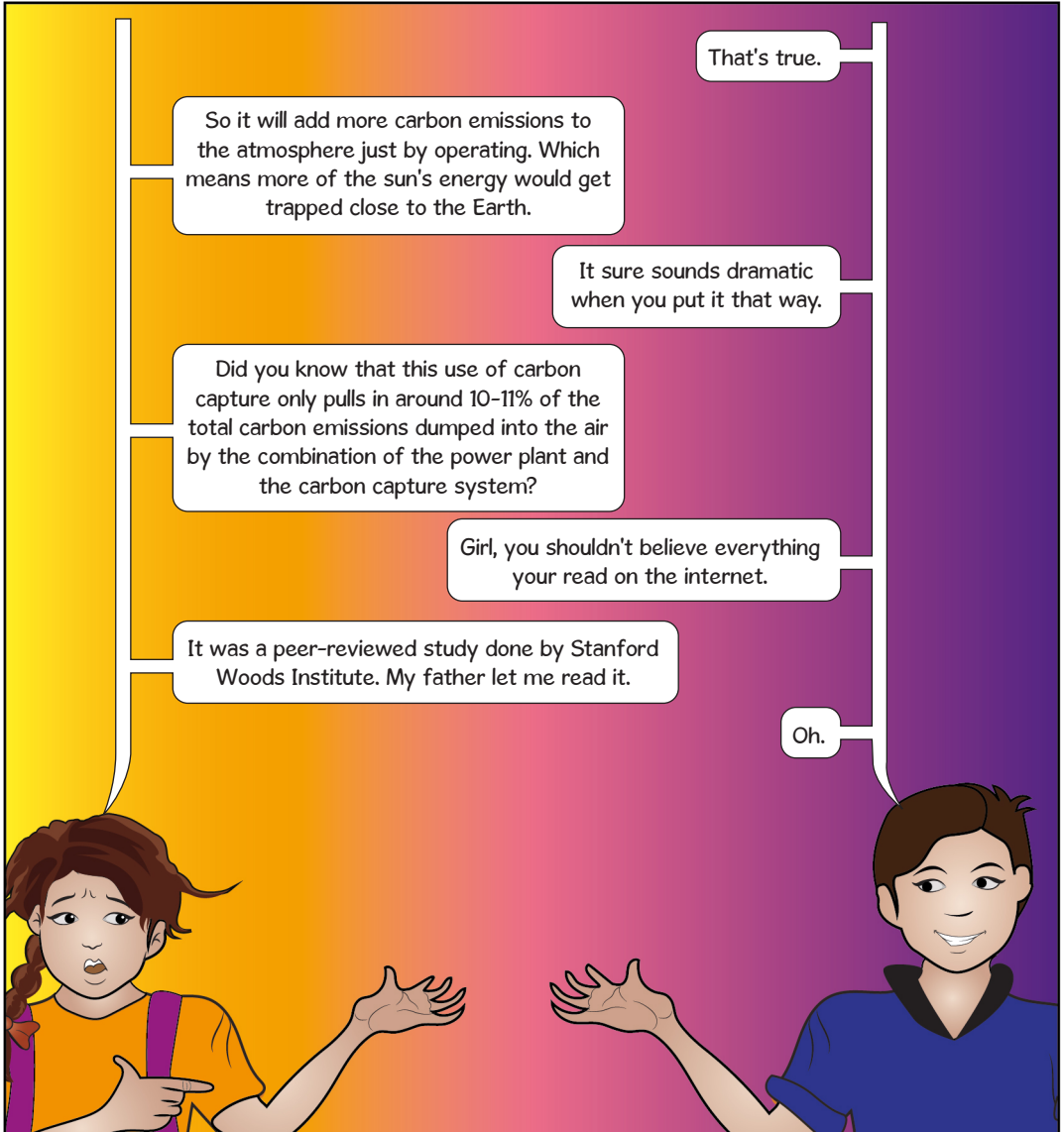


Ask what you want to ask. I know where you're heading.

Yes?



The carbon capture system itself draws power to operate. Right?



That's true.

So it will add more carbon emissions to the atmosphere just by operating. Which means more of the sun's energy would get trapped close to the Earth.

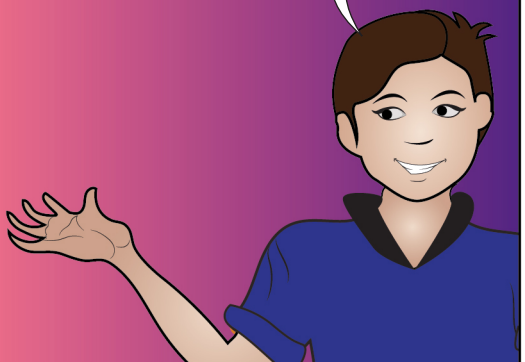
It sure sounds dramatic when you put it that way.

Did you know that this use of carbon capture only pulls in around 10-11% of the total carbon emissions dumped into the air by the combination of the power plant and the carbon capture system?

Girl, you shouldn't believe everything your read on the internet.

It was a peer-reviewed study done by Stanford Woods Institute. My father let me read it.

Oh.



So 90% of the total emissions from the plant still enter the atmosphere, even with your carbon capture units strapped on.

Considering the carbon capture unit raises the total carbon dioxide emissions, it seems like adding carbon capture to a power plant is kind of a waste.

It also makes the plant more costly, even more expensive than solar and windpower are now.

Okay. But think about what it might mean if larger versions of these could begin to pull the carbon out of the atmosphere.

If there is lower carbon dioxide in the atmosphere, the amount of heat trapped by the atmosphere would be less. The planet would cool.

Maybe.

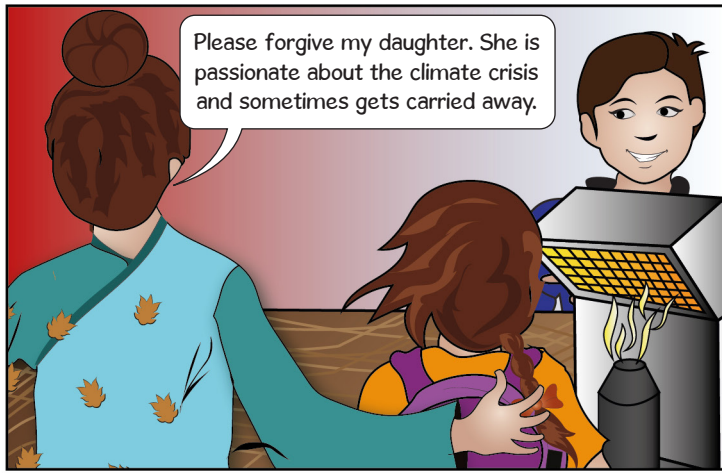
But just like with the carbon capture units, these systems will draw power. If that power comes from fossil fuel sources, it will add more pollution.

And it the other estimates are it will take trillions of dollars to do it – and decades to even see if it works.

We do not have that time to wait.

You shouldn't worry your pretty little head with stuff like that.

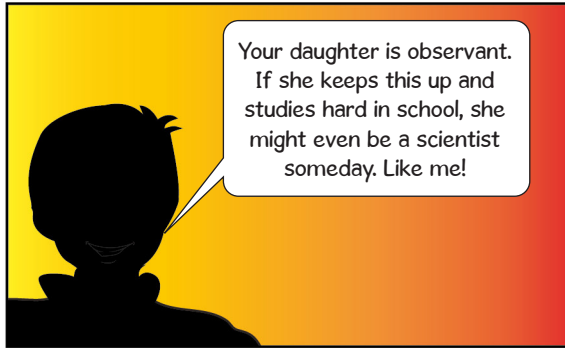




Please forgive my daughter. She is passionate about the climate crisis and sometimes gets carried away.



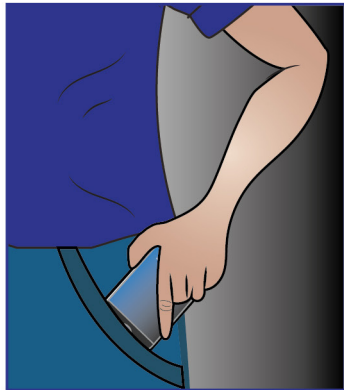
I am not even sure if the numbers she was quoting were right.



Your daughter is observant. If she keeps this up and studies hard in school, she might even be a scientist someday. Like me!



I am sure that is true.

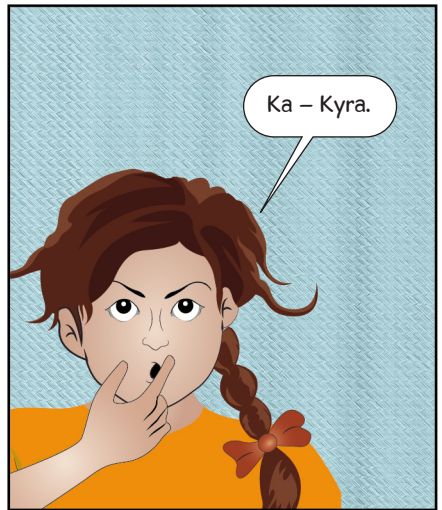


I'll be writing an article about the science expo later for the school bulletin. I bet your mother would love to see you in it.

Would you want to pose for a selfie with me?



Your manners, dear. Please.





Thank you for stopping by. I overheard part of the conversation. Do you think I could help explain anything more? I am from I.G. Fargen.

I.G. Fargen is the company which is sponsoring my research.



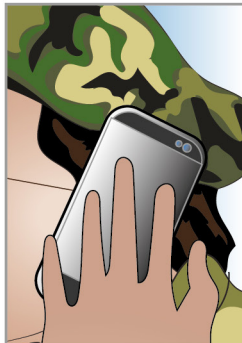
I am so sorry. We unfortunately have someplace else to be right now.



I am sorry to hear that. Maybe another time. The Science Expo is open for another full day, if you want to stop by again.

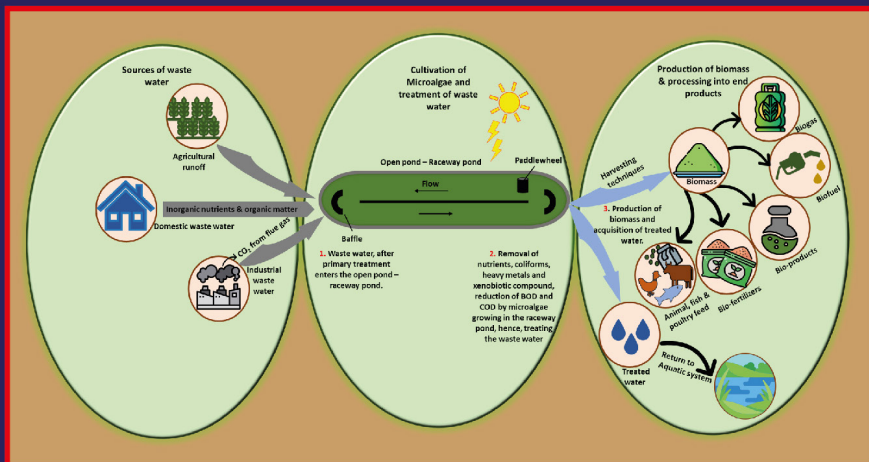


I am sorry we do not have more time.





# Algae-Based Wastewater Treatment Solutions



As temperatures rise due to the climate crisis, the increased heat will evaporate more water into the atmosphere and water shortages will become more common.

Since we still need water to drink, to cook with, to bathe, and to water our crops, that could mean some problems for us in the future. That is where science is already coming to the rescue.

One solution to this involves the use of algae, a term for a broad range of microorganisms which use photosynthesis to create food substances via biochemical reactions involving light, carbon dioxide, and water. Oxygen is one of the primary outputs from the process.

During Karma and Amma's visit to the Science Exhibition in this issue, they stopped by a demonstration project explaining how this is already being used to harvest "good" water from "used" water.

As the illustration here shows, the process begins with gathering water which goes down the drain in our showers, sinks, and bathtubs, as filtered but still not perfectly clean water coming from industrial plants, and as runoff from farms.

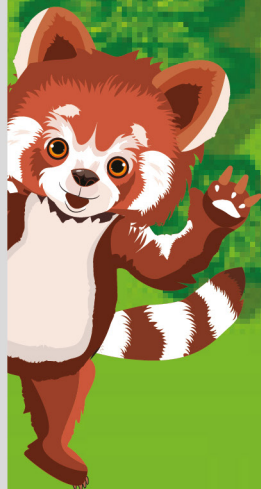
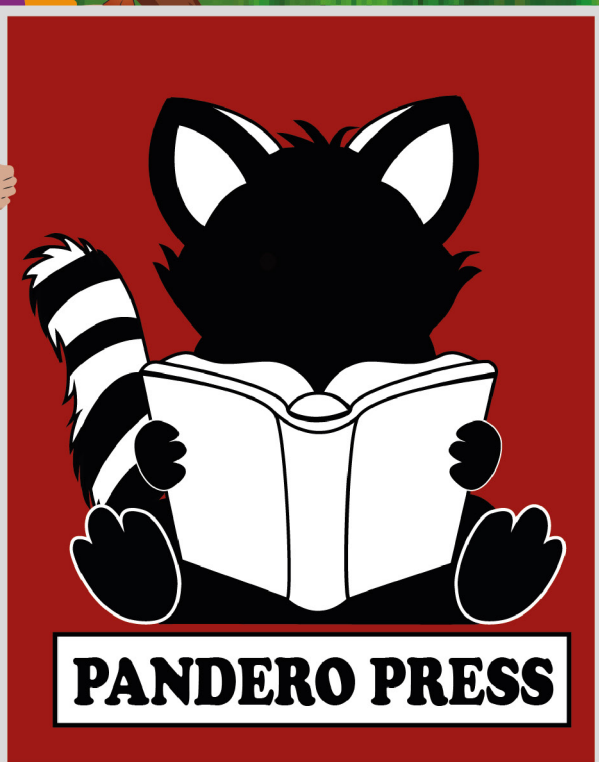
The "used" water is then brought into what are called "Raceway" ponds, where it is mixed with living algae. The types of algae are selected based on the types of wastewater gathered. Through biological and other means, the algae interact with the waste in the water to neutralize the waste and leave the what is left perfectly safe.

In a final step, the treated wastewater is filtered and separated. Some of the treated waste can be used as nutrient sources in advanced growing systems such aquaponics. Other treated waste can be used as biofuel for special energy reactors, which avoids the need for fossil fuels as a source of energy. As the graphic shows, still another use of the treated waste could be for special bio-fertilizers.

What is left is water which can be used for everything from toilet systems to irrigation in farmlands.

One of the companies doing advanced work in this area is Climate Survival Solutions India (<https://www.climatesurvivalsolutions.in>), based in Siliguri, West Bengal. The team would be happy to answer your questions.





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