



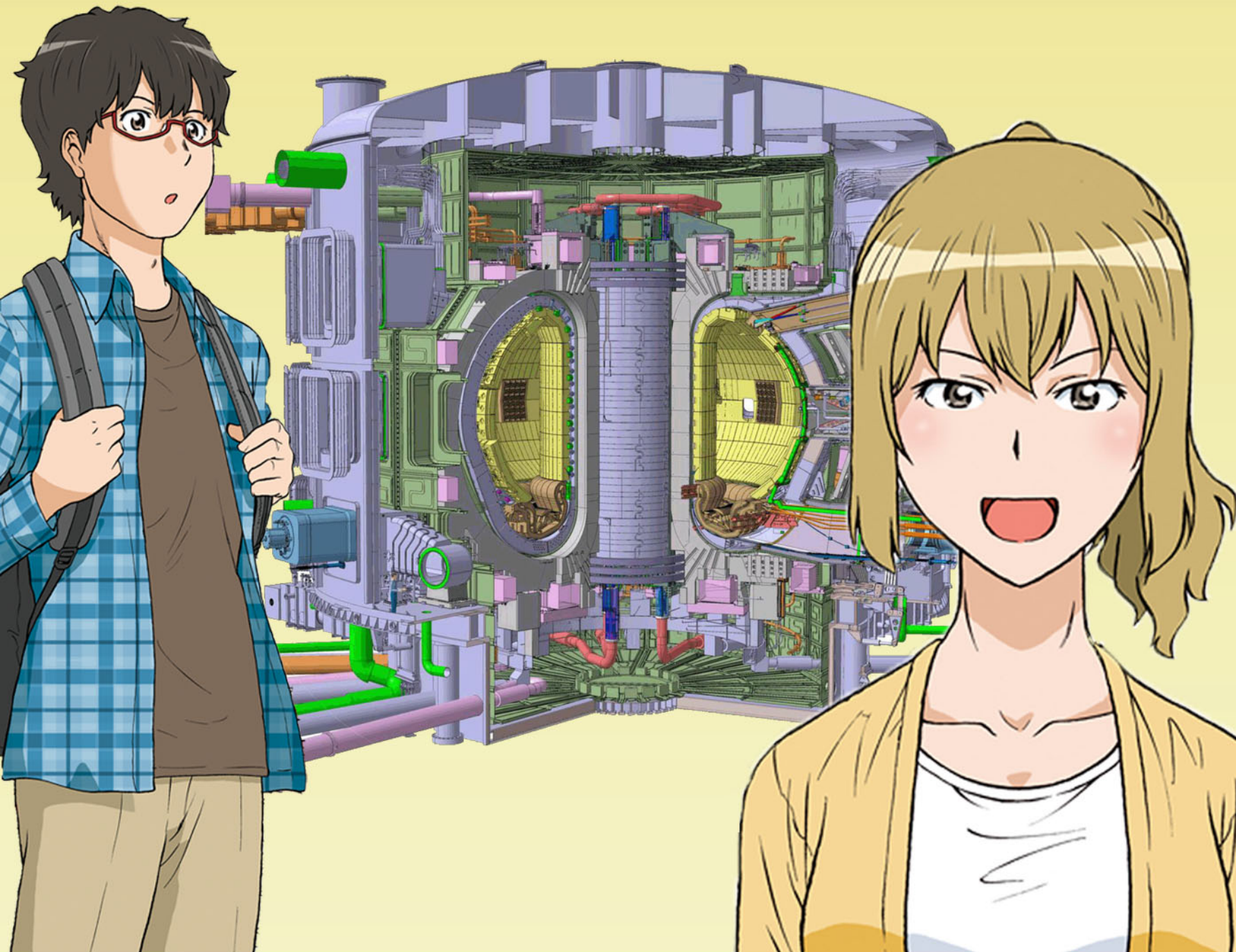
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Quantum and Radiological Science and Technology
Naka Fusion Institute



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and
Jennifer Mukae

ITER

A Small Sun on Earth



ITER Japan website&SNS

<http://www.fusion.qst.go.jp/ITER/>



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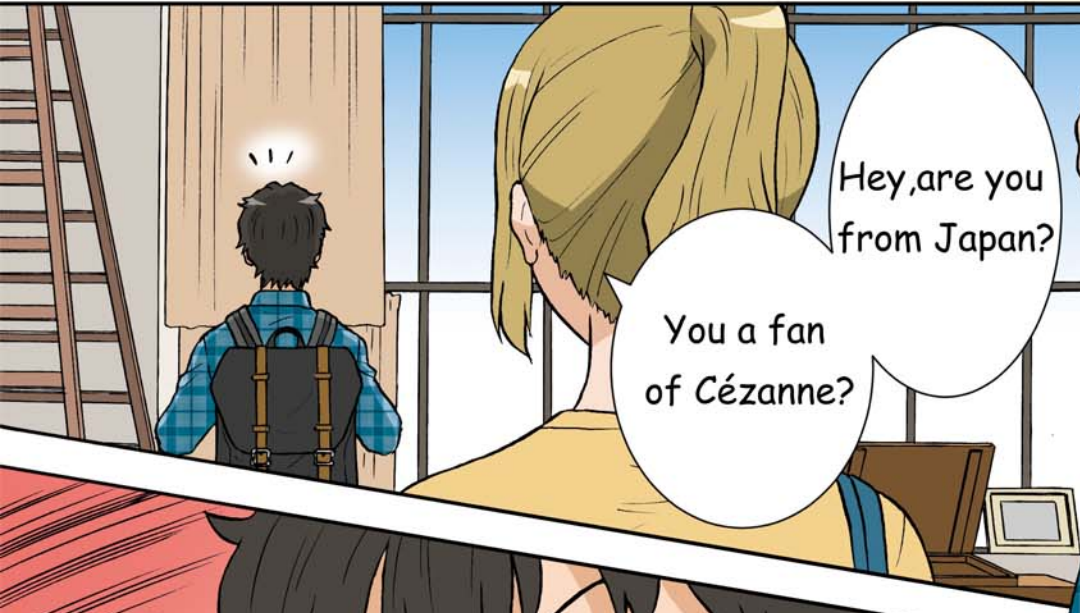
Instagram
@iterjapan_qst

ITER : A Small Sun on Earth

At Paul Cézanne's studio in Aix-en-Provence in the southeast of France...



Truly breathtaking...



Hey, are you from Japan?
You a fan of Cézanne?





Whoa, she's even more breathtaking.

Uh...



KONZCHIIWA *

*Hello

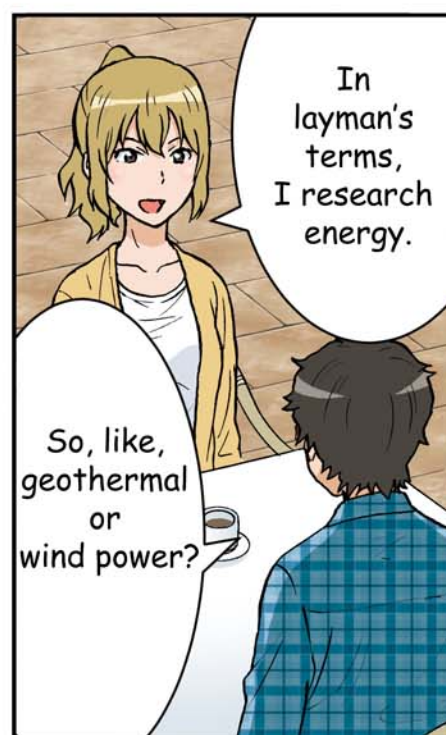
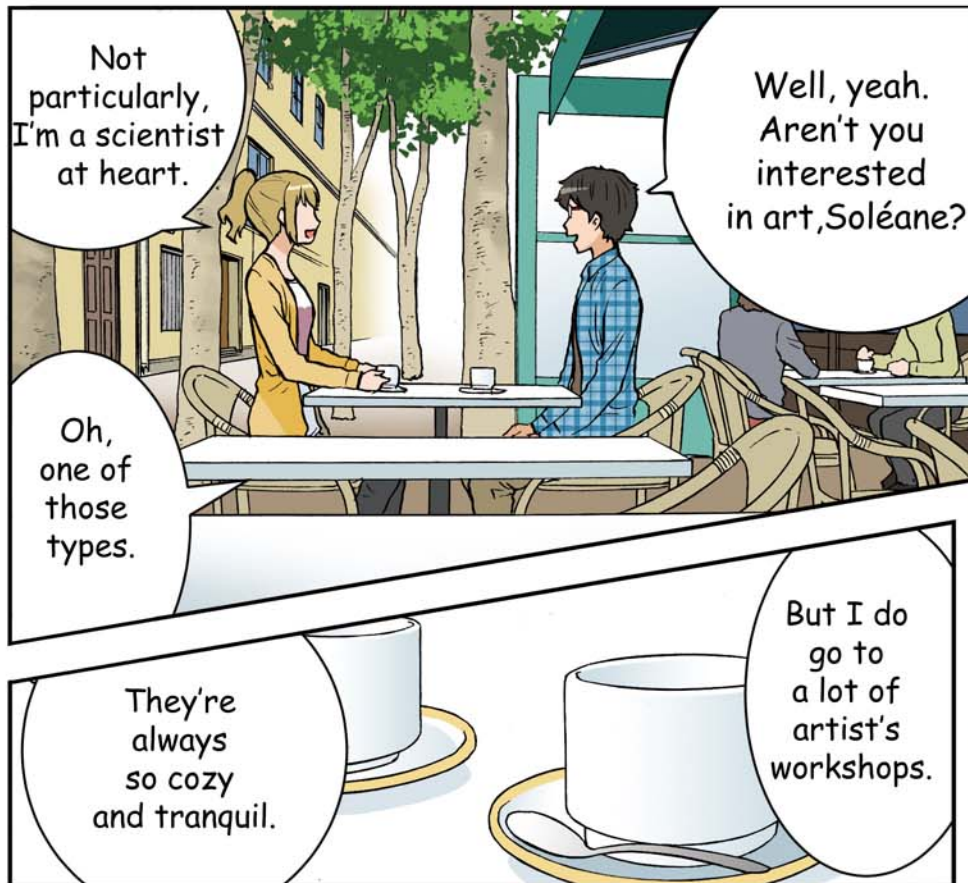


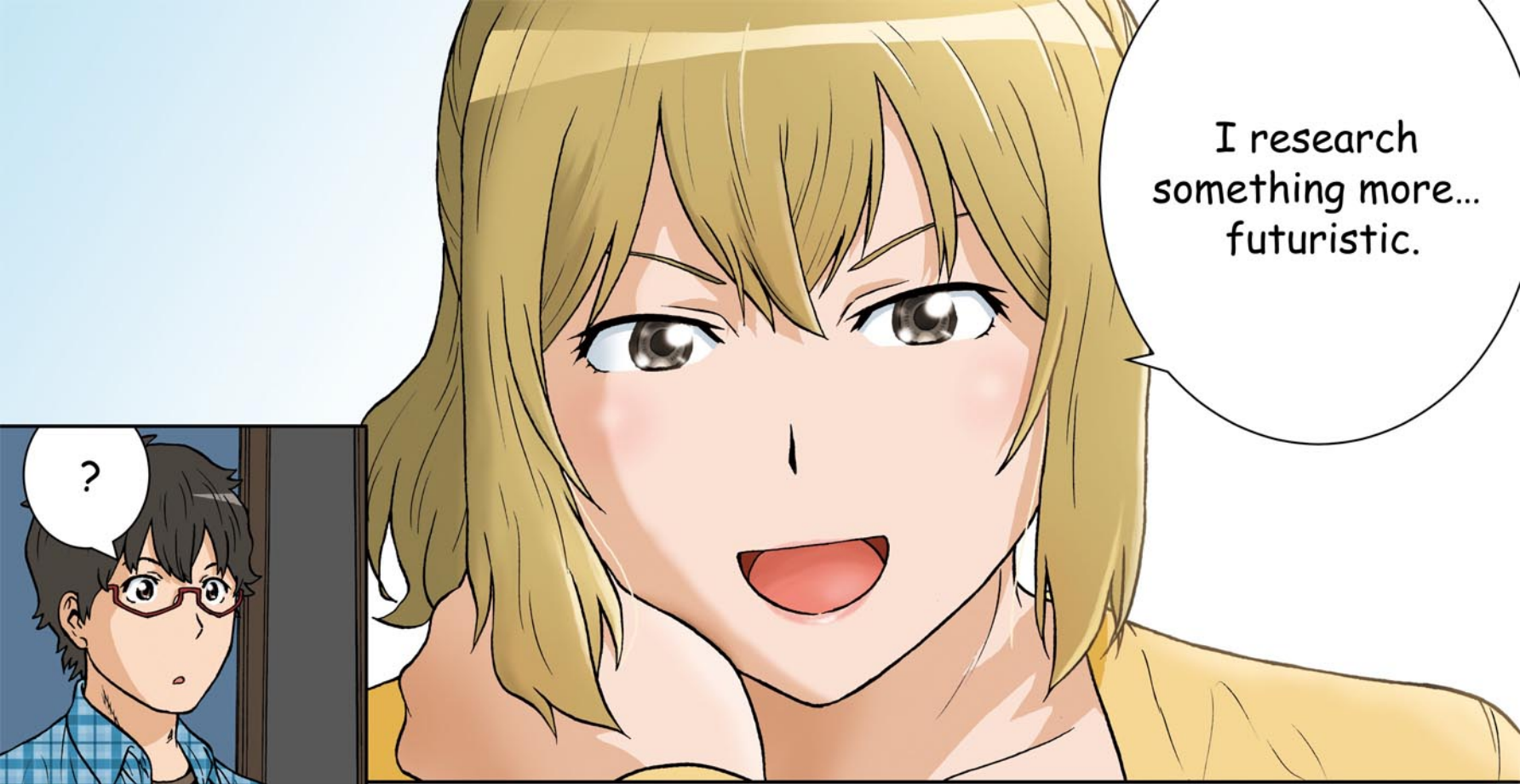
I'm an art major on my summer vacation taking a world tour of famous sites.

My name's TAIYO.



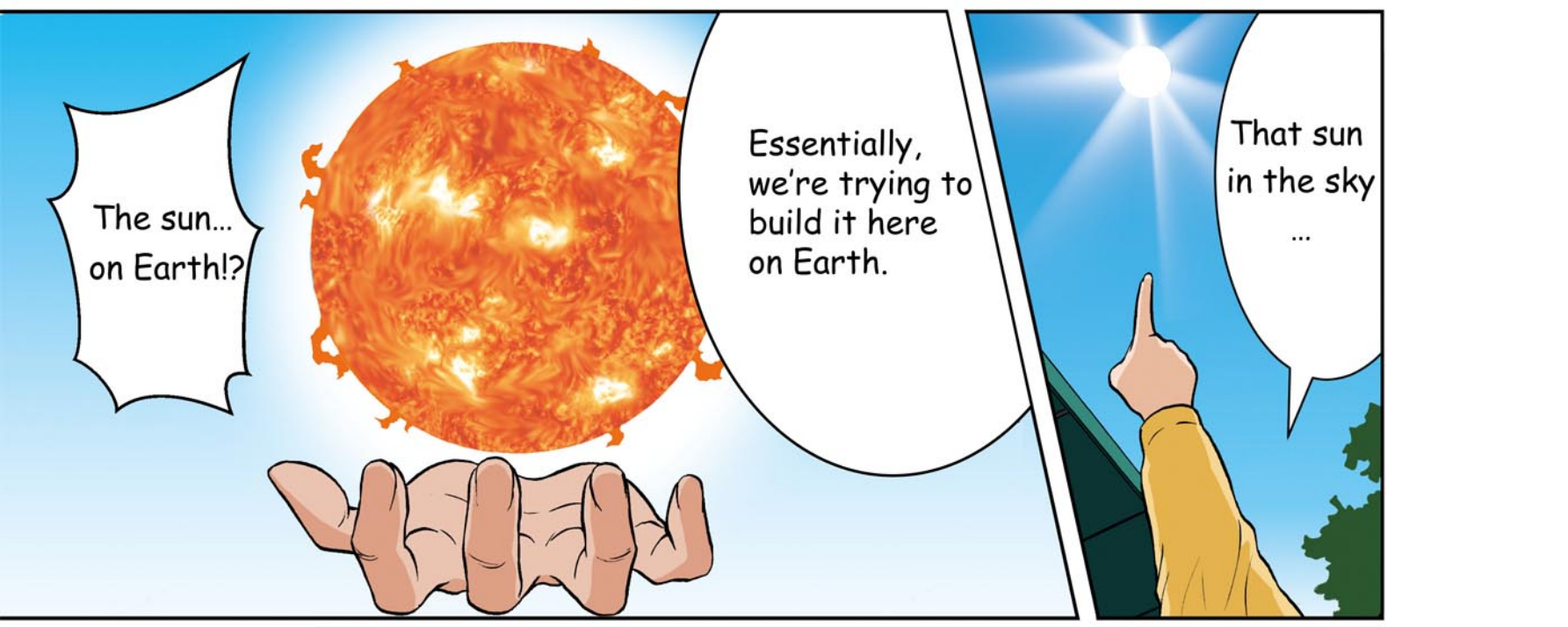
Aix-en-Provence was my next stop to see where the father of Post-Impressionism worked.





I research something more... futuristic.

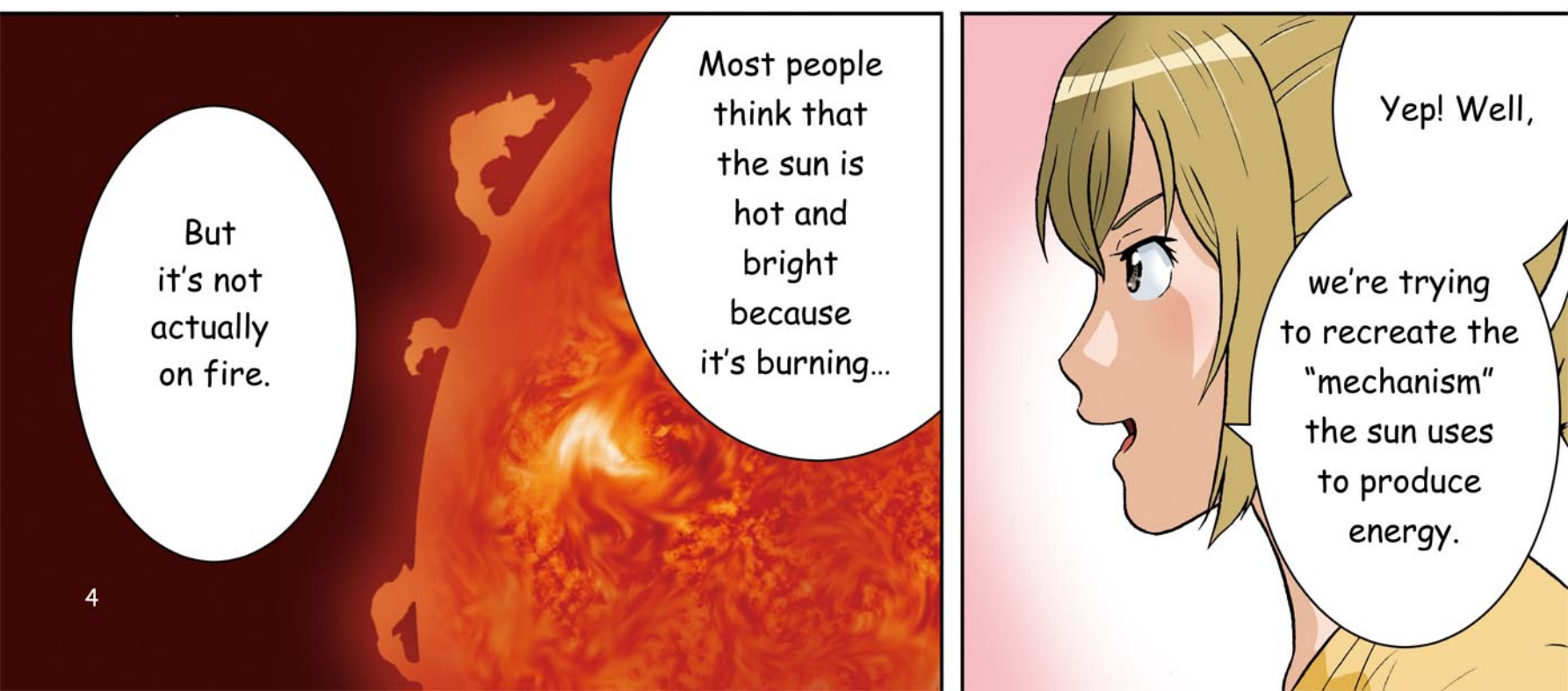
?



The sun... on Earth!?

Essentially, we're trying to build it here on Earth.

That sun in the sky ...



But it's not actually on fire.

Most people think that the sun is hot and bright because it's burning...

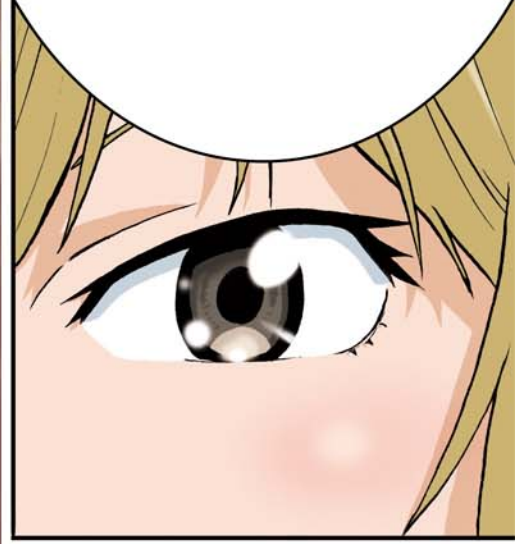
Yep! Well, we're trying to recreate the "mechanism" the sun uses to produce energy.

Nuclear... fusion?



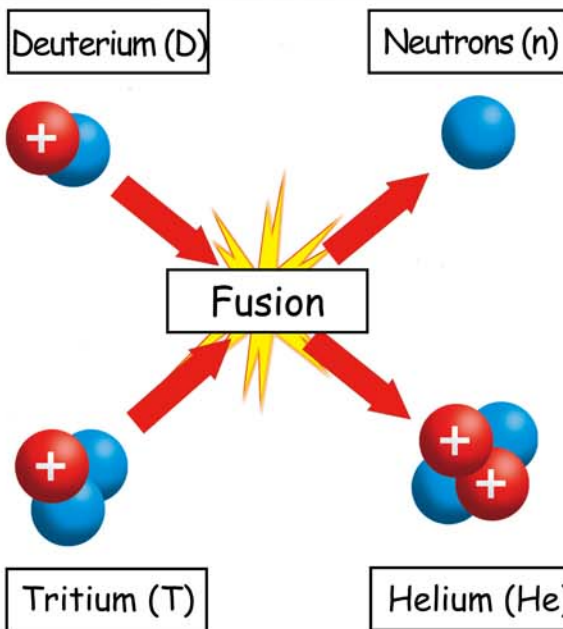
NUCLEAR FUSION!

So, if it's not on fire, how does the sun keep on shining?



The sun gets its energy by smashing small light elements together to make heavier elements

in a process called nuclear fusion.

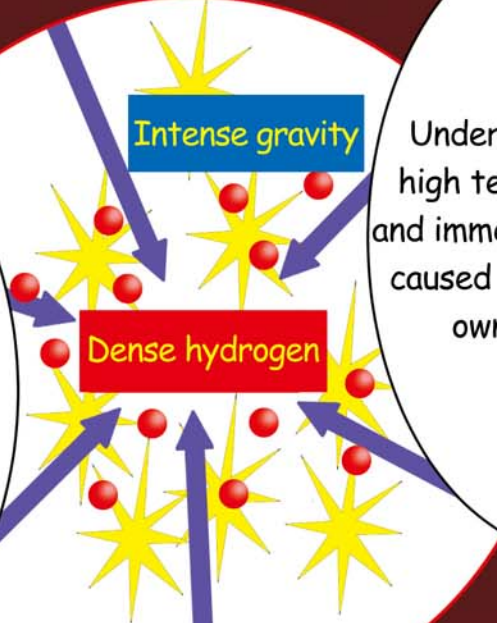


Put simply,



*The figure above depicts the reaction that would occur on Earth. In the Sun, a proton-proton chain reaction occurs.

the hydrogen atoms present in its core—in the physical state called plasma—start getting excited and collide into each other, which generates A LOT of energy.



Under extremely high temperatures and immense pressure caused by the Sun's own gravity,

The loss of a small amount of mass when forming these heavier elements produces a tremendous amount of energy.

Energy generated

Speed of light

$$E=mc^2$$

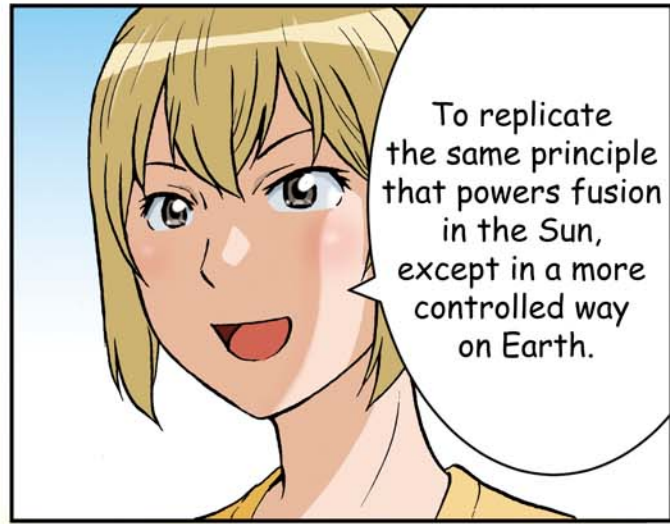
Mass lost



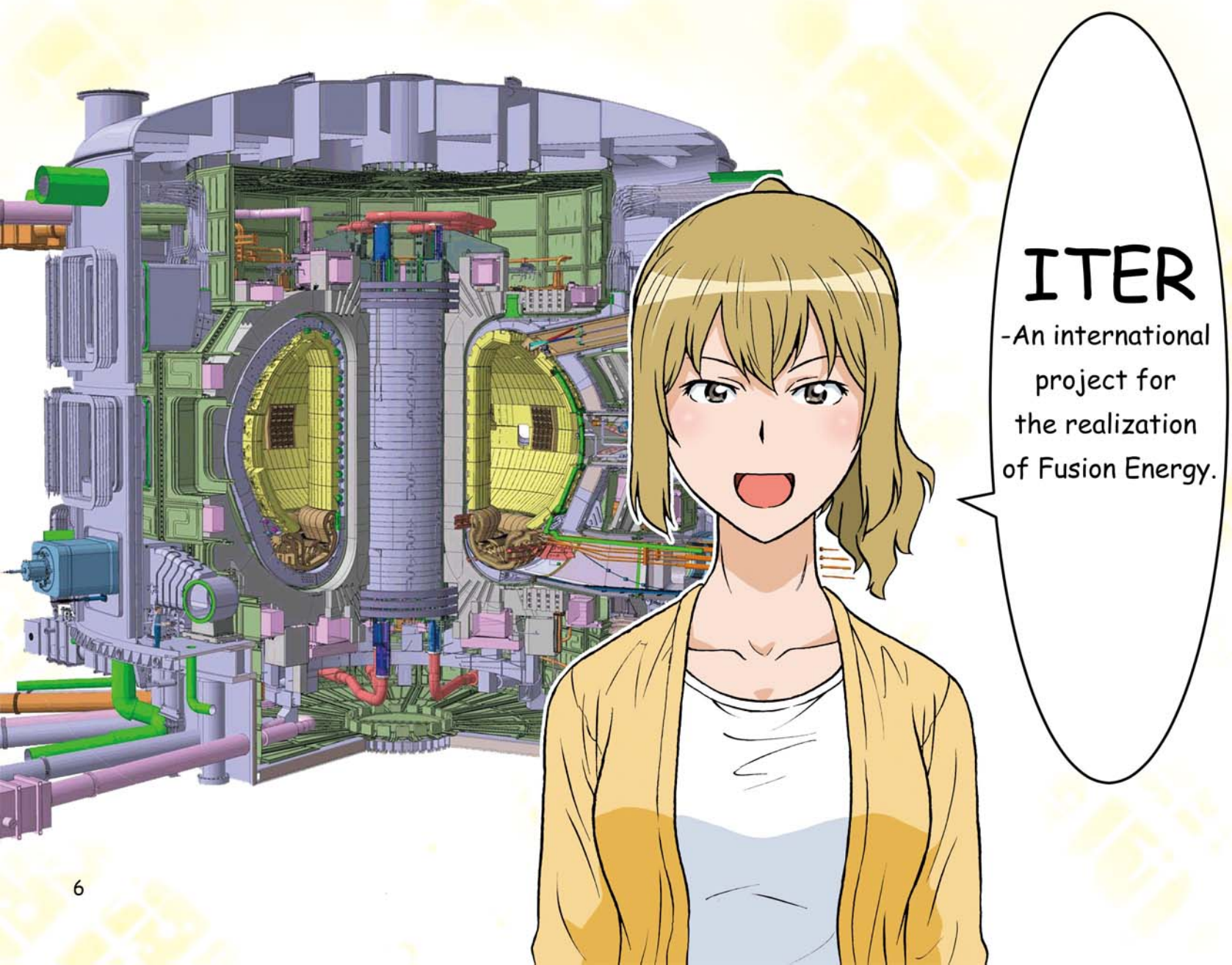
That's why the sun has continued to shine for as long as it has.



That is what I and people from all over the world are working on for the global energy research project called...



To replicate the same principle that powers fusion in the Sun, except in a more controlled way on Earth.



ITER
-An international project for the realization of Fusion Energy.



Is she an alchemist?

A sun on earth?
What is she on about?
Like that could actually happen.

The ITER...
project?

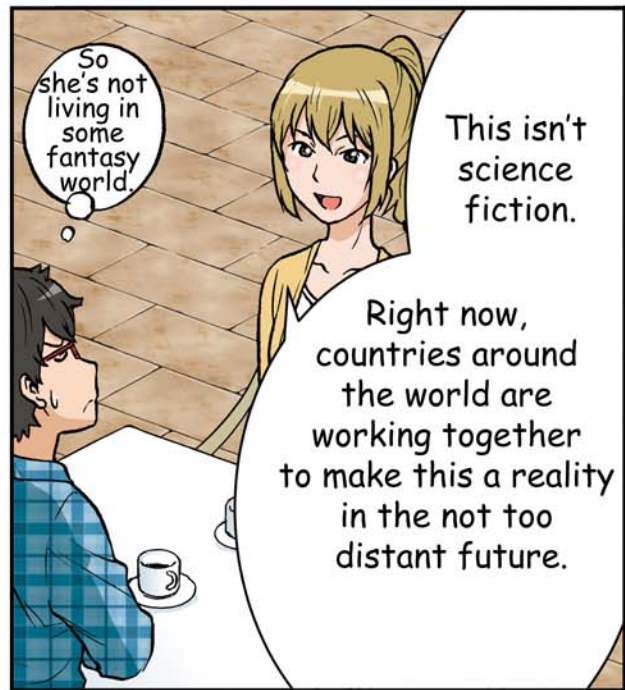


Piqued your interest, have I?



And why *fusion energy*?

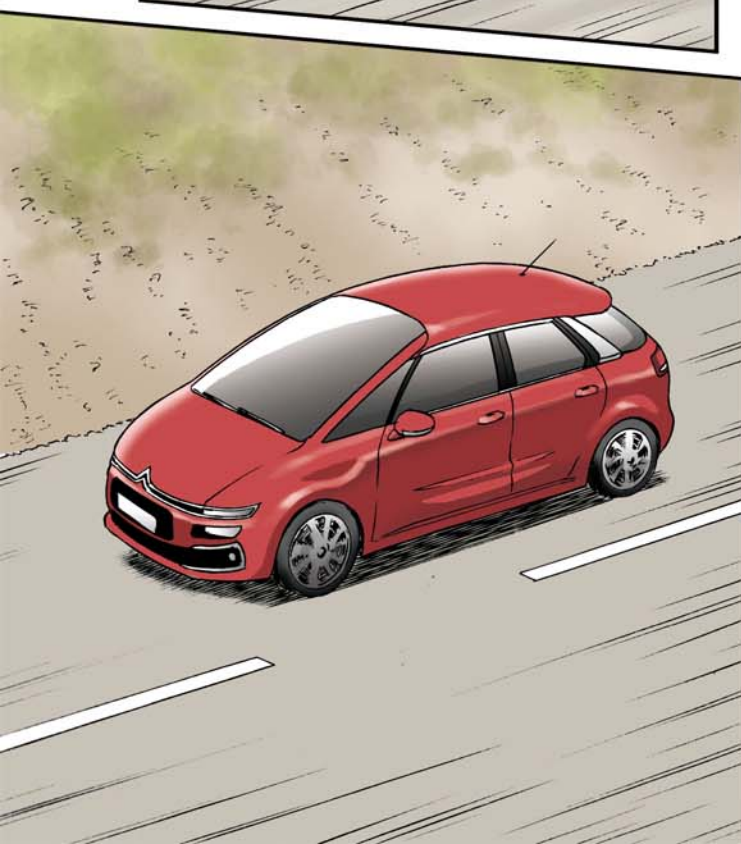
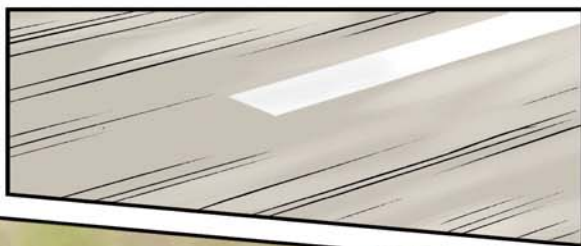
But how...



So she's not living in some fantasy world.

This isn't science fiction.

Right now, countries around the world are working together to make this a reality in the not too distant future.



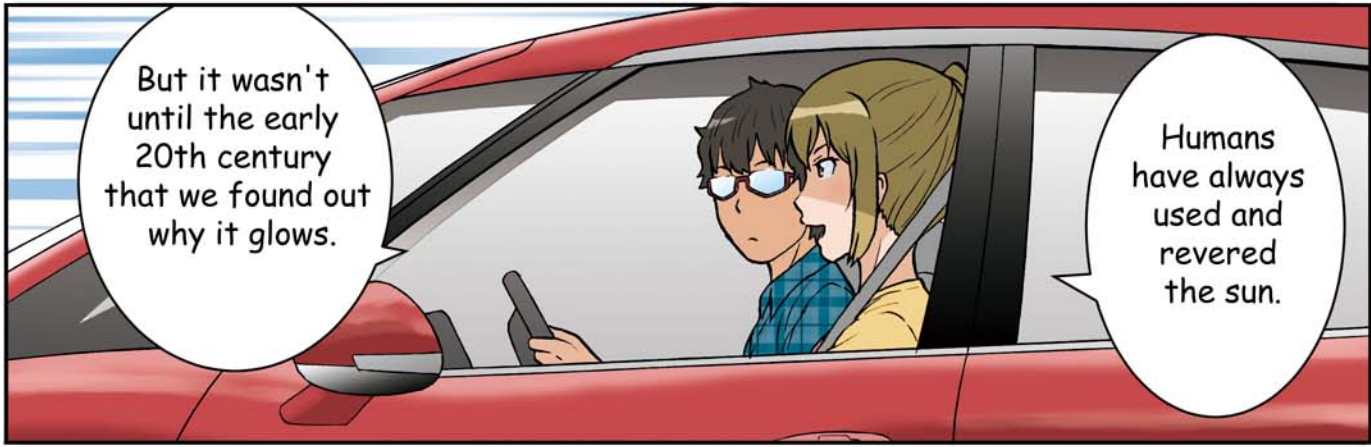
You bet!



If you're free, wanna come check out the ITER site?

It's only about an hour's drive.

Uh...



But it wasn't until the early 20th century that we found out why it glows.

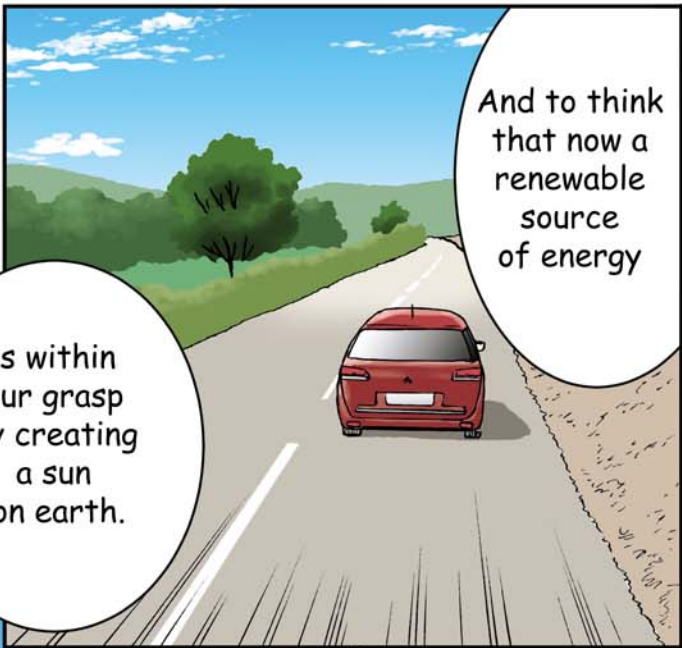
Humans have always used and revered the sun.



Oil, coal, and uranium are all limited resources.



is within our grasp by creating a sun on earth.



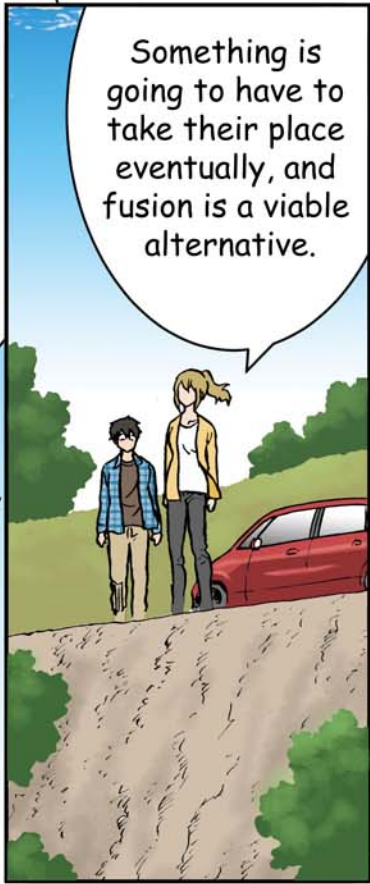
And to think that now a renewable source of energy



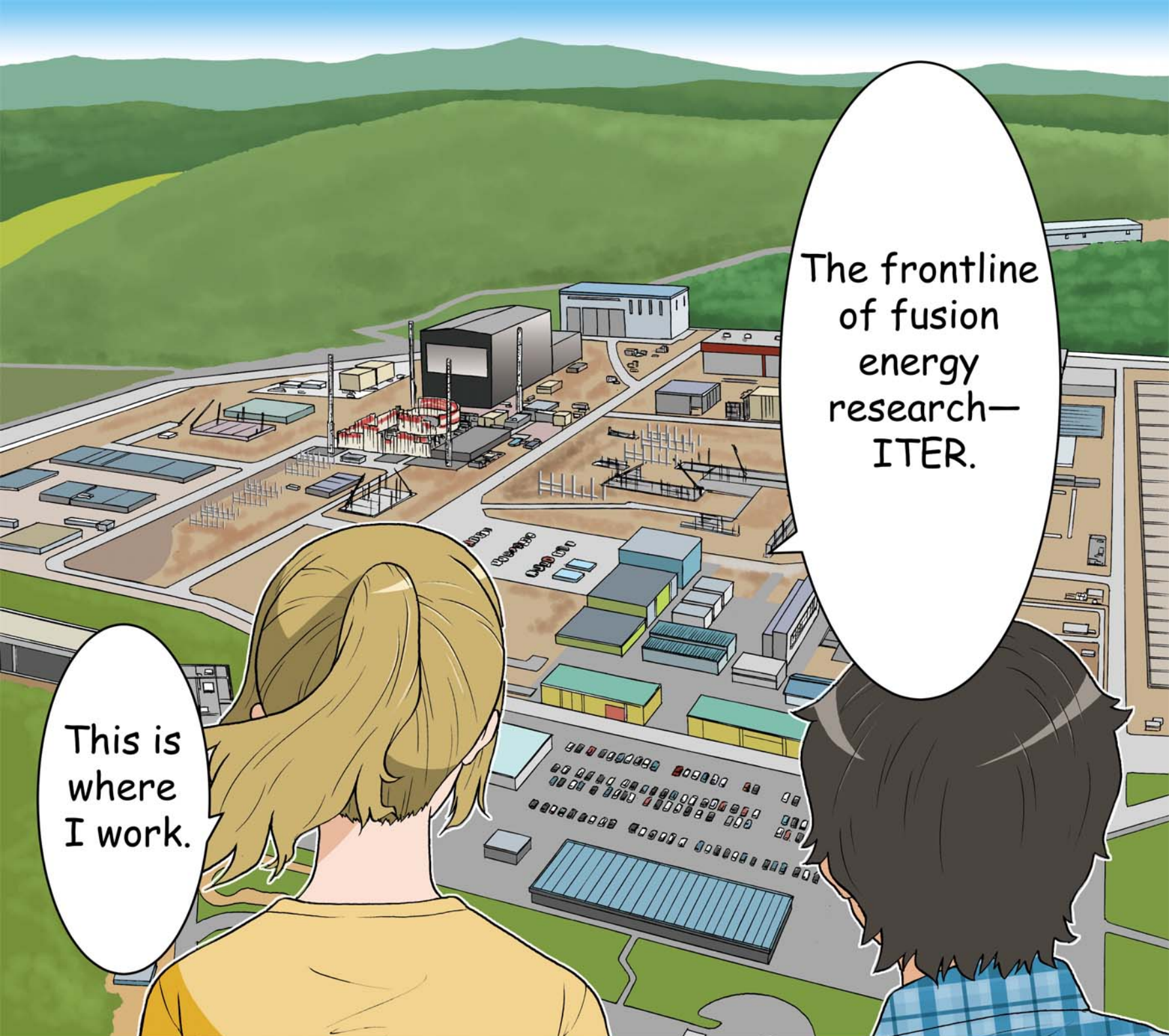
where the feasibility of fusion energy will come to fruition.



The future aspirations of humanity lie here,



Something is going to have to take their place eventually, and fusion is a viable alternative.



This is where I work.

The frontline of fusion energy research—ITER.

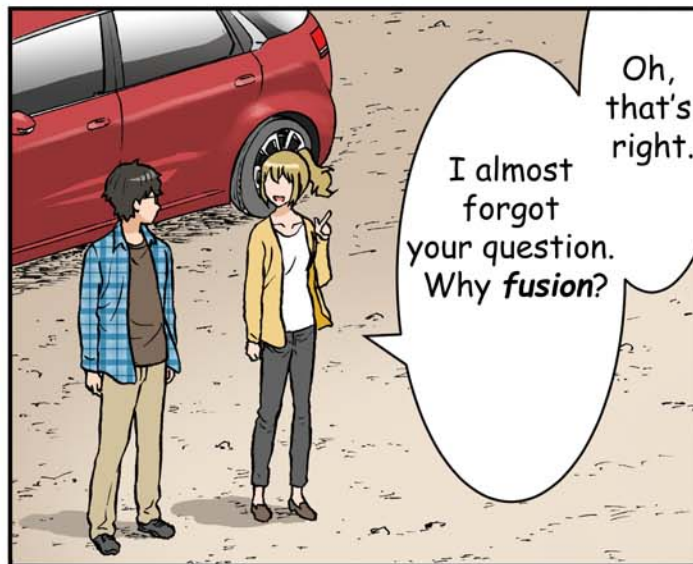


A lot of Japanese researchers work here, too.



Whoa...

It's bigger than I thought!



It's readily available everywhere.

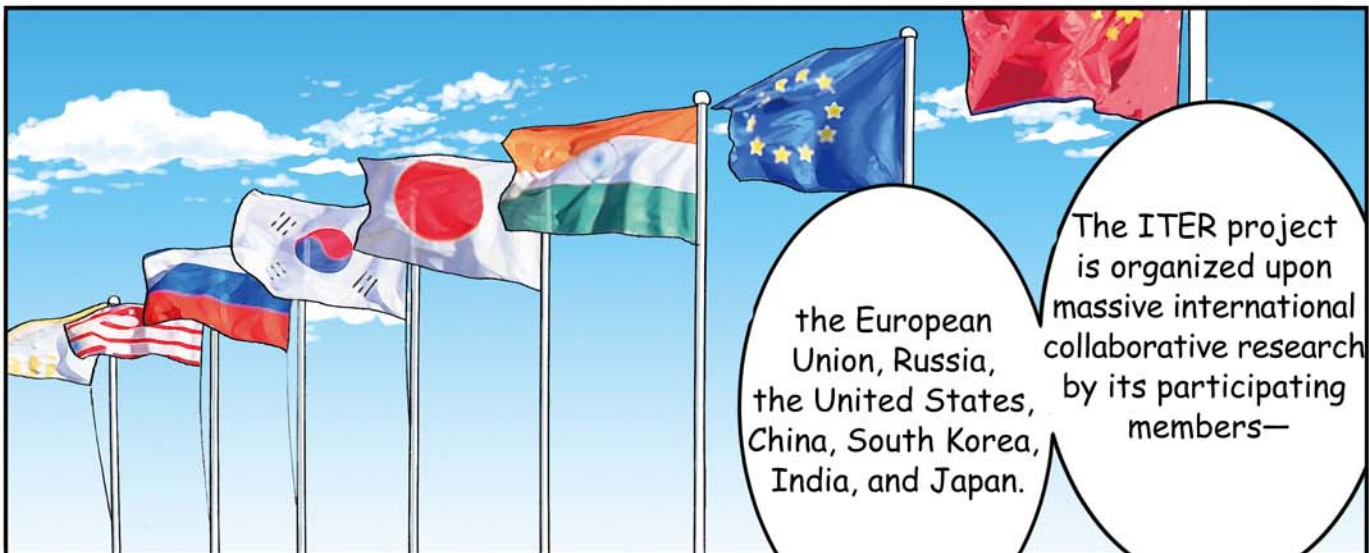
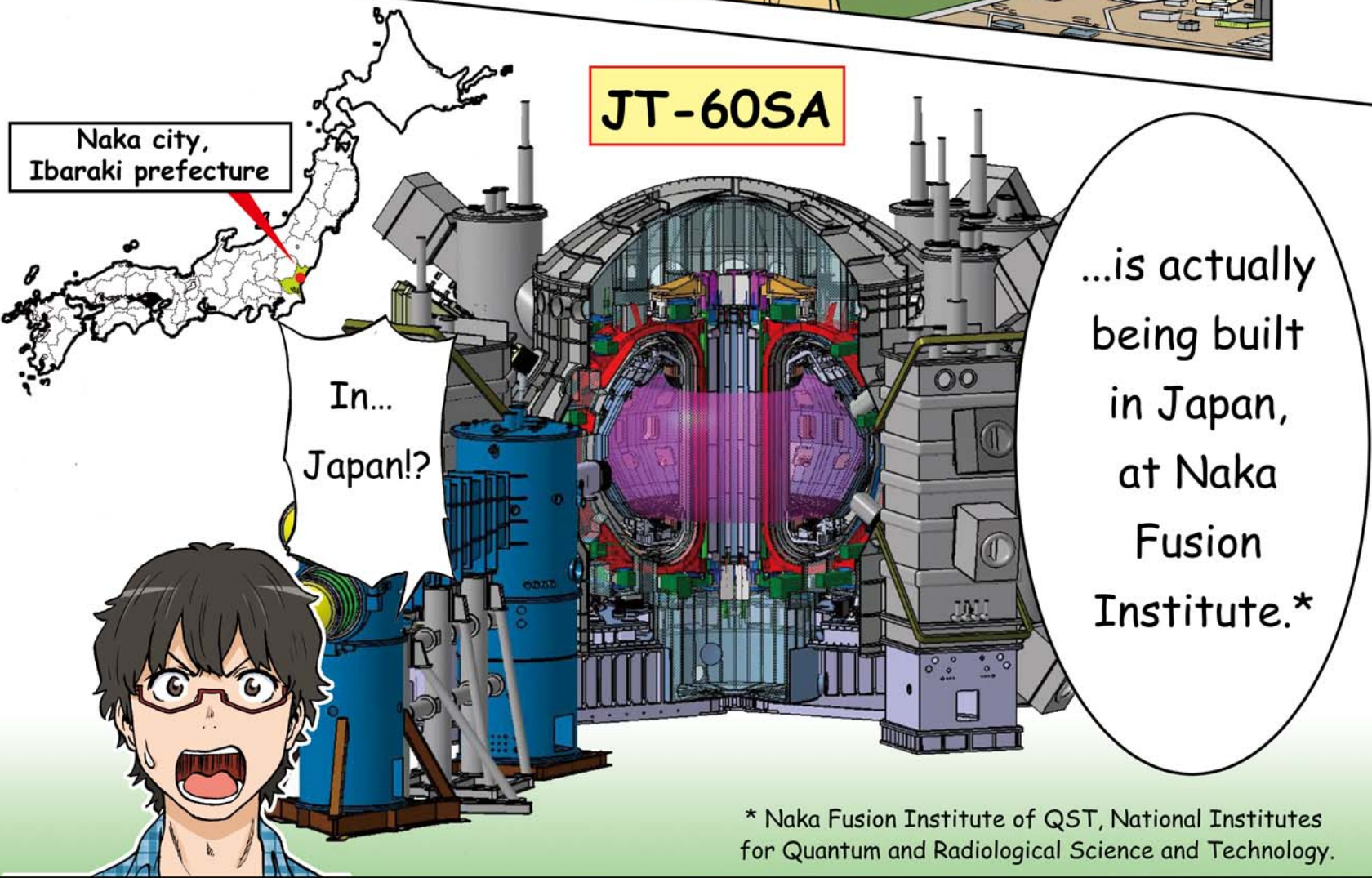
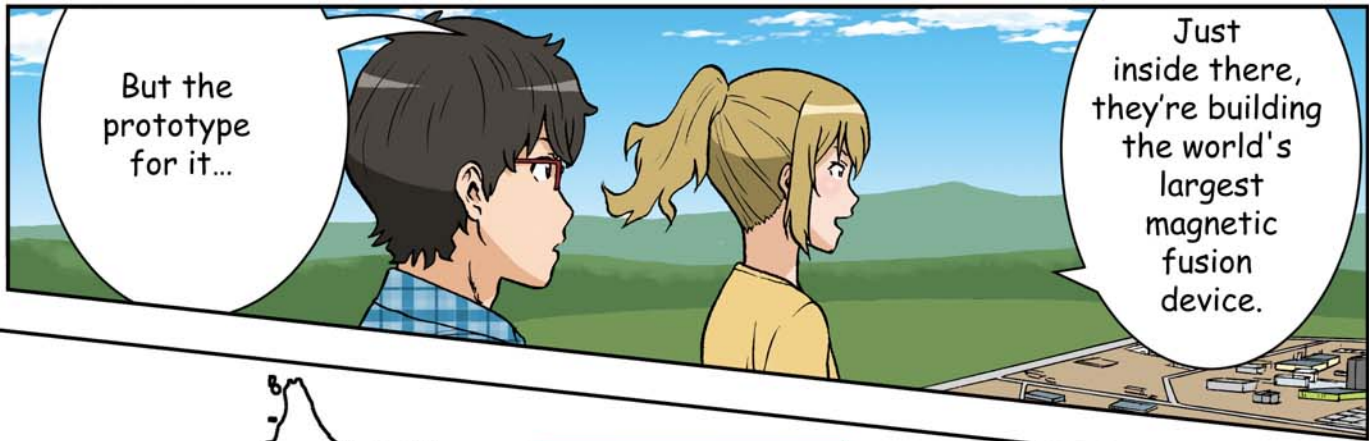
The heavy hydrogen and lithium fuel can easily be extracted from seawater.

1. Virtually limitless global supply of fuel.



3. It's a guaranteed safe source of energy and environmentally friendly.

2. Only a small amount of fuel is required to produce an enormous amount of energy.






population and more than three-quarters of global GDP*.

The countries involved in this project make up more than half the world's

* GDP (Gross Domestic Product)



had no idea.

I...



To know that Japan is playing an important role at the forefront of future energy technologies that could change the world! ...That's awesome!

Wow!!



You learn something new every day.

Just goes to show we have a long way to go in the PR department.

