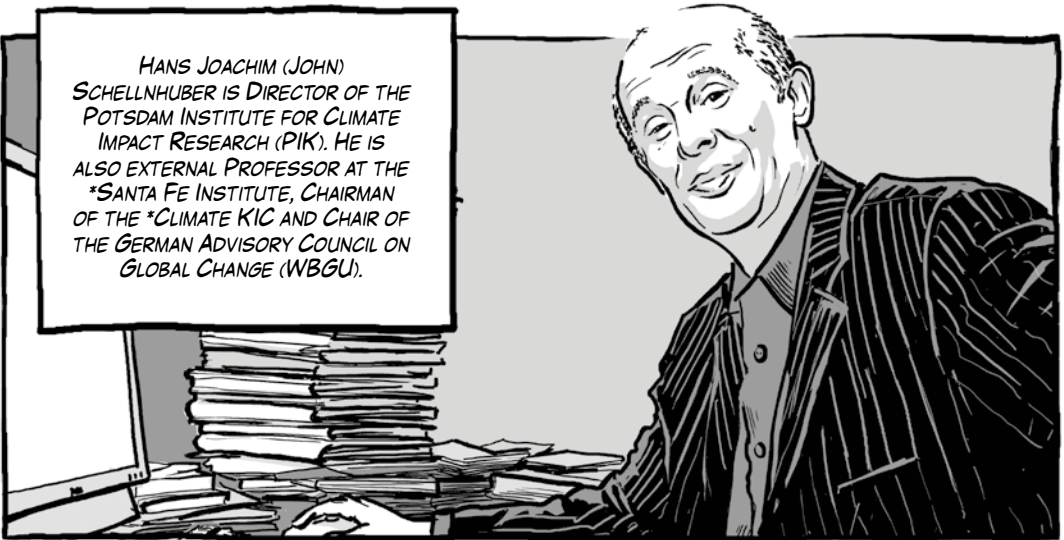


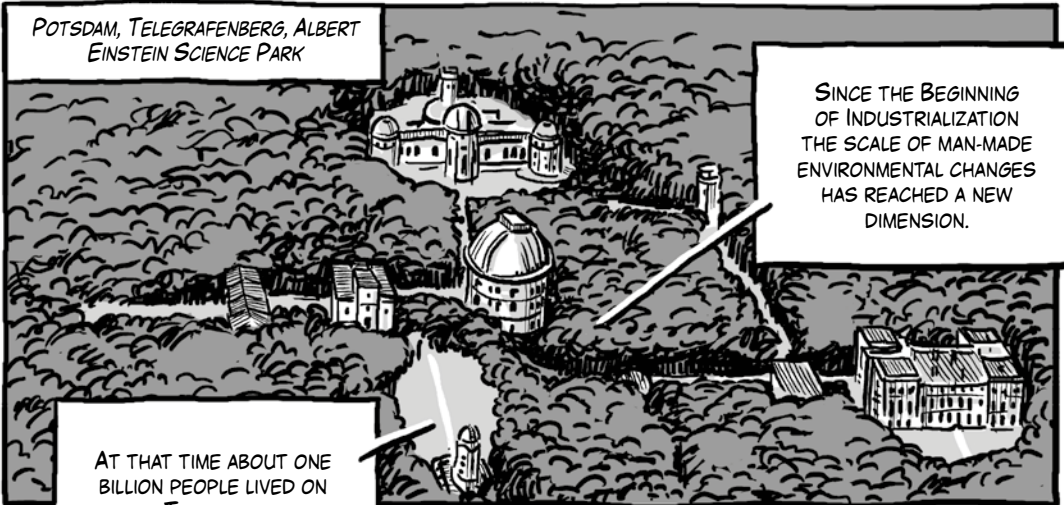
CHAPTER 1

WHY WE NEED TO TRANSFORM OURSELVES

HANS JOACHIM (JOHN)
SCHELLNHUBER IS DIRECTOR OF THE
POTSDAM INSTITUTE FOR CLIMATE
IMPACT RESEARCH (PIK). HE IS
ALSO EXTERNAL PROFESSOR AT THE
*SANTA FE INSTITUTE, CHAIRMAN
OF THE *CLIMATE KIC AND CHAIR OF
THE GERMAN ADVISORY COUNCIL ON
GLOBAL CHANGE (WBGU).



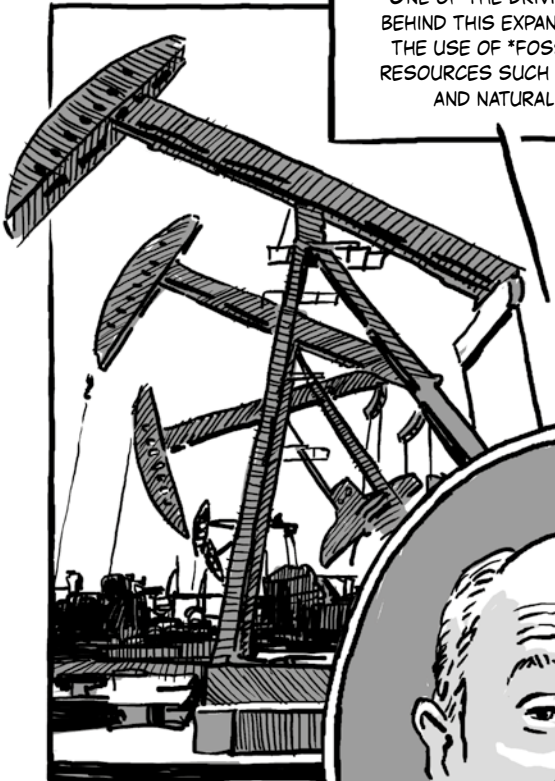
POTSDAM, TELEGRAFENBERG, ALBERT
EINSTEIN SCIENCE PARK



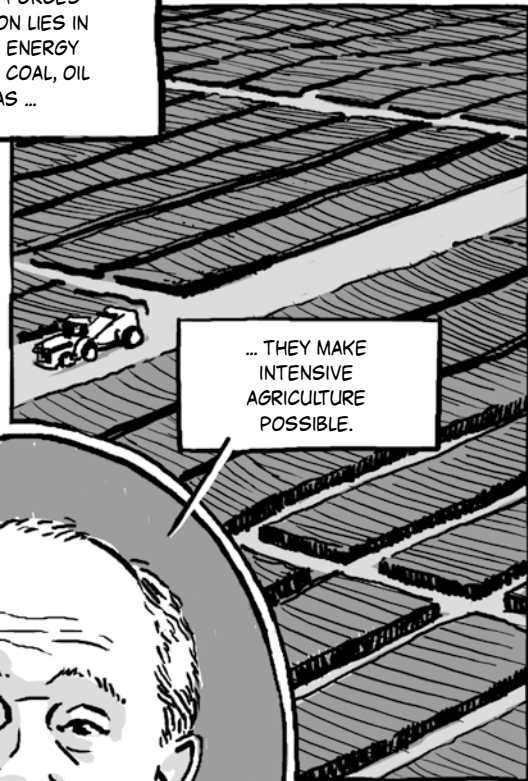
SINCE THE BEGINNING
OF INDUSTRIALIZATION
THE SCALE OF MAN-MADE
ENVIRONMENTAL CHANGES
HAS REACHED A NEW
DIMENSION.

AT THAT TIME ABOUT ONE
BILLION PEOPLE LIVED ON
EARTH. TODAY THERE ARE
7 BILLION OF US, AND IN 2050
ABOUT 9 BILLION PEOPLE
WILL INHABIT THIS PLANET.






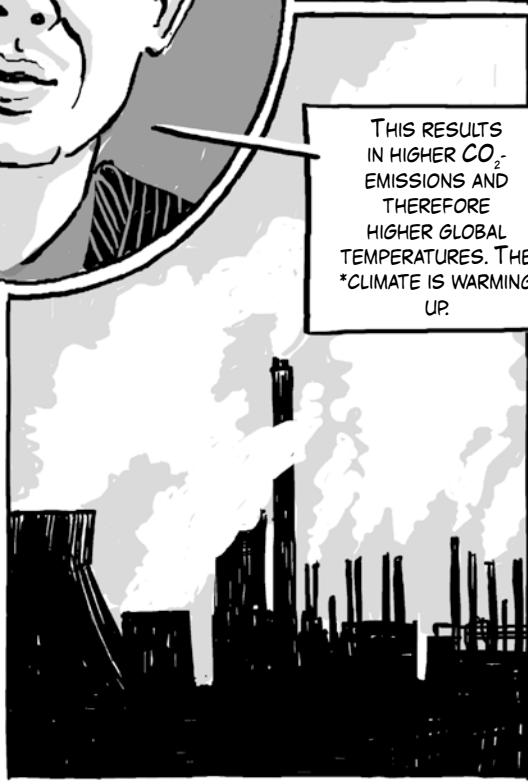
ONE OF THE DRIVING FORCES
BEHIND THIS EXPANSION LIES IN
THE USE OF *FOSSIL ENERGY
RESOURCES SUCH AS COAL, OIL
AND NATURAL GAS ...



... THEY MAKE
INTENSIVE
AGRICULTURE
POSSIBLE.



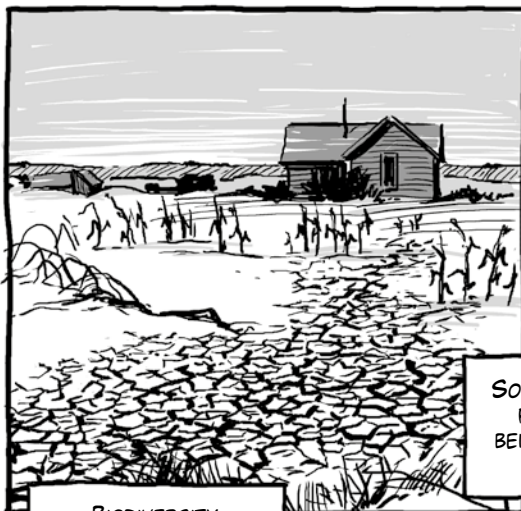
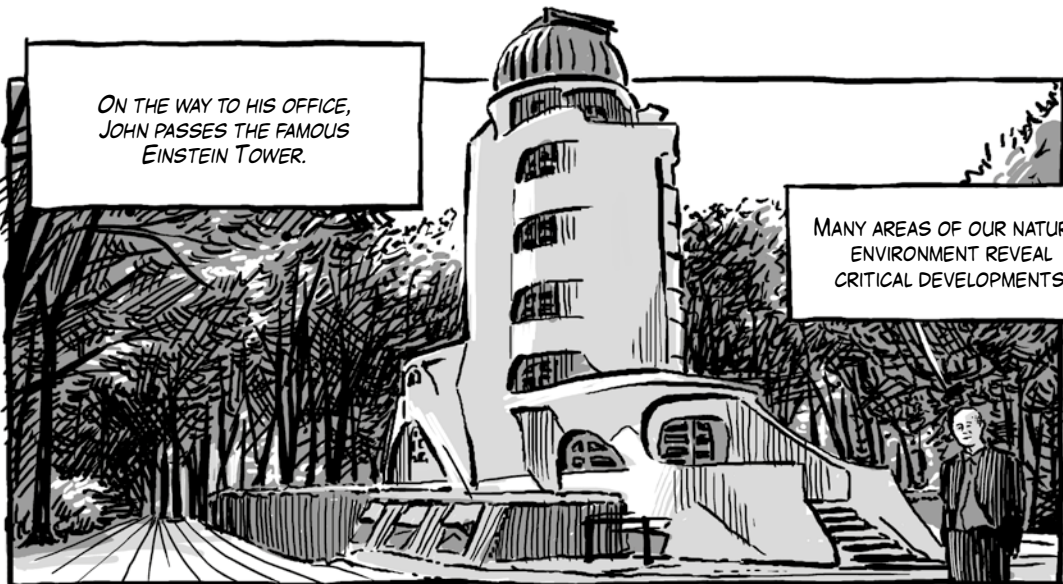
FURTHERMORE WE
ENCOUNTER A FAST-GROWING
FLOW OF INDUSTRIAL
MATERIALS, A GROWING
VOLUME OF TRAFFIC AND SO
FORTH ...



THIS RESULTS
IN HIGHER CO_2 -
EMISSIONS AND
THEREFORE
HIGHER GLOBAL
TEMPERATURES. THE
*CLIMATE IS WARMING
UP.

ON THE WAY TO HIS OFFICE,
JOHN PASSES THE FAMOUS
EINSTEIN TOWER.

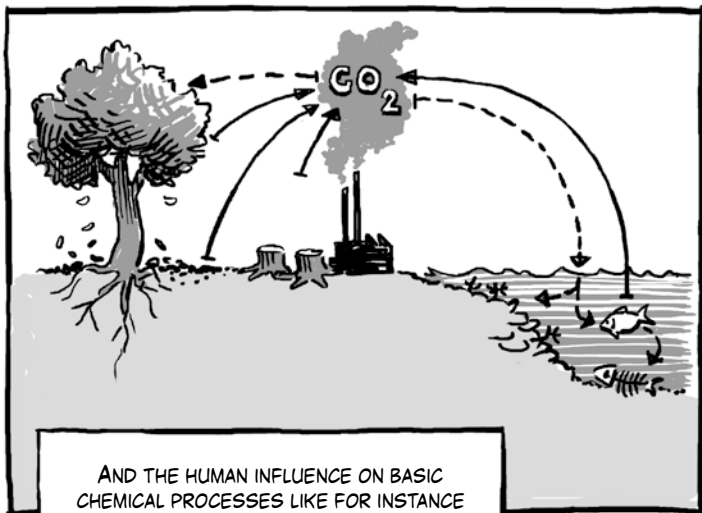
MANY AREAS OF OUR NATURAL
ENVIRONMENT REVEAL
CRITICAL DEVELOPMENTS.



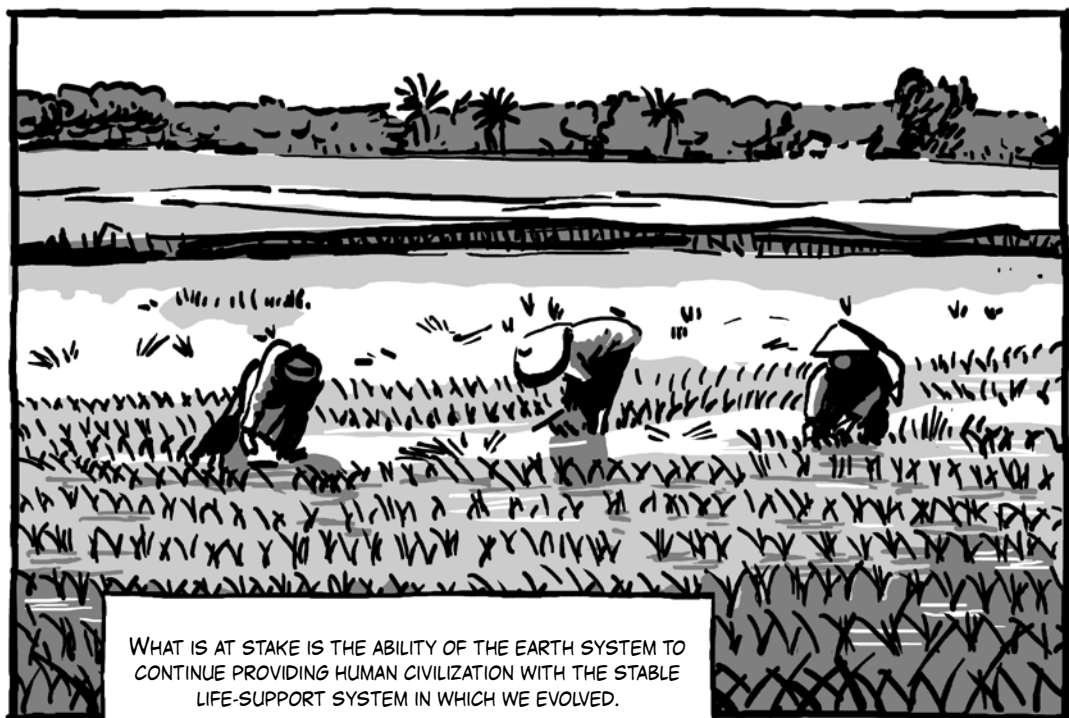
SOIL, FRESH WATER RESOURCES,
FORESTS AND OCEANS ARE
BEING OVER-EXPLOITED OR EVEN
DESTROYED.



BIODIVERSITY,
THE RICHNESS OF
NATURE, IS DECLINING
DRAMATICALLY.



AND THE HUMAN INFLUENCE ON BASIC
CHEMICAL PROCESSES LIKE FOR INSTANCE
THE *CARBON CYCLE IS ENORMOUS.



HERE, AN ENERGY-OPTIMIZED OFFICE BUILDING IS BEING CONSTRUCTED.



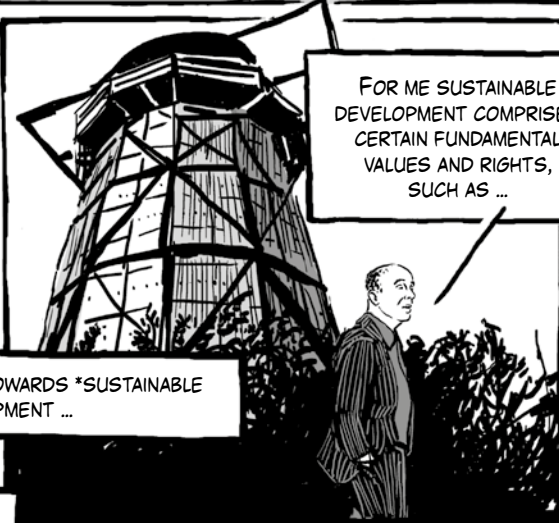
IN ORDER TO ALTER OUR COURSE AND TO PREVENT THE EARTH SYSTEM FROM BREAKING DOWN, WE MUST RE-INVENT OURSELVES.

THE »GREAT REFRACTOR« IS THE MAIN TELESCOPE OF THE ASTROPHYSICAL OBSERVATORY.

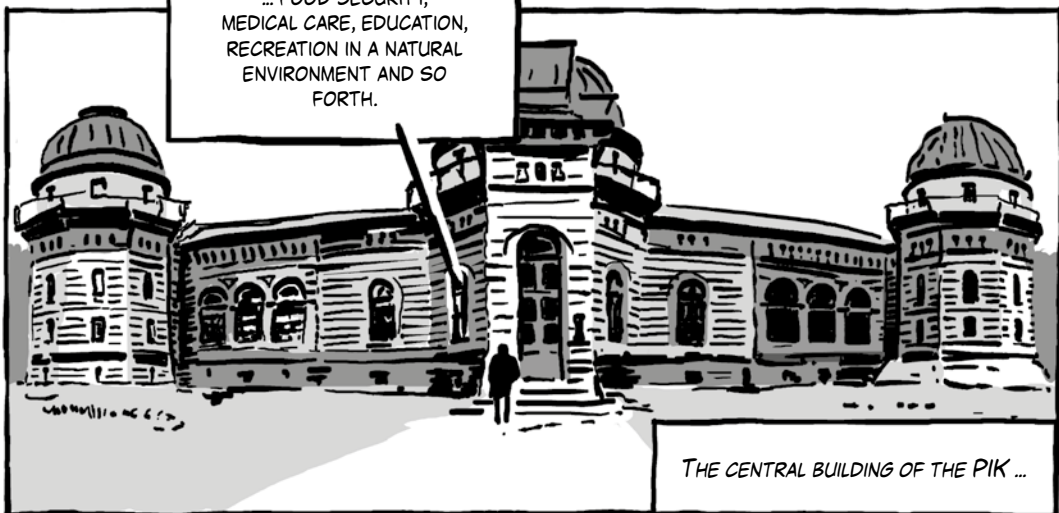


WE NEED A CHANGE TOWARDS *SUSTAINABLE DEVELOPMENT ...

FOR ME SUSTAINABLE DEVELOPMENT COMPRISES CERTAIN FUNDAMENTAL VALUES AND RIGHTS, SUCH AS ...



... FOOD SECURITY, MEDICAL CARE, EDUCATION, RECREATION IN A NATURAL ENVIRONMENT AND SO FORTH.

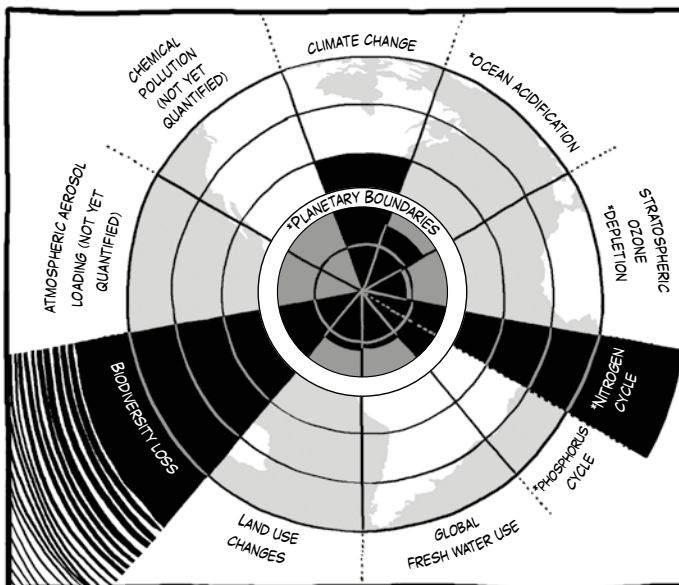


THE CENTRAL BUILDING OF THE PIK ...



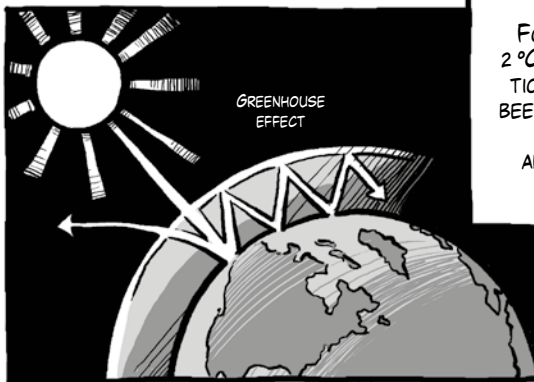
RIGHT NOW A MEETING OF THE WBGU IS TAKING PLACE.

SINCE 1994 THE WBGU HAS BEEN DEVELOPING PLANETARY GUARD RAILS FOR CLIMATE CHANGE AS WELL AS FOR BIODIVERSITY AND OTHER AREAS OF GLOBAL CHANGE.



THE WBGU DESCRIBES THESE PLANETARY GUARD RAILS AS MEASURABLE DAMAGE THRESHOLDS. ONCE THEY ARE TRANSGRESSED, THE IMMEDIATE OR FUTURE CONSEQUENCES WOULD BE INTOLERABLE AND PUT OUR CIVILIZATION AT RISK. STAYING WITHIN THE GUARD RAILS MEANS STAYING SAFE.

Source: Rockström et al., 2009



GREENHOUSE
EFFECT

FOR INSTANCE, THE
2 °C CLIMATE-PROTEC-
TION GUARDRAIL HAS
BEEN PICKED UP INTER-
NATIONALLY AND
ADOPTED BY MANY
NATIONS.

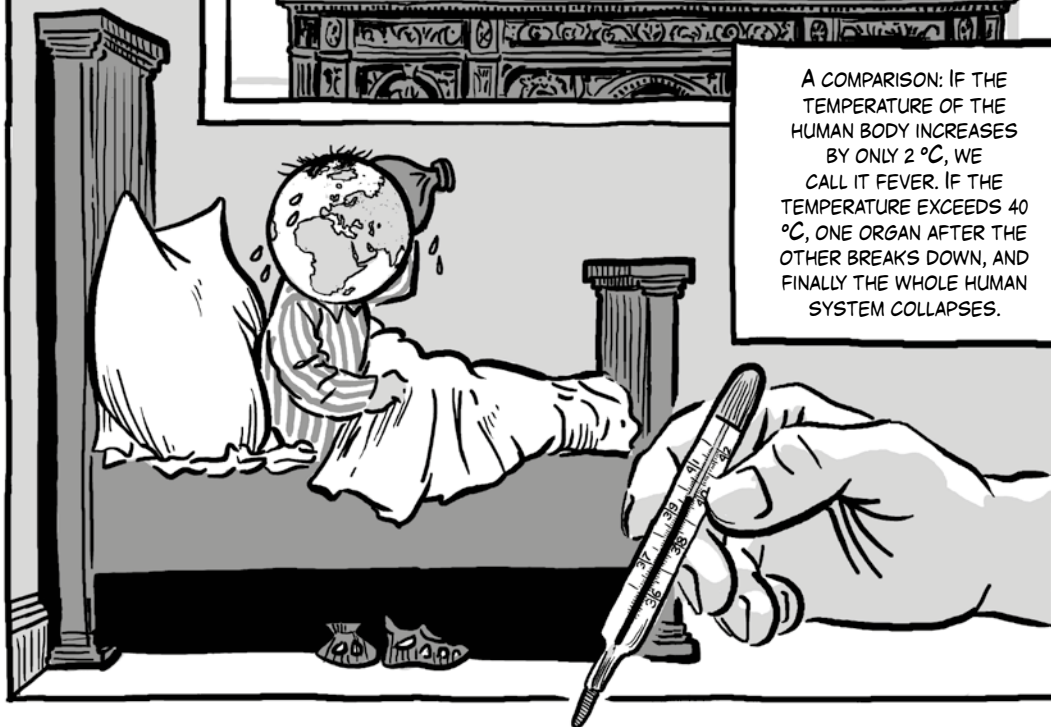


IT STATES THAT GLOBAL
WARMING MUST BE KEPT
BELOW 2 °C TO ENABLE
US TO SUCCESSFULLY
DEAL WITH THE
CONSEQUENCES OF THE
RISE IN TEMPERATURE.

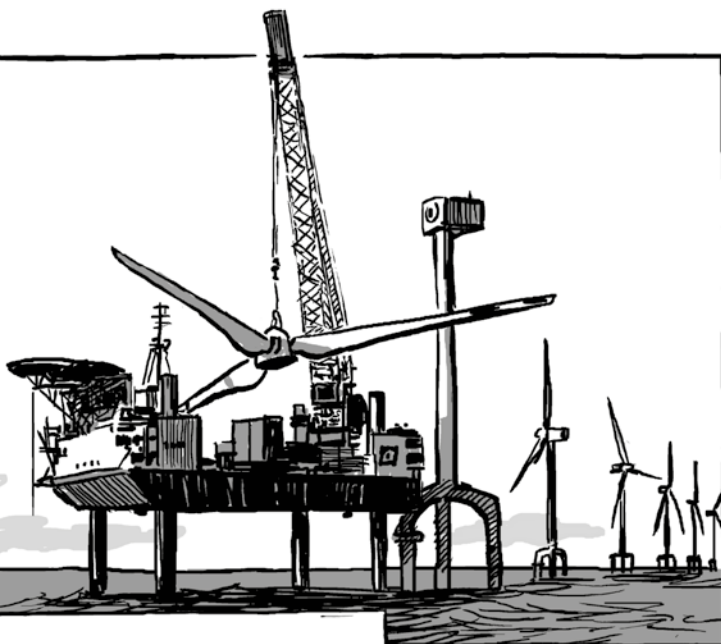
I AM REALLY CONCERNED
THAT THE PROGRESS
WE HAVE MADE
INTERNATIONALLY IS NOT
AS SUBSTANTIAL AS IT
NEEDS TO BE.



A COMPARISON: IF THE
TEMPERATURE OF THE
HUMAN BODY INCREASES
BY ONLY 2 °C, WE
CALL IT FEVER. IF THE
TEMPERATURE EXCEEDS 40
°C, ONE ORGAN AFTER THE
OTHER BREAKS DOWN, AND
FINALLY THE WHOLE HUMAN
SYSTEM COLLAPSES.

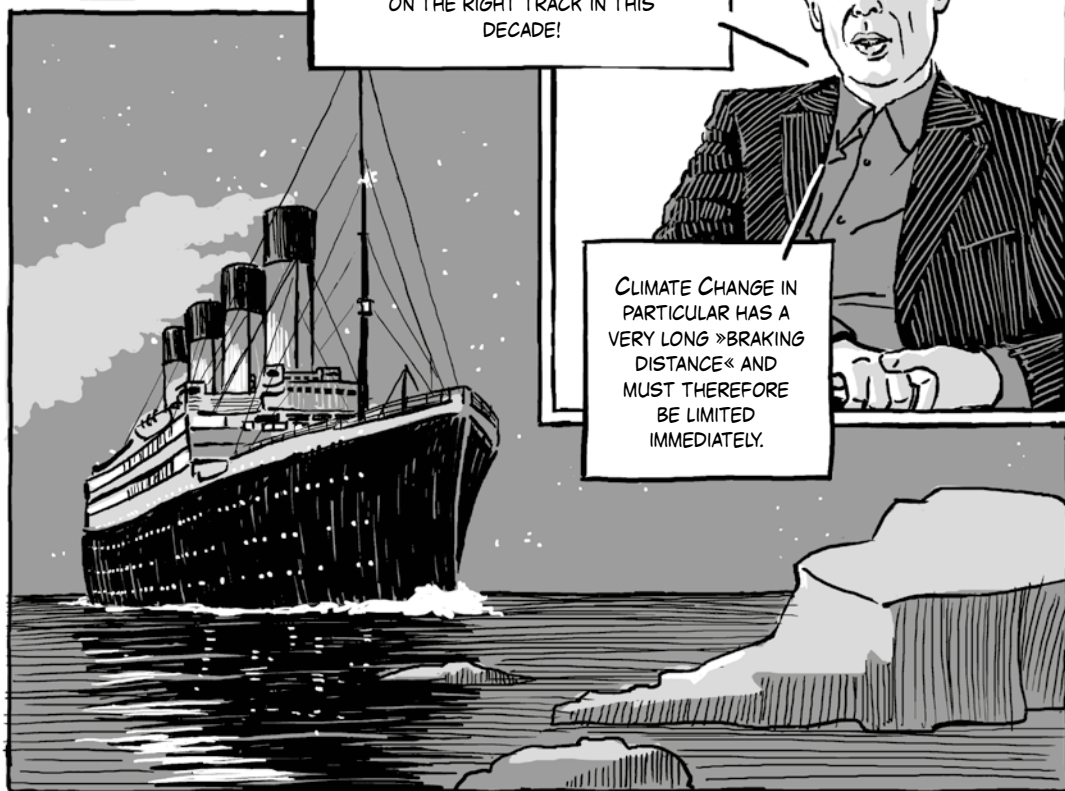


FIRST OF ALL WE HAVE TO
*DECARBONIZE THE ENERGY
SYSTEMS WORLDWIDE,
WHICH MEANS REPLACING
FOSSIL RESOURCES WITH
RENEWABLE ONES IN ORDER
TO LIMIT GLOBAL WARMING
TO A MAXIMUM OF 2 °C.

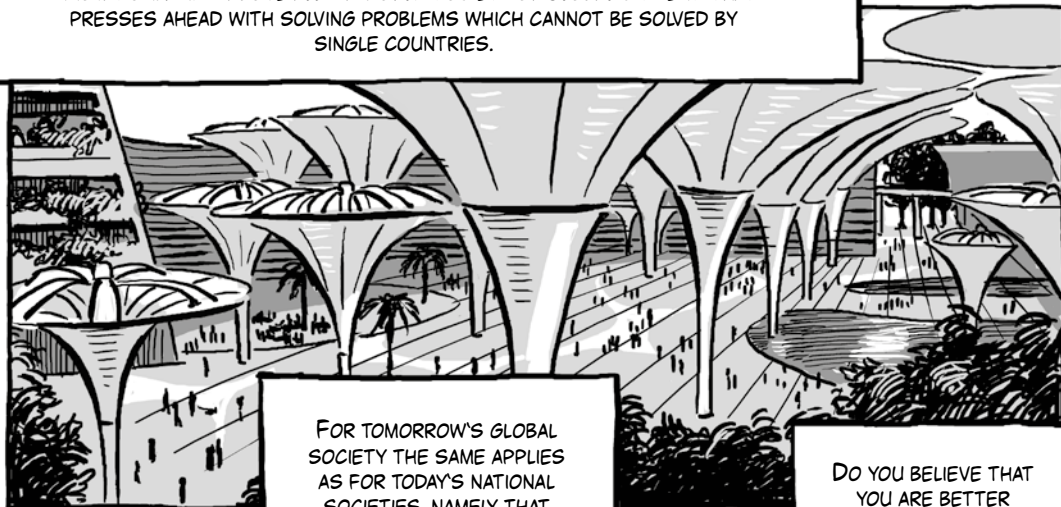


THIS WILL ONLY BE POSSIBLE
IF EVERY SINGLE PERSON IS
PREPARED TO QUESTION HIS OR
HER WAY OF LIFE. IN ORDER TO BE
ABLE TO STAY WITHIN THE GUARD
RAILS, WE HAVE TO PUT THINGS
ON THE RIGHT TRACK IN THIS
DECADE!

CLIMATE CHANGE IN
PARTICULAR HAS A
VERY LONG »BRAKING
DISTANCE« AND
MUST THEREFORE
BE LIMITED
IMMEDIATELY.



SUCH FUNDAMENTAL PROCESSES OF CHANGE REQUIRE CREATIVITY AND INNOVATION. AND - ABOVE ALL - A WORLD SOCIETY OF GLOBAL CITIZENS THAT PRESSES AHEAD WITH SOLVING PROBLEMS WHICH CANNOT BE SOLVED BY SINGLE COUNTRIES.

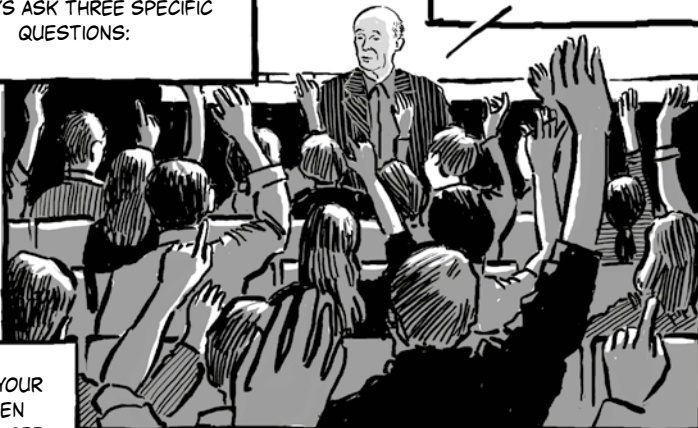


FOR TOMORROW'S GLOBAL SOCIETY THE SAME APPLIES AS FOR TODAY'S NATIONAL SOCIETIES, NAMELY THAT THE RIGHTS OF FUTURE GENERATIONS MUST BE TAKEN INTO ACCOUNT. IN MY LECTURES I ALWAYS ASK THREE SPECIFIC QUESTIONS:

DO YOU BELIEVE THAT YOU ARE BETTER OFF THAN YOUR GRANDPARENTS WERE IN THEIR TIME?



DO YOU THINK YOUR GRANDCHILDREN WILL BE BETTER OFF THAN YOU ARE NOW?



DO YOU THINK THIS IS OKAY?





SINCE THERE SHOULD BE SOMEONE SPEAKING FOR FUTURE GENERATIONS, I HAVE REPEATEDLY SUGGESTED APPOINTING OMBUDSPEOPLE TO REPRESENT THOSE WHO DO NOT YET HAVE A VOTE IN PARLIAMENT. THIS WOULD BE AN EXTENSION OF DEMOCRACY.



THE PAST SHOWS THAT PEOPLE AND ENTIRE CIVILIZATIONS HAVE THE ABILITY TO CHANGE. FOR INSTANCE, AROUND 11,000 YEARS AGO PEOPLE STARTED TO PURSUE ...



STONE AGE

... AGRICULTURE AND STOCK FARMING. THEY CHANGED FROM A NOMADIC TO A SEDENTARY SOCIETY. THIS ALSO BECAME POSSIBLE BECAUSE THE CLIMATE HAD STABILIZED AND GROWN INTO A RELIABLE FACTOR.



NEOLITHIC AGE
11 000 YEARS AGO

