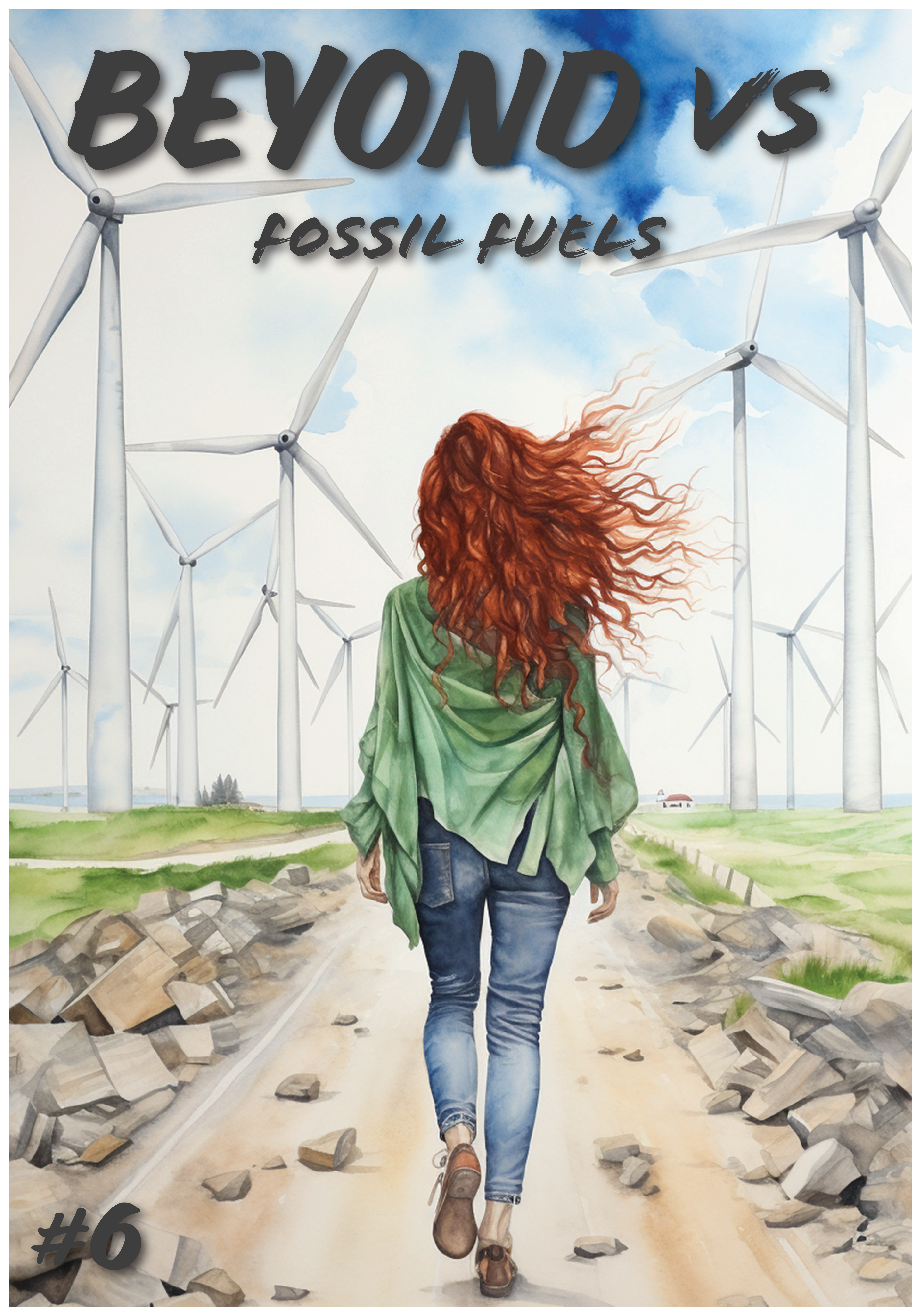


BEYOND VS

FOSSIL FUELS



#6



WOW, IT'S SO SMOGGY TODAY, OND. IS IT ALWAYS THIS BAD?



ACCORDING TO LOCAL NEWS REPORTS, WE ARE EXPERIENCING A TEMPERATURE INVERSION, BEY.

WHAT'S THAT?

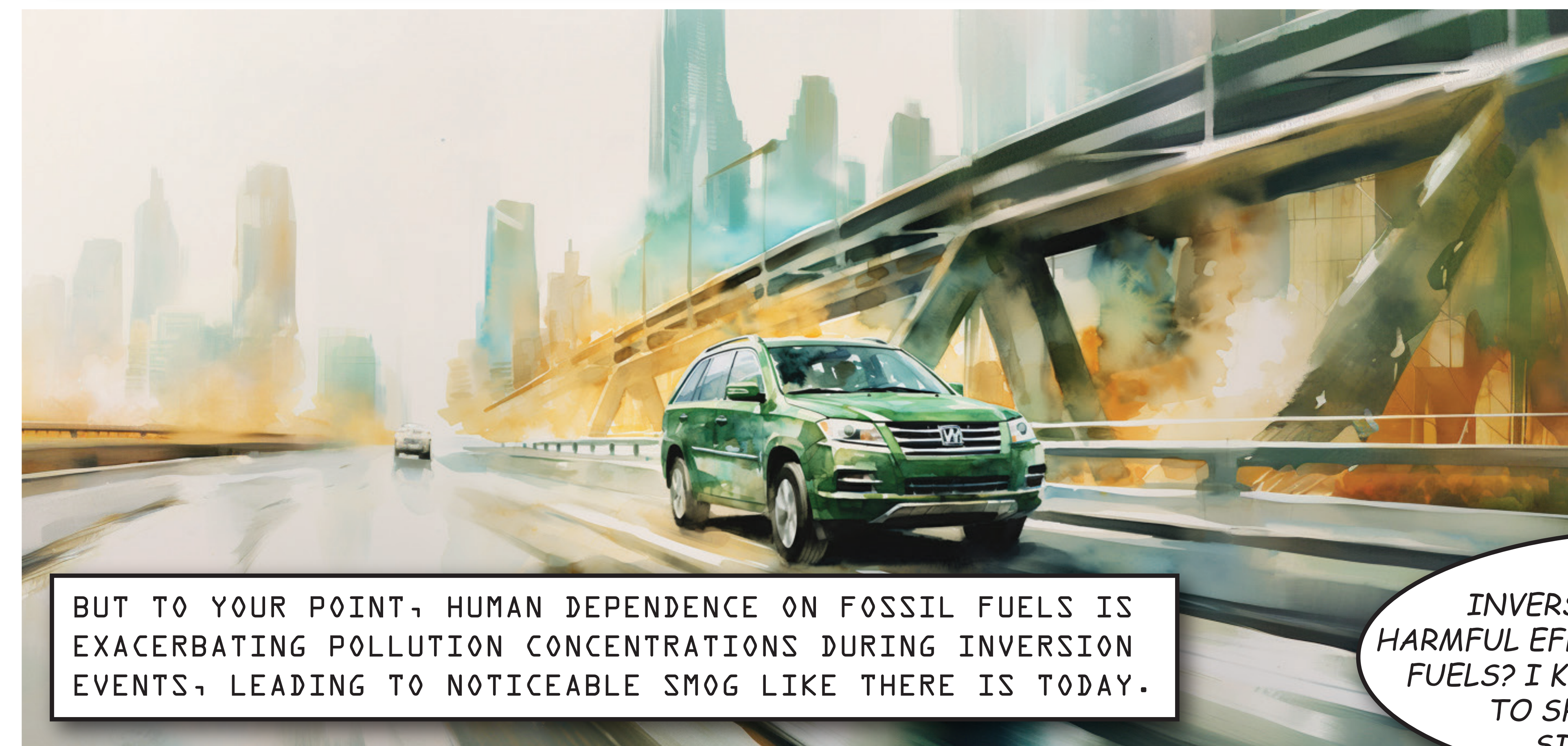


AS WARM AIR RISES, IT ACTS LIKE A LID, TRAPPING POLLUTANTS NEAR THE GROUND. THIS CAN LEAD TO SMOG AND POOR AIR QUALITY IN URBAN AREAS.



SO IF PEOPLE WEREN'T POLLUTING THE WORLD, WE WOULDN'T HAVE INVERSIONS LIKE THIS?

NOT EXACTLY. INVERSIONS ARE NATURAL EVENTS, AS ARE WILDFIRES AND VOLCANIC ERUPTIONS WHICH CAUSE SIGNIFICANT AIR POLLUTION. POOR AIR QUALITY HAS OCCURRED LONG BEFORE CITIES EMERGED.



BUT TO YOUR POINT, HUMAN DEPENDENCE ON FOSSIL FUELS IS EXACERBATING POLLUTION CONCENTRATIONS DURING INVERSION EVENTS, LEADING TO NOTICEABLE SMOG LIKE THERE IS TODAY.



ASIDE FROM INVERSIONS, WHAT OTHER HARMFUL EFFECTS COME FROM FOSSIL FUELS? I KNOW YOU ARE ANXIOUS TO SHARE ONE OF YOUR SIGNATURE LISTS.

YOU KNOW ME TOO WELL.



BURNING FOSSIL FUELS FOR ELECTRICITY, HEAT, TRANSPORTATION AND OTHER USES LEADS TO ACID RAIN AND SMOG, WHICH AFFECT THE HEALTH OF HUMANS AND ANIMALS.



THEN THERE'S THE GREENHOUSE EFFECT. BURNING FOSSIL FUELS RELEASES SIGNIFICANT AMOUNTS OF CARBON DIOXIDE, METHANE, AND NITROUS OXIDE. THESE ARE GREENHOUSE GASSES THAT TRAP HEAT IN THE EARTH'S ATMOSPHERE, LEADING TO GLOBAL WARMING AND CLIMATE CHANGE.

I IMAGINE CLIMATE CHANGE IS A WHOLE OTHER CAN OF WORMS. LET'S STAY FOCUSED ON FOSSIL FUELS FOR NOW AND LEAVE THE CLIMATE ISSUE FOR ANOTHER DAY



OKAY. USE OF FOSSIL FUELS ALSO CONTRIBUTES TO WATER POLLUTION- BOTH FRESHWATER AND OCEANS.

SPECIFICALLY, THE PROCESS OF COAL MINING CAN CAUSE ACID MINE DRAINAGE, CONTAMINATING WATERWAYS.



EXTRACTING FOSSIL FUELS OFTEN REQUIRES SIGNIFICANT ALTERATIONS TO THE ENVIRONMENT, SUCH AS MOUNTAINTOP REMOVAL FOR COAL MINING, OR LAND CLEARING FOR OIL AND GAS DRILLING. THIS CAN LEAD TO HABITAT DESTRUCTION AND FRAGMENTATION.

FOSSIL FUEL-DERIVED PLASTICS ARE NOT BIODEGRADABLE. THEY OVERFLOW IN LANDFILLS...



...AND HARM MARINE LIFE.



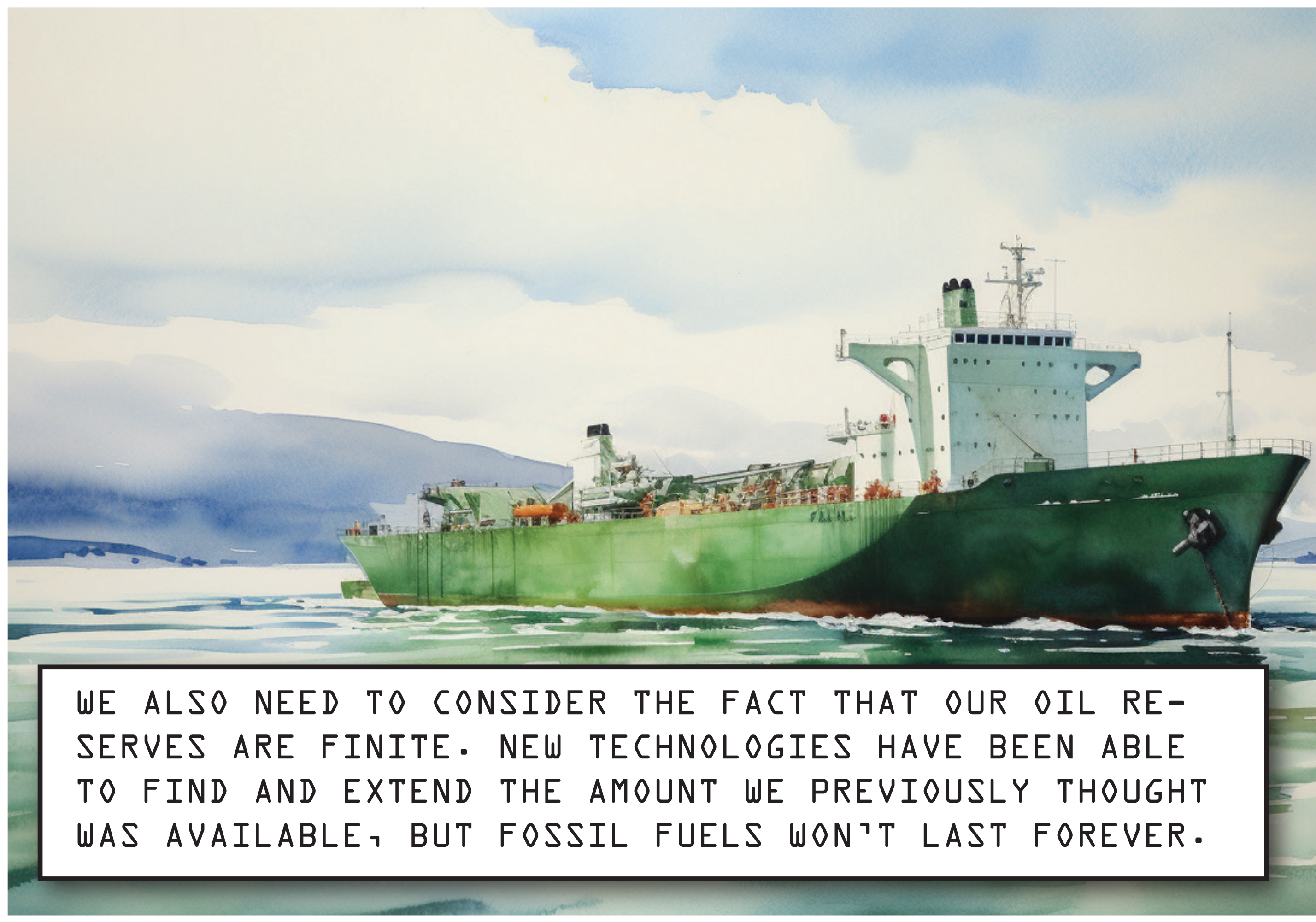
JUST... GROSS. IS THAT ALL? YOU ARE MAKING ME NEVER WANT TO DRIVE A GAS-POWERED VEHICLE OR USE A PLASTIC PRODUCT EVER AGAIN.

NO, THERE ARE EVEN NON-ENVIRONMENTAL IMPACTS. COMPETITION FOR FOSSIL FUEL RESOURCES HAS LED TO GEOPOLITICAL CONFLICTS. COUNTRIES WITH SIGNIFICANT FOSSIL FUEL RESERVES OFTEN WIELD CONSIDERABLE INFLUENCE, LEADING TO POWER IMBALANCES AND TENSIONS.





RELIANCE ON FOSSIL FUELS ALSO LEADS TO ECONOMIC VOLATILITY AND HARDSHIPS, ESPECIALLY ON COUNTRIES THAT RELY ON OIL EXPORTS.



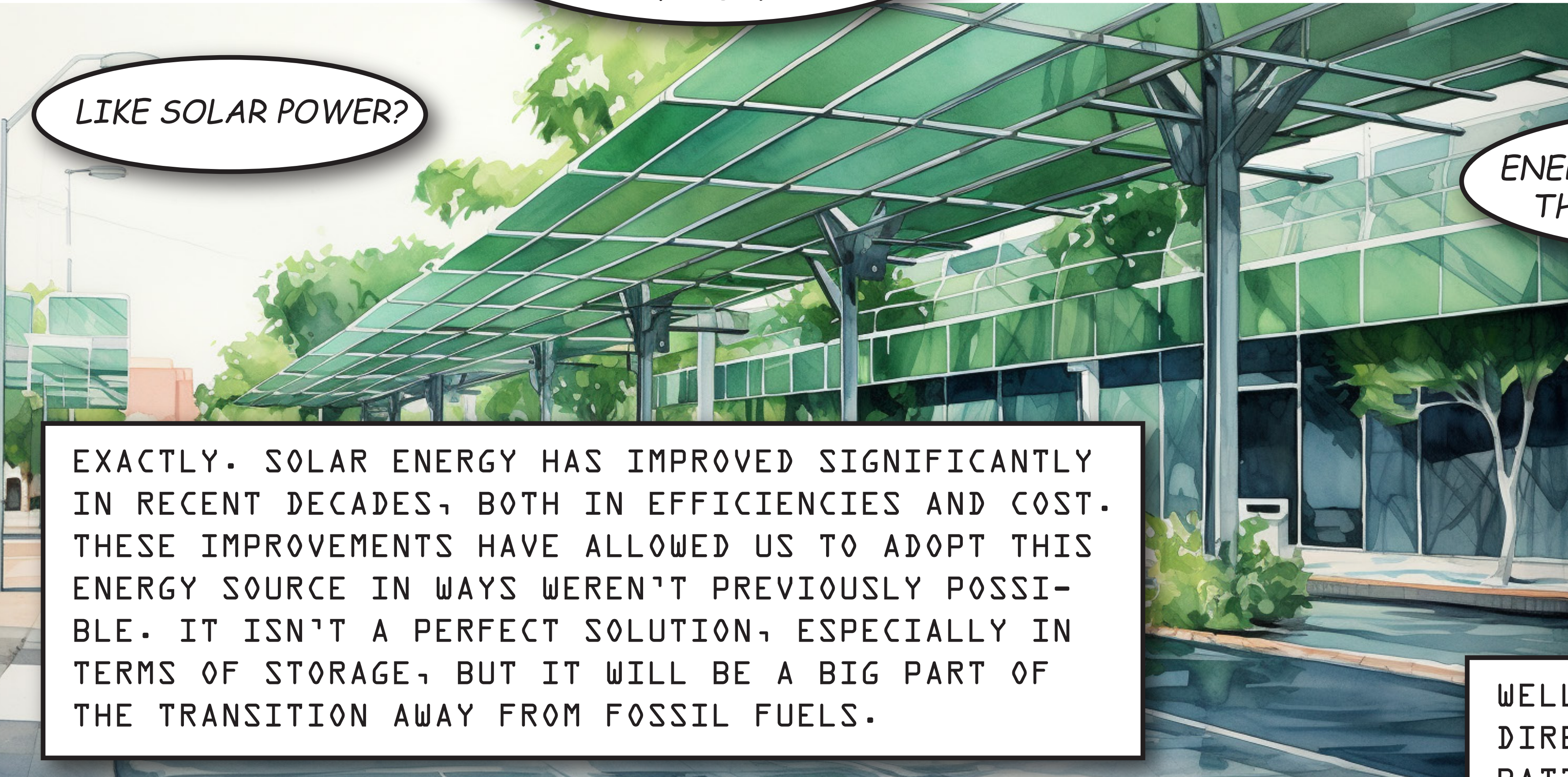
WE ALSO NEED TO CONSIDER THE FACT THAT OUR OIL RESERVES ARE FINITE. NEW TECHNOLOGIES HAVE BEEN ABLE TO FIND AND EXTEND THE AMOUNT WE PREVIOUSLY THOUGHT WAS AVAILABLE, BUT FOSSIL FUELS WON'T LAST FOREVER.



SO... WHAT DO WE DO? IT SEEMS LIKE WE ARE EITHER GOING TO COMPLETELY RUIN OUR ENVIRONMENT BY BURNING FOSSIL FUELS OR COMPLETELY RUIN OUR ECONOMY WHEN WE RUN OUT- WHICHEVER COMES FIRST.

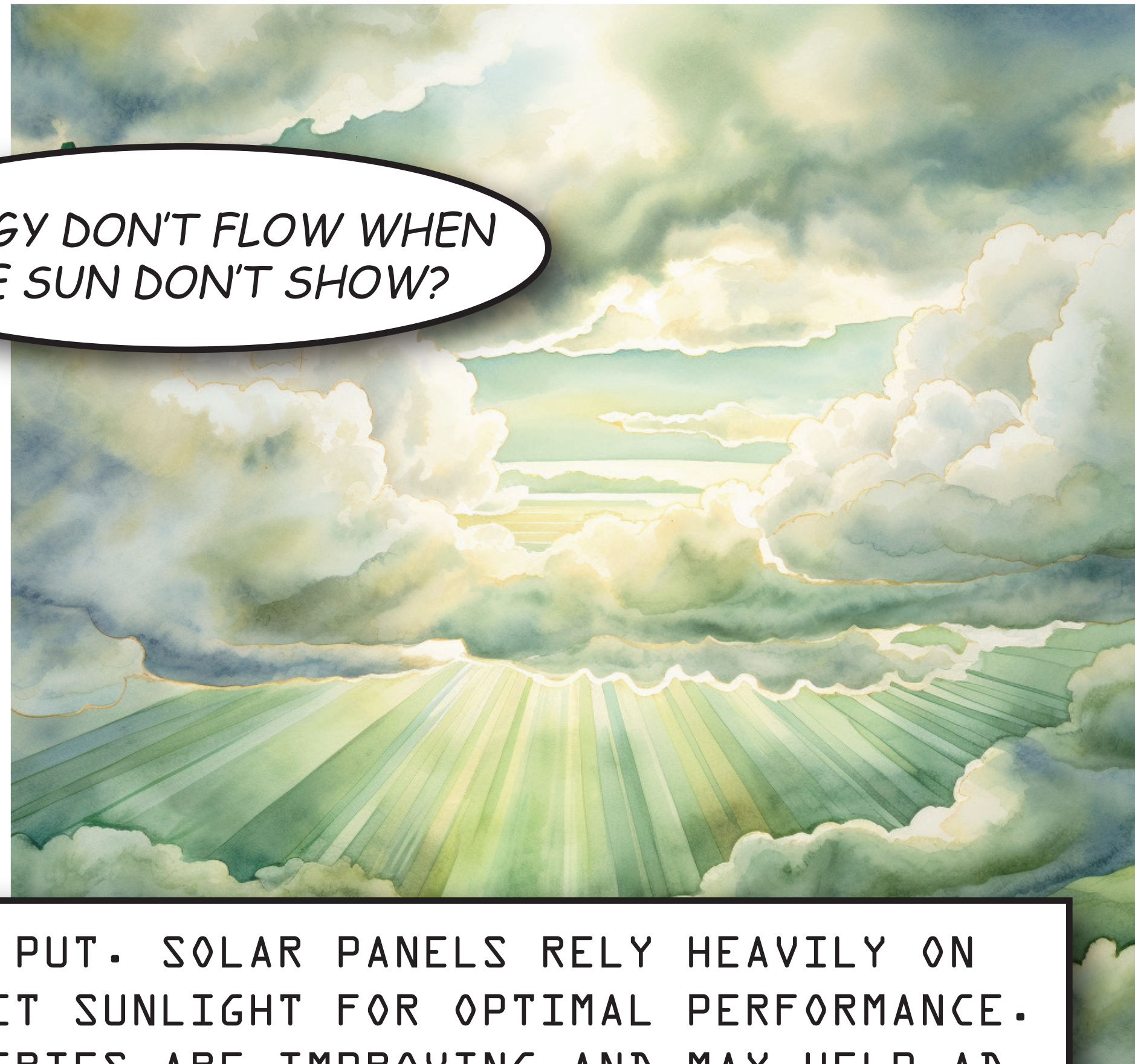


BEYOND, OUR MODERN WORLD WAS LARGELY BUILT ON FOSSIL FUELS. THEY'VE DRIVEN PROGRESS AND INNOVATIONS FOR THE PAST TWO CENTURIES. HOWEVER, THESE SAME INNOVATIONS NOW GIVE US THE TOOLS TO SHIFT TOWARDS MORE SUSTAINABLE ENERGY SOURCES.



LIKE SOLAR POWER?

EXACTLY. SOLAR ENERGY HAS IMPROVED SIGNIFICANTLY IN RECENT DECADES, BOTH IN EFFICIENCIES AND COST. THESE IMPROVEMENTS HAVE ALLOWED US TO ADOPT THIS ENERGY SOURCE IN WAYS WEREN'T PREVIOUSLY POSSIBLE. IT ISN'T A PERFECT SOLUTION, ESPECIALLY IN TERMS OF STORAGE, BUT IT WILL BE A BIG PART OF THE TRANSITION AWAY FROM FOSSIL FUELS.



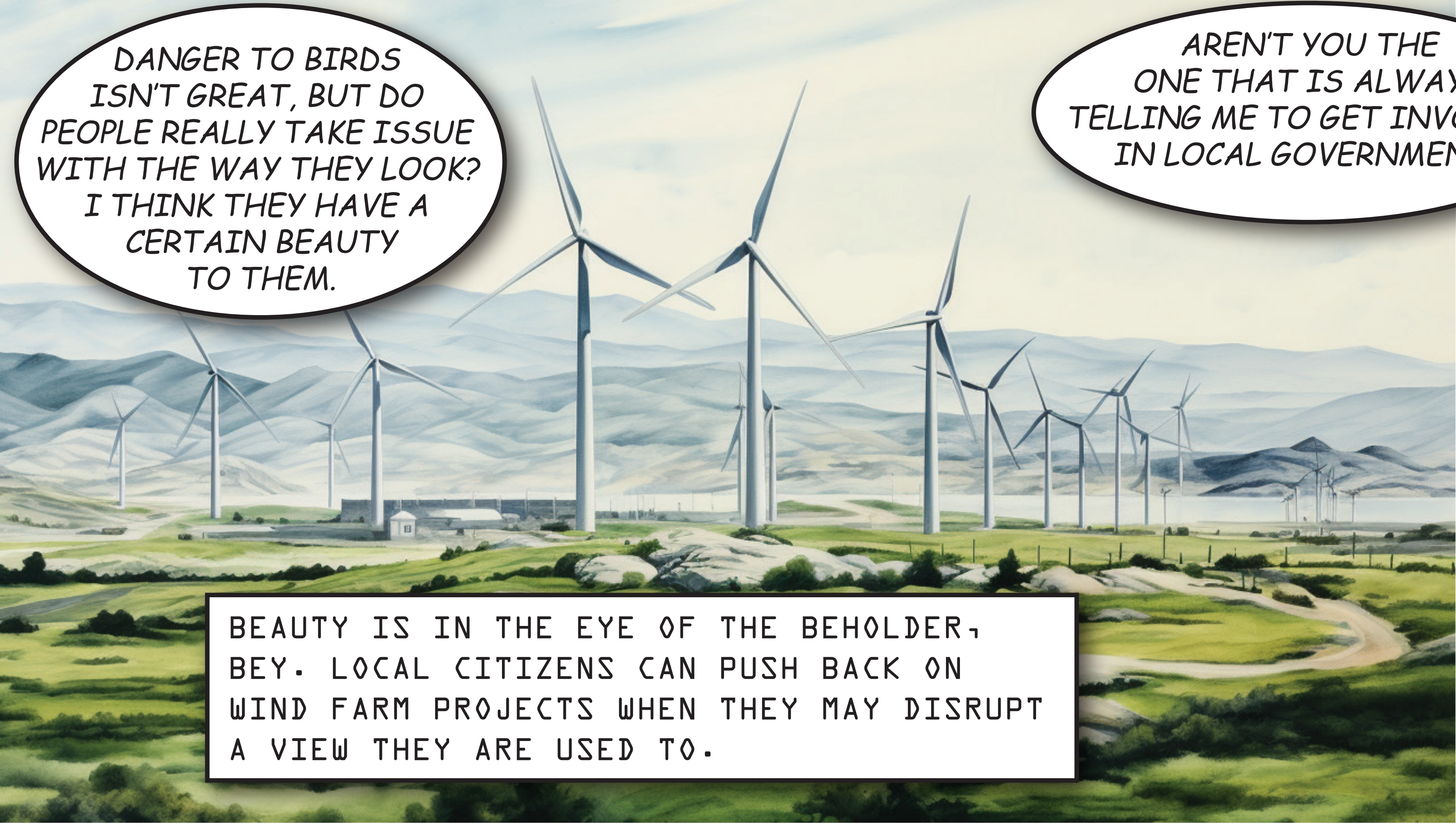
ENERGY DON'T FLOW WHEN THE SUN DON'T SHOW?

WELL PUT. SOLAR PANELS RELY HEAVILY ON DIRECT SUNLIGHT FOR OPTIMAL PERFORMANCE. BATTERIES ARE IMPROVING AND MAY HELP ADDRESS SOME INCONSISTENCIES, BUT SOLAR ALONE WILL NOT BE A COMPLETE SOLUTION BECAUSE OF THE STORAGE CHALLENGES.

I'M GUESSING USING WIND FOR ELECTRICTY HAS SIMILAR ISSUES?



YES, WIND ENERGY IS ALSO USEFUL, BUT SUFFERS INCONSISTENCIES AS WELL. WIND TURBINES HAVE BARRIERS LIKE AESTHETICS AND ENDANGERING BIRDS.



DANGER TO BIRDS ISN'T GREAT, BUT DO PEOPLE REALLY TAKE ISSUE WITH THE WAY THEY LOOK? I THINK THEY HAVE A CERTAIN BEAUTY TO THEM.

AREN'T YOU THE ONE THAT IS ALWAYS TELLING ME TO GET INVOLVED IN LOCAL GOVERNMENT?

BEAUTY IS IN THE EYE OF THE BEHOLDER, BEY. LOCAL CITIZENS CAN PUSH BACK ON WIND FARM PROJECTS WHEN THEY MAY DISRUPT A VIEW THEY ARE USED TO.



EVERYONE DESERVES A VOICE, BEY. EVEN IF YOU DON'T AGREE WITH THEM.

AGREE TO DISAGREE.



OKAY, SO LET'S CRANK UP THE SOLAR AND WIND. WHAT OTHER FORMS OF RENEWABLE ENERGIES CAN HELP US MOVE AWAY FROM FOSSIL FUELS?

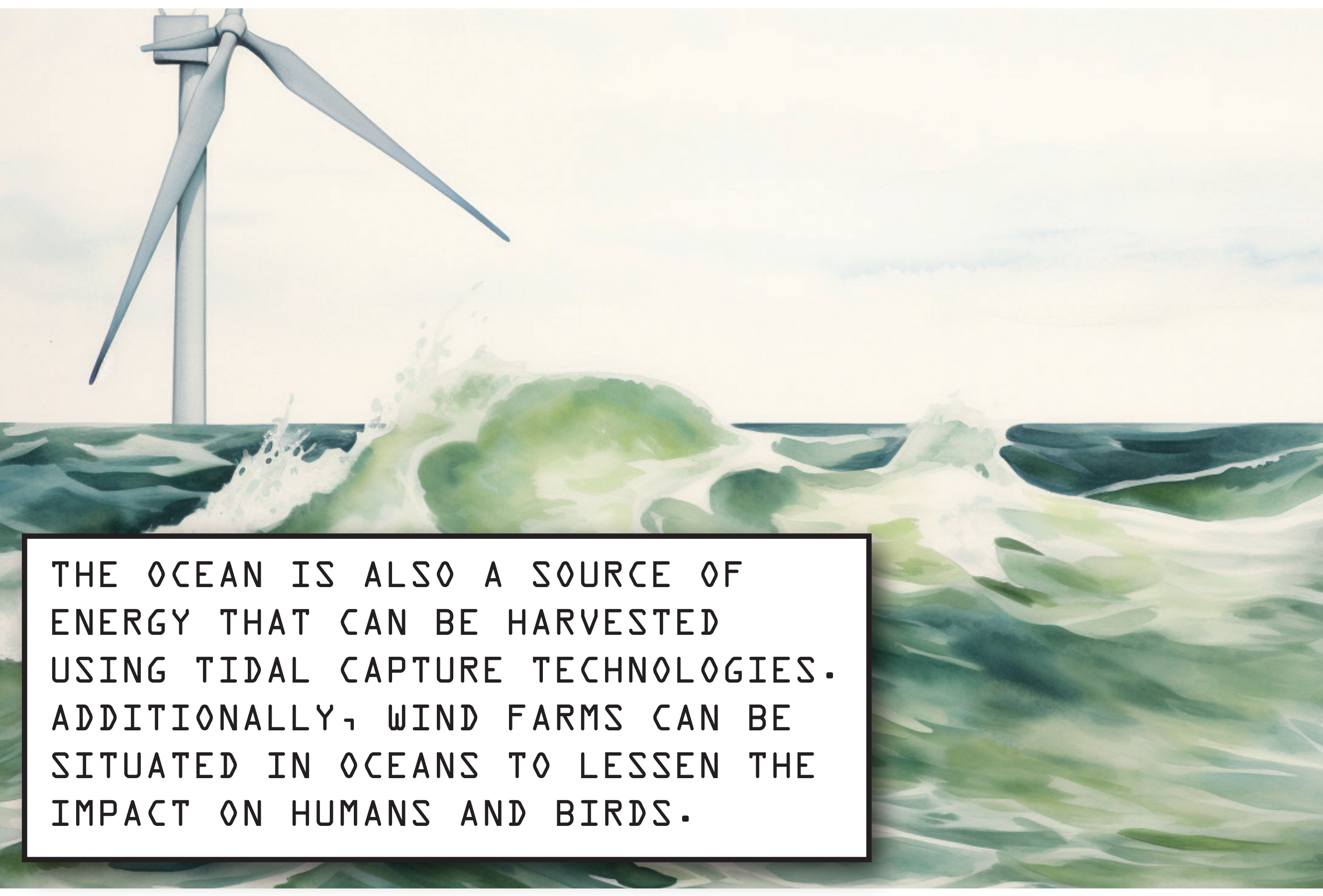
HYDROELECTRIC IS ONE OF THE BEST AND MOST RELIABLE, THOUGH MOST OF THE POTENTIAL SITES HAVE ALREADY BEEN TAPPED.



THERE IS BIOMASS ENERGY. SOME OF THESE EMERGING TECHNOLOGIES CAN EVEN TAP INTO LANDFILLS TO CAPTURE METHANE RELEASES.



GEO THERMAL POWER IS AN OPTION FOR CERTAIN PARTS OF THE WORLD WITH SIGNIFICANT TECTONIC ACTIVITY.



THE OCEAN IS ALSO A SOURCE OF ENERGY THAT CAN BE HARVESTED USING TIDAL CAPTURE TECHNOLOGIES. ADDITIONALLY, WIND FARMS CAN BE SITUATED IN OCEANS TO LESSEN THE IMPACT ON HUMANS AND BIRDS.



THAT'S A LOT OF OPTIONS, BUT IT SOUNDS LIKE THEY ALL HAVE DOWNSIDES, AND THERE ISN'T ONE THAT COULD SINGLE-HANDEDLY REPLACE FOSSIL FUELS.

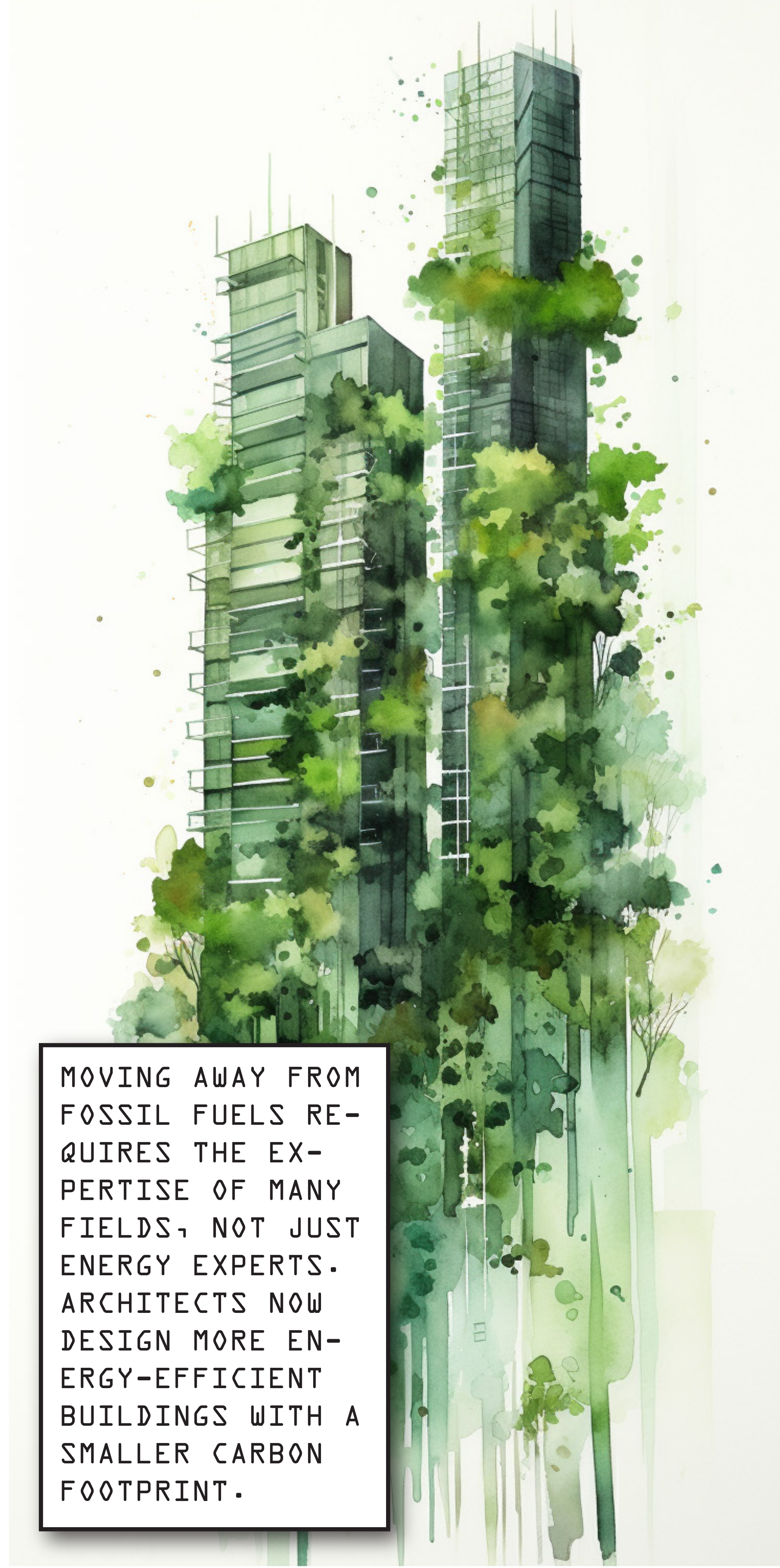
CORRECT, BUT IT DOESN'T HAVE TO BE JUST ONE OF THESE RENEWABLE SOLUTIONS. A NON-FOSSIL FUEL FUTURE WILL LOOK LIKE A BLEND OF ALL OF THEM.



THINK OF A PIE CHART WITH MULTIPLE SECTIONS, EACH REPRESENTING A SOURCE OF ENERGY THAT ADDS UP TO A MORE RENEWABLE FUTURE. SOME PLACES WILL RELY MORE HEAVILY ON ONE SOURCE THAN ANOTHER, AND THE CHART WILL LOOK DIFFERENT WHEREVER YOU GO. IT IS ALSO GOOD TO REMEMBER THAT SOME FOSSIL FUELS MAY ALWAYS TAKE UP A PORTION OF THAT CHART, EVEN IF THAT PIECE SHRINKS OVER TIME.



CITIES ARE ALSO MAKING SUSTAINABILITY A MAJOR PART OF THEIR TRANSPORTATION PLANS, REDUCING THE RELIANCE ON CARS AND INTEGRATING RECYCLED OR LOWER IMPACT MATERIALS FOR CONSTRUCTION.

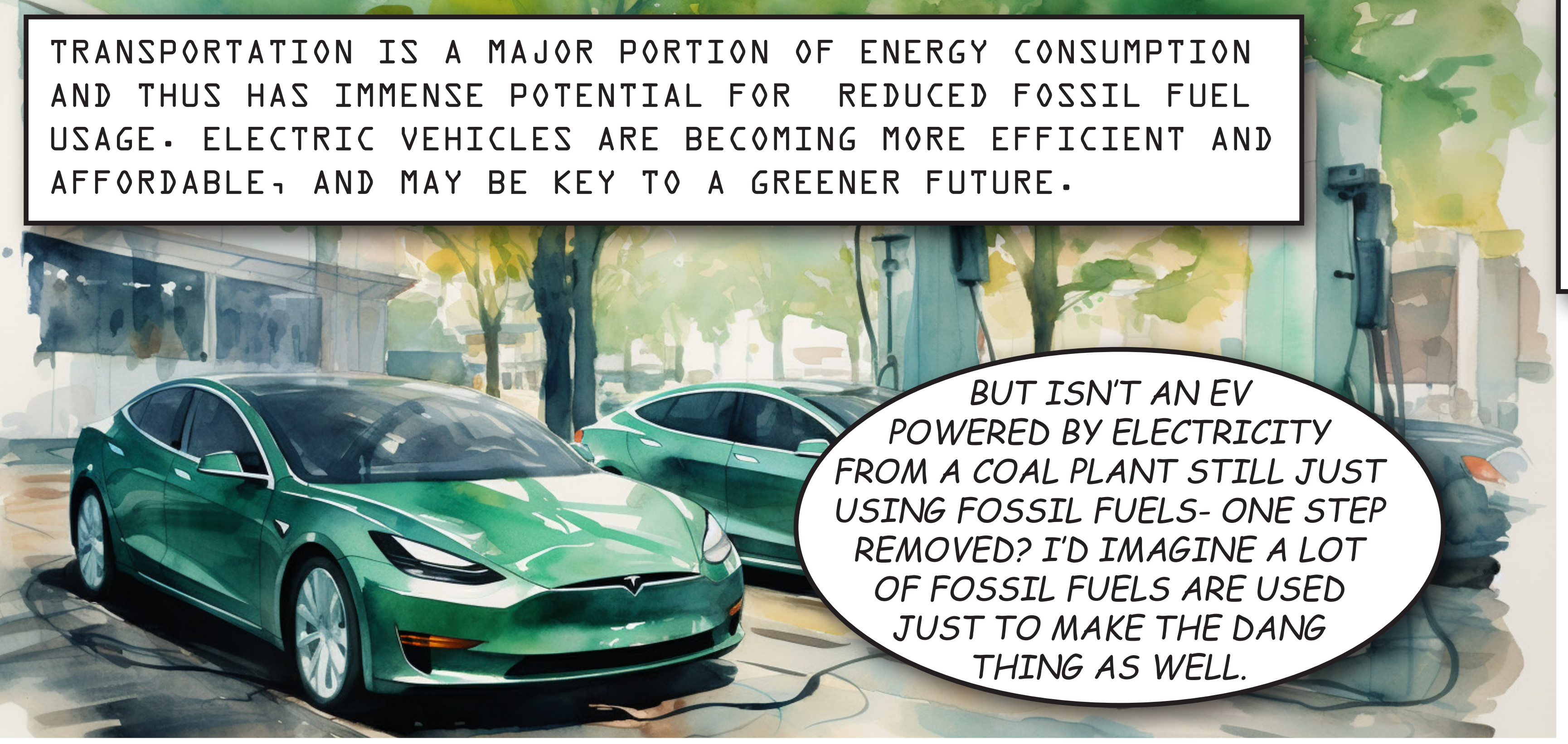


MOVING AWAY FROM FOSSIL FUELS REQUIRES THE EXPERTISE OF MANY FIELDS, NOT JUST ENERGY EXPERTS. ARCHITECTS NOW DESIGN MORE ENERGY-EFFICIENT BUILDINGS WITH A SMALLER CARBON FOOTPRINT.



I'VE NEVER THOUGHT ABOUT IT, BUT IT SEEMS LIKE ANYTHING COULD BE MADE MORE EFFICIENT AND LESS RELIANT ON FOSSIL FUELS.

INDEED, MANY MORE THINGS THAN ONE MAY NORMALLY THINK OF.



TRANSPORTATION IS A MAJOR PORTION OF ENERGY CONSUMPTION AND THUS HAS IMMENSE POTENTIAL FOR REDUCED FOSSIL FUEL USAGE. ELECTRIC VEHICLES ARE BECOMING MORE EFFICIENT AND AFFORDABLE, AND MAY BE KEY TO A GREENER FUTURE.

BUT ISN'T AN EV POWERED BY ELECTRICITY FROM A COAL PLANT STILL JUST USING FOSSIL FUELS- ONE STEP REMOVED? I'D IMAGINE A LOT OF FOSSIL FUELS ARE USED JUST TO MAKE THE DANG THING AS WELL.

GREAT POINTS, AND THAT MAY BE THE CASE TODAY, BUT AS MORE OF THAT PIE CHART IS RENEWABLE ENERGIES, EVS WILL BE CRITICAL TO SHRINKING THE FOSSIL FUEL PORTION. ADDITIONAL TECHNOLOGICAL ADVANCEMENT MAY EVEN LEAD TO SOLAR-POWERED VEHICLES.



I HAVE A FEELING OUR OLD FRIEND PUBLIC TRANSPORTATION MIGHT BE PART OF THE SOLUTION, TOO.

VERY GOOD, BEY. BECAUSE PUBLIC TRANSPORTATION CAN CARRY SO MANY MORE PEOPLE THAN PERSONAL VEHICLES, THEY ARE INHERENTLY MORE EFFICIENT. MOVING PEOPLE FROM CARS TO TRAMS, SUBWAYS, AND BUSES WOULD ALSO REQUIRE LESS PAVEMENT, WHICH NEEDS A SIGNIFICANT AMOUNT OF OIL TO BUILD.

I BET THESE BUSES AND TRAINS CAN BE EVEN MORE EFFICIENT IF THEY ARE USING RENEWABLE ENERGIES.

ABSOLUTELY.

...AND DON'T FORGET THE OTHER FORMS OF TRANSPORTATION WITH LITTLE TO NO CARBON FOOTPRINT LIKE WALKING, BIKES, SCOOTERS - AND THEIR INCREASINGLY COMMON ELECTRIC COUNTERPARTS.

I SWEAR IF I EVER PLAY A TRIVIA GAME WITH YOU, I'M ALWAYS GOING TO GUESS PUBLIC AND ALTERNATIVE FORMS OF TRANSPORTATION.

ISN'T THAT WHAT WE DO EVERYDAY?

BASICALLY...

SO WHAT ELSE IS ON YOUR LIST OF HOW ORDINARY CITIZENS CAN MOVE AWAY FROM FOSSIL FUELS?

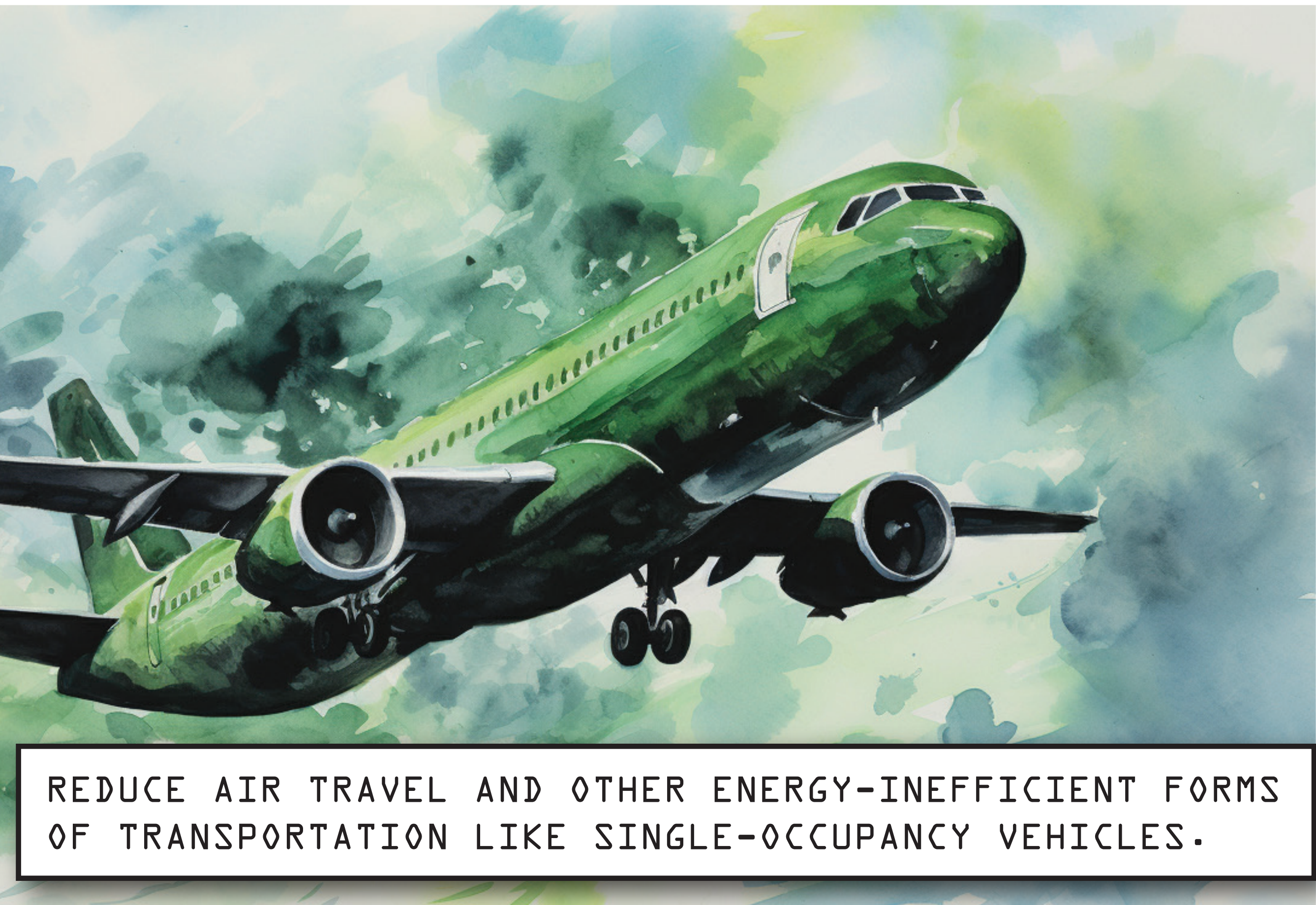
REMEMBER THE WISDOM IN THE SAYING 'REDUCE, REUSE AND RECYCLE' IN ALL THAT YOU DO. YOU CAN BRING REUSABLE BAGS TO THE GROCERY TO AVOID UNNECESSARY USE OF PLASTIC.



BUYING LOCAL ALSO REDUCES YOUR CARBON FOOTPRINT BY REDUCING THE DISTANCE FOOD AND OTHER GOODS ARE REQUIRED TO TRAVEL.



YOU CAN ALSO TURN OFF DEVICES WHEN THEY AREN'T IN USE AND REPLACE LIGHTS AND OTHER APPLIANCES IN YOUR HOME WITH MORE EFFICIENT COUNTERPARTS.



REDUCE AIR TRAVEL AND OTHER ENERGY-INEFFICIENT FORMS OF TRANSPORTATION LIKE SINGLE-OCCUPANCY VEHICLES.



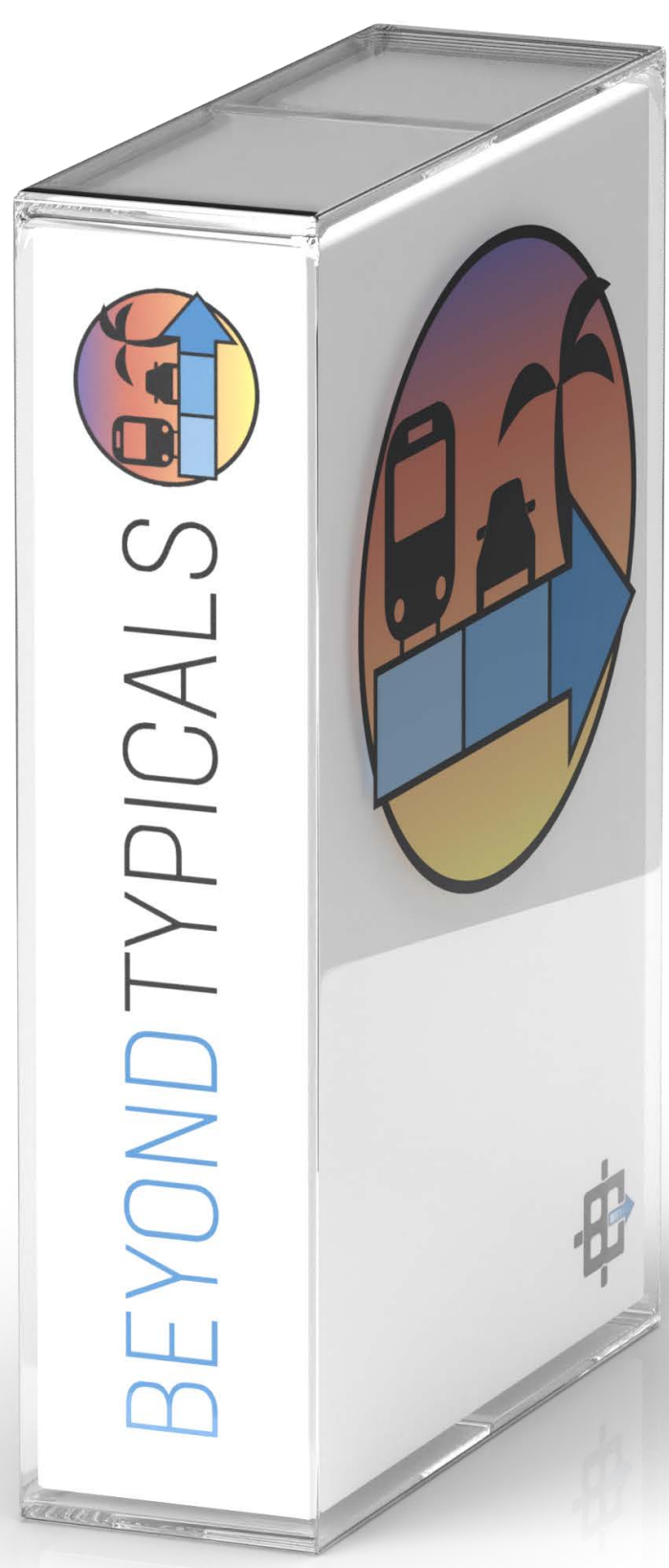
THIS IS AN INCOMPLETE LIST, BUT HOPEFULLY A GOOD START. GETTING INFORMED AND SPREADING THE MESSAGE WILL ALSO AMPLIFY THE GOOD YOU DO TO REDUCE OUR RELIANCE ON FOSSIL FUELS. THIS TRANSITION WON'T HAPPEN OVERNIGHT.



YOU MAKE IT SOUND SO EASY.

WOULD YOU LIKE ME TO MAKE IT SOUND MORE DIFFICULT?

NO, LET'S START WITH EASY. NOW LET'S GO GET SOME PIE.



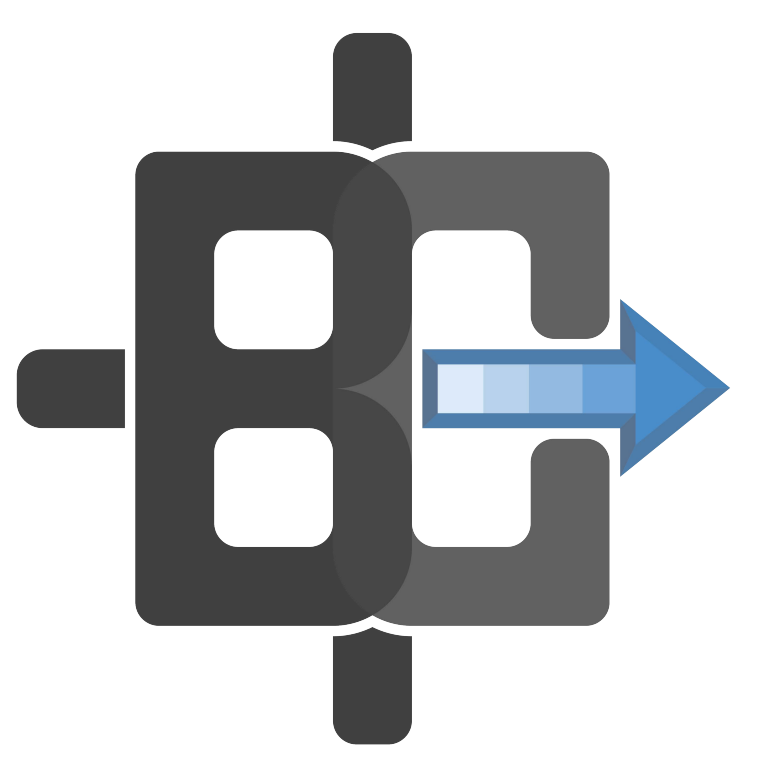
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