

CLIMATOPIA: THE STORY



CLIMATOPIA



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INTRODUCTION

For years now, astronomers have been searching with the most advanced telescopes at the end of space for a planet that will be like our Earth. Not too big but not too small. To revolve around a star, not too close to it but not too far. Just as much as needed to be able to have a proper atmosphere, to have seas and lakes so that it can have LIFE! Some even say that if this planet is found, maybe we humans could go and live there, if the living conditions on our planet become unbearable someday. Well, this planet exists! And it's just like our Earth. And life similar to that of Earth has developed. It has the same plants, the same animals. Most importantly, it has beings with logic, like us. And these beings have developed civilizations like ours and live in cities and villages just like us. And they have divided the surface of their planet, land, air and sea, into countries that unfortunately do not always live peacefully with each other, just like us. This planet, which we could say is the twin planet of Earth, its inhabitants call it Climatopia.

Let our astronomers look for it with their telescopes and let us go to Climatopia to see how its inhabitants live. Maybe, this is how we will better understand our life here on the Earth.

Chapter 1: In the Lecture Room

It is summer; the schools are closed for summer holidays. In one research center, however, students from all continents of Climatopia have gathered. They came here to learn as much as they can about a very serious subject. When they return to their homelands, they in turn will inform their classmates about it. In this research center there is a 'Laboratory for the Study of Climate' which is one of the most important in Climatopia.

The students are concentrated in a lecture room and listen carefully to a researcher. The researcher, a middle-aged man with curly hair in a white lab coat, tells the students: *"Often children, climatopians confuse the word 'weather' with the word 'climate'. 'Weather' scientists call the state of the atmosphere at a place as regards heat, dryness, sunshine, wind, rain, etc. We say for example: 'the weather in the last days was rainy, it was windy and cold'. But the climate is the weather conditions prevailing in an area in general or over a long period. We say for example about a country that 'the climate in that country is cold' or that 'the climate is hot and humid because it has a lot of rain all year round and the temperature never drops below zero'. A thin student with glasses from the first row raises his hand and asks: "That is, the weather in a place can change daily but the climate always remains the same!". The researcher says: "Yes... that is...no. Well, I want to say that this was the case until several years ago. In recent decades, however, the climate on our planet seems to be changing; and this is the serious problem we will be discussing".*

At the back of the room, three children are sitting next to each other. They arrived from three different continents. Barr is a somewhat stocky boy with a bright white face and has come from a country on the Middle Continent. Melan has dark brown skin and curly hair and lives in a country of the Great Continent. Zon is a boy who traveled here from the New Continent. He has beautiful small slanted eyes, straight hair and a slightly pale skin color.

Barr leans over to the other two children and whispers: *"Yes. .. that is...no ..! But what does the nerd tell us now? I'm bored here; shall we go for a walk?"* Zon shakes his head in

agreement, while Melan disagrees and says that what the researcher is saying is really interesting. Eventually, however, she follows the two boys in her group who are leaving from the back door of the room, the moment the speaker is looking for something in his notes.

The three children are walking in the deserted corridors of the building. *"To tell you the truth", Barr says, "I'm not interested in that entire climate thing. I asked to come here because otherwise I would spend the summer at home with my parents. Horror!". "I like living in nature. I was planning to go to my parents' village but there was a flood in the area and so the summer school was a solution", Zon says. At that moment, Melan stopped in front of a door with a sign that read 'Museum of Climatopia Cultures'. "Guys, I would very much like to see what exhibits there are. I followed you and left the lecture, now you will do me the favor. Won't you? "*

Melan opens the door and the three children enter a large room with showcases. There are objects found in excavations in various parts of the world. There are still dummies of climatopians from different parts of the world, races and seasons. They are dressed according to their season and culture. Melan reads out the signs with the information about the exhibits. The two boys are also looking with some interest. *"Isn't it amazing!" Melan says, "how many civilizations have existed in the past. How much evolution has happened to reach our days in our current technological culture!" "Now, you sound like the geek Melan. You have a very serious style when you speak like that scientifically!" Barr says and bursts out laughing. Melan does not pay attention to his words and continues thinking out loud: "What will be life like on our planet after 100 or 200 years? Will there be life on it or will our planet become uninhabitable due to climate change?" Bar continues laughing and says, "Do you take this nonsense about climate change seriously? Okay, there have always been natural disasters and floods and big fires and droughts but look: we continue existing just fine...and much better than before!"*

Chapter 2: The Four Elements

Meanwhile, the three children have reached the edge of the last room when Zon points to four dummies. One depicts an old climatopian with a long white beard and wrinkles like deep grooves carving his dark face. The figure wears a long green-brown tunic and rests on a stick. The other represents a young girl with a blue silk veil covering her body from head to toe. Her white skin looks transparent and her light posture makes her look as if she is not touching the ground. The third dummy is a short young man with long wavy hair covering his shoulders. He also has transparent skin and a blue long velvet tunic that falls heavily and spreads on the ground around his feet. In sharp contrast to the girl, he looks as if he stands firmly on the ground, as if he is stretching out like his tunic. The fourth dummy is even more bizarre. She represents a mature red-haired woman whose body is covered by a strange veil. It spreads around her on the ground like a purple lake. However, as it rises to her shoulders and somehow rises above her head, it becomes more and more light while its color becomes orange-red and then yellow-red.

Zon reads the sign aloud: 'Representation of imaginary beings based on descriptions in ancient texts or paintings on objects found in different parts of the world'. *"These imaginary creatures were considered the protectors of climatopians."* And he continues with admiration in his voice: *"Isn't it amazing? Climatopians in different eras, in different parts of the planet imagined similar beings! Or did they not imagine them but they really existed?"* Barr starts laughing at Zon's words again. *"Oh, well here we have a nerd scientist and a guy who believes*

in fairy tales about elves and fairies! Haha! Is there something wrong in here? Why don't we go outside to get some fresh air before you start saying more crazy things?"

"I would not call all this so crazy" a deep voice is heard as if coming from all over the room. The three children look around in surprise to see who spoke. *"I would even say it is very serious"*, a young voice is heard now.

"Very serious!", "Serious!" they repeat like an echo two female voices. The three children are stuck back-to-back and look around in amazement with rolled eyes. *"Look there"* Barr says in a trembling voice, pointing to the display case. The four dummies have begun to move. The old man with the white beard comes down slowly from the showcase. The young man moves in a way as if his figure is lowered in the showcase and at the same time raised on the floor of the room in front of the children. The red-haired woman comes down with a quick movement that makes her veil sound with a strange hum. The girl with the rustling veil goes down so lightly as if she is not stepping on the ground, stretches her arms as if she wants to touch the ceiling and says in a voice that sounds like a whisper and like a song: *"Ahhh...you cannot imagine how long I have wanted to do this! My body is numb from immobility!"*

"Nah, it's a dream! It's not possible! The nerd put me to sleep. I'm still sleeping on the desk. Wake me up guys!" Barr shouts. But his two friends are frozen and cannot understand if all this is really happening. *"Someone is making fun of us, a nasty joke..."*, Zon mumbles. *"What if they are real?"* Melan says and holds Zon's hand tight. *"But of course, we are real"* the young man says and extends his hand to shake hands with the children. They moved back and stuck on each other even tighter. *"Okay, we'll let you realize that you're neither dreaming nor anyone is making fun of you. Melan is right, yes we are real"* the young man says and lowers his hand. *"Do you know my name; How do you know; We have been here for two days. Who told you;"* Melan mumbles.

"We know everything that is happening on this planet now, at this time but also what happened in the past and what will happen in the future. We are the four elements of the planet or if you prefer four elves as we used to be called. But let 's introduce ourselves", the young girl speaks again with her singing voice. *"I am the element of Air"*, she says and makes a deep bow. *"And I am Fire my children"*, the red-haired woman says, and as she tilts her head in a small bow, small sparks erupt from her hair and a heat surrounds the children. *"Oh, forgive me if I scared you, I was a little careless. This long-term immobility is also to blame..."*, she says and takes a couple of steps back. With this movement, her tunic almost touches the young man's tunic and immediately the purple pond that is formed gathers around her legs. *"Watch out Water!"*, Fire says half- sternly to the young man who smiles playfully and turns to the children: *"Well, as you heard I am the element of Water and let me introduce you to the element of Soil, who does not like to speak. "I keep my words and speak when I have to and to whom I need to speak"*, the old man says in the brown-green tunic with a tone of sternness in his deep voice. *"And now I have to and I need to speak"*.

The three children gain courage, seeing that nothing bad has happened. Melan, with eyes full of surprise and less fear, says slowly: *"But you are the four elements that, as the ancient philosophers believed, as they are mixed in different quantities make the world: The two heavy elements, the soil and the water and the two light, the air and the fire! That's un- be- liev- able!"* Barr says in a hesitant voice: *"So you really exist now? I am not sleeping?"* *"Yes, we exist now, we existed in the past and we will exist in the future, but how many times do we need to say that?"* the young man says with an expression of frustration. The deep voice of the old man leaning on his stick, is heard now: *"And in the past, whenever we had to appear to*

climatopians, they showed the same distrust. They believe that the only rational beings in the universe are like them. It is difficult to accept that it is possible for other beings to exist with other abilities, other 'powers' as you call them". "Yes, twice so far we have appeared to the inhabitants of Climatopia. We wanted to help them save the life on their planet", the young man says in a serious manner. "So what?" Bar's voice is heard in disbelief. The old man sighs, his voice is sad "Unfortunately, we failed both times". "And Climatopia was destroyed?" Melan asks in surprise. "Not Climatopia but almost all climatopians and a large part of its living organisms", the young man replies. "But life on the planet has started again and again but with how much pain and how much waste of time..." now speaks the girl who after jumping lightly all the time came and sat on the floor in front of the children. "Let's hope that this time we will succeed and that the great disaster will not be repeated", she says. "So the fact that you once existed has reached our days like a myth? Like the myth of the Cataclysm that one encounters in the tradition of many climatopians?" Melan asks enthusiastically but Zon interrupts her abruptly: "Just a moment! Let me get this straight. You are telling us that Climatopia is in danger again? Is that why you came to us?"

The three children are now looking anxiously at the four strange visitors. "Yes, there is a great danger that the evil will be repeated", Fire replies. "But if you did not manage to save Climatopia as in the past, how will you do it now?" Zon says and sits on the floor as if unable to stand on his feet. "But you know the future, so you know what will happen. Tell us, will we be lost?" Melan's voice is heard in agony as she bends over the girl. The girl stands up abruptly, looks them in the eyes one by one and says slowly and seriously: "Your future is determined by you. It is up to you to change it. We can see what will happen if you continue to live the way you live..." "What is going to happen; Tell us. No, please don't. I do not want to hear anything. I do not want to know", Barr says, who has been motionless and pale like ice for so long. Then he abruptly turns his back and begins to walk away. "...as we can see what will happen if you change your life", continues the girl whose low voice suddenly became louder like the roar of the wind. Barr stops, looks at her and says with intensity: "After you failed twice to help climatopians, why do you now hope that you will succeed?"

"In the past we appeared to adults and tried in vain to show them where their greed and imprudence lead them", the old man answers and the young man continues: "This time we hope we will succeed, because we decided to talk to the children, the young residents of the planet. To you and to other children like you". "You can make the difference, you can change the future of your planet", the girl said, standing among her other two companions, looking at the three children. "We can show you the past, the present and the future. To show you how life was, how it is today and how it will be tomorrow. But first you must ask for it and wish to bring change to Climatopia. We will be there for you when you decide and when you need us. We will be waiting".

The last phrase is being said by the four visitors simultaneously and it echoes throughout the room as if their voices are coming from everywhere. At the next moment the four dummies of the ancient spirits are in their place back in the showcase. The children look around, look at the four dummies and then at each other. After a few seconds of silence, Zon speaks first: "What happened guys? I am going crazy! Did you see and hear all that?", he says and grabs his head with both hands. "Yeah dude. We were not sleeping, it was not a spooky joke and we are not going crazy as a group", Barr answers, looking as if he is lost. "It was not our imagination. The four elements were real and came to help us save our planet", Melan continues with intensity. "So, what should we do? It's no coincidence that they chose us. We came here to learn about climate change. And we do it without much interest, as if we don't really believe in it". They said they would help us if we wanted it. So, how do we show that

we want to try and that we want their help?" Zon speaks, continuing her reasoning. "To do right what we came here to do. That is, to learn as much as we can about climate change", Barr says. "So, let's get back to the lecture room", all three of them say together. "You'll see that I'll end up liking the nerd scientist" Barr says and the three of them laugh together as they walk quickly out of the museum.

Chapter 3: A Greenhouse Called Climatopia

The moment they enter the Lecture room the speaker looks up from his notes, as if time had stopped the moment the three children left the room.

"Let me ask you something, have you ever heard of the greenhouse effect?" the researcher asks. "My grandfather has a greenhouse on his farm in the village and..." Zon mumbles but Melan looks at him reproachfully and he stops. Melan rises her hand and says in a firm voice: "The gases in the atmosphere surrounding our planet prevent the heat of Climatopia from escaping into space, just as the transparent cover of a greenhouse prevents the heat from escaping out of it". "As I've read it's a natural process that helps our planet to be kept warm and allows life and evolution to occur," a student from the front row of seats adds. "That's right", the researcher retorts, "without the greenhouse effect Climatopia would be a frozen planet with an average temperature of about -20 degrees, whereas now its average temperature is about 15 degrees". "Brrrrr! Too cold", Burr mutters. "We would have been ice columns", Zon shouts, and everyone laughs. "But if our star the Life-giver sends out heat with its rays, why would our planet freeze?" a dark-haired girl interjects into the conversation.

"Very good! Your questions help me tell you about this very important phenomenon», the researcher says. "Hey good! And why should we know that", Barr whispers to Melan, "if this ... thermo.. something protects our planet?". "Stop it! Let's listen" Melan cuts him off, looking at him sternly. "Well, well I know, we are in trouble today", Barr mutters in a desperate tone.

"Let's first look at what a greenhouse is and how it works", the researcher says. "Please come with me to the yard" he says and without a second thought, he opens the door and walks out into the large courtyard surrounding the Research Center.

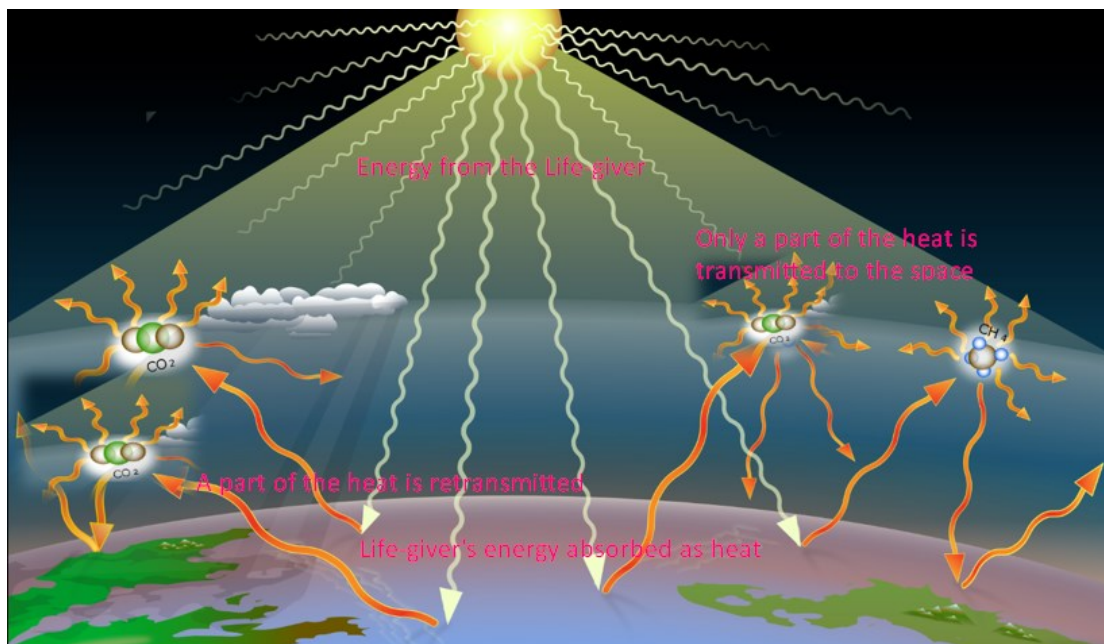
Outside, the Life-giver is shining and yet it is a cool for the season day. At one end of the courtyard is a low house, a little taller than the height of a climatopian. But the odd thing is that instead of concrete columns, its frame is made of metal rods, while its roof and walls are made of thick transparent plastic. The children follow the researcher and go inside. The first thing they feel is a stifling heat. "Hey, that's off". Barr grumbles, "now the boring scientist wants to barbeque us too?" Some children are blowing air with their hands in their faces, others are unbuttoning buttons from their shirts, while shouts and laughter fill the room. On the ground there are flower beds with vegetables and flowers. The smell they give off is also strong. The children scatter into the little house and observe. Some of them can't stand the heat and come out. The others quickly follow them and are relieved by the morning coolness. The researcher gathers them in a circular wooden gazebo next to the greenhouse. He asks them to sit around him on the wooden benches and as soon as the children are quiet, he asks:

"Which of you will tell us about what we just saw?" Many hands go up, but most urgently Zon asks and gets the floor. "This strange little house is a greenhouse. My grandfather has a much larger one in the village. He grows plants in the greenhouse even in winter because the temperature inside is higher than outside". "So it's like an artificial summer in winter", a boy next to Zon says. "And how do you think this, as you call it, artificial summer happens?" the

researcher asks. Melan jumps up as if she can't help herself: *"As I said before sir, the plastic cover keeps the heat of the Life-giver from escaping. First, it lets its rays get into. These rays heat the interior of the greenhouse. Then the plastic cover prevents the heat from escaping"*. *"It's trapped inside"*, Zon adds. The dark-haired girl raises her hand and says, *"Doesn't something like that happen with a car? In the summer, when my father parks it under the rays of the Life-giver and then we get in, we melt because of the heat."* *"That's right. And in this case the heat from the Life-giver is trapped inside, isn't it?"* the researcher asks.

Barr, meanwhile, half-hidden behind Zon, has taken a bite out of a tomato he got from the greenhouse. The researcher looks at him, smiles and says: *"I see, you are already tasting the fruits of our greenhouse, young man. I hope you like them"*. The children burst out laughing, while Barr, who turned redder than a tomato, says with his head down apologetically *"Well, sir... it was very hot in there and I wanted something to cool me down"*. The laughter gets louder and the researcher can't hold back any longer either. *"You're right, my friend,"* he says between laughs. *"Let's take a break to cool off at the backyard fountain. Anyone who wants can taste from our greenhouse production"*. The children excitedly thank Barr for being the reason for the break, take tomatoes and peppers from the baskets by the side of the gazebo and run to the fountain.

After a short break the researcher gathers the children back at the gazebo again. On a large screen a picture of Climatopia is projected.



The Greenhouse Effect

"As you can see in the figure the rays of the Life-giver, or as we say in science, its radiation, passes through the atmosphere and reach the ground. The ground and the atmosphere absorb this radiation and are heated. In turn, the heated ground becomes a source of heat. Some of its heat is emitted as radiation into space. But some of the gases in the atmosphere act like the plastic cover of the greenhouse... They trap that heat and send it back to the ground...", Melan speaks up again. *"Yes, they absorb initially, that heat, some of it they emit into space and some of it they send back to the ground"*, the researcher says, satisfied. *"Is this the greenhouse effect you were telling us*

about?" the kid with the glasses asks. *"That's right. We call it that because of its similarity to the operation of a real greenhouse."*

The dark-haired girl raises her hand, *"But how is it that the radiation that reaches Climatopia from the Life-giver can pass through the atmosphere and when it radiates out it can't? Do these gases sometimes let it pass and sometimes not?" "Are those gases or traffic police?"* Barr says out loud, who has become unruffled after the tomato episode. The children laugh at his joke, and the researcher smiles and replies: *"That's a very clever observation. The radiation sent by the Life-giver is not of one kind. Let's say it's a bouquet of different kinds of flowers. We can see some of this radiation. It is the light that illuminates us, the visible radiation. Others we don't see but we feel them as heat, it's the thermal radiation. Others we also don't see and in large quantities they cause damage to our skin. This is ultraviolet radiation. Like every flower has its own particular fragrance, every radiation has its own particular wavelength, as we call it. These gases in the atmosphere can absorb a lot of the thermal radiation. All other kinds of radiation of the Life-giver reaches the ground of Climatopia and heats it. The ground in turn sends outward thermal radiation that is at the wavelength absorbed by the gases. So much of this radiation is trapped in the atmosphere and prevents Climatopia from freezing". "And so we don't become ice columns"* Zon says again.

The dark-haired girl holds a flower in her hand and every now and then she sniffs it, listening carefully. She rises her hand and says: *"In other words the various flowers of the bouquet sent by the Life-giver to Climatopia when they reach the ground change species and become like those that are the favorites of the atmosphere's gases".* The researcher smiles broadly and says with satisfaction, *"I like the analogy you made. Yeah, it's something like that. Just like you picked a flower, Climatopia picks the gases it likes".*

The conversation has livened up. Hands are raised and everyone wants to talk. The child with glasses asks: *"So if these gases that trap the thermal radiation of Climatopia become less what will happen?" "We will become ice columns"* all children say in a voice and laugh, looking at Zon. And another one asks: *"What if they get more then what happens?"* Zon shouts to be heard *"It will be like closing the windows of a greenhouse. Then the heat becomes too much. And, Climatopia, which is like a big greenhouse, will get very hot". "But, what are you saying? The gases in the atmosphere don't change like the soil in the ground or the trees don't change"* a girl says loudly. Voices are raised, some agree others disagree. *"And what are these gases anyway that we have been talking about for so long? Don't they have a name?"* Now comes the voice of Barr, who is beginning to show a lot of interest in the discussion and wants to join in.

The researcher smilingly motions to the children to stop and when the voices die down, he says: *"But you guys are becoming real researchers already. You ask questions and answer them according to what you have learned using your logical thinking. We call these gases "greenhouse gases". The most important of these is carbon dioxide. Another less important one is called methane. We will learn about them. But first I would like you to make miniature greenhouses. The best way to see how something works is to build it".*

The researcher's colleagues have placed three long benches alongside the entrance to the lecture room. There are cardboard boxes of various sizes, scissors, adhesive pliers, tapes, wire rolls and rolls of transparent plastic. The children run towards them full of excitement to make something. They divide into small groups, pick a part of one of the three benches and set to work. Some are assigned to design the construction. They go to the greenhouse and observe how it is made. They make a rough sketch and explain it to their group. Then everyone starts building their greenhouse. The researcher and his

colleagues are happy to watch and discuss with the children any questions they have or help them solve construction problems. Together they are like a beehive buzzing around their hive, which is the workbenches, and of course their honeycomb are the little greenhouses they are building. Two hours later five greenhouses are set on the benches like a sculpture exhibition. Each one different with the children's art, imagination and above all the creativity projected onto them. The students browse around the constructions, discuss, laugh, tease each other and are proud of their works.

The researcher invites them to join him: *"Now that we've made these wonderful greenhouses, let's see if they work and aren't just nice dollhouses"*. The children laugh at his words and pretend to protest. *"Not a dollhouse"*, Zon says. *"Ours is like my grandfather's and it's ready to plant tomatoes"*. Laughter and shouting can be heard from all around: *"Ours is the best"*, *"We built the best"*...The researcher interrupts them and asks: *"How do we prove that they work?"*. Silence falls at once. The children look at each other as if questioning each other with their eyes. Melan says seriously: *"We use the greenhouse to increase the temperature of a room by harnessing the radiation of the Life-giver. We will need a thermometer to measure the temperature inside and outside the greenhouse we built and then compare the two temperatures"*. Voices of approval can be heard from the children: *"Well done Melan, your idea is right"*.

Some thermometers are brought from the laboratory. One is placed on a bench and one in each greenhouse. The three benches with the greenhouses are placed so that the rays of the Life-giver fall on them. A few minutes later the temperatures are compared. In all the greenhouses the thermometers show a higher temperature than the outside thermometer. Excitement prevails: *"We did it! We have made a greenhouse!"* the children shout. Zon suggests that they measure the internal temperature when they have the windows and door of their group's greenhouse closed. The measurements show that the temperature rises slightly compared to the temperature when they were open. Melan says: *"Wouldn't the exact same thing happen to the temperature of Climatopia if we increased the greenhouse gases in the atmosphere?"* *"Yes indeed!"* *"right"*, *"very good point Melan"*, children's voices can be heard approvingly.

The researcher with obvious satisfaction and admiration in his eyes says: *"Now you are real scientists. You have built a model of a greenhouse, that is also a model of Climatopia. You have shown how the greenhouse effect works on our planet and explained how the amount of greenhouse gases affects the temperature of the planet"*. *"The more windows we close or the more greenhouse gases accumulate in the atmosphere, the more the temperature of our greenhouse or our planet increases"*, Barr says with enthusiasm, who spent so much time observing rather than participating in his team's work. *"Now I understood what it was all about with the greenhouse and the gases and the thermometers and..."* *"Well, good thing we had you and you solved our problem"*, one boy says in his group and they all laugh. Barr isn't fazed. *"Okay, you guys did something too. I didn't do it all by myself"*. Everyone bursts out laughing. Some even shake Barr's hand, congratulating him.

The researcher seems amused by the development and shares the children's enthusiasm for their success. He waits for the laughter and shouting to die down and then says: *"So now that we understand what the greenhouse effect is, we'll answer your questions: what greenhouse gases are, if the amount of them in the atmosphere is changing, and what the consequences of this change are. But that's enough for today. Think about what we have done and learned today and tomorrow morning we will go over it again in the lab next to the lecture room"*.

Chapter 4: The Greenhouse Gases

Early the next morning, the children gather in the laboratory next to the lecture room. Bottles of various sizes, oddly shaped glass tubes propped up on metal stands, monitors, strange machines, folders, books and a host of other items are lined up on long benches throughout the room and on shelves and display cases covering the walls of the lab.

The children observe everything with obvious curiosity and fascination. The researcher's assistant who helped the children the day before stands in front of a bench and greets them with a smile. She is a young tall girl. She is wearing a white lab coat. The children surround her, commenting quietly on what they see around them.

"Good morning, children. Welcome to the chemistry lab. We already met yesterday. I am also a researcher at the Research Center and today we are going to learn about greenhouse gases together. Which of these gases is the most important?" Hands go up and a girl answers: *"It's carbon dioxide"*. *"That's right. Have you ever heard of this gas before?"* the researcher says. The boy with glasses raises his hand and answers: *"I know that it is a gas that, as the name suggests, is made of oxygen and carbon. Plants absorb the carbon dioxide in the air with their leaves. They separate the oxygen from the carbon, they keep the carbon they need to live and grow, and they expel the oxygen"*. *"That's called photosynthesis, ma'am"*, the dark-haired girl says, *"and they call it that because to do it, plants use the energy from the Life-giver's light"*, *"Excellent..."* the researcher says but Zon interrupts her by saying: *"It is as if we were saying that plants cook their food in their kitchen, which is operated by light from the Life-giver"*, The children laugh at Zon's intervention and the researcher nods her head affirmatively and says: *"Very well said, all of you. But do you know how carbon dioxide is created?"* After a few seconds of silence, Barr's voice is heard in a tone of protest: *"But you said it's in the atmosphere, ma'am"*, *"Yes, but how did it get there? After all, since, as you rightly said, plants use it to make their food, wouldn't it have run out?"* None of the children are now speaking. They are all trying to think of an answer. The young researcher continues: *"Do you want to have a competition?"* *"Yes!"* comes the sound of many voices.

"But first thing in the morning competitions?" Barr protests, who has his head sleepily resting on the counter, bored. *"Good! So, you're going to split into teams and try to solve two riddles. Come on, Barr, wake up! You'll see, you'll love it!"* the researcher says with a smile. *"If you solve them, you will have managed to produce carbon dioxide. Whichever team solves one of the two riddles first wins. The first riddle is: Plants with light separate us and life goes on, but when it is lit it unites us in an instant and the other: I am dust that swells sweets and you were wine in the old days, put us together and let us be foams."* The children laugh enthusiastically, split into groups and begin lively discussions.

Melan with Barr and Zon go to one end of the room: *"The first one seems easier"*, Melan says. *"Let's try to solve this one. What do you think?"* Zon pats Barr lightly on the back and says: *"Come on Barr we have to win! Wake up! Think! What is it about plants that separates them from the light?"* *"Light, huh? Light...photo...photo...photo...didn't you say something about plants?"* Barr says. *"They call it photosynthesis, but what's it got to do with it?"* Zon says. *"Yes, photosynthesis! Plants photosynthesize by breaking down carbon dioxide and separating oxygen from carbon"*, Melan says enthusiastically and immediately lowering her voice so the other groups won't hear her. *"And why do they go on living?"* *"Simple: We all need oxygen to live"*, Zon says. *"And the plants keep the carbon and live and grow too"*, Melan adds. *"But we don't want to separate them, we want to put them together to make carbon dioxide"*, Zon says. *"When*

it's lit, it brings them together. Which one? The lamp? I don't understand." All three look thoughtful for a moment. Then Zon says: "We said the oxygen goes into the atmosphere..." "and the carbon stays in the plants, in the trees in the wood....", Melan continues. "But how does a light bulb bring them together in an instant?"

No one speaks until Barr is heard, "Wow! You said wood, and you reminded me of the tiredness I had when my father and I were carrying wood for the fireplace to the shed. Every year the same story. And then we cleaned the fireplace so it would get air and burn well." "Is that what you've come up with now?" Zon says exasperated. But Melan looks at Barr in surprise: "Without air, the fire goes out. That is, without the oxygen in the air, the fire goes out. We blow the red-hot coals to make them catch fire. Not the lamp, but the fire is what brings them together"... "Maybe when we burn the wood, the carbon is joined with the oxygen in the air. Yes, it combines carbon with oxygen to make carbon dioxide. We've got it, guys!" Zon shouts. "Yeah, that's it", Melan shouts, too, bouncing around with Zon. "What had we missed and we found it, guys?" Barr wonders. But at the same time other voices can be heard from the other side of the room: "We found it. We know how carbon dioxide is made".

The researcher approaches the two groups, talks to them for a while and then smiles and says loudly so that everyone can hear her: "I think we have two interesting solutions to the two riddles. We may have two winning teams. Let's come and hear them".

The brunette girl takes it upon herself to present the team's answer to the riddle. "I like baking and I often help my father in our bakery. I know that we use baking powder or baking soda to rise the dough for sweets". "Also, wine becomes vinegar when it ages in an open bottle," a boy in the group says. And Melan continues: "We found vinegar and baking powder on this shelf right here. So we poured vinegar into baking powder and immediately foams were created. See for yourself". By saying these, she poured some vinegar into a small bowl of baking soda. Immediately the little bowl is filled with so many bubbles that it overflows. Shouts of excitement and applause can be heard from the children "Bravo!" "Perfect!!!!"

The researcher confirms the girl's words: "Congratulations to your team. You solved the riddle. These bubbles have carbon dioxide in them. But let's listen to the other team".

Melan starts talking in order to explain the solution to the other riddle to the children. When she finishes, the researcher says: "So to produce carbon dioxide we only need to burn wood?" "Yes, wood or a plant in general", Zon replies. "Or a quantity of any plant substance, such as grass, leaves, a match..." "Wooden things.. and things made from plant fibers like paper, clothes," the dark-haired girl adds. "And fuels like oil and gas, since they were created in the interior of Climatedia from plants, so they too have carbon. So, when they burn, they produce carbon dioxide", Zon says. "But gasoline and all plastics since they are made from oil also produce carbon dioxide when they burn. Isn't that so?" Melan says again.

"This is all very true and your team deserves congratulations. You have discovered the most common way of producing the most important of the greenhouse gases, namely burning materials containing carbon". "Who won, ma'am?" Barr asks. "Both teams". "Together we solved the riddles", shouts can be heard from the children. "I agree. Both teams won. But I think you all won from this competition after learning all those things about carbon dioxide."

The boy with glasses raises his hand and asks, "And how do we know that this gas produced when we burn fuel or pour vinegar into baking powder is carbon dioxide?" "Excellent question, young man. It shows that you have the mind of a researcher".

The researcher said: "So far we have learned quite a lot about carbon dioxide. The second most important gas contributing to global warming is methane. It is a compound, or more simply a gas made of carbon and hydrogen". "Again, carbon plays a role in global warming", Zon

observes. "Yes, it does", the researcher says. "Methane is produced from decomposing plant matter, for example in swamps". "If I remember correctly, it's in the natural gas we use as fuel", Melan now butts in. "Quite right", the researcher says. "In the subsoil, plant matter buried millions of years ago decomposes. This produces methane, which makes up almost 90% of natural gas. Where else do we have decomposition of plant matter?" "Maybe in the stomach and intestines of herbivorous animals?" the boy with glasses asks. "Indeed, herbivorous animals produce methane in their digestive systems as their food is broken down there."

"Are there other greenhouse gases?" Zon asks. "Yes", the researcher replies, "there are others such as nitrous oxide and chlorofluorocarbons, but they have less of an effect because they are not present in large quantities in the atmosphere".

"I've chloroformed my tongue, but what's she telling us now," Zon grumbles softly to Barr. "After....." Before Barr can finish, the researcher's voice can be heard: "Barr, it seems that something is bothering you. Do you want to tell us maybe?" Barr hesitates for a moment but then decides to speak: "I'm very confused about all this. We came here to learn about climate change. But as you told us, the climate is not changing. Then we were told that our planet is in danger of being destroyed. Then we learn about the greenhouse effect that helps the planet. And about some gases called fluorochlorine... chlorofluorine... and some carbons... anyway..." Barr pauses with an expression of wonder and despair at once.

"Yes, I understand, young man. You're in a bit of a hurry though. We'll take this all in order. But who told you that our planet is in danger of being destroyed?" Zon stomps on Barr's foot, and he grimaces in pain but doesn't make a sound, while Melan looks at him with rolled eyes as if telling him to shut up: "Barr's hyperbole madam. That's just the way Barr is, he gets carried away sometimes". "Uh..yes I do overdo it ma'am..." Barr says with an embarrassed smile.

"But ma'am, Barr is right", the boy with the glasses takes the floor. "The previous researcher told us that the climate doesn't change. While we've heard about the Ice Age and climate change..." "Your questions are justified, guys. Indeed, the climate over a period of a few thousand years does not change significantly. However, in the last 150 years there has been an average increase in Climatopia's temperature of 1 degree. In some areas the temperature increase has even reached 2 degrees or higher". "What is the cause of this increase, Madam? Is it the greenhouse effect?" Zon asks. "This is a hypothesis that I want you to examine in your groups. This afternoon I would like each group to give us an answer to the question of whether it is possible that the increase in global warming is due to the greenhouse effect and explain your answer". And saying this, the researcher waved them off and left the lab room.

Chapter 5: Searching for the Causes of Climate Change

In the afternoon of the same day, the three friends meet in the gazebo in the courtyard of the Research Centre. "You almost slipped up and told everyone about our meeting with the four elements. And then everyone would say we were lying or hallucinating", Zon tells Barr. "I'm sorry guys, but I'm really so confused that I don't know if the elements were real, what we're doing here, what we're learning about..." Barr says apologetically. "The elements are real and we were warned of the evil that was going to happen. Here we just learned that the temperature of the planet is rising. The climate is changing.." Melan says "And we're here now to think about why this is happening", Zon continues. "One degree in 150 years! Big deal about the terrible change in temperature. So what's the big deal?" Barr replies exasperated. "Maybe nothing serious has happened yet, but the spirits warned us that it will happen in the future" Zon now

replies. "Okay, I have my doubts, but since you want it, let's see what's causing this increase" Barr ends the conversation with some annoyance.

Melan with confidence in her voice says: "I have thought about it and I think that the increase in temperature is due to the increase in greenhouse gases. More gases, let's say carbon dioxide, means more heat is trapped in Climatopia". "Yes, it's like closing the greenhouse windows", Zon continues. "We saw it in the experiment we did with the miniatures we made". "And what is the reason of the increase in carbon dioxide, Mr. researchers?" Barr says with a note of irony in his voice. Melan pays no attention to the irony as she is lost in thought: "Carbon dioxide is produced by combustion. But plants absorb it and then break it down. They keep the carbon and release the oxygen. If as much carbon dioxide is released into the atmosphere as is absorbed by plants then..." "Then the amount of carbon in the atmosphere doesn't change. Therefore, global warming is simply keeping our Climatopia as warm as we need it to be. As if to say that we have so many windows closed that our plants have the temperature they need." "Now the greenhouse expert has spoken", Barr says again with a wry smile, "and tell me what happened 150 years ago that started to upset this carbon dioxide balance. Who closes the windows of the greenhouse of Climatopia? Huh?"

Zon and Melan look at each other without being able to answer Barr. "And I'm telling you it's not global warming, it's the Life-giver", Barr said, and continued: "Maybe it's been warming us more these last few years. Or it could be that Climatopia is getting closer to the Life-giver as it revolves around it". And as he said this a slight gust of wind dewed them. The next moment a small whirlwind of wind began to whirl the fallen dry leaves and ground dust before them slowly at first, quickly thereafter until wind, leaves and dust began to take the form of a girl. The children were speechless and frozen in surprise. "Here I am. You haven't forgotten me, have you? You asked for me and here I am" came the whispered voice of Air. "Huh!.... We didn't...ask for you...exactly..." Zon finds the courage to whisper a few words... "And since we promised we'd show up again when you needed us... here I am," the airy girl says, taking a deep bow. "Our friend Barr said you might not ..." "We don't exist... etc. Okay, we've said that, Zon. But our point is why the temperature of your planet is rising. You like to travel, don't you? Come with me and you'll find out." And saying this with a wave of her hands her veil spreads over their heads and falls down covering the three children.

Chapter 6: At the Greenhouse Gas Measuring Station

Everything goes dark for a moment, but then it seems as if they are travelling through a blindingly bright tunnel. It is so bright that they instinctively close their eyes. At the same moment they hear a roar and feel two successive streams of air pass through their bodies! It is a sensation that does not frighten them but instead calms them down. A few seconds later - or was it hours? - total silence. They open their eyes. They find themselves in a room that is not very large. On one of the walls are large bright screens. Libraries with thick files and books are all around while five or six desks are lined with computers and stacks of papers. The children, with the airy girl by their side, stand at one end of the room, the moment footsteps and animated chatter can be heard approaching. A door opens and an older man with a grey beard and a young tall woman with black hair enter. Both of them wear white lab coats.

"There is no doubt", the man says, "that the carbon dioxide in the atmosphere is increasing year by year". "The measurements we took yesterday, both with the balloon we sent up to 10,000 meters and those on the ground, confirm it", the young woman agrees. The two researchers

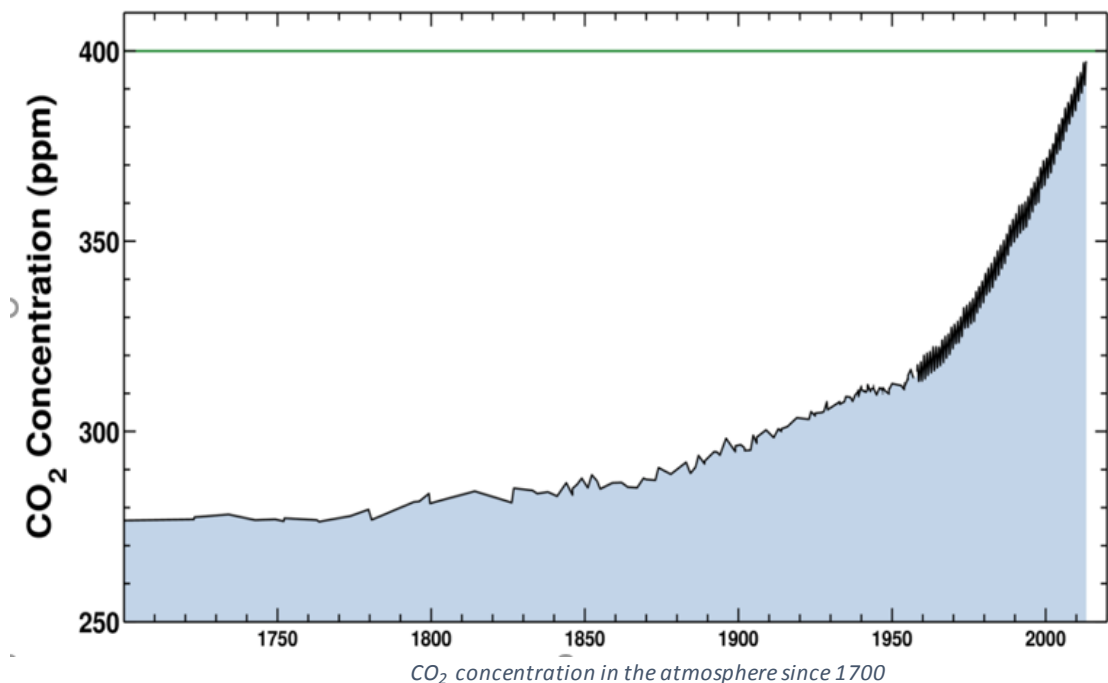
pass in front of the children but it's as if they are oblivious to their presence. "Hello", Melan says hesitantly, *"sorry we came in like this but"*... The two researchers seem not to see or hear Melan and continue the conversation: *"We need to compare the results of our measurements with those of the other stations in the network"*, the young woman says, *"let's see what they sent us from the islands of the Great Ocean"*. She sits at a desk, typing away, and on one of the large screens, tables of numbers appear. *"Yesterday they sent us results from the greenhouse gas measuring station at the South Pole, too. Let's see them"*, the older man says. The woman types and another screen shows tables similar to the others.

The children all this time are standing still, looking at each other as if asking each other where they are and why the two researchers can't see them. The airy girl smiles and makes a dancing gesture as she walks past the two researchers. *"As you can see they can neither see nor hear us. Isn't that amusing? I'll never get tired of doing this,"* she tells the children and bursts out laughing. Barr clumsily tries to imitate her and falls over a chair. But the chair stays in place while Barr walks through it as if he's not touching it. *"But how did that happen,"* Zon says, *"it's like not having a physical body"*. Saying this he reaches out to grab a pen from the desk next to him but his fingers close without feeling like he's touching anything or being able to grasp it. One surprise after another. The three children hesitantly at first but then briskly walk into the room, unhindered by the furniture, as if it does not interfere with their path. Barr even disappears in a moment into a closet without opening its door. *"Cuckoo,"* he shouts, *"where am I, do you see me?"*

The initial surprise is followed by unrestrained laughter. *"It's a lot of fun", "Incredible", "Amazing"*, but after a while: *"But how can that be?" "What's happening to us?"*, The laughter stops abruptly and the children look at the air element: *"We're not going to stay like this, are we? We're going back to normal,"* Zon asks anxiously. *"But where did we get to, what is here, why is this happening to us?"* Barr shouts in agony. The air element who has been enjoying the surprise of the children for so long says laughing: *"Don't worry. Nothing has happened to you; you've just crossed over into the fifth dimension. We are in one of the dimensions of space-time where we usually are, the four elements of nature. Don't worry we can always return to the three dimensions of the world that you climatopians can perceive with your senses."* *"But where are we? And who are these two?"* Barr asks. *"We are at one of the hundreds of greenhouse gas measuring stations. We are on top of Kvale, a high mountain at the equator of Climatopia,"* the airy girl replies. *"She is a chemical climatologist and he is a physical climatologist. But listen to them."*

Meanwhile, on all the screens on the wall, tables with numbers have been displayed. The two researchers look carefully and compare the results of carbon dioxide measurements. On one screen a younger researcher appears to be in a room similar to theirs. The older researcher says: *"Well, we see on the screens the measurements from most of the measuring stations in our network. We have measurements from hundreds of stations on the ground at dozens of points in Climatopia, in the air from planes and balloons going very high in the atmosphere, and in space from satellites."*

"All measurements show the same thing: The carbon dioxide in the atmosphere of Climatopia continues to rise year after year." A graph appears on a screen. *"Look!"* the young woman says, *"the graph shows the concentration curve of carbon dioxide in the atmosphere from 1870 to the present day. We see a steady increase in carbon dioxide in our atmosphere as the years go by."*



"That's right," the researcher on the screen says, "we can see clearly that before 1750 the amount of carbon dioxide in the atmosphere was constant. After 1750 it started to increase." "And after 1970 the increase is getting faster and faster," Melan says loudly, who wants to join the conversation, forgetting that she can't be heard by the researchers.

A middle-aged woman appears on one of the screens: "Dear colleagues, I am intervening in the discussion to inform you that our research team has analyzed measurements taken from all Climatopia's survey measurement sites for methane and other greenhouse gases. Unfortunately, a similar increase to carbon dioxide in the atmosphere is seen in all greenhouse gases."

Chapter 7: Journey to the Past

"I think we've heard enough, guys. The answer to the question the researcher asked us is that greenhouse gases is to blame for the warming?" Zon asks. "So it is without a doubt, guys," Melan replies. "But it remains to be answered why greenhouse gases are increasing. Who is closing the windows of the greenhouse of Climatopia?" Barr says, emphasizing his last words. "We could ask the scientists but they don't see us or hear us", Zon says, "or maybe Air... But where is she? Where has she gone?" The children look around in horror but the airy being has disappeared. "She left us here in the fifth dimension and left. Will she come back? Now what do we do?" Barr's voice rings out with intensity. A few minutes of agony pass for the children, who feel trapped in a world invisible to others. Then, the footsteps of someone slowly climbing a staircase echo in the room. "Don't be upset, children, I'm here. I'm a little late. It's also age you see...". The element of Soil appears, first his head and then the rest of his body as if he is emerging from the floor of the room, as if he is slowly climbing some invisible staircase. He rests on his wand, straightens his body and smiles heartily at the children who look at him with wide-eyed wonder.

"Ahhhh my years have taken me children. Four billion years give or take... But our subject is different: Why carbon dioxide in the atmosphere has been increasing over the last 150 years.

Right?" "Yeah, but uh...we could ...say maybe jump back to three dimensions?" Zon says with an expression of hesitation and pleading in his voice. Soil, however, continues as if he didn't hear him: "Well, hold on tight to my wand and let's go" and saying this he extends his wand to the children. They unthinkingly grip it with one hand and then the dazzlingly bright tunnel opens before them again. This time two streams of air pass through them and when they open their eyes again they find themselves at the top of a hill.

At the foot of the hill is built a small town that could have been out of a period film or an 1800's engraving. The town is surrounded by a high wall. Smoke rises from the chimneys of the houses. On the muddy road leading to the town, slowly rolling carts loaded with oxen roll by. A closed carriage drawn by four horses passes them and is the first to pass the great gate of the city wall. Men and women on foot, some with sacks on their backs, others pushing handcarts, walk laboriously along the muddy road, towards the city.

The outskirts of the small town are wooded on one side. On the other side there are small fields. Most are ploughed, some are planted with trees. A farmer sows by hand dropping seed into his field. Another ploughs his field with a plough dragged by an ox. On the hillside a herd of sheep graze grass. A small river runs its waters parallel to the road, runs alongside the city wall, crosses the fields and disappears into the dense forest. A few boats are pulled up on the bank and two or three men are fishing.

"But what is here? Are they filming a movie? A very successful setting like the real thing! Look..." Barr speaks first. "What are you talking about? This town is real! Did we change the era? Did we go back in time?" Zon interrupted and turned to the old man who was smiling calmly: "You got that right my friend. We travelled about 200 years back from your time." "Look at how peaceful people's lives are. They live simple lives close to nature in a clean environment. Their fields, the forest, the river give them everything they need to live," Melan says. "But their life is hard without the technological means we have today. Without the doctors and hospitals, we have today, many will surely be lost needlessly," Barr counters. "But why did we come here? What are we doing here?" Zon asks, looking at Soil. "Hold on to my wand again, guys," he says instead of answering and extends his wand towards the guys.

The children touch the wand and in an instant a flash causes them to close their eyes. When they open them they are in the same spot at the top of the hill, but many things are different now. The city no longer has a wall, it has grown and stretches across both banks of the river, so that the river runs through it. But its waters are now a brownish-yellow color. Perhaps that's why no one fishes on its banks. Three-and four-story buildings stand in place of the low houses. Many more chimneys now send their smoke into the sky.

The forest has been greatly reduced far away from the city. Various buildings have been built in its place. Some are livestock farms. Others are warehouses. Most look like factories. A siren sounds and the children turn their attention to a building complex with chimneys. A cloud of gray smoke billows out of the chimneys and slowly rises toward the sky. Very quickly a crowd of uniformly dressed people emerge from its gate and walk towards the city. They are the workers returning from their work at the factory.

Alongside the road the children discern a railway line. A train with a steam locomotive dragging wagons with passengers and goods behind it whizzes by. The wagon behind the locomotive is loaded with coal. The children can see the heater that pours coal into the locomotive. Thick smoke comes out of its chimney.

"But how did the little town change like this? What happened?" Zon asks. "Gone is all its beauty, its clear sky, its clear river water, its lovely forest. What a pity!" Melan adds. "How many years have passed in the meantime?" Barr wonders aloud. "I think what has changed is that there are now machines. A lot of what people used to do with their hands is now done by machines in factories," Melan replies to Zon's question. "And the city has grown because the factories need workers," Zon adds.

The wind now brings the smoke from the factory chimneys towards the children. *"Poof. What are they burning? Coal?" Barr says, coughing "Coal? Yes, coal! That's why there's so much black smoke... But wait a minute. Didn't we find in the lab that carbon dioxide is produced when we burn materials that contain carbon?" Melan speaks again. "And where is there a lot of carbon? In the coal, of course "You saw the train. It had a steam-powered engine. Steam is produced by water boiling with the heat of the burning coal," Zon continues. "That's why from some time onwards we've had an increase in carbon dioxide in the atmosphere. Because that's when the first engines started being used." "I think I read it in history that steam engines started being used in factories and trains about 150 years ago. Historians called this change the Industrial Revolution," Melan adds.*

"My friends, it seems that you have found the answers to the questions that have been troubling you," Soil says who has been silent for so long watching the children's reasoning. "We can now go to the three dimensions close to your classmates." "But I would like to see what this little town is like today before we leave," Zon says. "But you know it well my friend", Soil replies, "it is the capital of your homeland!" "Not possible! This little town in front of us is Lago? But today it is a huge city with 3 million inhabitants, and it certainly has no river running through it, nor does it have a forest", Zon replies, surprised. Soil shakes his head in agreement: "Yes indeed, the city is much bigger now. And the river because it was almost dry is covered with cement. It is turned into an underground conduit that way. A major motorway runs over it, making it easier for thousands of drivers to get around every day. Now hold my wand and let's go! Don't forget, you have to hold it tight". The children hold on to the old man's wand and once again find themselves in the bright tunnel. Four currents of rumbling air are felt rushing through them. When they open their eyes, they find themselves half-dazed in the pavilion of the Research Center.

Chapter 8: Return with Losses

Melan rubs her eyes and says: *"What an amazing experience! We traveled through time-space and experienced so much that it would take me days to recount. Huh, guys?"* Beside her, though, is only Zon. *"But where's Barr?"* Zon stops rubbing his eyes and looks around in surprise: *"Where did he go? He went into the tunnel with us. I closed my eyes, but I know he was by my side. Did he go in? Before we went into the tunnel, he was telling me he was hungry. He must have gone to the kitchen."* *"Look, Zon! That's the Soil's wand. But where is Soil? And how did he leave his wand here?"*

At that moment the door of the building opens and the young researcher appears with the other children following her and coming towards the gazebo. Melan barely catches up and pushes the wand into a bush with her foot. *"I thought it was cooler this time of day and it would be nice to continue our conversation here. But Zon, I don't see Barr. A minute ago, I saw all three of you talking". "Yes ma'am, he was here. I think he went inside to get something to eat" Zon says with some hesitation. "Let's get started and he'll be here any minute". "Good. So which group wants to answer the question I asked you first?"*

The boy with the glasses gets a turn: *"We know lady from movies and documentaries that there have been climate changes in the past. They were caused by small changes in the movement of Climatopia around itself and the Life-giver. These changes have caused periods of glaciation and periods of global warming. Perhaps this warming is also due to such a natural change". "Very good reasoning guys!" the researcher says, "What you say about the climate changes that have occurred in the past is very correct. There are you know researchers studying the climate of those times. They assure us that changes in temperature like the last 150 years in the past took thousands of years to occur. So, this increase in temperature cannot be due to natural causes". "But madam," now a blonde girl from the same group says, "as we read on the internet a few centuries ago there was a short ice age but also a warm period similar to ours." "Quite right. The change in climate you say happened. But it was limited to only a few areas of the planet and not the whole planet, like the one we have been living in for the last 150 years. Therefore, the causes of this warming must logically be different".*

The dark-haired girl takes the floor and says: *"We ma'am thought that the warming on our planet might be due to large eruptions that sometimes occur on the surface of the Life-giver. We have heard that these happen sometimes and last a long time." "Yes, there are researchers who are constantly observing the surface of the Life-giver with telescopes. They assure us that eruptions that look like huge spots or jets occur on the surface of the Life-giver. But in the last forty years there have been no such large explosions to explain the warming we observe in Climatopia."*

"Melan and Zon are we going to wait for Barr any longer? Would you care to tell us how your team answered the question we're discussing?" But the two children's minds are on their friend who has not appeared yet and the wand was found on the ground. "Melan, Zon can you hear me? But where is your mind?" the researcher raises her voice to get the attention of the two friends. "Sorry ma'am I was thinking about your words," Zon apologizes. "Me too ma'am. Very interesting all you said," Melan says with a serious expression on her face. "Well, will you tell us?" the researcher asks more insistently. "Yes. Yes. We madam found that researchers around the world have found a steady increase in the amount of carbon dioxide and other greenhouse gases in the planet's atmosphere. This increase can explain the increase in global warming". The researcher shakes her head in satisfaction.

"You are quite right to say so. But perhaps you can also tell us how the increase in greenhouse gases in the atmosphere can be explained?" Zon takes it upon himself to answer now: "The increase of carbon dioxide in the atmosphere begins when the industrial revolution also begins, i.e., the use of coal-fired engines in industry and trains." The boy with the glasses interjects: "Yes, but for many years now it is not coal that has been used in factories, but oil or electricity". Melan answers: "But as we said, both oil and gas when burned produce carbon dioxide. And electricity is produced in power stations that use generators that run on these fuels". "The means of transportation, which is ever increasing, also uses gasoline to get around. And gasoline when burned produces carbon dioxide", adds Zon.

Chapter 9: In a Fiery Trap

Indeed, Barr entered the bright tunnel with the children and Soil. He had been hungry for a while and his mind was on a sandwich he had in his pants pocket. After the first gust of air he felt his hunger go through him as if it had grown. He let go of the wand from his hand and shoved it into his pocket. The next moment he felt an unbearable heat and hot air envelop him. He opened his eyes and was surprised to see that he was flying at speed over a desolate area with no trees and the ground cracked from the drought. The

thirsty ground was succeeded by a vast expanse of burnt grass and bushes. Then he flew over burnt trees that were still smoking while further away a few trees smoldered.

Now he is approaching a forest area that is burning. The fire is speeding towards a small town, burning everything in its path. His breathing becomes difficult as he passes through the smoke. He holds his breath but luckily, he is moving so fast that in seconds he passes over the first few houses and reaches over a small square. Climatopians are gathered there. No one notices Barr as he suddenly falls and hits the ground. He shakes from his agitation and tries to brace himself against a pillar. A police car appears in the square and the police officers use a loudspeaker to call climatopians to move away because the flames are approaching. The crowd moves and drags him along. He advances with pushing and pushes his way out of the square. He moves with dozens of other climatopians of all ages down a street where vehicles are stranded that, it seems, their drivers abandoned to save themselves. He now runs blindly through the smoke while behind him he hears the roar of fire and explosions from cars that are engulfed in flames one after another. *"Run for the sea"*, a voice stands out amidst the noise of the fire, the explosions and the cries of anguish of the crowd. *"Come this way"*, a woman cries out, who seems to know the way to the sea.

A small group of climatopians move towards a narrow alley. Barr follows, choking on the smoke. The alley leads to the yard of a house surrounded by a tall junkyard. The fire seems to be chasing them. There is no way out but to climb the junkyard. They all try, but only one or two young men manage to jump out. Barr tries, but he slips. The smoke has turned day into night. He falls to his knees in despair. The last thing he thinks before he loses consciousness is that he hasn't had time to eat the sandwich still in his pocket.

Chapter 10: At the Mercy of the Storm

The conversation in the group continues for a while longer but Melan and Zon can't watch. Their minds are on Barr. They are waiting for the conversation to end so they can look for him. Indeed, in a moment the researcher releases the children for dinner. Zon and Melan run first to the kitchen, then to the dining room, to the guest room... Barr is nowhere to be found. They return to the gazebo, panting with anxiety. *"Something has gone wrong. Barr went into the tunnel but something happened and he disappeared into some other dimension"*, Melan says, distraught. *"And now what do we do?"*, Zon asks, *"we can't leave him. He could be in danger"*.

No one speaks. Suddenly Melan says excitedly: *"We have the wand that Soil left us. Maybe we can use it ourselves to travel through time-space"*. *"When we entered the tunnel I closed my eyes, but in the first wave of air I felt Barr touching me. Then I don't think I felt him anymore"*. *"Air took us to the fifth dimension in the present but in another place. Soil took us to the past in the seventh dimension. Barr seems to have stayed in the sixth dimension. Perhaps the sixth dimension is the future"*. *"Come on Melan, let's see if the wand can take us to the future"*. Zon takes the wand that was hidden in the bush. The two children hold it tightly *"but nothing happens"*, says Melan, *"but what?"* *"I remember that before Dirt gave us the wand to hold it, he was hitting it on the ground. The first time I think he hit it twice. The second time he hit it four times, I remember it well."* Melan thinks for a moment and then says: *"He hits it as many times as the dimension we are in is as far away from the one we want to go. Twice to go from the fifth to the seventh and four times to go from the seventh to the third."* *"If what you say is correct, to go to the sixth dimension we have to hit the stick three times. Let's try"*.

Zon taps the wand three times on the ground and then extends it towards Melan. Melan holds it tightly too and the bright tunnel opens up in front of them. Three air currents roar through them one after the other.

The first thing they feel is a strong wind pushing them. They open their eyes in fright and see houses around them. Doors and windows are closed. No one is around them on the street. The wind whistles deafeningly. *"We must be in some town, but where"*, Zon shouts to be heard, though Melan is beside him. They cover their faces to shield their eyes from the dust swirling around them. They hold onto each other to keep from falling. Objects blown by the wind fly here and there. A sign comes loose and falls with a thud onto the road beside them. Fallen branches prevent them from moving forward. They look for somewhere to shelter. A tornado swirls high in the sky. It stands over a roof and in a second its tiles are ripped off and after a few spins in the air they crash into the street with a terrible noise.

The two children sneak into a large sewer that runs under the street. The Life-giver is hidden behind black clouds. It is getting dark as if it were dusk. Suddenly lightning flashes furrow the sky and thunder makes everything crackle. The children close their ears and eyes in fright. In no time a torrential rain breaks out. They must seek safer shelter. The door of an old warehouse a short distance away is open and the wind makes it bang noisily against the wall. The children without a second thought run towards it. It was weather! The road has now turned into a rushing torrent that drags everything along. Murky water with mud and stones now rushes down the sewer where they were just moments ago.

The warehouse is a good shelter. They enter and close the door. From its window they can see out. Where before there was a road, there is now a rushing river. Boxes, sheet metal, signs, branches, tree trunks are carried away by its muddy waters with a rush. A small car seems to pull away from the road and slowly at first at speed then floats like a runaway boat. Then a second one then another. Finally, a truck is overturned by the water and drifts away too. A little further down a second road - river meets the first one. At the junction a huge pile of materials and vehicles forms, blocking the water. Those swell sharply and quickly reach the ground level of houses and shops. The warehouse door opens with a loud noise and water rushes in. The children look for a higher spot to protect themselves. They climb to a loft and from there up a ladder to the roof of the small building.

The sight they see around them is desperate. The houses around, the ones that can stand out in the torrential rain, are half submerged in a wide river that flows its muddy waters, carrying everything in its wake. In the two-flour house across the street, a family has gathered on the roof and is staring in horror at the rushing waters. An elderly couple in panic calls for help from the roof of the house next door but no one can hear them. The water has reached their roof.

The two children are frantically looking for a way to help them. A metal ladder could bridge the distance between the two rooftops. If they could get to their roof, they would find some way to help them. Zon unhesitatingly placed the ladder as a bridge between the two buildings. The two children try to crawl across. When they reach the halfway point the rusty ladder bends under their weight and the two children fall into the water.

They now try to keep their heads above the surface as the rushing water carries them away. Zon is sinking but Melan, who seems to be a skilled swimmer, manages to hold him

back by pulling him by his shirt. The water pushes them with momentum toward the truck wedged in the intersection. The collision is inevitable. Melan closes her eyes, holding tightly to Zon who seems to have lost consciousness.

Chapter 11: Journey into a Nightmarish Future

Barr opens his eyes and sees the blue sky. His first thought is that he is hungry. His next is to reach into his pocket for his sandwich. Then he remembers that he was trapped by the fire and jumps to his feet screaming: *"Fire! Help, help, fire!"* But how strange! No fire and no smoke. *"I must have dreamed it"*, he speaks aloud to himself. Then he notices that lying beside him on the grass are his two friends Zon and Melan. Their clothes, their hair, their faces are covered in mud. He leans over them and shakes them: *"Melan, Zon, what's wrong with you? Are you all right? Wake up?"*

Melan opens her eyes, looks at Barr in surprise, then jumps up screaming: *"Zon where is Zon?"* Barr shows her the lying Zon, who also opens his eyes and coughs loudly, spitting up mud. Barr bursts out laughing, *"But what a mess you have? You're like little pigs in mud!"* Melan, who has calmed down seeing that Zon is fine, points to Barr and says laughing: *"And how come you're so burnt and tanned? Did they barbecue you?"* The three guys look at each other and nervous laughter makes their bodies jerk.

When they've calmed down from laughing, Melan says to Barr, *"So where have you been? How did you get here? We went crazy with anguish when we saw you didn't come back with us"*. Barr recounts his adventure in a few words, and so do Melan and Zon. *"So someone saved us all at the last minute and brought us here. But where are we?"*

"Somewhere not in the very distant future. In a future that you and all climatopians will live in if you continue to live as you have been living", comes the familiar deep voice of Soil that appears before them as if sprouting from the ground. He rests, as usual, on his wand and looks at them fondly. *"Ah, but you have your wand! But how? I was holding it until we fell into the water!"* Zon says in surprise. *"Exactly! Into the water! That's where I found it and you. Have you forgotten, my friend, that I am Water?"* comes the voice and then the tickling laughter of the liquid element. In an instant the form of Water takes shape before them as if some invisible hand were pouring water from above into a pitcher shaped like a young climatopian. *"And when the flames animated Barr it was easy to find him in space-time, for I am Fire"*, comes the voice of Fire like a crackling flame, appearing wrapped in its strange veil and making Barr shudder. *"And when you were flying through the air towards the burning city you felt safe because I AM AIR"*, now sounds like a hum the voice of the airy girl, appearing in a whirlwind of leaves and dust.

"But then you, Soil, have not lost your wand either. You could have taken it since it was left in the gazebo on the dirt. Did you have all this planned beforehand?" Melan asked with an expression of suspicion. Soil smiles and says: *"We were just watching your reactions and making sure nothing bad happened to you. The decisions were yours. You two showed how clever and observant you are after you figured out how the wand works"*, the element in the form of the old man says, *"but you did something very reckless: To travel into the unknown, into the dimensions of space-time from which you might never return"*. *"But you did it to save your friend. And then you risked your life again in your attempt to save the two unknown elderly people"*, Water says, *"and in doing so you proved that you have a great love for your fellow human beings. In other words, you have proven yourselves worthy of the mission we have assigned you"*, Fire says.

"I was very hungry, you know, and that's why I left the wand in the tunnel", Barr says apologetically, who meanwhile took the opportunity to finally bite into the sandwich he had in his pocket. "You, my friend Barr, always have a unique way with your actions, questions and observations of helping the team move one step forward. Are you really going to tell us how you do it?" Air says and all of them, including Barr, burst out laughing.

When the laughter stops Melan asks, "You said that what we experienced would happen if we climatopians don't change our way of life. But floods and fires have always happened, just like in our time". "True", Zon says, "a while ago there was a big flood in the area where my grandfather lives". "You discovered that the increase of greenhouse gases in the atmosphere makes the greenhouse effect more intense and increases the temperature of Climatopia. Right?" the air element is now speaking. "Increasing temperatures will cause longer periods of drought", Water says. "The drought will make fires happen more frequently which will cause more and more damage to forests, crops and homes", Fire continues. "The storm you experienced and the flooding did not happen for the first time in that place. But these phenomena will become more and more frequent not only there but in many parts of the world", Water speaks again. "Trees with their roots and vegetation in general hold back the soil", Soil says. "The soil absorbs rainwater and thus avoids flooding. The destruction of forests by fires will make flooding more frequent". "Around the town where you are there is no forest or other vegetation", Water says again. "The rain water not only didn't get absorbed but also washed away the scant soil. And so water and mud rushed into the city and caused the destruction".

"But it is time to return to our time in three dimensions. All three of us will need a bath", Zon says. "Please, before we go, I would like to see my city. I'd like to see what it will look like in the future", Melan says. "I'm afraid you won't like what you see my friend", Water says with a sad expression. "But don't forget that what you will see may not happen if ..." "Yes, I understand but let's go please", Melan insists.

Chapter 12: At the South Pole

Once again, the element of the air covers the children with its veil and the next moment the three of them are flying over a sea. In the distance a coast and a city can be seen. As they approach, they see that the sea has moved inland and has covered the buildings of the city up to the height of the ground floor windows. The children stop on the roof of a tall building. The sight is overwhelming. Melan, who recognizes that this half-submerged city is her home, cannot hold back her tears. Her friends comfort her, saying they will do everything they can to prevent this disaster from happening.

"But why did the sea water come in and flood my town? The sea has always been a blessing to our city. Sometimes in winter its waves would wet the waterfront but we were never worried about it". "This is another disastrous consequence of the increase in the intensity of global warming", is the voice of Water rising from the sea. "With warming temperatures, the ice that for millions of years has covered the poles of Climatopia is melting. Also, the ocean water is expanding too. So, sea levels around the planet are rising, water is overflowing onto the coasts and drowning cities and crops". "The inhabitants of your city have been forced to migrate to other places. But nowhere can anyone be sure of their lives anymore", Air says, who appears in her usual manner before them.

"Really! On my trip to the Research Center, we flew over very high mountains. The pilot told us that the tops of the mountains used to have ice, glaciers as he called them, even in summer. But now there was no trace of them left", Zon says. "I don't want to stay here any longer", Melan

says, *"I can't bear to see this destruction". "Let's go back now", the air element says, "but first I'd like to pay a visit to the South Pole glacier"*.

Once again, the air element with its veil covers the children and they enter the bright tunnel that brings them into the world of three dimensions. When they open their eyes, they fly over a vast icy white expanse. In the distance in front of them they can see the blue surface of the ocean. At that moment there is an eerie sound like a huge piece of glass breaking. Below them a crack tears through the ice to where they can see. A chunk of the glacier as big as a city stands out and begins to slide slowly towards the sea. They stand on its icy surface. Air covers the children with the veil again and a glow makes them close their eyes.

When they open their eyes again, enough time has passed, the huge piece of ice has now been cut away and removed from the glacier. Far away they can see other similar 'white islands' floating in the water. *"Year by year, larger and larger pieces of the frozen ocean are separating from the huge glacier and melting into the ocean. The glacier is getting smaller and smaller and sea levels are rising. Some islands in the ocean are already covered by the water", the air element says in a sad voice. "But there is another problem", he continues, "in the melting ice there are huge amounts of dissolved carbon dioxide and methane. These as they are released into the atmosphere make the greenhouse effect even more intense." "A vicious circle", Melan says, puzzled. "I think you guys have lived and understood a lot. It's time to go back. There is a lot to be done".* The three friends' journey through space-time ends there and a short time later they are back in their rooms at the Research Center.

Chapter 13: The Consequences of Climate Change

The next morning, the whole group of students gathers in the lecture room. The two researchers who have become their teachers, the old man and the young woman, greet them with their usual smiles. The researcher asks the children to recap what they have learned in the previous days at the Research Centre. Some of the pupils repeat what they have learned about the greenhouse effect and the gases that cause it, the role of the phenomenon in maintaining the temperature and in climate change with the increase in the average global temperature, and the causes of the increase in carbon dioxide in the atmosphere.

A student asks to speak and says: *"You have told us sir that in the last 150 years the average temperature of Climatopia has increased by 1 degree. Is this one-degree increase so significant?" "Your question is justified, my child. The answer is, yes, it is very significant. There are already changes in the climate and the physical environment that we will talk about later. This small increase shows that it is not due to a natural phenomenon but to climatopians' activities. It shows above all that in the future the temperature will continue to rise even more and the consequences will be more and more serious".* The researcher continues: *"Think, children, that in the time of the dinosaurs the temperature of our planet was only 4 degrees higher than today and yet crocodiles lived in areas near the North Pole. If we completely ignore the problem of climate change then it is very likely that 80 years from now the average temperature of the planet will be about 3.5 to 5.7 degrees higher than pre-industrial levels"*.

The dark-haired girl asks for the reason: *"Will the greenhouse gases produced now stay in the atmosphere forever? Aren't they being lost?" "Excellent question, my child", the researcher says. "In 100 years almost all the carbon dioxide emitted into the atmosphere today will still be there". "For methane things are better. In about 12 years almost all the methane emitted in the*

atmosphere today will have broken down. But the bad news is that over a period of 20 years methane absorbs approximately 80 times more heating than carbon dioxide”.

Barr clutches his head with his hands and says: “I’m dizzy with the numbers. What I understand is that nature had achieved a balance in the greenhouse gases so that there were just enough in the atmosphere for us to live well”. “Barr is right. But we climatopians have upset that balance by letting more and more of these gases escape into the atmosphere”, Melan adds. “And so, with global warming, the temperature of our planet keeps rising”, Zon adds.

Many of their classmates shake their heads approvingly and say “Yes”, “That’s right”, “That’s right”. The kid with glasses shouts to be heard: “But I would like to know exactly what will happen in the future if we don’t change something. What our lives will be like with warming temperatures. Can you tell us?” “Many groups of scientists around the planet with excellent researchers of various disciplines such as physicists, chemists, mathematicians, biologists, sociologists, economists and others have made some scenarios of how much the temperature of the planet will increase in the future depending on our behavior. So, if we don’t try to limit the production of greenhouse gases that we let escape into the atmosphere...”

Melan who has been constantly thinking about what they experienced there since they returned from the sixth dimension, without being able to contain herself stands up, interrupts the researcher and with intensity in her voice says “I’ll tell you what Climatopia will be like when we are forty or fifty years old. The glaciers that have existed for millions of years at the poles of Climatopia will have melted. Their waters will make the sea level rise. coastal cities like my town will be flooded by the sea water and many islands will be wiped off the map. Their inhabitants will be forced to become refugees...” A wave of emotion cuts her off. Absolute silence reigns in the room as if everyone is holding their breath. Barr stands up and with an unusual intensity in his voice continues: “Large areas of the planet will suffer from drought, will be deserted. Great fires will burn the forests and the cities built near them. Many climatopians’ and animals’ lives will be threatened or lost”. “Tornadoes, storms and floods will cover towns and crops, climatopians will be in danger of being lost, homes and businesses will be destroyed... life for climatopians will be very difficult now”, Zon concludes, who is also standing next to his two friends.

No one speaks. Everyone is surprised by the words of the three friends and by the passion with which they spoke. The elderly researcher, also moved by the way the three friends spoke, says to them: “Thank you guys for what you have said with such passion, as if you have really lived it”. He now turns to all the children: “Unfortunately, what your classmates have said is predicted by the scientific scenarios I have mentioned. All the extreme weather events that is happening today such as, heat waves, fires, tornadoes, storms, floods, droughts will happen more and more often, with greater and greater intensity and duration. The lives of climatopians will be greatly affected”. “But be quiet, children. Much can be done to prevent these dire predictions from coming true”, comes the encouraging voice of the researcher standing beside her elderly colleague. “We scientists have warned the governments and inhabitants of Climatopia’s countries many times. Many have understood the problem and several things have been done to solve it. There are solutions but there are also significant difficulties that need to be overcome”.

“What needs to be done and what can we do?” Melan speaks again, who has regained her composure since her outburst. The two researchers exchange a look of satisfaction. The researcher takes it upon herself to answer: “The first thing you guys need to do is educate yourself about the problem and its possible solutions. That’s why we invited you here”. “Then you, in turn, will inform your classmates back home. What you do from there onwards will be decided together”, the researcher continues.

A child asks to speak and says: *"But the problem of climate change is, as we understand, huge. How are we children going to solve it?"* The researcher says with great seriousness: *"You are exactly at the right age to deal with this really huge issue. Because it is mainly about you, since you are the future of the planet. The adults are perhaps too old now to be seriously concerned about it"*. The researcher seems to agree with his colleague's words: *"Don't let your age discourage you. You can do a lot more than you think. There are still many things to learn because this knowledge will give you the power to win the war on climate change"*.

"To tackle the problem, action needs to be taken in two directions: to limit as much as possible and as early as possible the emission of greenhouse gases into the atmosphere and to prepare to deal with the consequences of climate change that will certainly happen", the researcher says and continues: *"The effort in these two directions will only be successful if it is a team effort. Climatopians across the globe must work together: in their homes, in schools, in workplaces, in communities, in the associations of states on every continent and in the partnerships of those states around the globe that have the most economic power"*.

The researcher concludes the meeting by saying: *"Children, in the next few days you will be working in the library of the Research Centre. There you will find the information you need to answer the question: How can the problem of climate change be addressed by all of us in homes workplaces communities and governments. Then we will meet to discuss what you have found."*

Chapter 14: Looking for Solutions

The next day the three friends meet in the library. The other children are there. They work together in groups trying to gather information through books or by searching the internet to gather information about the proposals on how climate change should be addressed.

Melan sits in front of a screen, looking for information and taking notes in a notebook beside her. Zon is also buried in a stack of books and doing the same with his friend. Barr has his head resting on an open book on the table and every so often he puffs his nose. *"But what's wrong with you, my friend? All this time you're in front of a book and you're puffing. Have you overeaten?"* Zon teases him. *"I never overeat. But I feel like I've been reading too much. Books are not for me. I don't like them"*, Barr replies and Zon laughs, *"But you've been in front of the first page of the first book since morning. When did you have time to get indigestion, or rather, dyslexia?"* *"Shhhh"*, Melan says, *"Quiet! This is a library!"* Melan's remark achieves the opposite effect. Now Barr laughs with him. The two friends run out of the library, unable to hold back their laughter. Soon Melan follows them. She finds them talking in the gazebo.

"Guys, I can't stand to stay in the library any longer. Don't you agree that the most important things we've learned so far have been learned on our journeys through the dimensions of space-time, with the help of the elements?" *"I agree"*, Zon says. *"Yes, but what do you mean?"* Melan asks. *"I'm saying that we should do the same thing now"*. *"But how? Since we don't have the wand?"* Zon wonders. *"I don't know... We should call in the elements and..."* *"And if you had the Soil's wand where would you go?"* comes the familiar whispering voice of Air. And at the same moment in a whirlwind of leaves and dust the air element appears before them. *"You came!"* *"What a pleasure to see you again"*. *"We missed you"*, the children say, and surround Air, who smiles lovingly at them. *"So, where do you want to go? Where do you want to get into trouble again?"*

"Climate change has begun and we are already experiencing its consequences", Melan says seriously, "We have learned what its causes are. We now have to think about the ways in which it will be tackled". "We thought that with your help we could study life on the planet and the behavior of climatopians not in books but in reality, by travelling through space-time", Barr says. "I am at your disposal to go wherever you want. But don't underestimate what you can find in books. That's where the knowledge and thinking of many great climatopians is found. They will help you understand what you see and help you find the answers to the questions you have", the airy girl replies.

"As we have learned from our past journey, the build-up of extra carbon dioxide in the atmosphere began when climatopians started using fossil-fuel-powered machines", Zon says. "So if we stopped using machines we would solve the problem". "Impossible! All the modern civilization developed in the last 150 years would have to be lost. We would be back to the time when our ancestors used their own or animal power to move things or move themselves". "I totally agree with Melan", Barr says. "Without machines there would be no electricity or television and then how would I watch the sequel to my favorite show?" "The solution guys is not to do away with the machines but to move them with other forms of energy and not the one produced by fossil fuels", Melan replies. "You mean the ones they call renewable energy?" Zon asks, "the truth is I don't know much about them". "If you want, we can get to know them in person", Air says. "Great!" Bar says enthusiastically. "Finally, some action!" The airy girl covers the children with her cloak and a glow causes them to close their eyes.

When they open their eyes again, they fly over a plain where a multitude of wind turbines are installed, it's a wind farm. Further away on a large area is a photovoltaic park. Then they pass over a ridge where a series of huge wind turbines slowly turn their blades. High pylons with power cables carry the electricity to the cities. Roads have been opened up into the forest, while the mountain tops around the wind turbines have been flattened and tons of cement has been poured. Some of the wind turbines stand with their rusty blades motionless. They look like they have been abandoned. Their journey ends on a shore. A few hundred meters away, the sea wind slowly rotates the huge blades of a row of wind turbines fixed to the seabed.

The two boys are excited about their 'flight'. But Melan seems troubled: "Thank you air for the trip. We saw how the energy of the wind and light of the Life-giver is converted into electricity. The wind and light energy of the Life-giver is inexhaustible, but it is not always available. Some days it is not windy or cloudy. On those days, where do cities get their electricity from?" "Your question is correct, Melan", Air says, "that's why there must be a backup means of generating electricity available. Usually, a power plant that runs on a fossil fuel. The other solution would be to have large batteries where excess electricity is stored to be used on windless or cloudy days. But this technology is not yet sufficiently developed".

"We have seen that with the installation of wind turbines on the mountain many trees in the forest have been cut down. What an ugly sight and a disaster for the environment. At least in the plain or here at the sea there is no such problem", Zon says sadly. "And those abandoned wind turbines rusting away? Can't they be recycled?" Barr says. "I agree with you Zon", Air says, "there are solutions to replace fossil fuels with renewable energy, like wind and the Life-giver's energy. But you climatopians must be very careful not to cause any more disasters to nature. You have caused so many disasters already and that is why the planet is in its present state."

"Do you guys remember when we saw what Lago was like 200 years ago? A small town surrounded by beautiful nature with dense forest and a river full of life. Today there is nothing of

that nature. Only concrete, iron, asphalt and millions of climatopians crowded together”, Zon says sadly. “Never before had I thought about how cut off from nature most of us climatopians are”.

“You're talking about nature without us? But we are nature”, comes the good-natured laughter and the deep voice of Soil. The three elements; Soil, Fire and Water, each appear in their own way. Soil, which seems to have grown from the ground, continues: “You climatopians developed technology to make your lives easier and you succeeded. Much of the world's population has been freed from hard manual labor, has better health and education. Until a few decades ago, their lives were not threatened by the intensity of natural phenomena”. Water now takes the floor: “You saw nature as something outside of you, as if you were not a part of it. You took from it, like barbarian conquerors, all the materials you needed to build walls of cement, iron, glass and asphalt around you”. Fire continues: “You shut yourselves inside the walls and left nature outside. To do this you cut down trees, you dug deep into the ground to get the materials you needed. There you also found the fuel to run your engines, to light and heat your cities”. “Inside your cities, behind the walls you fortified yourselves”, Soil takes the floor again. “You thought you would leave nature outside. But whether you like it or not you are also a part of nature” The four elements join their voices like a dance in a tragedy: “Now nature returns with much greater intensity and joins you destructively as you were separated: Cyclones, fires, floods, tornadoes sweep away the walls you have built and you run to protect yourselves. From what, I wonder? From your nature?”

The children have stood still as if frozen. For a few minutes none of them speak. The words of the elements have overwhelmed them. Barr sits on the ground. Suddenly he feels like his legs can't support his weight: *“I never thought of it that way”, he mutters, “we're part of nature too”. “Nature is asking to join us and what we have taken from it”, Melan says with a bowed head. “How right she was...” Zon says aloud his thoughts. Then he says to his friends who look at him in wonder, “Long ago I read the words of a native. He belonged to a tribe that once lived in my homeland. He spoke of modern civilization. Now I understand him”.*

Melan looks at the four elements and asks, *“You said that all of this is true for a large part of the planet's population. The three of us are part of it. I'd like to know about the other climatopians. Why did they follow a different path from us? How do they live?”* The four elements look at each other and smile. Soil holds out his wand to the children and says: *“It is time to see how climatopians live on your planet. How they think and what they plan to do to live better. Hold on tight and you Bar better, huh?”*

Chapter 15: Two Houses Somewhere in Climatopia

The bright tunnel, the five air currents that pass through them and when the three friends open their eyes they are on a hill. Around them is very sparse vegetation with bushes that seem to be suffering from the drought. The ground is cracked. It is obvious that it has not rained for months. A village is built at the foot of the hill. The children walk down the hill and take the dirt road that leads to the village. To their left and right are small fields. Some are planted with plants that have long since dried up. A young climatopian with a sunburnt face on a bicycle passes by them without looking at them, as if unaware of their existence. He is dressed in worn clothes that hang on him. He looks malnourished.

They enter the village. The houses, close to each other, are built with clay and look like they are rising out of the ground. Their roofs are made of bales of dried grass and sheet metal. Barefoot, half-dressed children play soccer in the dusty street. Their ball is

made of rags sewn together. They run after it screaming. A few women sit in the front doorway of a house, chatting. They wear colored long dresses and have scarves in their hair. Their clothes are worn with the colors faded. On the wall of a house, leaning against the wall next to its open door is the bicycle they saw a moment ago. The children exchange a glance and decide to enter the house.

They enter a room with unpainted walls. A thick wooden table sits in the middle with a few stools around it. The floor is dirt. Two narrow mats cover the piece that is in front of one of the walls. On top of them are two boots. One seems to have bedding; they will serve as a bed at night. The other seems to have the occupants' clothes wrapped in an old sheet. A wooden bench with a few blackened cooking utensils grips the other wall. This is all and all of the furniture and equipment in the house.

The man they just saw riding the bicycle sits on a stool. His elbows rest on the table. The three children are standing with their backs to the wall. Behind them enters one of the women who were chatting on the street. She is very thin too, prematurely old. *"Shall I get you some soup?"* she says to the man, and walks over to the counter. *"I was waiting in line to get flour, and when my turn came they had given it all away. They said to come back tomorrow".* *What are we going to do?"* the woman says in a tired voice. *"We have some corn left for the children to eat for a few more days. Then?"* *"I'll sow again. I have some seed left. Maybe this time it will rain"*, the man replies, *"I'll plant the seed of the corn we have left"*. *"If it rains and it sprouts and it grows and it fruits. And until then what shall we eat? The flour that they hand out to us that never comes? The women outside say their husbands will go to the north. They'll go to find work and then come back to take them and the children. The teacher's already gone. The school is closed. We have no life here anymore"*. *"I'll sow. And if it doesn't rain this time too, I'll sell the bike and we'll all go north together. I can't leave you alone. There must be a place to live somewhere"*.

The three friends walk tearfully out onto the dusty road. They take the road to the hill with bowed heads. They are accompanied by the voices of the children playing, and it lightens their hearts a little. The four elements are waiting for them at the top of the hill. None of them speak. *"Let's go, please"*, Melan says. *"Climatopians in this place, without contributing to global warming, are already becoming refugees. They are the first to suffer from it. Tomorrow we may be in their place"*.

Soil once again extends his wand. When the children open their eyes again, they see a completely different environment. It is afternoon. They are in the suburbs of a big city. They are walking along a wide tree-lined street. To their left and right are built luxury villas surrounded by lush gardens of grass, shrubs and tall palm trees. They can't get enough of admiring the fountains in the courtyards, the tree-lined gardens, the magnificent architecture of the houses. The road leads to a wonderful sandy beach and becomes a coastal road. The Life-giver is approaching its setting in the deep blue waters.

The children arrive at the gate of a huge mansion. Beside the gate on a set marble plaque is inscribed, 'Rodling Manor'. A luxury car stops in front of the gate which opens and the car enters. Before the gate closes behind it again, the three children also enter. The car heads to a garage where three other luxury cars are parked. Its driver a middle-aged man dressed in expensive clothes climbs the marble stairs leading to the main entrance of the residence. The children stand to admire the garden, the large swimming pool in the background and the magnificent building. Then they too climb the stairs and without any difficulty they pass through the closed door. They find themselves in a large high-ceilinged hall. An inner marble staircase leads to the first floor of the mansion. To the left of the staircase the children walk down a hallway and enter a large living room. It is

tastefully decorated. It is obvious that the owner must have spent a fortune on furniture and decoration.

A well-dressed young woman is seated in an armchair and talking on the phone. *"The amount of our family's donation will be deposited directly into the school's account. Please don't thank me. I want my children to have the best education. I want them when they grow up to be ready to take over the management of our group of companies"*, she says and hangs up the phone. At that moment the man enters the living room. He is now wearing more comfortable clothes and sits in an armchair opposite the woman. *"How was your day"*, the woman asks him. *"Nothing much. I met the minister this morning. Under the new environmental law on climate change he says we are required to put carbon collectors in the funnels of our ships. Nonsense. The cost is high, I said, but we will comply"*. He smiles and continues: *"Of course I don't intend to give that much money. We'll put in some cheap fake filters"*. *"But there will be inspections"*, the woman says. *"I know the right people in the environmental service. The checks will be discreet. One thing I have learned in my life is that there is nothing that money can't buy"*, the man says, laughing out loud.

The couple was still laughing when a girl dressed as a maid in a luxury hotel enters the lounge: *"Dinner is served madam"*. The couple gets up and follows the girl into the dining room. It is dusk and all the lights in the mansion are on. On a long table are arranged platters of various foods, salads and fruit. *"I don't have much of an appetite tonight"*, the woman says. *"And I'd rather go out tonight. One drink and maybe later we'll go somewhere for dinner"*. The couple exits the dining room and climbs the marble staircase. The children follow them to the bottom of the stairs. *"I wanted to surprise you but I can't help it"*, the man says, *"I ordered the latest model of Fuero's two-seater. With extra equipment, especially for you"*. *"Great! Best news of the day. I almost forgot. Tomorrow I have an appointment at the fashion house in the capital. I hope the jet is available..."* the woman's voice came out just before the couple entered a room on the floor.

The three friends come out contemplatively into the courtyard. The garden as well as the mansion is beautifully lit. So are the adjoining houses. The children walk down the street. Zon speaks first: *"How different lives people live on our planet. This couple lives in wealth and overconsumption. The couple we met in the hamlet in their entire lives will produce as much carbon dioxide as they do here in a day"*. *"Not only are they producing carbon dioxide and indifferent to climate change, but they are also evading the law that was supposed to prevent it"*, Melan adds. *"I get hungry just thinking about the food they left on the table. Do you think they're going to throw it away"*, Barr mutters. *"But how does it happen that there are such huge differences from country to country from region to region?"* Melan wonders. *"I don't know how we got into this situation. But the important thing is to find a way to stop these differences"*, Zon replies.

"I think what you will see on your next trip will help you to think of solutions to this huge problem of climate change", Air says, who appears in front of them in a small whirlpool of dust. She spreads her airy veil over the children and a glow makes them close their eyes.

Chapter 16: Two Different Schools

When the children open their eyes again they find themselves in a narrow room that looks like a warehouse. Surely it must have once been a warehouse. But someone has placed these low long benches in rows one behind the other. He hung a faded blackboard

on the wall in front of them. And next to the blackboard he hung a faded map of Climatopia. This former warehouse now looks a bit like a schoolroom.

The person who did all this is probably the young man who enters the room carrying a stack of books. He leaves them on a stool under the blackboard. Then he stands in front of the door looking out. The three friends who are also standing silently beside him are looking at him. It seems to be the teacher. He is tall and thin, dark-haired with fine facial features. One likes him at first sight. His jacket, shirt and trousers are a little worn but well cared for.

Soon two girls, a boy, a second boy walk through the door... The young man welcomes his students one by one with a smile and a warm greeting. Five minutes later the stalls are full. Some children lay out a narrow long mat in front of the stalls and sit on it. The speeches and laughter of the students fill the room. The teacher closes the door and stands in front of the children.

"I am glad to see that we are constantly growing in numbers. But we will need more benches. There are boards outside in the shed. After class I want three kids to stay so we can make two more benches." Hands go up a lot and the teacher picks three children. *"Good. I'll take care of extra books"*. He hands out the stack of books to the children. They read a text and then discuss how to write a letter. *"Children we have discussed how technology is a tool for development as long as we use it properly. We need to have at least a computer and an internet connection. For the connection I have arranged for the community to give us. But for the computer there is no money. I have thought of asking for an old technology one from a business that no longer needs it. Let's write a letter with our request"*. The students work together and finally write the text: *"Dear Sir... We are We inform you that ... We would like ... Thank you. The students..."*.

When they finish writing the letter, the teacher asks them to follow him outside. Behind the narrow building in a beautifully fenced area is a vegetable garden. The children divide into groups and take on gardening tasks. The teacher helps where needed and answers their questions: *"Why do the plants have leaves, sir?" "How do the plants feed?" "Why do plants grow flowers?" "Why do plants grow?" "Why do plants need fertilizer?"* When they finish their work, which is a lesson at the same time, the teacher takes them to a stream very close to the school, on the edge of their small town.

The three friends follow the happy group of students and watch all their activities with interest. The stream is four to five meters deep. The children slide down its downhill bank and reach its bed. Its water is clear and most of them dip their feet in the water to cool off. After a while the teacher gathers them and asks them to sit on the grass on the bank like in an amphitheater.

"Today I would like to continue the work we are doing on climate change. What is left to consider?". A boy raises his hand and the teacher gives him the floor: *"You said that today we were going to look at how we can protect ourselves from the effects of global warming"*. *"Very good. Let's look at what natural phenomena could threaten our lives and property"*. A thin girl asks to speak: *"I think sir, today you didn't bring us to the stream like the other times to study its ecosystem. You want to discuss how we can protect ourselves if it rains a lot and our stream overflows"*. The teacher smiles with satisfaction, *"You scared me Maura! You have divination skills!"* The children laugh and the teacher now speaks in a serious voice. *"But the danger from our stream is real. It may not have caused us any problems so far, but we owe it to our forest"*. *"Yes sir, it is true. Its trees hold most of the rain water and as long as it reaches the stream it is never so much that it floods"*. *"Yes but as we said as the temperature rises, the vegetation catches fire more easily and a fire can burn the forest"*, another student said. *"Yes sir, and then a very*

heavy rain can flood our stream", a skinny boy with freckles says, and continues: "But don't worry, nothing will happen to our forest, because we are keeping it safe".

"That's exactly what I wanted to talk about, guys. What we have to do to protect our forest and to make sure that even if everything goes wrong, our neighbors, our animals and our houses are not in danger. We will divide into groups as we always do. Each group will look at an issue and propose solutions. What do you think are the issues we should consider?" A student records the ideas of his classmates in a notebook. After discussion, they come up with three study topics. *"What dangers threaten our forest and how can we protect it", "If our forest burns down what can we do to prevent our stream from flooding", "If the stream floods what will happen to our community and how can we protect ourselves".* The teacher lets the children enjoy nature and then they return to school.

The three friends stay in the ravine, thinking. A column of water rises up through the stream and takes the form of the liquid element. *"What did you guys think of this school?"* Water asks in his chirpy voice. *"But before you answer I would like you to see another school quite different from this one".* Without waiting for the children's answer, Water flows towards them and surrounds them in the form of a water column that spins faster and faster. The three children close their eyes as they feel themselves being submerged in a suction of water.

When they open their eyes again, they find they are in a building. A joyful music fills the room. A long corridor begins in front of them. They begin to walk along the corridor. To their left and right they encounter open doors with signs: Computer Lab, Robotics Lab, Technology Lab, Electricity Lab, Engineering Lab, Chemistry Lab... The three friends take a look inside the labs. They are all perfectly equipped with computers, interactive whiteboards, instruments and machines that remind them of the laboratories of the Research Centre. In each room there are teachers busy preparing the next lesson.

When they reach the end of the corridor, they encounter a staircase leading to the upper and lower floors. The music stops. Children's voices and footsteps on the stairs can be heard getting louder. Soon the three friends find themselves among children running and entering the lab rooms. Soon the voices are lowered and the students, under the teachers' direction, begin to work individually or in collaboration with a couple of classmates on a project.

Footsteps can be heard behind them. A grey-haired man in a suit walks past the three friends and enters the Robotics Lab. The children follow him. The teacher turns toward the entrance approaches the man, greets him with a handshake and says to the children: *"Children, Mr. Principal is doing us the honor of coming to our lab".* The Principal smiles and says: *"Thank you, but all the honor belongs to the Rodling family. Thanks to their donation, our school's Robotics Lab has been fully configured and equipped. You know that at our school we strongly believe that Science and Technology are the basis and future of our culture. That is why the entire focus of our educational program is on Science and Technology".* The Principal says a few more words of resignation to the students and leaves.

The children look surprised, *"It can't be a coincidence",* Melan says. *"The couple in the mansion is the same Rodling couple who donated the money to make this workshop..."* *"...and their children attend this school here",* adds Zon. *"I can just imagine what great food they'll be serving in the dining hall of this school",* Barr says. *"I don't know why, but whenever I hear that name Rodling I feel hungry".*

The kids walk down the stairs and out into the yard, while Barr looks around to see if they can find the dining hall anywhere. But instead of the dining room, they find the four elements in the gazebo in the yard. They all sit in a circle on the marble benches.

After a moment or two of silence, Melan looks at her friends, as if asking for permission to speak, and then at the four elements. They have an expression of anticipation: *"You asked us what we thought of school in the village. Now I can tell you my opinion, which I think is all three of ours: The two schools are similar in one thing and different in everything else"*. *"Let's start with their similarity"*, Fire says with interest. *"The administrators at both schools agree that technology is very important for growth. They are trying to introduce it into their schools"*, Melan replies. *"I think I found the answer to the question I asked earlier"*, Zon says enthusiastically. *"Education and technology could help a poor country develop economically and its climatopians would not have to migrate to live"*. The elements shake their head in approval of what the two children have said.

"And what are the differences between the two schools?" Water asks. *"At first glance you can see that this one is a school for kids from rich families, which has everything, while the other one doesn't even have the basics"*, Zon replies. *"There's something more important: You said that climatopians are a part of nature. That's what kids learn in small school from their teacher. They live in nature and learn to love and care for it"*, Melan says now. Zon continues: *"Right. We saw how their teacher teaches them about climate change and how to protect themselves from the disasters it will bring"*. *"The principal here believes that technology is the future of the planet. We didn't hear him say a word about nature. This school seems to be taking children away from their own nature"*.

Soil stands up and tells the children: *"You have already understood too much. Education is the key to changing the destructive course that Climateopia has taken. But education for all the children of the planet, without inequalities. To teach all children how to protect Climatopia. To learn how to use science and technology for the good of all"*. *"I found another similarity in the two schools"*, Barr says. *"There is nothing edible in either of them"*. *"Have a little patience, Barr. In the dimension we're in if you put something in your mouth it will go straight to your stomach and from there to the floor"*, Zon says and everyone laughs while Barr makes a funny grin of frustration.

When the laughter stops Melan says: *"I'm thinking of one more thing. That with our lives and our actions we can help other climatopians live better. Like the teacher in the village struggles to help his students have a better life"*. *"And fortunately, there are many climatopians like this teacher. On our next trip you will meet a few more"*, Soil says and extends his wand to the children. *"Come on children! Hang on!"*

Chapter 17: On a Farm

When the children open their eyes again, they see a farmhouse in front of them. Around them is a beautiful orchard of fruit trees. In one part of the orchard there is a small greenhouse and to the side of it a vegetable garden. The production of the orchard will certainly be enough to meet the fruit and vegetable needs of those who live here. The orchard and farmhouse are located on a large plain sown with corn and wheat. Zon looks around in amazement at first, then surprised, *"But where are we? This place... this house I know! This is my Uncle Yan's house"*. He walks towards the farmhouse with quick steps: *"Yes this is definitely it"*. His friends follow him.

As they approach, they hear talking. On the terrace of the house a man and a woman are talking, sitting in wicker garden chairs. "Uncle Yan! Uncle!" Zon shouts as he approaches. "He can't hear you, Zon", Barr shouts at him. "You're trying in vain". Zon realizes that no one can hear or see them and stands beside his uncle in longing and frustration. Barr puts his hand on his friend's shoulder to comfort him. Zon's uncle is a young man and the woman is about his age.

"It's a very difficult decision. The changes will be big. There's a lot at stake but I want to try", he says firmly to the woman listening intently. "I know it will be difficult at first, but we'll support you as much as we can", the girl tells him.

At that moment a farm car pulls into the yard and stops in front of the house. An older man gets down and approaches the porch. As the old man approaches, Zon says to the children: *"That's my grandfather. What a shame I can't hug him. I've missed him so much".* Zon's grandfather waves to his son who went to greet him and then turns to the girl: *"I finally meet the agronomist that Yan speaks highly of".* The girl smiles and says: *"Thank you for your kind words. I am very sorry to hear about the damage to your farm caused by the flood".* *"Unfortunately, this year's production was lost. This is the second time our area has been flooded in the last five years. I don't know if I will have the courage and money to reseed next year", the grandfather says.*

"That's why I wanted you to come, father, to talk with Hannah and me. We'll find a solution together. Hannah suggests we make big changes in our production". The three of them sit down and the agronomist says, *"Climate change will cause extreme events more and more often. We have to adapt to them but also make sure we don't amplify the causes".* *"What do you mean? What can we do?" the grandfather asks. "The plain floods because a heavy rain that lasts for a long time causes the water of the dry river to overflow. We can clear the dry riverbed and deepen it where needed", says the agronomist. "The technical department of the municipality will make its machinery available". "We farmers will also use our own machinery. I spoke to the farmers' cooperative. We will all work together", Zon's uncle says. "We'll start planting trees on the mountainside too. The trees will retain rainwater and not so much water will reach the dry river", the agronomist adds. The grandfather seems satisfied with what he heard: "Yes, you have convinced me. I was convinced. It's definitely worth a try".*

"But the most important thing is the other father. Hannah suggests that we apply organic farming to our farms. Without the usual chemical fertilizers with nitrogen". "Why would we do that?" Grandpa asks. "Because some of the nitrogen in the fertilizers combines with the oxygen in the air to produce nitrous oxide. This gas is one of the greenhouse gases that cause climate change". "And how do we enrich the soil with nitrogen, which is essential for plants? Should we do what we did when I was young before chemical fertilizers were discovered?" "That's exactly what I suggest. One year you will sow plants like clover in your field that absorb nitrogen from the atmosphere and leave it in the soil with their roots. So the next year the soil will be ready for growing corn. And then you have enough manure from your animals that contains nitrogen and you can use that for fertilizer as well". "But that will reduce our production", Grandpa says. "But you will produce corn that will be of better quality with more nutritional value", the agronomist replies.

"But there is another change we need to make. To reduce the number of animals we raise", Yan says. Grandpa looks at him in surprise: "Why do we have to do that?" "Animal enteric fermentation produces methane, animal manure also contains methane, which is one of the most important greenhouse gases", the agronomist says. "Of course, for limiting meat production to have an effect, consumers need to be informed. They should replace the proteins they get from eating

meat with plant proteins. For example, they should eat more pulses and less meat". "And we will start growing pulses so that our income does not decrease", Yan adds.

Grandfather remains thoughtful for a moment. Then he says: "Indeed, all these are important changes for us. But they won't have any effect unless other producers follow us and especially if climatopians are not convinced to change their diet. They should put more organic plant foods and less meat on their daily table". "You are absolutely right, sir," the agronomist says. "Our department in collaboration with the media is planning a public awareness campaign. It is of great importance to inform climatopians and change their eating habits". "We will also talk to the other producers in the agricultural cooperative. We will try to convince them. But if we don't make a start, if we don't change our production ourselves, our words will not convince anyone".

Grandpa stands up: "My children, I am proud of you. I may be old but I will help you as much as I can. You will encounter difficulties and you will need all the help you can get. I wish your brother was here to help us". He shook the agriculturist's hand and said to her: "It was very nice to meet you. I hope you succeed for the good of all of us". Grandpa walks to his car and Zon follows him. When he leaves, the three children are met by the four elements waiting for them under the trees in the orchard.

Zon speaks first: "I really feel proud of my uncle and grandfather. They are so right to say that we have to change first. Each and every one of us. When I return home I will try to convince my family to return to the village. We can live better there and contribute to change. I will certainly go on school holidays to help my uncle too".

Melan says to Zon: "Climatopians like your uncle and grandfather become an example for others. Climatopians like the village teacher and the agronomist strive to improve the lives of others. But how many follow them? How many listen to them?" Soil smiles at Melan and says: "My children should know that no effort for good is wasted. It is like the good seed that falls to the ground. The soil covers it and it waits for the right moment to sprout. It may have to stay buried for years. But one day it will grow". "But let's go see a friend of ours who won't stop dropping his seed", Air says, and in one motion she covers the three children with her veil.

Chapter 18: The City Council Meets

When the three friends open their eyes, they find themselves flying over a meadow of seeded fields. Then they fly over sparse trees followed by a dense forest of pine trees. In the distance you can see a small town. Soon they hit the ground in a square. Barr looks around in surprise: "I've seen this square before. That tower with the big clock on top... and the building with the arched windows... and the stone fountain... Guys this is the town I was in danger of burning and Fire saved me". "Are you sure?" Melan says. "Yes, back then there were lots of shops around the square. Now there are more houses and gardens with trees...". "But you, Barr, were in the sixth dimension in the future. Now we're in the fifth dimension in the present", Zon says. "So, this town if something doesn't change in a few decades will be burned down by fire coming from the forest", Melan says. The children stand and look around anxiously. "We have to do something. We have to warn them that their town is in danger", Barr says in a voice that shows agitation.

It is afternoon and a few residents are sitting in the cafes and talking. A few other men and women meet in front of the building with its arched windows that stands out for its beautiful architecture. The children follow them. 'Municipal store' they read on a sign placed above the entrance.

Entering, they see a long corridor and to their right a door leads to a large room. It resembles a courtroom. A row of raised benches and several rows of seats in front of them. A young woman and a man are seated on two of them, discussing. The young woman stands up and greets her fellow citizens who enter the room with a handshake.

Everyone is seated and the young woman steps up to the center seat on the dais and speaks: *"Dear city councilors, I called you here tonight because I wanted to discuss a serious issue concerning the future of our city. As you know, the new highway has made access to our town much easier. Climatopians from neighboring large cities all over the country who want to enjoy the beauty of nature come to our town. Many have built or are building homes for vacation homes or small hotels".* "Mayor we know these things. Our town is growing. There is tourism and economic growth that we didn't imagine a decade ago, what's the problem?" a middle-aged man interrupts her. *"Let me introduce you to Mr. Tari. He is an environmentalist; he works at the National Institute of Environment and a few days ago he visited me. I think the city council should also listen to what he told me"*.

Mr. Tari comes up to the bench and says: *"Good evening. A few days ago I visited your area for a study I am doing. After careful observation I found the following and I bring it to your attention: Your town is located in very close proximity to the forest. In fact, the outlying houses are located in the forest. Most homes and hotels have trees and vegetation in their yards".* *"That's why holidaymakers prefer it because living here means living in nature. What's wrong with that?"* the middle-aged man interrupts him. *"Please, Mr. Hara, don't interrupt the speaker"*, the mayor says. *"The problem lies in the fact that in the event of a forest fire, the fire will quickly spread into your town"*. Voices of protest can be heard from some councilors: *"What are you talking about?"* *"We've never had fires in our area"*.

"But you do know that with climate change, the average temperature of Climatopia is increasing and the risk of fire is also increasing". More voices now interrupt him: *"What climate change"*, *"There is no warming"*, *"There is no fire danger"*. The Mayor intervenes and the councilors calm down. *"I also noticed that your city was developed without an urban plan. Many houses have been built arbitrarily. So many streets are narrow and confusing. Others are dead-end. They stop at fences. It's easy to lose your bearings. In the event of a fire, I fear that residents and especially holidaymakers will be trapped and their lives will be in danger"*.

The protests are getting even more intense: *"But what is this stuff"*, *"You are defaming our city"*, *"Our city plan is fine"*, *"Mayoress why did you bring him here"*. With difficulty the mayoress calms the councilors and the environmentalist continues: *"I understand your disagreements but hear me out. I am not asking you to tear down your houses. Some changes can be made without great cost"*. *"Please, Mr. Tari, tell us your suggestions"*, the mayor says. *"The easiest thing is to put signs on the streets with the route to take in case of danger. That way residents and especially tourists can quickly and safely evacuate the city and go to neighboring towns"*. The middle-aged man shows great irritation and shouts: *"What are you talking about. These signs will scare the tourists. They will feel unsafe and will not want to stay in our city"*. *"Right. You're going to ruin us with your ideas"*.

All the while, the three friends are anxiously watching the conversation. Barr is particularly worried: *"But why don't they listen to him. Don't they understand that if they do what he says, one day it will save them, them, their children, their property"*.

When the voices calm down a bit, the Mayor says: *"Please tell us what your other proposals are"*. *"Some roads need to be widened, and new roads need to be opened. Of course, to do this some lots will have to be made smaller for the safety of all of you"*. Except for two or three

who approve of the scientist's words, the other councilors strongly protested: *"Impossible", "We cannot ask such things of the citizens"*.

"Let's listen to Mr. Tari's proposals for the forest", the Mayor says. "In cooperation with the Forest Service, your municipality should take care of clearing the forest of dead branches and grasses so that there is no fuel on the ground for the fire. I also suggest that in the area between your town and the forest you replace the flammable trees with other trees that do not burn easily. That way, in the event of a fire, the fire will be delayed in spreading to the town". "Here we go again with the forest fire", "But we said there are no fires in our area". "This is none of our business".

"I wish it were possible for them to experience what I experienced in the sixth dimension", Barr says. "Then they would be convinced and make the changes that need to be made". "Unfortunately, very soon they would forget all about it and go on with their lives the way they have learned", Fire's voice is heard. Soil appears before them and walks with them. "It is very great the power of habit upon you climatopians, especially those who are of an older age. In fact, when changes have a financial cost, it is even more difficult to make them", he continues his reflection.

The three friends stop. They have reached the last houses in the city. *"But in addition to informing citizens, politicians will have to make decisions. They need to listen to the scientists," Melan says. "Replace the use of fossil fuels with renewable energy sources, but also reduce energy waste", Zon adds. "And to make as many changes as necessary to be able to cope with natural phenomena that will become more and more intense", Barr adds. "All together: citizens, municipalities and governments must work together for the future of Climatopia", Soil says, who has meanwhile joined the company. "For the changes to succeed, everyone must be involved in their own way. I think at this very moment the meeting of the Union of Middle Continent Countries has begun. What do you think? Shall we go and attend it?" Soil extends his wand to the children and the three friends travel once again.*

Chapter 19: The Meeting of the Middle Epirus Countries

They hear speeches, young voices around them. They open their eyes. They find themselves surrounded by a few dozen young people: boys and girls aged 15 to 20. They talk to each other animatedly and every now and then they join their voices in some slogan: *"Save the planet, act now" "Open your ears, listen to the scientists" "Climate justice, not climate disaster" "Act now, tomorrow will be too late"*. Their slogans are written on banners and signs holding them pointing towards an impressive building with modern architecture. A sign in front of it reads 'Middle Epirus Committee'.

Next to them a group of two girls, one brunette and one blonde, together with a tall boy are having a lively conversation. The dark-haired girl says loudly to be heard: *"A meeting of the heads of state of the Middle Continent on such a serious matter, and look how few of us are gathered". "The media didn't push the issue enough. Unfortunately, a lot of people don't understand how serious the climate crisis is", replies the other girl. "People have not understood that without the pressure of the citizens on the governments, this will also be a meeting without results", the boy says, "we finally have to make decisions to stop producing greenhouse gases", the boy says. Another boy approaches and joins the discussion: "Scientists have been predicting climate change for thirty years. They have warned about its effects". The circle of the group grows as a few more girls and boys approach and join the conversation: "And all you hear from our governments is talk of green growth and circular economy and blah blah blah",*

"They talk about zero greenhouse gases after thirty years. Are you listening? After thirty years", "Yes, and then they say that it is very likely that the average temperature of the planet will only rise 1.5 degrees higher than before the industrial revolution", "But already millions of people in the southern hemisphere are suffering from hunger and lack of clean water, or migrating north", "Scientists say that every day 200 species of animals and insects are disappearing from the planet. Ecosystems are collapsing and they are discussing what will happen in 30 years' time", "Aren't we in the northern hemisphere starting to suffer too? Heatwaves, floods, fires and rivers running dry for the first time in history...", a blonde girl with glasses says, but her words are covered by a husky voice coming from a portable loudspeaker: "Act now, tomorrow will be too late". The assembled climatopians repeat the slogan, shouting at the top of their voices.

The three friends are taken away from the group of young protesters gathered in the courtyard of the building. They head towards the entrance of the building. Zon says: *"These guys seem to be well-informed. I wish everyone was like them". "Well, I'm very curious to see what the heads of state are talking about", Barr says.*

Guards stand at the entrance and check everyone who enters the building, but the three children go unnoticed. In the reception area of the building several journalists stand facing TV cameras and comment on the session. Behind them is the main conference room. The children enter. Thirty heads of state are seated around a large oval table. The meeting has been underway for some time.

The chairman of the committee has the floor: *"Under the Lagos Agreement that we signed seven years ago, most countries of the world committed ourselves to zero carbon emissions by the middle of this century. In those seven years I am afraid that little progress has been made in that direction. I therefore propose that we reduce the use of coal for electricity generation even further".* The Prime Minister of a country in the central Middle Continent asked for the floor: *"In countries like ours where there are abundant coal reserves, coal-fired power generation is much cheaper. Replacing it with imported gas will make electricity much more expensive and will make economic growth more difficult. Citizens will react".* Another prime minister takes the floor: *"Dear colleague, you consider coal-fired energy cheaper because you do not take into account the cost of repairing the damage caused by natural disasters caused by climate change".* A Prime Minister then asked for the floor: *"I agree. We must finally invest more in the use of renewable energy sources: solar and wind".* The Prime Minister of the country of the central Middle Continent interrupts her: *"You say this because in your country you produce wind turbines and photovoltaic panels. You want to increase your exports. But in order to buy them we have to borrow from the Bank of the Union. We are already over-borrowing. Such a decision will never be approved by our Parliament".*

The debate between the Heads of State has heated up. One after the other they make proposals. *"A compromise solution could be the construction of the southern gas pipeline. We would then be able to import cheaper gas from countries in the Middle Continent", "I absolutely agree. After all, as you know, the geological surveys we have carried out in our country show that there are abundant natural gas deposits. The southern pipeline could be used to transport our gas to all the countries of the Middle Continent as well", "I do not disagree, but in the best case scenario this will happen after six to seven years. Immediate solutions are needed here"...*

The three friends stand at one end of the room and watch the conversation. They look frustrated. Melan says: *"It seems to me that the heads of state are thinking more about the economic benefits of their countries and less about climate change. They are worried about how Climatopia will react. But the citizens are not well informed about the danger that threatens them". "It seems as if they themselves do not believe what the scientists say. Our lives in the years to come*

depend on their decisions and yet they are counting gains and losses", Zon says. "I don't understand. They talk about mining and transporting fossil fuels while agreeing to zero carbon dioxide production. Isn't that crazy?" Barr says.

The children leave the room. Other TV crews and journalists have arrived outside. The children walk past them and out into the courtyard. The young protesters are still there. They are talking and every now and then they shout a slogan. The three friends feel better among themselves. The hoarse voice coming from the loudspeaker says: *"Action now. Tomorrow will be too late"*. The children join the young protesters even though they cannot be heard.

At some point they see that the four elements are waiting for them a little further on by a small artificial pond with a fountain. Bushes and trees around it also help to forget that they are in the middle of a big city. The three children approach them. *"We see you're taking action"*, Fire says with a smile. *"What we heard from the leaders of the Middle Eastern countries made me want to scream"*, Zon says. *"Me too"*, Melan and Barr say at the same time, as if they were in agreement. *"I felt like I was drowning in there"*, Melan adds with an expression of frustration. *"Just as it's hard for ordinary citizens to change, it's even harder for politicians to change decades-old policies"*, Air says. *"Don't get frustrated. You the younger generation can achieve a lot if you learn the truth and join forces"*, Water adds standing on the water of the pond.

Soil who is leaning on his wand, as he is used to says: *"Every year the leaders of the 20 most economically developed countries in Climatopia meet in one of these countries"*. *"There they talk to each other and try to solve the big problems of the planet"*, Fire continues. *"This year the meeting will take place in a few days in Pantera, the capital of the great country of the New Continent"*, Water says. *"The most important issue that will be discussed there, is the climate change"*, Wind adds. *"Let's take another trip into the future. What do you think?"* The three children shake their heads affirmatively. But their expressions show that their initial enthusiasm for space-time travel has given way to a serious concern. With a gesture, Air covers the children with her airy veil and the children travel to the sixth dimension.

Chapter 20: At the Conference of 20

Once again, when the three children open their eyes, they are surrounded by journalists, cameras and young climatopians demonstrating. They are gathered in the space in front of a building. They are mostly young climatopians who have come from all continents of the world. Many are holding signs with slogans that they chant rhythmically every now and then. Some are even wearing the particular traditional costumes of the regions from which they come. Several journalists describe and comment on the colorful and lively gathering. One journalist interviews a girl in traditional dress. *"What brings you here today"* the reporter asks. *"We are here to shout to the leaders of the 20 major countries of the world that the time for talk and debate is over. It is time for action. Thousands of climatopians in my country and in many parts of the world are suffering from hunger and lack of drinking water"*. Another girl approaches and shouts loudly: *"My family and I have left our homeland. It was once a blessed place. Now drought and fires have made it uninhabitable"*. *"What do you hope will happen?"* the journalist asks the two girls. *"The world leaders know what to do. But they must work together and act now"*, the first says, and the second continues: *"Climate change cannot wait"*.

The three friends are standing next to a journalist who is interviewing an elderly climatopian: *"Professor, why have you, an economist who has been awarded for his scientific work, come here?" "I am here as an ordinary citizen to join my voice with the young people of the world who are struggling for the future of the planet and their lives" the professor replies. "As an economist, what message would you like to send to the leaders of the rich countries of the world?" "I would tell them to dare to completely change their policies. Current policies are aimed at continued economic growth. Growth requires consumption of resources and energy. And this is at the expense of nature, which is not inexhaustible". "But isn't renewable energy a solution?" "Yes, to use renewable forms of energy but in moderation for our real needs and not for overconsumption". "You have written in your books about lifestyle change. You talk about small communities living close to nature". "Yes I'm talking about communities of climatopians living in relative self-sufficiency. Who manage nature, live off it and protect it". "But is that possible today?" "If we understand that this is necessary for our survival, then we will find ways to achieve it. Homelessness can be reversed and the economy can become sustainable".*

Another journalist holds a microphone and speaks while facing the camera: *"This year's meeting of the 20 leaders comes at a bad time. The reason is the military conflicts that broke out a few months ago in the western Middle Continent".* Next to him, a young journalist is briefing the audience: *"The guest of the summit today is the Prime Minister of the Bari Islands in the Great Ocean. Due to climate change, the Bari Islands are one of the countries particularly affected by major natural disasters: Hurricanes, droughts, floods and forest fires. But there is also a more serious risk that threatens them. The islands are at risk of being submerged in the ocean because of rising ocean levels".*

The three children, having made their way through the crowd, enter the building where the meeting of the 20 is taking place. In a large room the 20 leaders sit around a round table and listen to the Prime Minister of the Bari Islands. He is a middle-aged dark-haired man with a deep voice who concludes his speech by saying: *"Climatopians of the Bari Islands have lived in harmony with nature for centuries. But the climate crisis seems to have turned nature against us. We are not responsible for it, but we are the first to suffer from it. If the 1.5 degree target is not achieved, our country will soon be off the world map. It is not fair, it is not moral. Respect your promises, act now, act now, tomorrow will be too late".*

The Prime Minister of the Bari Islands comes down from the podium and also sits in front of the round table with the other heads of State, while the 20 heads of State leaders applaud. The Prime Minister of the country hosting the summit comes to the podium and says: *"Prime Minister, thank you. The climate crisis is a global problem. Much has already been done to limit greenhouse gases. We are here today to discuss the next steps in this direction. The International Climate Change Fund will finance countries like the Bari Islands whose economies have been affected by climate change".*

The three children attended the speech of the Prime Minister of the Bari Islands. The organiser's response made them wary. Melan tells her friends: *"The money from the International Fund will give them a breath but it won't stop climate change".* "So, let's hear what measures they will take to stop it", Zon adds.

After a few minutes' break and the departure of the invited Prime Minister, the 20 leaders meet again. The prime minister of the host country gives the floor to the president of a New Continent country. She says: *"Unfortunately, the drought of the last few months has reduced the water in the dams and hydroelectric power generation has decreased. Also, the reduction in river water has forced us to stop the operation of nuclear power stations that use river water for their operation. This forced us to increase electricity generation from thermal power plants*

burning coal or natural gas". The President of a country on the Great Continent asked for the floor: "The problems you have mentioned are also faced by us. But we also have a shortage of natural gas. As you know, Pahori, which supplies us, has reduced the flow of gas to our country in violation of our agreement. We are therefore forced to increase the use of coal".

The President of the Conference took the floor: *"Let's see what the President of Pahori has to say. I hope we can find a solution".* The President of Pahori addressed the previous speaker in a stern tone: *"You were the first to violate trade cooperation agreements with us. You are the ones who support our enemies with arms and money. As long as you continue this behavior, we will make our gas available to countries that are friendly to us".* A prime minister interrupted the speaker saying: *"Your attack on Remalla violates international law. You must stop it".* *"You talk about international law when you have violated all the agreements..."*. Some heads of state are trying to intervene, some for one side and some for the other. The President of the Conference adjourned the meeting to allow calm to prevail.

The three children look even more frustrated: *"They have been divided into two opposing camps. I can't figure out who's right. But I don't think there can be any agreement on the climate between these leaders",* Barr says. Zon and Melan also shake their heads in frustration, agreeing with their friend. *"But let's wait a little longer",* Melan says.

After the atmosphere in the room has calmed down, the President of the Conference says: *"Let us leave what divides us and discuss our common decisions on limiting greenhouse gases".* A country president interrupts him saying: *"You are of course talking about the Lagos agreement. But we know that not everyone in this room has signed it".* The President of another country says with irritation: *"We did not sign the agreement. The reason is simple. The cost of energy switching and the time it will take will cause a delay in our efforts for economic development".* He pauses for a moment and then says: *"Besides, many of you who signed the agreement are not keeping your commitments either. For example, Rogan".* The Prime Minister of Rogan replies in exasperation: *"Yes, we produce the most carbon dioxide of any country. But you forget that many companies from other countries have set up factories in our country. Their production is available in those countries. So a lot of the carbon dioxide produced in our country is actually produced by other countries"*

Barr says irritated, *"I don't understand much of what they say. But I do understand that they blame each other instead of working together".* Melan shakes her head in agreement: *"That's the way it is, Barr. That's not how they're going to make the serious decisions the planet needs".* *"But you can see how in the end they'll say that the meeting achieved its goals",* Zon says as the three friends walk out of the room, disappointed.

Chapter 21: Time for action

After many wanderings through the dimensions of space-time, the three friends are back in the courtyard of the Research Centre in the gazebo next to the greenhouse. One by one the groups of other students also gather in the gazebo. All the students are thoughtful, the conversations among them low-voiced and brief. As if something is on their minds but they are hesitant to say it. The three friends sense this change in their classmates. Melan looks into the eyes of her two partners. They, as if they understand what she is thinking, give her their approval with a shake of their heads.

Melan turns to all of her classmates who are sitting around the gazebo: *"Guys, we have something very important to tell you"* she says in a firm voice. *"And our group has something serious to tell you",* the dark-haired girl says. *"And we want to talk to you too",* the

boy with glasses says. *"And we ...", "And we...."* repeat children from all groups. Then there is a sudden silence. Each looks the other in the eye, as if suspecting something but finding it hard to believe. Melan is the first to dare to voice her suspicion: *"Do you want to tell us about the four elements?"* *"Yes, about them. But how do you know?"* the dark-haired girl says. *"Did you see the four elements too?"* the boy with the glasses asks excitedly. Suddenly the voices flare up, everyone is talking to everyone and only a few phrases such as: *"But wasn't it amazing to fly?"* ... *"and then we went to the Bari Islands..."*, *"in the slum in Lago we saw..."*, *"I almost got burned by the fire if..."*, *"the storm caused landslides and we were covered by mud..."*, *"at the conference I wanted to shout at them..."*, *"all talk and little action..."*, *"scientists are right but..."*, *"we all need to change our way of life..."*. As suddenly the conversation flared up so suddenly the voices quietened down and the children were left silent and thoughtful.

A few seconds pass before Zon breaks the silence: *"For so long I thought the four elements had chosen us to reveal the truth about the future of Climatopia. I felt pride, I felt special but also a great fear. I was afraid that the three of us alone would not be able to do anything to change the future of our planet"*. *"Yes, I understand you"*, the dark-haired girl says, *"I felt that way too, but now I know that there are many of us and together we can do something"*. *"And who knows how many other kids like us in other parts of the planet have met the four elements and know as much as we do"*, the boy with glasses says. *"We can all do it together if we work together, if we act together"*, Melan says, *"but we have to think about what we're going to do"*.

"Today is the last day of the training program. Tomorrow we will leave the Research Centre and return to our home countries. But we must not separate. Our communication can continue through the internet. We will work together as we have been doing all these days", Zon says. *"Yeah right. We'll exchange our email addresses"*, a girl with red hair and freckles says. *"Our next step is for us to change our lifestyle ourselves. A wise man once said 'be the change you want to see in the world',"* the dark-haired girl says. *"Indeed. If we don't change our own lifestyle, how will we ask from other climatopians to do so?"* the boy with glasses says. *"To consume less. Buy something only when we really need it and recycle it when it breaks or donate it when we don't need it anymore"*, Zon says. *"To eat less meat, which I don't really like anyway, and more vegetables and fruits from organic farms. And never throw food away"*, Barr says. *"Choose produce that's grown in the area where we live. That way less energy will be spent on transporting them"*, the redhead girl adds. *"To not waste electricity, to"* the children go on to list behaviors they should adopt in their daily lives.

When the long list seems to be over Zon says: *"But we need to talk to climatopians who live around us: Our families, our friends, our classmates, wherever we can"*. *"We should tell them about the danger that threatens us, that it's not in the imagination of some scientists"*, the dark-haired girl says. *"To tell them that we all have to change our lives"*, Barr says. *"Let's even tell them that nature is not a threat, it's not taking revenge on us, as some climatopians believe"*, Melan says. *"On the contrary, nature is our greatest ally in trying to stop global warming"*. *"Yes, to rebuild our relationship with nature. To live close to it, to know it, to study it"*, the boy with the glasses says. *"To make the barren fields fertile again, the burnt forests green"*, Zon says. *"Those of us climatopians can leave the big cities and live and work close to nature"* *"The crops and forests will do for us what they know how to do: absorb the carbon dioxide that is choking the planet"*, Melan says. *"Let's reduce our energy needs. And what energy we really need we can get without hurting nature: from the sun, the wind, the flowing water..."* the brunette says. *"Science and technology are tools that will help us with all of this, if we use these tools properly"*, Melan says.

"But how do we get the big guys to do all this? We can't wait for ourselves to grow up", the boy with the glasses says. "Yes, we've seen how hard it is for them to change the way they think. How weak they are to make decisions", the boy with glasses says. "How difficult it is for them to work together. They only care about what they think is in their best interest", Barr says. "We, young climatopians should be asking for change. We should all of us around the planet should ask for it" Zon says. "We'll keep calling for it, we'll keep shouting it. Then all climatopians will be forced to listen to us. They won't be able to deny it", Melan says. "Yes, we will", the boy with the glasses says. "We'll cooperate, since they can't cooperate", the dark-haired girl says. The voices get louder again: "Yes, we'll start it", "We'll make it", "It's about our lives"... The children shake hands, thus making a promise to make their words come true.

The voices are slowly lowered and then the voice of the elderly researcher is heard: *"I see you have learned all you need to know. We have nothing more to tell you".* Standing beside him is the young researcher: *"In a few days you have understood much more about the problem of climate change than we had hoped you could understand". "You are to be congratulated. Your words show us that there is hope. Thank you",* the researcher says, excitedly. The children circle the two scientists who became their teachers for a few days. They feel respect and gratitude for them and show it by shaking their hands and hugging them.

The next morning the children board the bus that will take them to the airport. They will travel to their home countries. They feel that now the real adventure begins. But they are happy because they don't feel alone and because they know they will try for a great cause.

The two researchers stand and watch the bus drive away. *"It's amazing to me how much these kids have changed in just a few days",* the young woman says, *"how much they've matured. It's as if it's been years since they got off the same bus". "Like years have passed, huh? As if they've lived as much as one lives in a lifetime..."* the older researcher says. *"Very strange, very strange... Come with me please. Something crazy is going through my mind".*

The two partners enter the building, walk down the corridor, enter Climatopian Museum of Civilizations and stand in the last room in front of the display case with the four dummies. The elderly researcher says in a voice that reveals awe, *"Look closely at the dummies doesn't it seem like..." "Like they're smiling?"* the girl says with eyes full of surprise. *"Yes, exactly like they're smiling",* the researcher continues, almost in a whisper. The two stand silently for a few seconds. *"They can't. It can't be. It can't be explained. Maybe it's our emotion that these wonderful children are gone..."* the researcher says in a steady voice. *"Yes, it must be... emotion sometimes makes us imagine things and think irrationally". "Yes, I told you: it was a crazy thought. Let's go! The next group of kids will be here the day after tomorrow and we have a lot to take care of".* The two researchers walked away from the showcase. The older researcher stays a little further back and before he leaves the room, he takes one last look at the four dummies of the elements. *"And yet they are smiling",* he thinks, *"as if ... but no, it's impossible".*

END



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