Emma's destiny

EDITORIAL

Produced during the summer of 2022, between intense heat waves, unprecedented droughts and devastating fires, the working context of this comic book could unfortunately not be more in line with its content. This book was, indeed, produced by several actors of the energy transition in the framework of the European project Sun4All.

Sun4All is a project of the European Union's «Horizon 2020» programme, dedicated to research and innovation. Its aim is to bring solar photovoltaic energy to households in energy poverty. It is being tested in the cities of Almada (Portugal), Barcelona (Spain), Rome (Italy) and in the Community of Communes of Coeur de Savoie.

The aim of this book is to raise readers' awareness of climate issues and get them involved in the implementation of solutions. In the first part, you will discover the destiny of young Emma, whose story takes place in 2065... in a society that has managed to adapt and act in the face of the challenges of climate change. Indeed, the story has been deliberately imagined with a positive vision of the future.

Finally, a technical file will allow you to discover in detail practical solutions that may suit everyone... Enjoy your reading!

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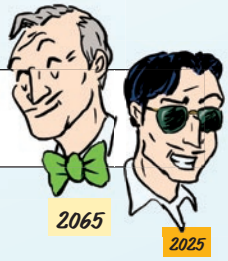
Thank you to all the participants for being involved in the making of this comic book!

Emma's destiny

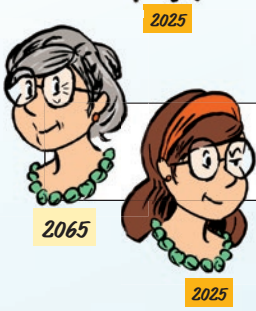
PRESENTATION OF THE MAIN CHARACTERS

EMMA, 9 YEARS OLD, A FOOTBALLER, IS OUR MAIN HEROINE. SHE HAS EYES THAT SPARKLE WITH CURIOSITY. SHE'S LIVING IN A COMFORTABLE FUTURE IN 2065, BUT WHEN SHE COMES ACROSS MYSTERIOUS EVENTS, SHE'S GOT TO ASK SOME QUESTIONS.

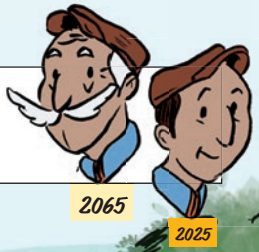
THOMAS IS EMMA'S GRANDFATHER. THOMAS IS THE GOOD FRIEND, HE IS FAITHFUL TO HIS FRIENDS AT LEAST AS MUCH AS HE IS TO HIS GLASSES. HE HAD NEVER ASKED HIMSELF A LOT OF QUESTIONS... UNTIL ONE DAY...



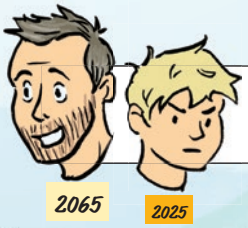
ANTHONY WAS A COMPULSIVE CONSUMER, DESPITE HIS SMALL SALARY. HE HAS REVIEWED HIS PRIORITIES BUT HE'S STILL AS STYLISH AS EVER. HE HAS A CRUSH ON PRUNE!



PRUNE IS THE GREEN ONE IN THE GROUP, AND LONG BEFORE THE OTHERS. SOME WOULD SAY SHE'S A BIT EXTREME! SHE HAS A CRUSH ON ANTHONY!



NOA IS FROM AN IMMIGRANT BACKGROUND, A BUILDER AT HEART. HE HAS A STRONG CHARACTER AND HE DOESN'T MINCE HIS WORDS!



LUCAS IS EMMA'S DAD. AS A CHILD, HE CAUSED A SMALL - AND NECESSARY - EARTHQUAKE IN THOMAS' HEAD, HIS DAD ... HE WILL SHOW THAT EVERYTHING IS POSSIBLE!

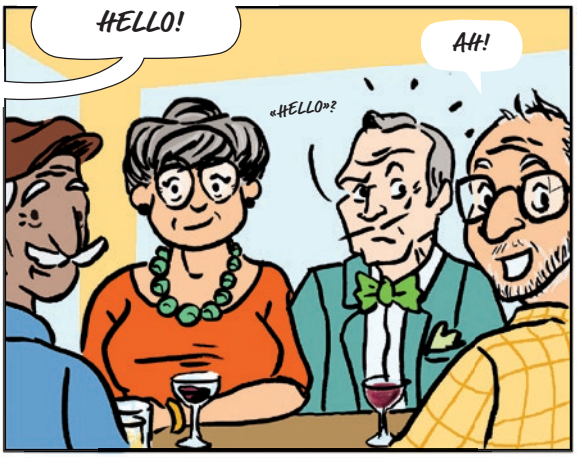
JUNE 2065

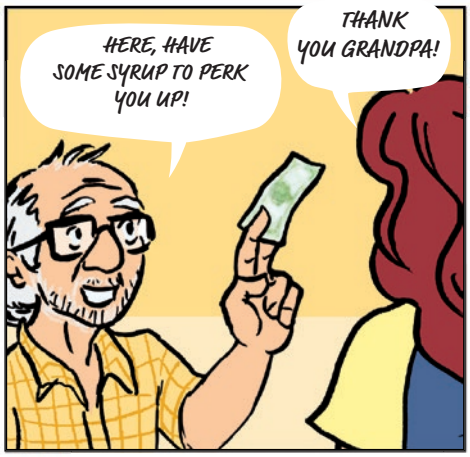
SOMEWHERE IN THE ALPS, HELIOS STADIUM

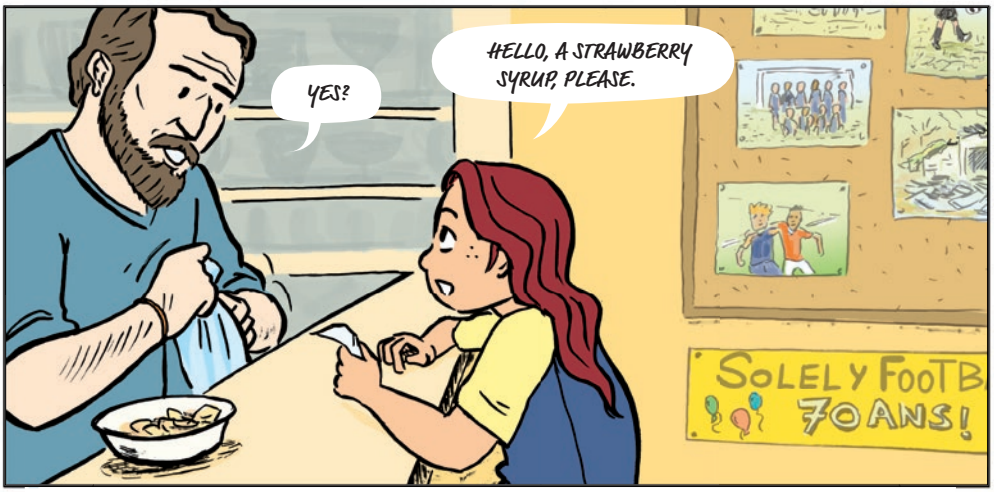
TODAY, THE FOOTBALL CLUB CELEBRATES ITS 70TH ANNIVERSARY!

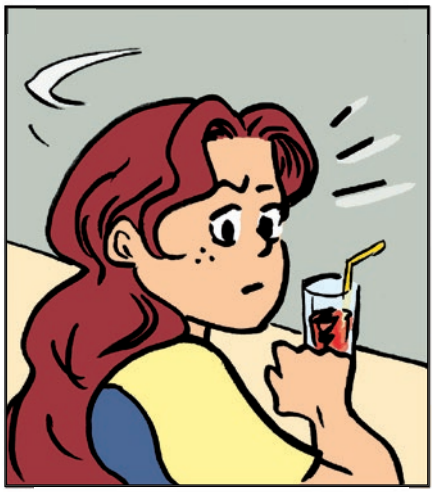
TRRIT! TRRIT! TRRIIIIT!

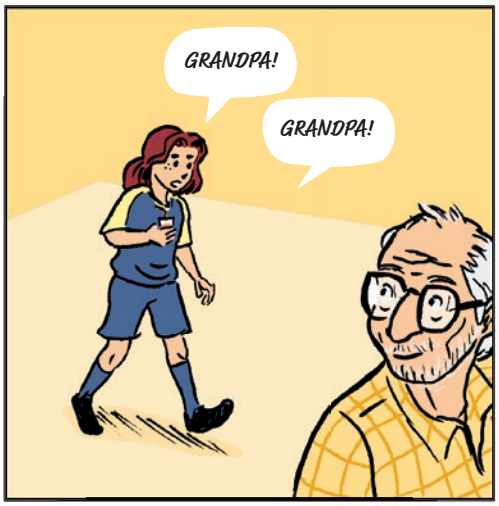
THE REFEREE WHISTLES THE END OF THE MATCH!

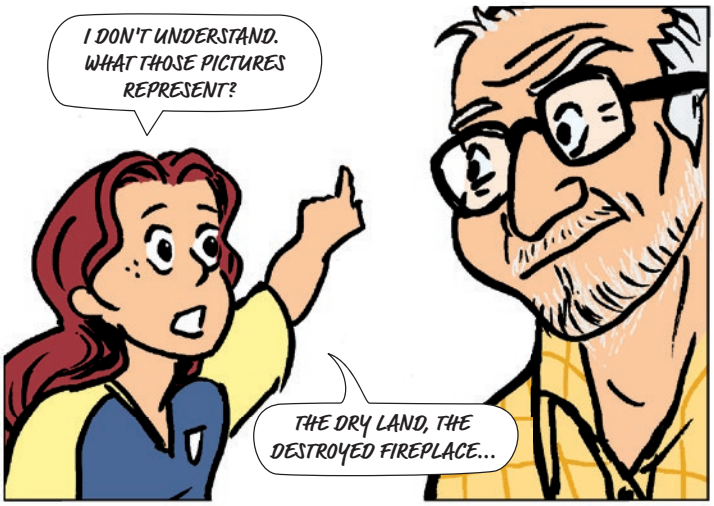




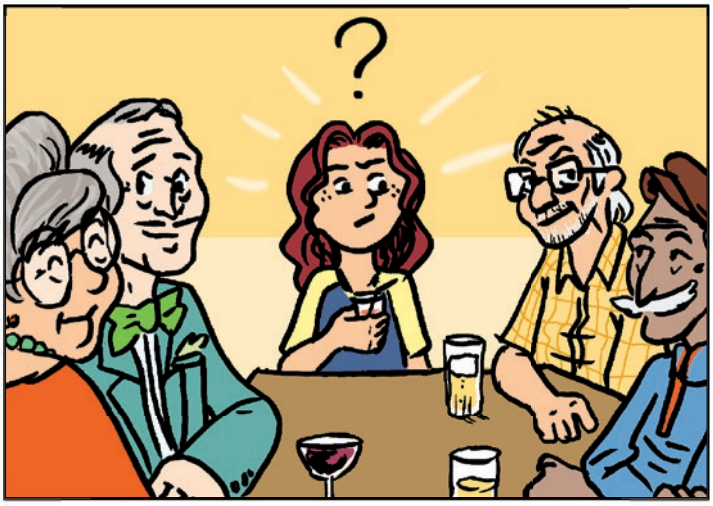





GRANDPA!
GRANDPA!


I DON'T UNDERSTAND. WHAT THOSE PICTURES REPRESENT?
THE DRY LAND, THE DESTROYED FIREPLACE...


... AND THIS GENTLEMAN?
I FEEL LIKE I'VE SEEN HIM BEFORE!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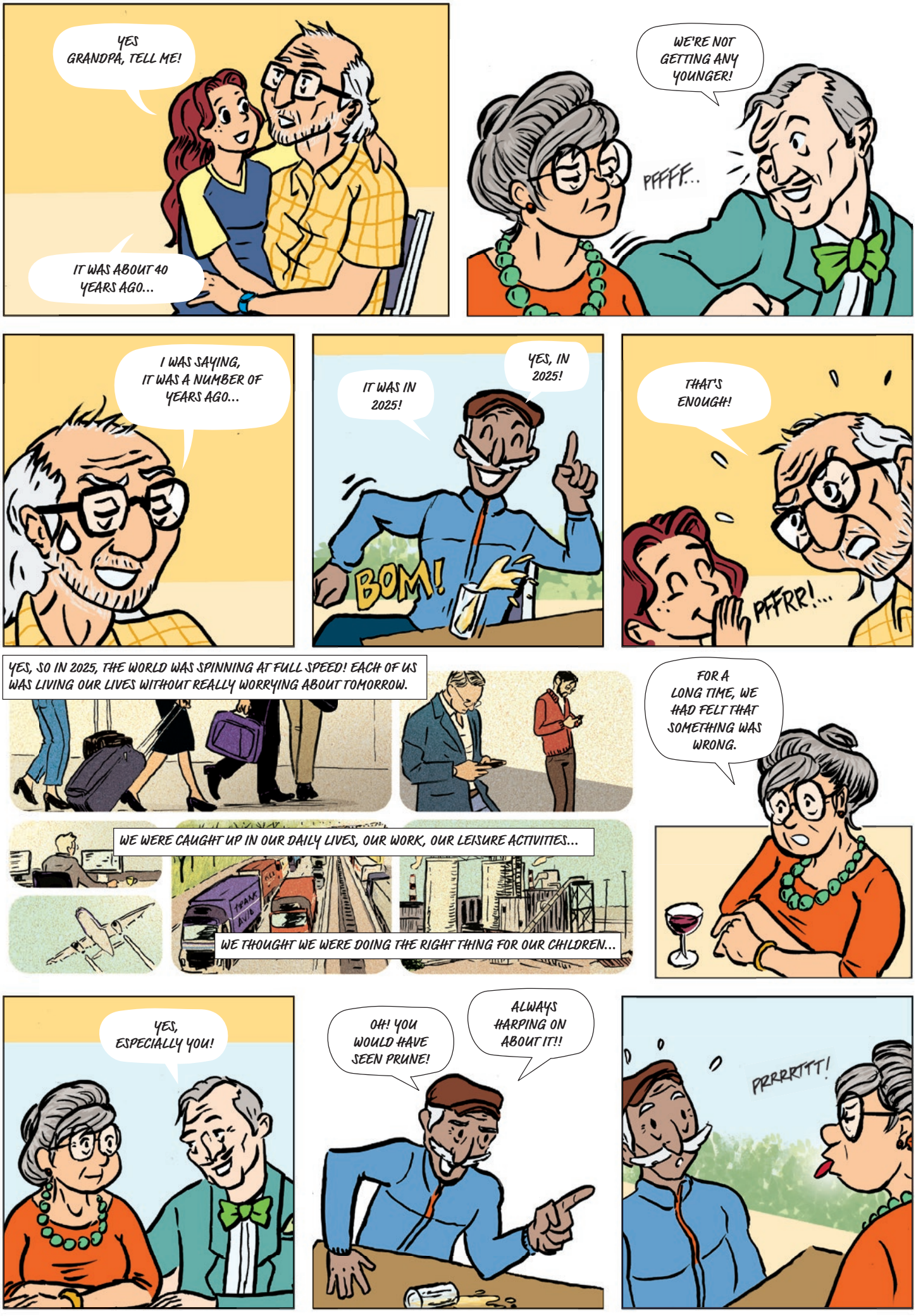
COME ON, SWEETHEART, WE'LL EXPLAIN!


YES GRANDPA, TELL ME!
IT WAS ABOUT 40 YEARS AGO...
WE'RE NOT GETTING ANY YOUNGER!
PFFFF...
I WAS SAYING, IT WAS A NUMBER OF YEARS AGO...
IT WAS IN 2025!
YES, IN 2025!
BOM!
THAT'S ENOUGH!
PFFRR!...
YES, SO IN 2025, THE WORLD WAS SPINNING AT FULL SPEED! EACH OF US WAS LIVING OUR LIVES WITHOUT REALLY WORRYING ABOUT TOMORROW.
WE WERE CAUGHT UP IN OUR DAILY LIVES, OUR WORK, OUR LEISURE ACTIVITIES...
WE THOUGHT WE WERE DOING THE RIGHT THING FOR OUR CHILDREN...
FOR A LONG TIME, WE HAD FELT THAT SOMETHING WAS WRONG.
YES, ESPECIALLY YOU!
OH! YOU WOULD HAVE SEEN PRUNE!
ALWAYS HARPING ON ABOUT IT!!
PRRRRTTT!

AT THAT TIME, MOST PEOPLE BOUGHT A LOT OF THINGS AND THREW THEM AWAY, WITHOUT REUSING THEM. IT WAS A RACE FOR THE LATEST TECHNOLOGY, THE LATEST FASHIONABLE THINGS.

ALSO, HOUSES WERE POORLY INSULATED AND THERE WAS A LOT OF ENERGY LOSS. DO YOU UNDERSTAND?

YES! THAT MEANS THAT THE HEAT GOES AWAY!

YES, THAT THE COLD OR THE HEAT GETS INTO THE HOUSES.

GIEC

... IN SHORT, SCIENTISTS OFTEN WARNED US ABOUT OUR EXCESSIVE CONSUMPTION. THE USE OF FOSSIL FUELS HAS BEEN DISRUPTING OUR PLANET'S CLIMATE FOR YEARS BUT MANY OF US CONTINUED TO TURN A DEAF EAR...

YEAH!

SO, THE PHOTO OF THE FOOTBALL PITCH ALL DRY, IT WAS OUR PITCH AT THE TIME?!

YOU'VE GOT IT RIGHT, EMMA!

IT WAS YOUR DAD, LUCAS, WHO TRIGGERED IT FOR ME!

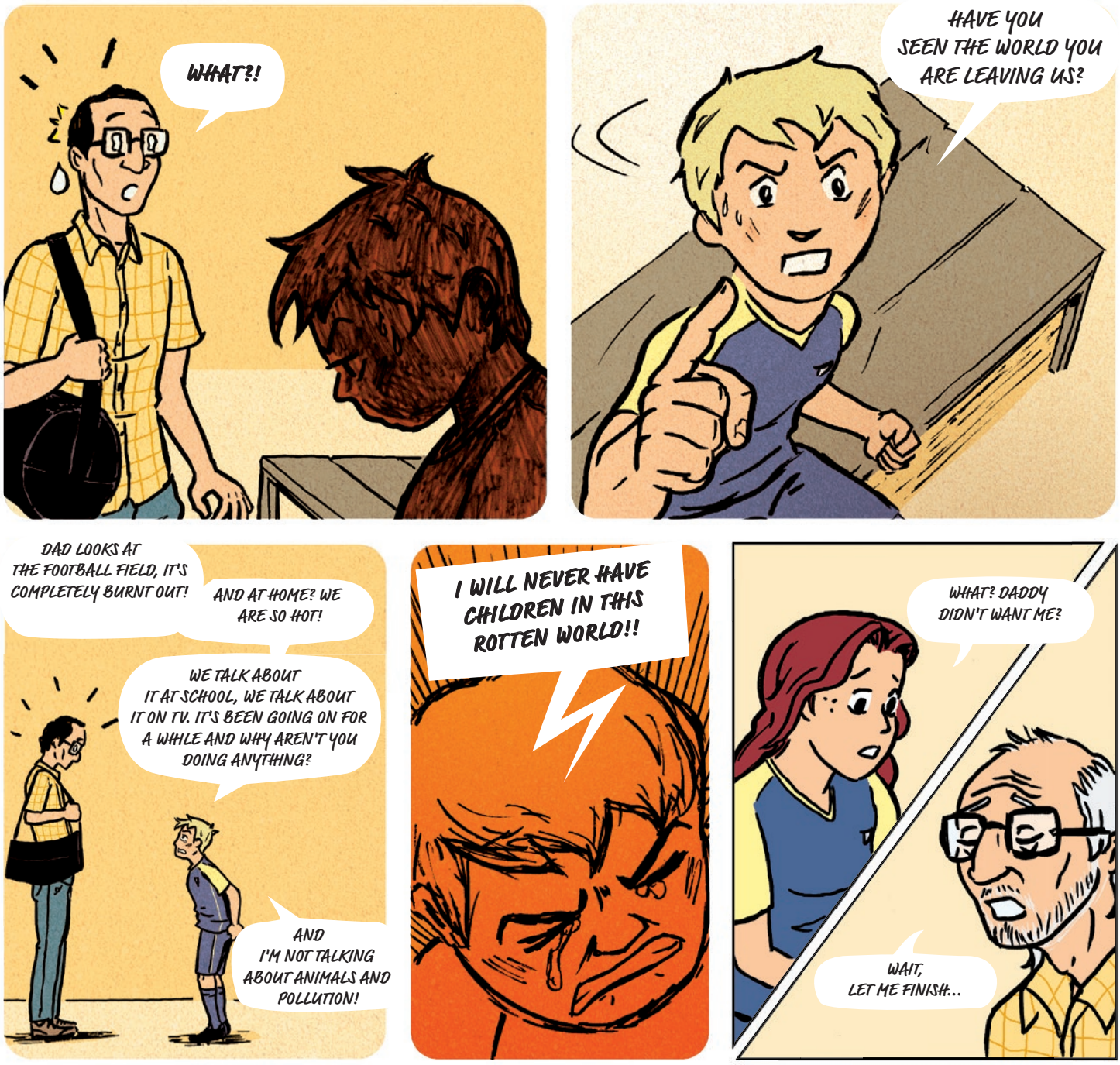
DAD ?

YES. ONE DAY, AFTER YET ANOTHER FOOTBALL MATCH IN THE MIDDLE OF A HOT SUMMER...

LUCAS OPENED MY EYES...

HELLO MY SON! NICE GAM

DAD, WHY DID YOU HAVE CHILDREN?


WHAT?!
HAVE YOU SEEN THE WORLD YOU ARE LEAVING US?
DAD LOOKS AT THE FOOTBALL FIELD, IT'S COMPLETELY BURNT OUT!
AND AT HOME? WE ARE SO HOT!
WE TALK ABOUT IT AT SCHOOL, WE TALK ABOUT IT ON TV. IT'S BEEN GOING ON FOR A WHILE AND WHY AREN'T YOU DOING ANYTHING?
AND I'M NOT TALKING ABOUT ANIMALS AND POLLUTION!
I WILL NEVER HAVE CHILDREN IN THIS ROTTEN WORLD!!
WHAT? DADDY DIDN'T WANT ME?
WAIT, LET ME FINISH...
YOUR FATHER'S WORDS HAVE RESONATED WITH ME FOR A LONG TIME.
IT'S TRUE, WHAT FUTURE WAS I LEAVING TO MY SON?
IT WAS STILL A LONG WAY OFF FOR ME, BUT I KNEW THAT I WOULD HAVE LOVED TOHAVE GRANDCHILDREN...
AND ABOVE ALL, THAT THEY COULD GROW UP IN A LIVEABLE WORLD...
TUT! TUT!
PIIP!
PIIP!

THOMAS - YOUR GRANDPA - CAME TO TELL US ABOUT IT.

LUCAS WAS NOT THE ONLY ONE WHO WAS ANGRY... OUR CHILDREN GAVE US THE SAME REPROACHES!

IT UPSET US ALL....

I WAS A FOOTBALL FAN AND I SWORE BY THE STARS AND THEIR LUXURIOUS LIVES. I THOUGHT MY SON'S HAPPINESS WAS THE LATEST SMARTPHONE.

...BUT I WAS WRONG... SO WHAT COULD I DO? I DIDN'T HAVE MUCH MONEY...

AND THEN THERE WERE THE BIG STORMS...

STORMS, HAIL AND LANDSLIDES...

AFTER THE BIG HEAT WAVES, THE GROUND WAS ALL DRY, SO TORRENTIAL RAINS WASHED EVERYTHING AWAY...

THE REGION WAS DEVASTATED... OUR HOUSES, OUR CARS, THE FOOTBALL CLUB...

EVERYTHING WAS DAMAGED!

OH MY GOD!

WE WERE EXPERIENCING THE FULL FORCE OF GLOBAL WARMING'S EFFECTS

HOW MANY OF DISASTERS HAD TO COME BEFORE THE IRREVERSIBLE HAPPENS?

IT WAS TOO MUCH!

AS WE CLEANED UP THE MESS, WE ALL PROMISED TO TRY TO CHANGE OUR BEHAVIOUR!

AND THAT'S WHEN IT ALL STARTED!

THE BULK OF OUR EFFORTS WOULD SOON BE SUMMED UP IN ONE WORD:

SUFFICIENCY

YES, I HAD TO LEARN ABOUT SUFFICIENCY AND SUSTAINABILITY ... ME WHO WAS AN AVID CONSUMER... ALTHOUGH I WAS STRUGGLING WITH SMALL JOBS, I SPENT ALL MY MONEY ON CLOTHES OR HIGH-TECH ITEMS.

PRUNE ADVISED ME TO START BY REVIEWING MY DIET...

I CUT DOWN ON MEAT AND PROCESSED INDUSTRIAL PRODUCTS AND GRADUALLY REPLACED THEM WITH VEGETABLES FROM THE LOCAL AND ORGANIC FARMING.

I ALSO REALISED THAT SPENDING TIME IN NATURE WITH MY SON WAS MORE BENEFICIAL THAN HAVING THE LATEST SMARTPHONE.

I USED TO LIVE IN A POORLY INSULATED HOUSE. MY HEATING BILL WAS VERY HIGH, AND I WAS OFTEN COLD IN WINTER.

SO, I DECIDED TO RENT, IN THE ECO DISTRICT OF PRUNE, AN APARTMENT SLIGHTLY MORE EXPENSIVE, SLIGHTLY SMALLER ... BUT IT WAS A BETTER DEAL FOR ME!

THE INSULATION IN BUILDINGS IS FIRST RATE! MY HEATING BILL HAS REALLY GONE DOWN, AND I HAVE GAINED IN COMFORT.

LIFE IN THIS NEIGHBOURHOOD IS VERY PLEASANT.

THERE ARE MANY MEETING PLACES, WE SHARE EQUIPMENT, EVERYTHING IS DESIGNED FOR BIKES...

MY QUALITY OF LIFE HAS IMPROVED, I'VE SAVED MONEY AND LOWERED MY CARBON FOOTPRINT!

AND THEN, AS YOU KNOW ... PRUNE AND I MOVED IN TOGETHER! ❤️

AND I DIDN'T GIVE UP FOOTBALL!
I TOOK OVER THE CLUB AND LAUNCHED A FUND TO ENGAGE IT IN THE ECOLOGICAL TRANSITION.

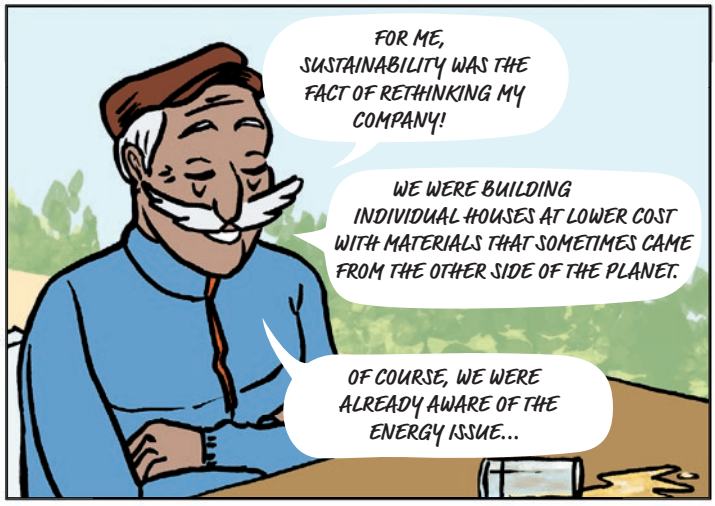
THANKS TO THIS CITIZEN INITIATIVE, WE WERE ABLE TO PUT PHOTOVOLTAIC SOLAR PANELS ON THE ROOFS OF THE FOYER AND THE STANDS...

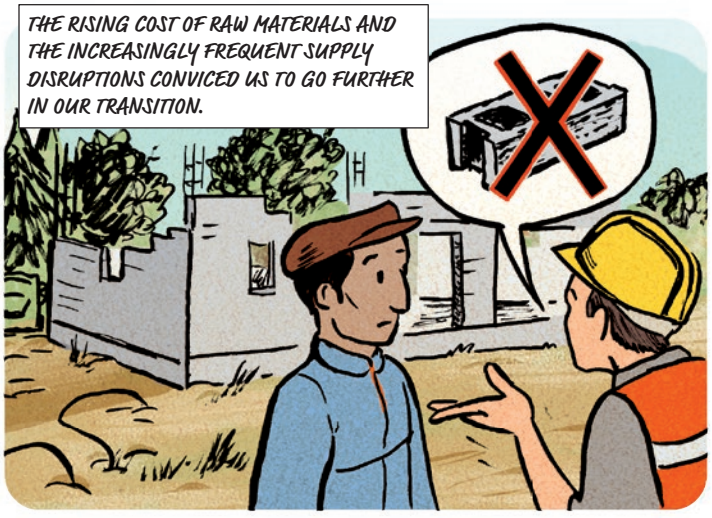
... AND CREATE THIS GREAT SOLAR PERGOLA!

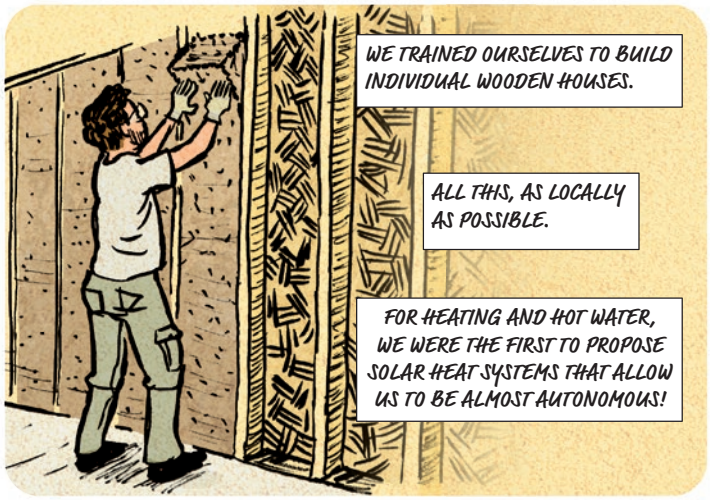
HAAAA YEEEES!

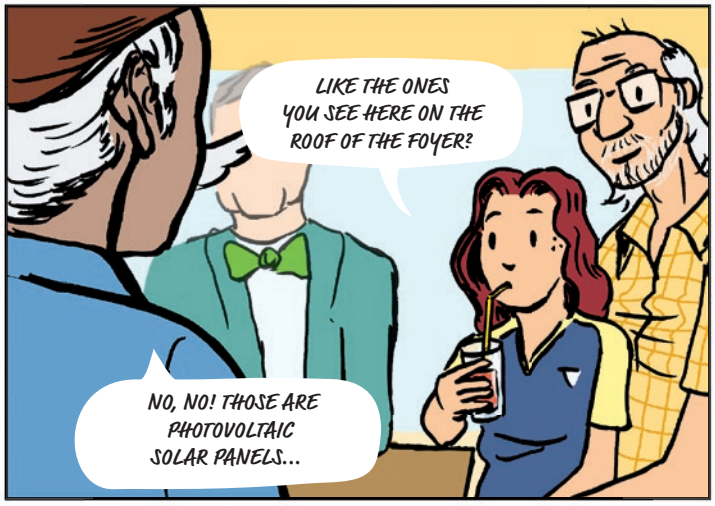
YOU ARE USED TO IT, YOU SEE IT EVERYWHERE!

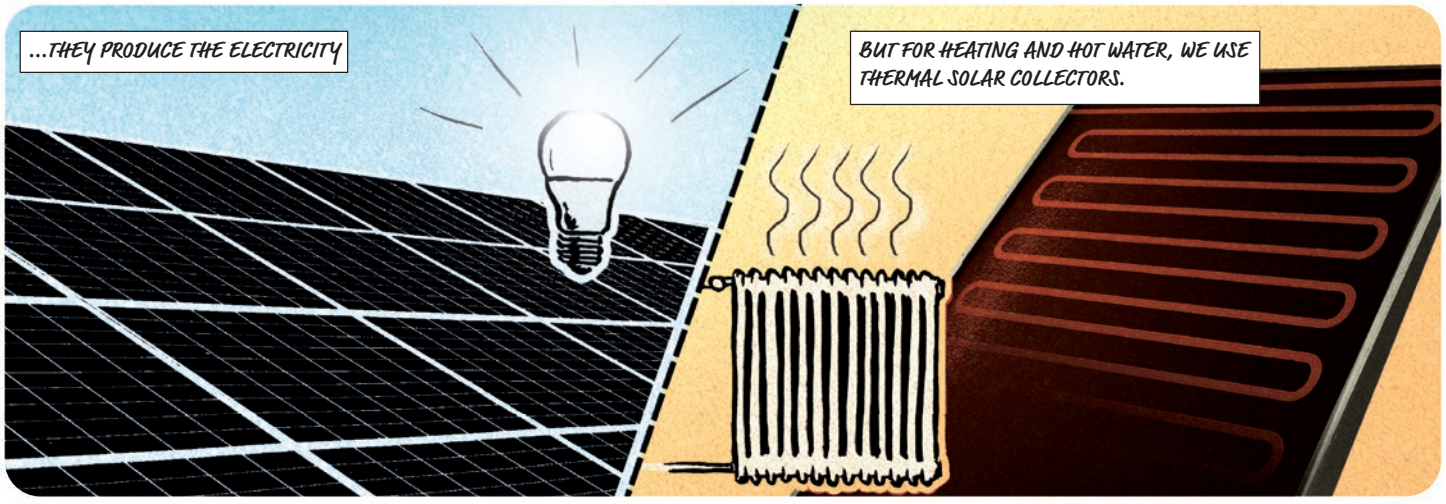
BUT AT THE TIME IT WAS STILL RARE ... WHEREAS THE SUN CAN PROVIDE US WITH A LOT OF ENERGY!


FOR ME, SUSTAINABILITY WAS THE FACT OF RETHINKING MY COMPANY!
WE WERE BUILDING INDIVIDUAL HOUSES AT LOWER COST WITH MATERIALS THAT SOMETIMES CAME FROM THE OTHER SIDE OF THE PLANET.
OF COURSE, WE WERE ALREADY AWARE OF THE ENERGY ISSUE...


THE RISING COST OF RAW MATERIALS AND THE INCREASINGLY FREQUENT SUPPLY DISRUPTIONS CONVICED US TO GO FURTHER IN OUR TRANSITION.


WE TRAINED OURSELVES TO BUILD INDIVIDUAL WOODEN HOUSES.
ALL THIS, AS LOCALLY AS POSSIBLE.
FOR HEATING AND HOT WATER, WE WERE THE FIRST TO PROPOSE SOLAR HEAT SYSTEMS THAT ALLOW US TO BE ALMOST AUTONOMOUS!

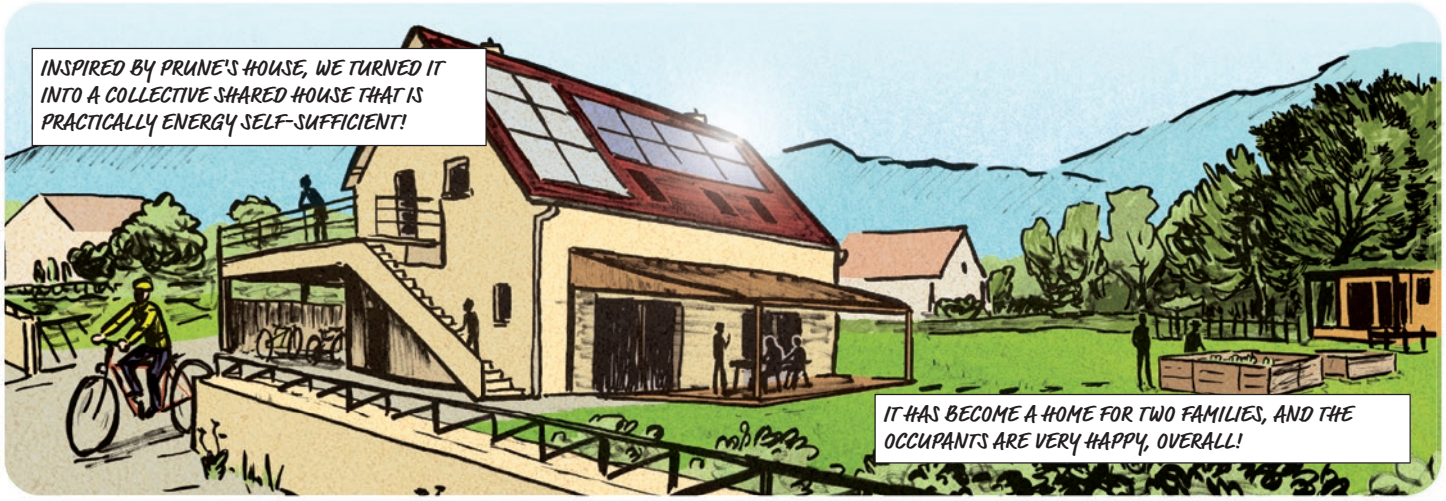

LIKE THE ONES YOU SEE HERE ON THE ROOF OF THE FOYER?
NO, NO! THOSE ARE PHOTOVOLTAIC SOLAR PANELS...


...THEY PRODUCE THE ELECTRICITY
BUT FOR HEATING AND HOT WATER, WE USE THERMAL SOLAR COLLECTORS.

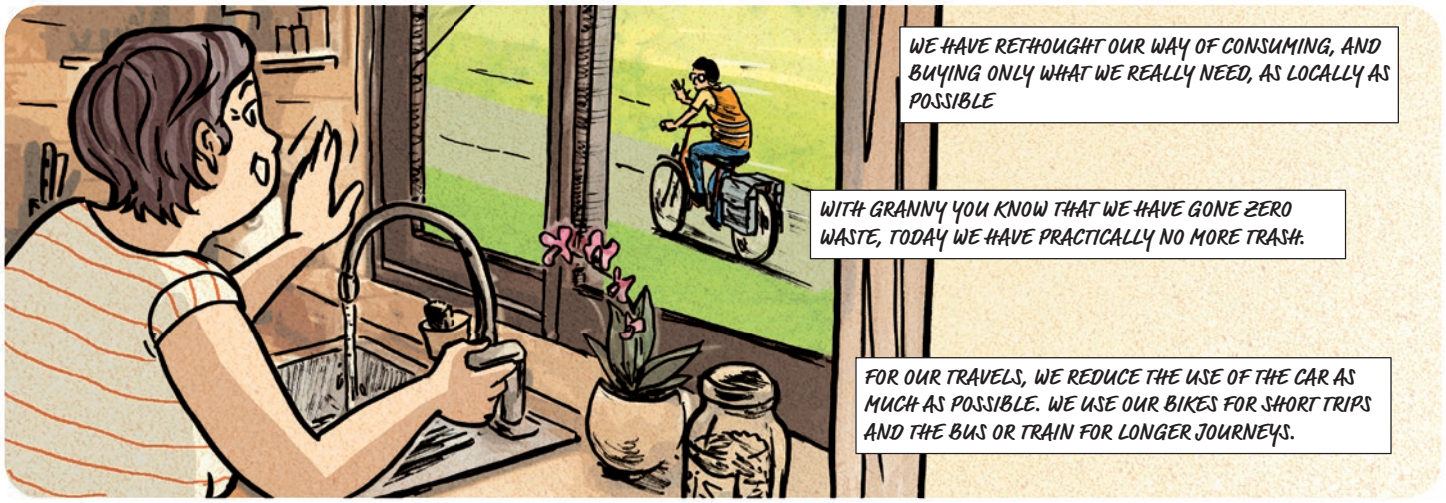

AAAAH, SUFFICIENCY ...
REMEMBER THIS WELL EMMA:
WITH THESE 3, IT TAKES A WHILE TO GET IT IN BUT, ONCE THEY GET IT, IT'S DONE!
HA! HA! HA!

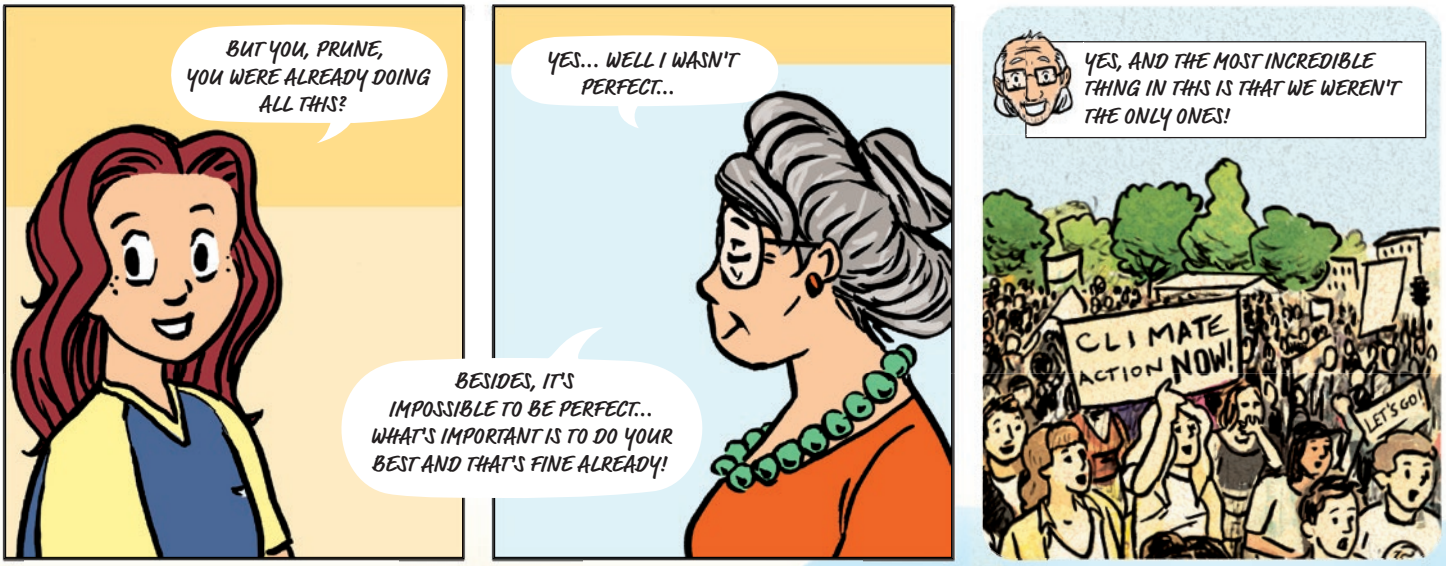

BUT WHAT ABOUT YOU, GRANDPA, WHAT DID YOU DO?

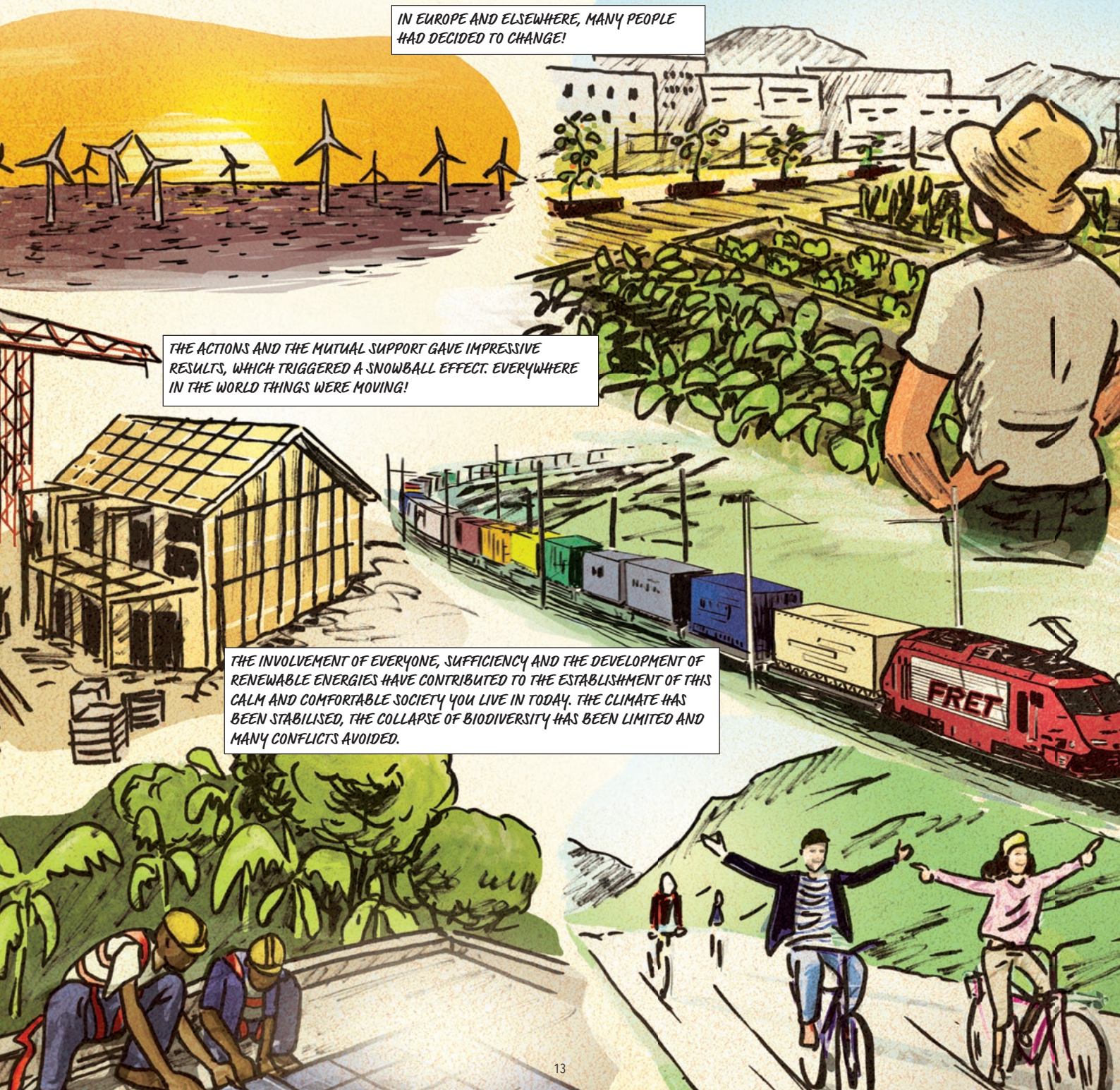

WHEN THE CHILDREN GREW UP, YOUR GRANDMOTHER AND I REALISED THAT OUR HOUSE NO LONGER MET OUR NEEDS.
IT WAS MUCH TOO BIG FOR THE TWO OF US. IT WAS EXPENSIVE TO HEAT, BECAUSE IT WAS POORLY INSULATED.
WE DECIDED TO RENOVATE IT AND RENT IT OUT.

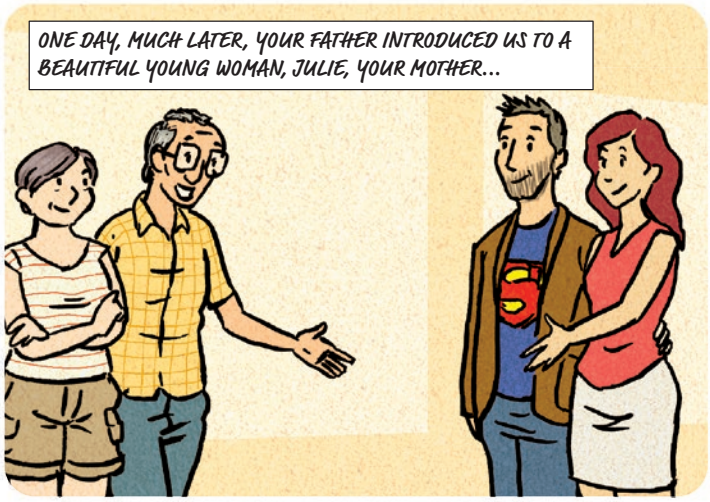

INSPIRED BY PRUNE'S HOUSE, WE TURNED IT INTO A COLLECTIVE SHARED HOUSE THAT IS PRACTICALLY ENERGY SELF-SUFFICIENT!
IT HAS BECOME A HOME FOR TWO FAMILIES, AND THE OCCUPANTS ARE VERY HAPPY, OVERALL!

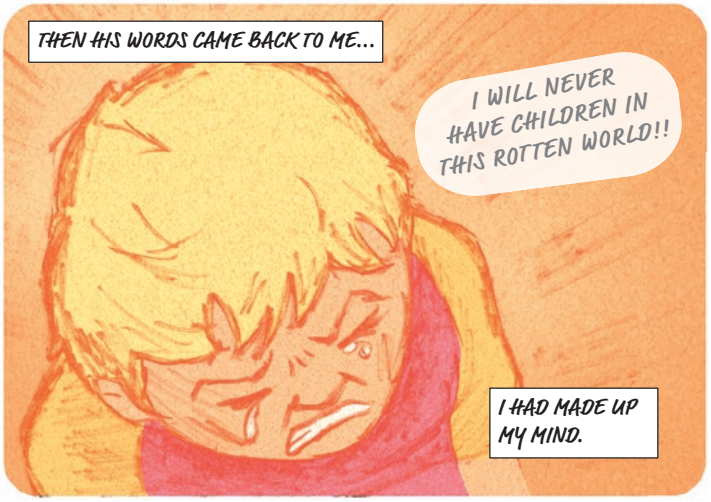

AND, AS WE HAD A LARGE PLOT OF LAND, WE KEPT PART OF IT TO PUT A TINY HOUSE ON.
IT'S THE ONE YOU'VE BEEN PLAYING IN SINCE YOU WERE LITTLE!
WE HAVE PRIVATE ACCESS TO IT BUT WE TAKE ADVANTAGE OF THE COMMON AREAS OF THE COLLECTIVE HOUSING, SUCH AS THE BICYCLE GARAGE, THE LAUNDRY ROOM AND THE VEGETABLE GARDEN.

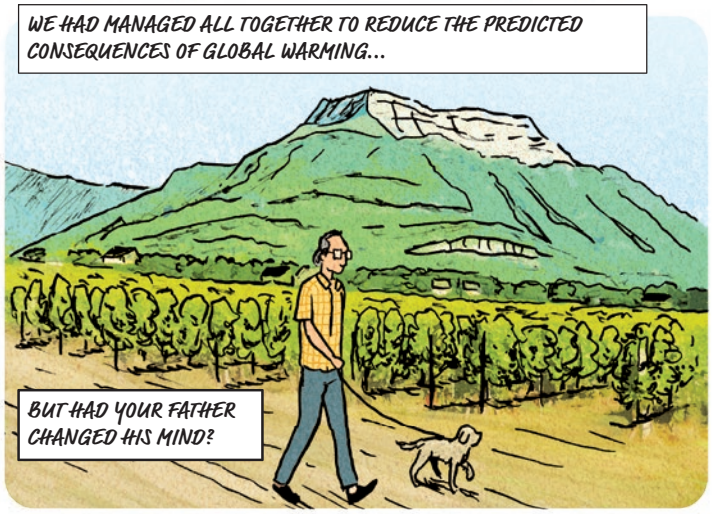

WE HAVE RETHOUGHT OUR WAY OF CONSUMING, AND BUYING ONLY WHAT WE REALLY NEED, AS LOCALLY AS POSSIBLE
WITH GRANNY YOU KNOW THAT WE HAVE GONE ZERO WASTE, TODAY WE HAVE PRACTICALLY NO MORE TRASH.
FOR OUR TRAVELS, WE REDUCE THE USE OF THE CAR AS MUCH AS POSSIBLE. WE USE OUR BIKES FOR SHORT TRIPS AND THE BUS OR TRAIN FOR LONGER JOURNEYS.

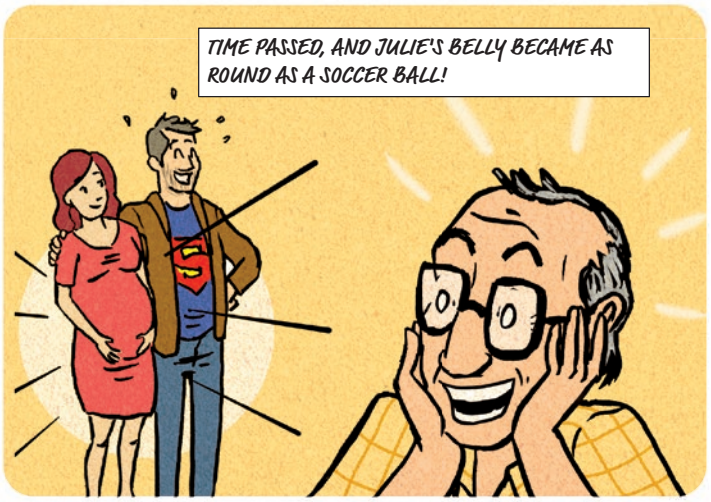

BUT YOU, PRUNE, YOU WERE ALREADY DOING ALL THIS?
YES... WELL I WASN'T PERFECT...
BESIDES, IT'S IMPOSSIBLE TO BE PERFECT... WHAT'S IMPORTANT IS TO DO YOUR BEST AND THAT'S FINE ALREADY!
YES, AND THE MOST INCREDIBLE THING IN THIS IS THAT WE WEREN'T THE ONLY ONES!
CLIMATE ACTION NOW!
LET'S GO!

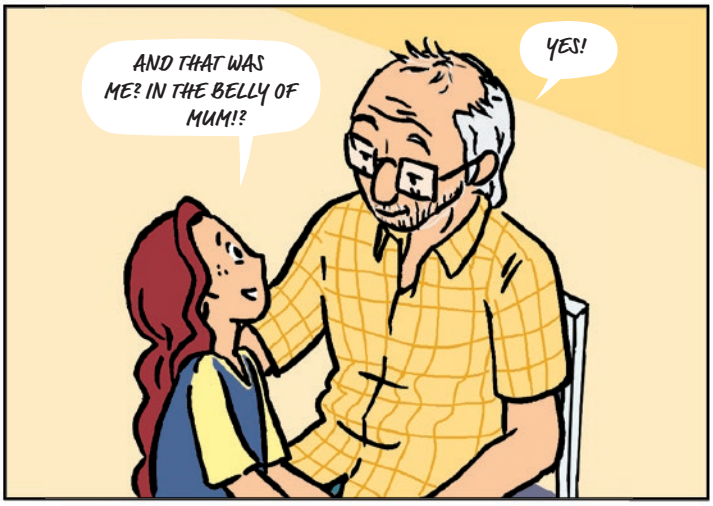

IN EUROPE AND ELSEWHERE, MANY PEOPLE HAD DECIDED TO CHANGE!
THE ACTIONS AND THE MUTUAL SUPPORT GAVE IMPRESSIVE RESULTS, WHICH TRIGGERED A SNOWBALL EFFECT. EVERYWHERE IN THE WORLD THINGS WERE MOVING!
FRET
THE INVOLVEMENT OF EVERYONE, SUFFICIENCY AND THE DEVELOPMENT OF RENEWABLE ENERGIES HAVE CONTRIBUTED TO THE ESTABLISHMENT OF THIS CALM AND COMFORTABLE SOCIETY YOU LIVE IN TODAY. THE CLIMATE HAS BEEN STABILISED, THE COLLAPSE OF BIODIVERSITY HAS BEEN LIMITED AND MANY CONFLICTS AVOIDED.


ONE DAY, MUCH LATER, YOUR FATHER INTRODUCED US TO A BEAUTIFUL YOUNG WOMAN, JULIE, YOUR MOTHER...

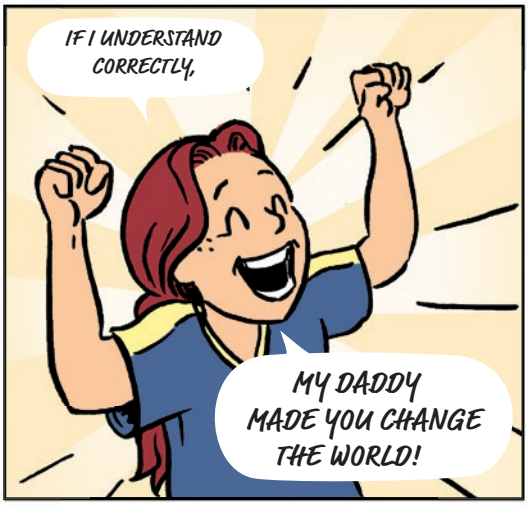

THEN HIS WORDS CAME BACK TO ME...
I WILL NEVER HAVE CHILDREN IN THIS ROTTEN WORLD!!
I HAD MADE UP MY MIND.


WE HAD MANAGED ALL TOGETHER TO REDUCE THE PREDICTED CONSEQUENCES OF GLOBAL WARMING...
BUT HAD YOUR FATHER CHANGED HIS MIND?

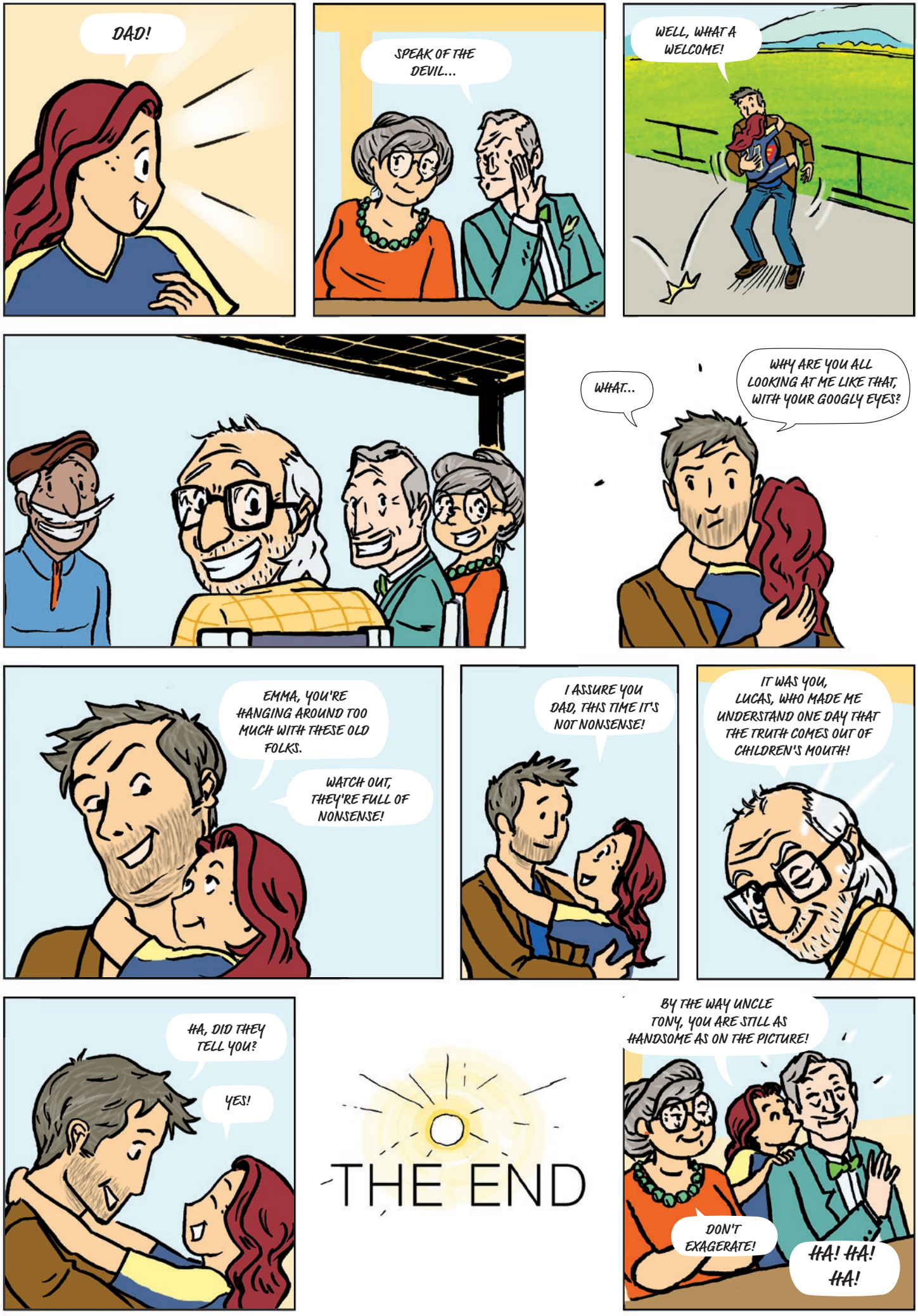

TIME PASSED, AND JULIE'S BELLY BECAME AS ROUND AS A SOCCER BALL!


AND THAT WAS ME? IN THE BELLY OF MUM!?
YES!


BUT THEN, WAIT...


IF I UNDERSTAND CORRECTLY,
MY DADDY MADE YOU CHANGE THE WORLD!


UMMM...


DAD!
SPEAK OF THE DEVIL...
WELL, WHAT A WELCOME!
WHAT...
WHY ARE YOU ALL LOOKING AT ME LIKE THAT, WITH YOUR GOOGLY EYES?
EMMA, YOU'RE HANGING AROUND TOO MUCH WITH THESE OLD FOLKS.
WATCH OUT, THEY'RE FULL OF NONSENSE!
I ASSURE YOU DAD, THIS TIME IT'S NOT NONSENSE!
IT WAS YOU, LUCAS, WHO MADE ME UNDERSTAND ONE DAY THAT THE TRUTH COMES OUT OF CHILDREN'S MOUTH!
HA, DID THEY TELL YOU?
YES!
THE END
BY THE WAY UNCLE TONY, YOU ARE STILL AS HANDSOME AS ON THE PICTURE!
DON'T EXAGERATE!
HA! HA! HA!

GLOSSARY

Sufficiency: Reduction of consumption through lifestyle changes and social transformations, without deteriorating living comfort. It refers to the idea of frugality and, in the language of the IPCC, "demand-side" measures

Sustainability: Meeting the needs of the present without compromising the ability of future generations to meet their own needs, as defined by the United Nations Brundtland Commission.

CO_2 Emissions: CO_2 emissions are all the carbon dioxide released into the atmosphere. CO_2 emissions caused by human pollution are constantly increasing. They contribute to global warming. CO_2 is the main greenhouse gas, but not the only one, along with as methane (CH_4) and nitrous oxide (N_2O).

IPCC: The IPCC is the Intergovernmental Panel on Climate Change. Created in 1988 by the United Nations Environment Programme (UNEP) and the World Meteorological Organisation (WMO), it brings together 195 member states. The IPCC is a centre of expertise that synthesises the state of knowledge on climate change and the role of human activity, and publishes scientific reports that are used by states to reach agreements in the fight against global warming.

Tiny House : A small transportable ecological house fixed on a trailer, built in light and noble materials.

Fossil fuel: Energy produced from compounds derived from the sedimentary decomposition of organic matter, i.e. mainly composed of carbon. It includes oil, natural gas and coal. When fossil fuels are burned, they release large amounts of carbon dioxide, a greenhouse gas, into the air. Greenhouse gases trap heat in our atmosphere, causing global warming.

Carbon (or environmental) footprint: This is a unit for measuring the impact of human activities on climate change. It calculates the amount of greenhouse gases emitted by an action.

Zero Waste: "Zero waste" is an approach to reducing our impact on the environment by reducing the amount of waste we produce and its negative impact on the planet.

Associations for the preservation of farming agriculture: Associations that establish a direct link between a local farmer and consumers..

In line with what the characters have undertaken in 2025, this technical guide will give you concrete solutions for taking action.

In this technical guide you will find an example of a house that will evolve over time. In its initial state, our house is very poorly insulated and its inhabitants have very high heating consumption.

The house will then be renovated and the heating system changed for an efficient one. After having thought about energy savings and efficiency, we can install renewable energies: solar thermal energy to complete the heating system and solar photovoltaic energy to produce electricity.

ENERGY POVERTY

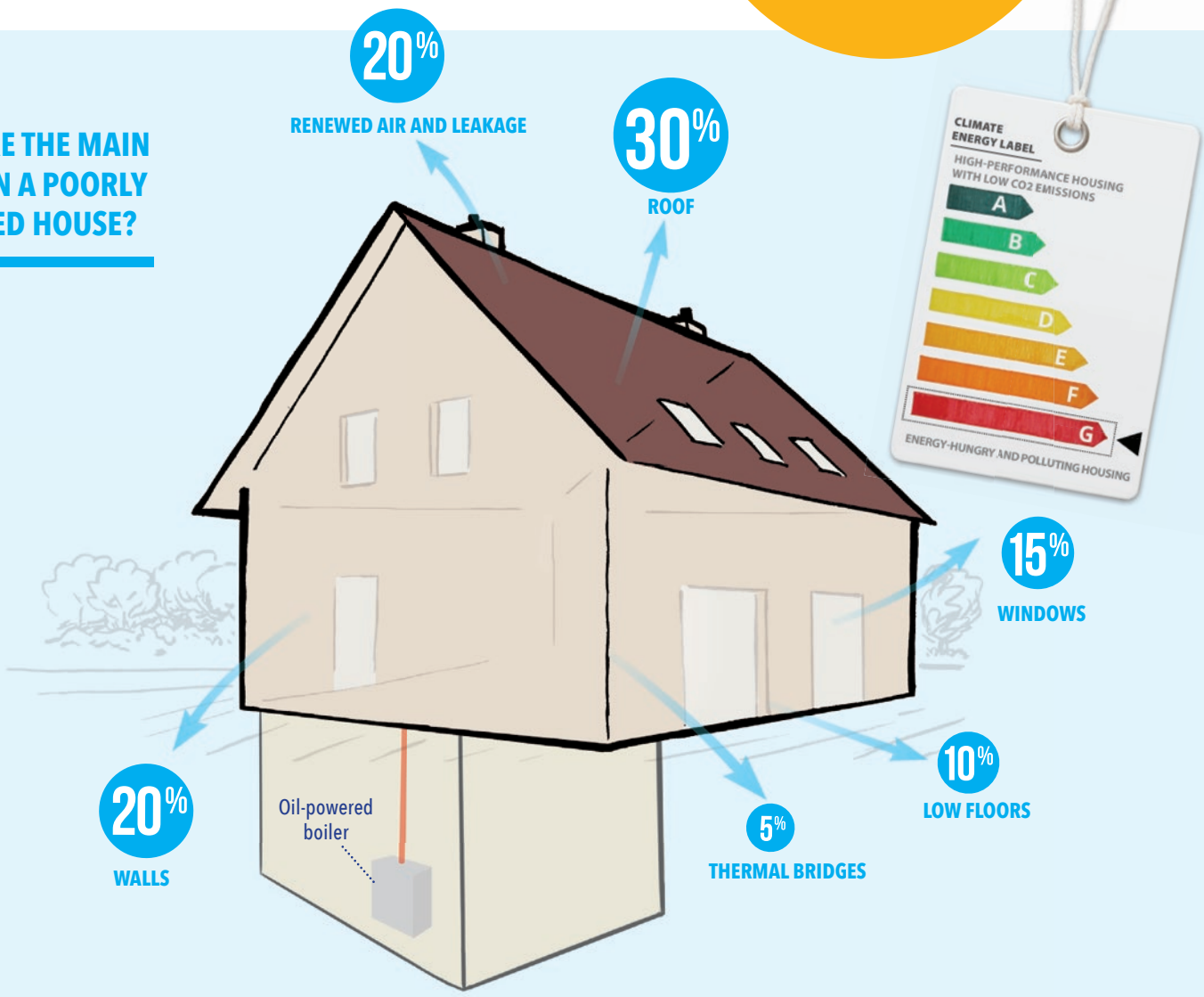
Many people find themselves in a situation of "energy poverty ". They are unable to heat their homes at an acceptable cost.

They may be forced to choose between satisfying basic needs or paying the bills, or even over-indebtedness.

Most of them have low incomes and, above all, poorly insulated housing

DID YOU KNOW?
In 2022, over 41 million Europeans were unable to keep their homes adequately warm (9.3 % of the population of the EU) and the increase in energy prices only reinforces this phenomenon!

WHAT ARE THE MAIN LOSSES IN A POORLY INSULATED HOUSE?



ENERGY POVERTY IS

= SIGNIFICANT DISCOMFORT • • • COLD • • • APPEARANCE OF MOULD • • • HEALTH PROBLEMS (fatigue, bronchitis, asthma etc.) • • • SOCIAL ISOLATION

HOW TO REDUCE ENERGY CONSUMPTION?

IMPLEMENT ECO-FRIENDLY ACTIONS > PRACTICE SOBER ENERGY USE
With Eco-friendly actions you can save an average of 12% on energy so a significant financial gain!

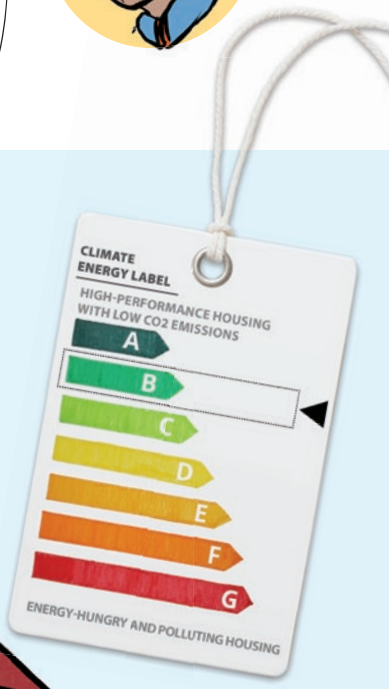
RENOVATE YOUR HOME > OPTIMISE ENERGY EFFICIENCY
Good thermal insulation is the first step because it will reduce the need for heating or cooling.

ECO-FRIENDLY ACTION:
Use power strips to switch off appliances! When electronic devices are not working, they can still consume energy.

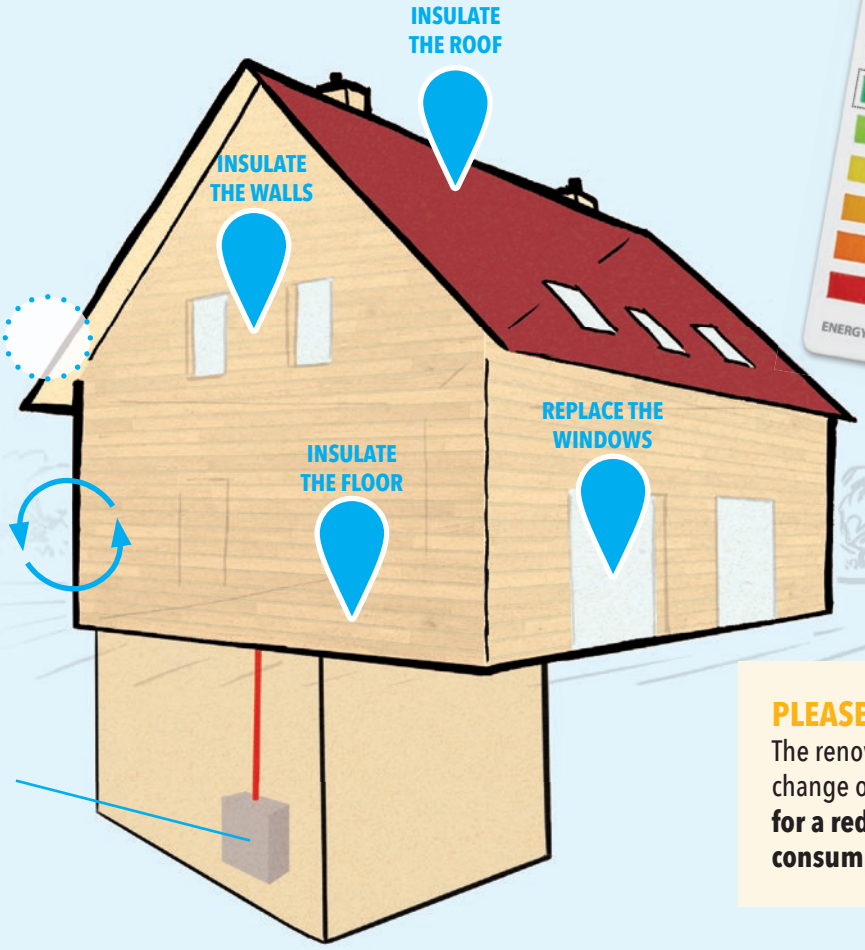
ENERGY RENOVATION

This house has been renovated in an ideal and efficient way in order to achieve the objectives of a "low energy" building.
The objective of the energy renovation of buildings is twofold
- to reduce the energy consumption and bills of the inhabitants
- to minimise the impact on the environment by reducing emissions and by using bio-based materials.

DID YOU KNOW?
In the EU, buildings are responsible for 40% of our energy consumption and 36% of greenhouse gas emissions.



RENOVATION WORK ON THIS HOUSE:



PLEASE NOTE!
The renovation, including a change of heating system, allows **for a reduction in energy consumption by 4 to 5 times!**

The overall renovation of this house resulted in savings of 400 kWh/m2/year and 8800 kgCO2/year.

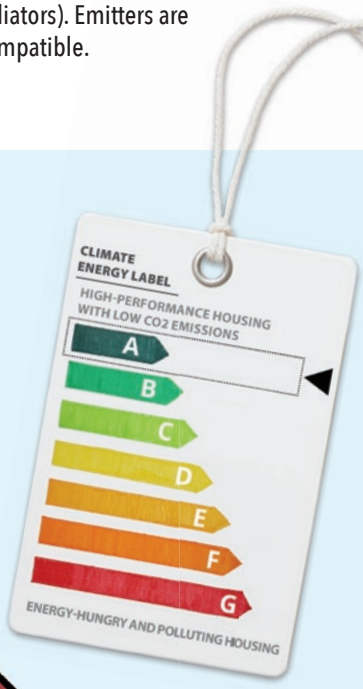
This represents the equivalent of 70,000 km/year driven by car or almost two trips around the world.

SOLAR HEAT

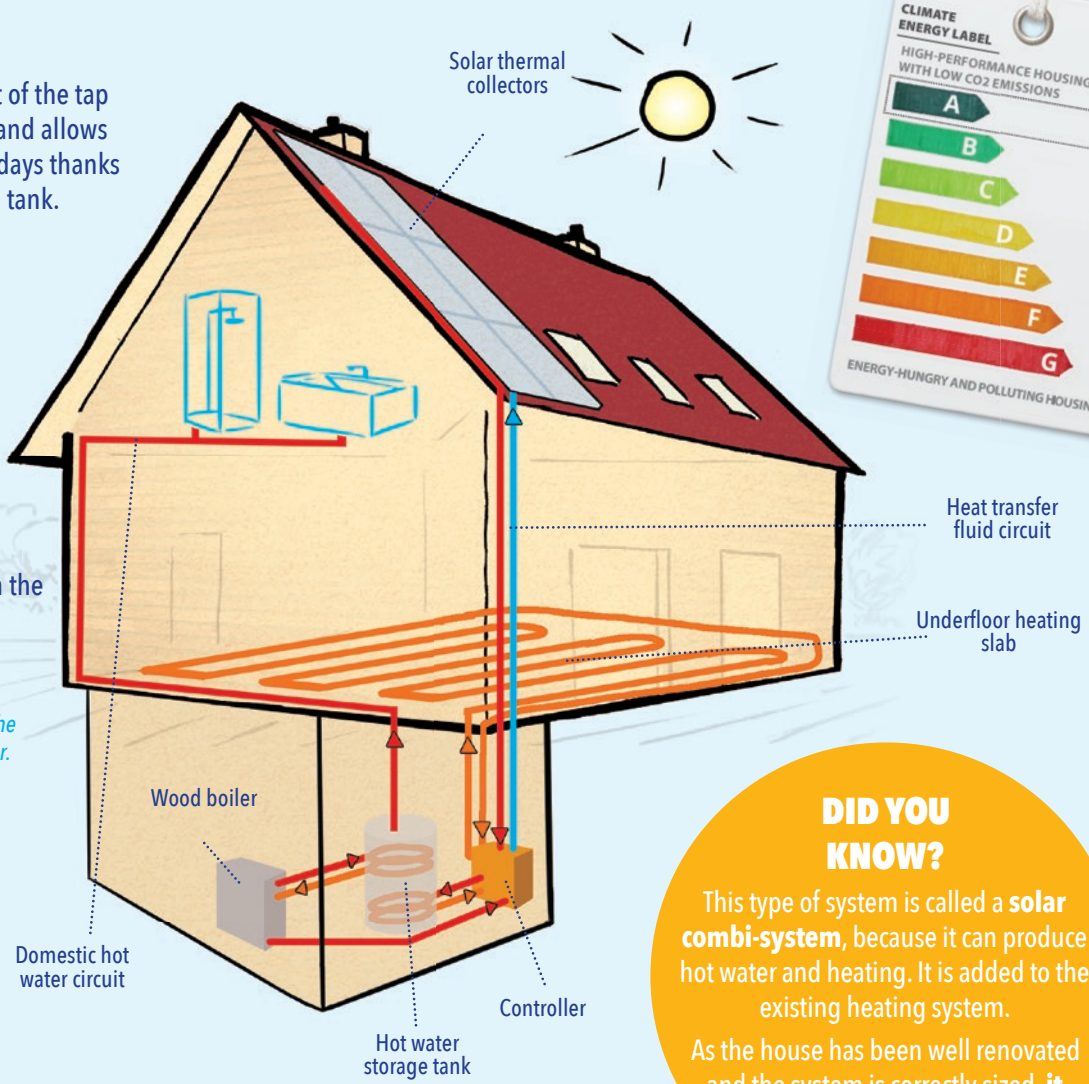
Solar thermal energy is used to heat a fluid, mainly water. Most of solar thermal modules consist of a black plate with copper tubes on the back. The plate heats up and transfers its heat to the water contained in the tubes. A pump is used to circulate the water and fill a hot water tank for example.

The next step for an efficient renovation is to install renewable energy systems. Here we propose to couple solar thermal energy to the wood-burning stove installed after renovation.

The energy is redistributed where it is needed: this can be the hot water tank for our showers, and the washing machine, but also to supply the heat emitters (i.e., underfloor heating and radiators). Emitters are therefore required, with circulating water... If they are electric radiators, they are not compatible.



FOR A SUNNY DAY:
The hot water that comes out of the tap has been heated by the sun and allows you to be autonomous for 3 days thanks to the storage capacity of the tank.



EQUIPMENT REQUIRED:
- Collectors (on the roof or on the ground in the garden)
- A tank of at least 400 litres

CAUTION: Place the tank in a basement, garage or attic, as the stored heat radiates in summer.

DID YOU KNOW?

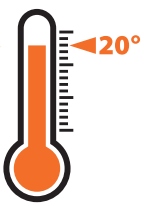
This type of system is called a **solar combi-system**, because it can produce hot water and heating. It is added to the existing heating system.

As the house has been well renovated and the system is correctly sized, **it can save between 50% and 70%** on its heating bill.

ECO-FRIENDLY ACTION:

We set the temperature between 19 and 21°C in occupied rooms during the day, and 17°C at night and during the day in rooms that are less occupied.

1°C less **means 7% energy savings!**



The temperature of the rooms can be easily adjusted by installing a control and programming your heating system.

PHOTOVOLTAIC SOLAR ENERGY

DID YOU KNOW?
A solar photovoltaic panel has a carbon footprint of 30gCO2/kWh, which is about 15 times less than gas and 30 times less than coal.

Photovoltaic solar panels are used to generate electricity for lighting or television, for example. Thanks to this installation, this house will achieve an A++ rating, which means that it will produce more energy than it consumes.

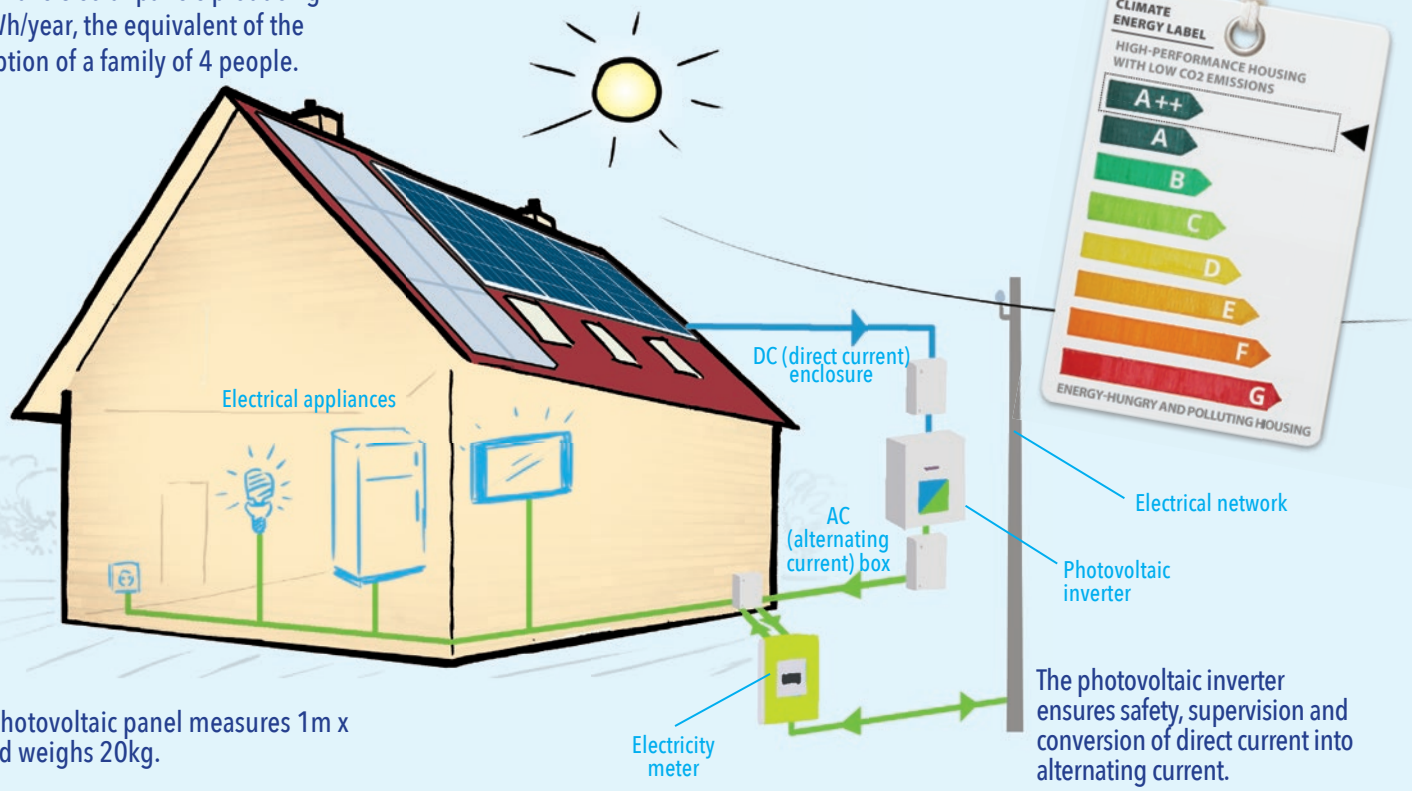
Economically, there are 2 ways to valorise your photovoltaic production:

Selling your photovoltaic electricity to an electricity supplier

Self-consume your photovoltaic electricity and sell the surplus

> means making financial savings on your electricity bill.

Here we have 5 solar panels producing 2400 kWh/year, the equivalent of the consumption of a family of 4 people.



A solar photovoltaic panel measures 1m x 1.7m and weighs 20kg.

The photovoltaic inverter ensures safety, supervision and conversion of direct current into alternating current.

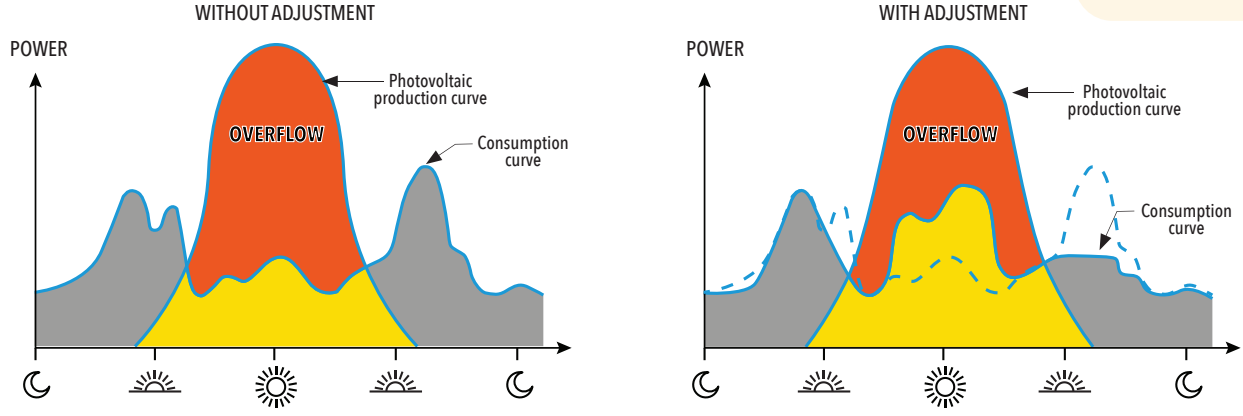
FOCUS ON SELF-CONSUMPTION

Self-consumption means adjusting your consumption to the photovoltaic production:

> The energy produced by the photovoltaic installation is consumed directly by the household

> The surplus is fed into the electricity grid

Comparison between the photovoltaic production and the consumption of a household during a day



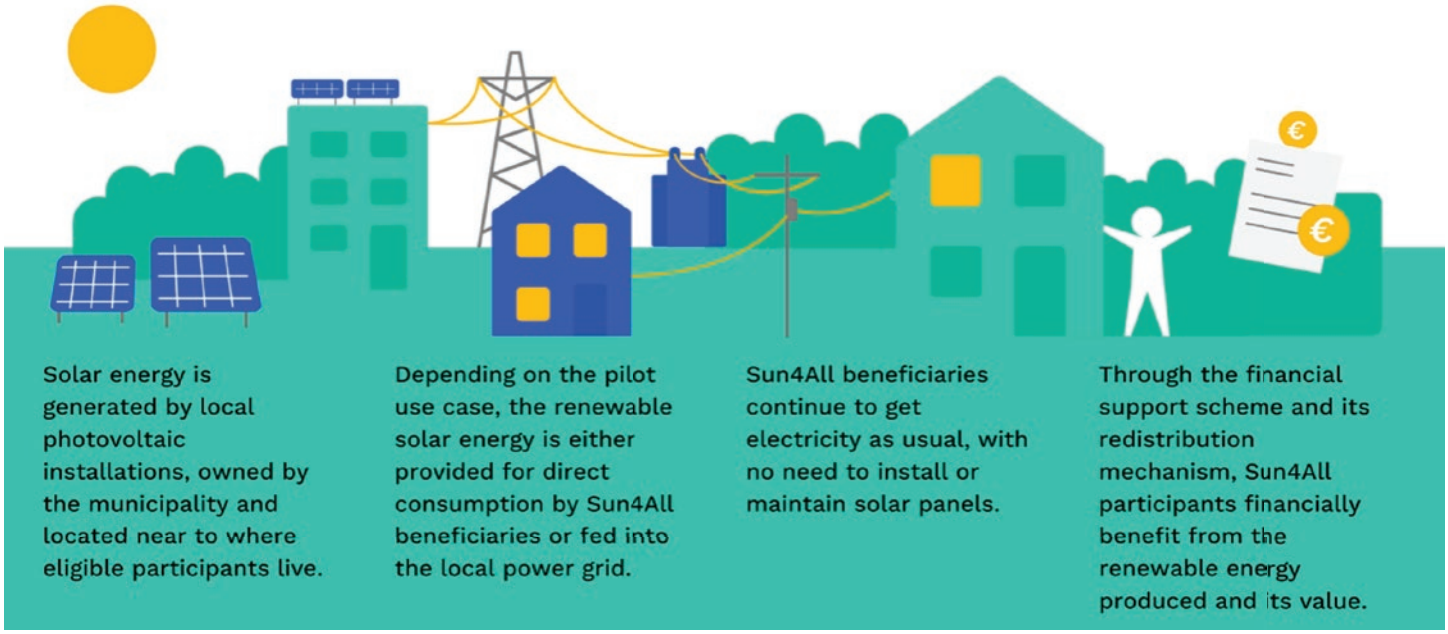
Source : Agence qualité construction

Sun4All solar power to the people

WHAT IS SUN4ALL?

Sun4All is an innovative project of the European Union's Horizon 2020 programme. Its objective is to bring the benefits of **solar photovoltaic energy** to households **in energy poverty**, which usually do not have the capacity to invest in such energy sources.

Accompanied by the training and expertise centre of the **FRENCH NATIONAL INSTITUTE FOR SOLAR ENERGY (INES-PFE)**, the **Community of Communes Coeur de Savoie** has been selected alongside the European cities of Rome, Barcelona and Almada to experiment with this programme. Between 2023 and 2024, 50 households per year are invited to join the project. The aim will then be to analyse this experiment, before adapting it and **replicating it in other European territories**.



TO FIND OUT MORE:

info@sunforall.eu
www.sunforall.eu
Twitter: Sun4All_EU
LinkedIn: Sun4All Project

Coeur de Savoie communauté de communes

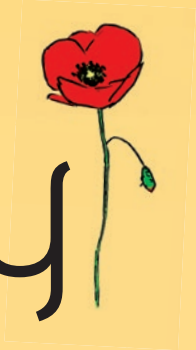
The Coeur de Savoie Community of Municipalities has long been involved in the development of solar energy with numerous photovoltaic power plants installed on its territory.

INES INSTITUT NATIONAL DE L'ENERGIE SOLAIRE

The INES-PFE component of the FRENCH NATIONAL INSTITUTE FOR SOLAR ENERGY aims to support territories and companies to strengthen their capacities in the in the field of solar energy.

This project has been funded by the Horizon 2020 and innovation programme Horizon 2020 of the European Union, under the grant agreement n°1010322309

Emma's destiny



The story of "Emma's destiny" takes place in 2065 in a small town in the Alps. The changes needed to fight global warming and protect biodiversity have been implemented. The climatic disasters are behind us, everyday life is liveable, territories are more adapted and resilient than in 2022. At the party of her football club, Emma, a young football player, discovers, by looking at photos and talking to her grandfather in particular, what has caused these positive changes and what solutions have been adopted by 2025... The year of (real) awareness and collective action! Finally!

In the spirit of what our characters have undertaken in the years 2025, a technical guide at the end of the story gives you some ideas for action.