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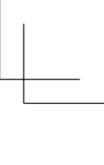
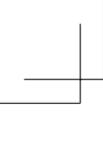
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## Introduction

### The Earth Charter—Why Now?

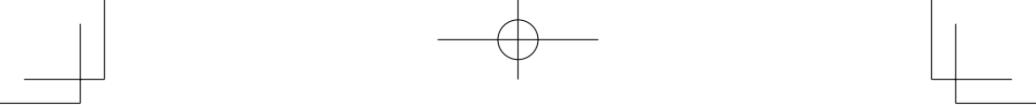
**Wakako Hironaka**  
**Chair, Earth Charter Committee of Asia Pacific and Japan**

In the long history of humankind, there has never been an era that had undergone such dramatic changes as the twentieth century. Scientific, technological, and medical progress has given humankind astounding economic growth and prosperity, as well as increased human longevity. However, we have come to face a series of adverse challenges, such as environmental degradation and the proliferation of devastating conflicts.



Economic growth has often led to significant environmental deterioration—at times irreversible—and has created disparities in wealth and social inequities. Furthermore, two World Wars followed by countless regional conflicts during the Cold War robbed many people of their life, their wealth, as well as their happiness. War is the largest cause of environmental destruction. The twentieth century has produced those with tremendous wealth on the one hand, but has made poor countries even poorer, and the gap between the wealthy and the underprivileged within countries is widening even further. Medical advancement and improvement in public health has blessed people with greater longevity. However, now over 7.25 billion people populate the Earth—the only home for us humans—and continued population growth will further burden the planet.

If growing societies seek more affluence and wish to achieve economic success as industrialized nations once did, this will deplete the Earth's resources, leading to



further environmental deterioration. Weather abnormalities caused by climate change, sea level rise, deforestation as well as forest diminishment, and desertification—these examples of environmental degradation will surely bring about human and economic damage at a monumental scale, directly affecting people’s lives, particularly those of the underprivileged. It will produce countless environmental refugees around the globe. Poverty will give rise to feelings of frustration among the deprived, and if those feelings of resentment evolve into conflicts, this will give rise to a vicious cycle of further poverty and environmental devastation.



Today we live in an extraordinarily unequal world where it is estimated that a mere 20% of nations and their population consume 80% of the Earth’s resources. As we tread forth through the twenty-first century, it may not be an exaggeration to say that the biggest challenge we face today is how to break out of the negative spiral created by poverty-fueling conflicts and environmental destruction, and to create a just and equal world from a global perspective.

Various actors and stakeholders, including UN agencies, NGOs, and the academia have long raised awareness of these issues and discussed them in diverse ways since the late twentieth century. One of the responses to these critical issues strongly impacted the world in the form of a report published in 1972 by The Club of Rome called *The Limits of Growth*. Furthermore, in 1987 the Brundtland Commission’s report *Our Common Future* recommended the creation of an Earth Charter, from the perspective that treaties, laws, and regulations are insufficient means to resolve environmental issues, and



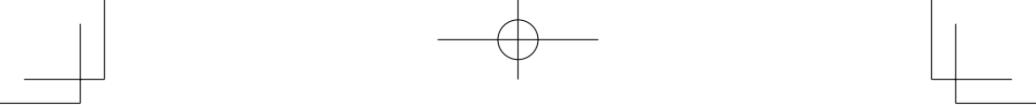
that we are in urgent need of philosophies, ethics, and codes of conduct to transform people's minds and actions. Shortly after, in 1992, the UN Conference on Environment and Development (Earth Summit) convened in Brazil's Rio de Janeiro, focusing on sustainable development. It was a time when the long-standing Cold War had drawn to a close and the whole world came together in a heightened collaborative mood to discuss global environmental issues as a common challenge facing the entire human race.



The Rio Summit, which included delegates from over 170 nations, international organizations, NGOs, religious organizations, and citizens, engaged in active debate under the slogan: Think Globally, Act Locally. The conference adopted Agenda 21 and The Rio Declaration on Environment and Development. Then nations began undertaking the task of tackling a range of environmental issues. The conference ended with the successful signing of the UN Framework Convention on Climate Change and the Convention on Biological Diversity. Regrettably, the Earth Charter submitted by international NGOs could not be adopted.

Two years later in 1994, a renewed push towards the formulation of the Earth Charter came from former Soviet President Mikhail Gorbachev, Rio Summit Secretary-General Maurice Strong, and then Prime Minister of the Netherlands Ruud Lubbers, giving it a new life. Twenty-four participants representing diverse regions, professions, as well as age, gathered from various parts of the world to discuss the content and develop a draft.

Based on the draft, the task of collecting opinions from all parts of the world began, led by the Drafting Committee



of which I was a members. Three years later, in March of 2000, the Committee gathered in UNESCO Headquarters in Paris to settle on the final draft. Finally, in June of the same year, the Earth Charter was officially presented at The Hague's Peace Palace, graced with the presence of Princess Beatrix, then Queen of the Netherlands.

The Earth Charter is comprised of three parts: the Preamble; sixteen chapters of the main text, of which each is dedicated to various aspects of Charter principles; and the last section entitled The Way Forward. The Charter states that Earth is the one and only home to us, and that we must coexist with other animal and plant life. It also criticizes our treatment of the planet as if we own it.



Our planet Earth cannot end with our generation. We must hand over its magnificent bounty to the next generation and beyond.

This requires changes in our way of life as well as in our mindsets, to those that are sustainable and gentle towards the environment. We must move away from our current lifestyle of overproduction, excessive consumption, and wasteful disposal, and put a stop to the loss of biodiversity and other serious environmental deterioration.

The Charter is an affirmation to protect the global environment as a whole, while respecting regional communities and their peoples, cultures and traditions. It is a promise to uphold human rights, to strive towards the eradication of poverty, to promote literacy, and to build a democratic and non-violent society supportive of the rights of women and of minority groups.



These are the answers to the question posed in the title:  
Why now?

Since its birth, all across the world a wide array of efforts has been ongoing to promote the Earth Charter. This booklet containing the Earth Charter manga, now created by Mr. Norio Yamanoi, an internationally renowned cartoonist, and the text of the Charter, is such an example. It has been produced in the sincere hope that more people, in particular younger generations, will become familiar with the Charter, and will understand its values and principles.

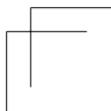
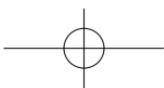
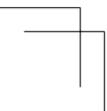


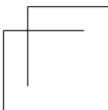
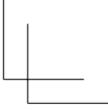
This booklet was published in both Japanese and English in time for the UNESCO World Conference on Education for Sustainable Development in Nagoya, Japan, November 10-12, 2014. The year 2015 marks the fifteenth anniversary since the birth of the Earth Charter, and a wide range of events is planned for its further promotion. We hope that this manga as well as a variety of other works produced will be instrumental in enhancing people's appreciation of the Charter.



In closing, I would like to thank and acknowledge the efforts of Dr. Tatsuro Kunugi, Visiting Professor at the UN University, who initiated and led this project; Professor Tsuneo Takeuchi at Nagoya University, who advised the project; members and supporters of the Earth Charter Committee of Japan; as well as Ms. Asuka Abe, who translated this booklet into English.

November 2014





## Chapter 1

# Population Explosion and Global Food Shortage



**Natalie:**

Hey Jiro. Where are you off to with those pretty flowers?

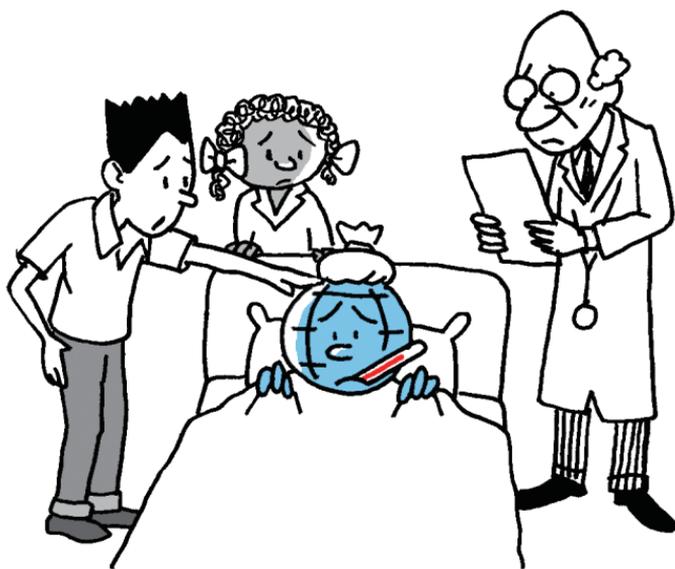
**Jiro:**

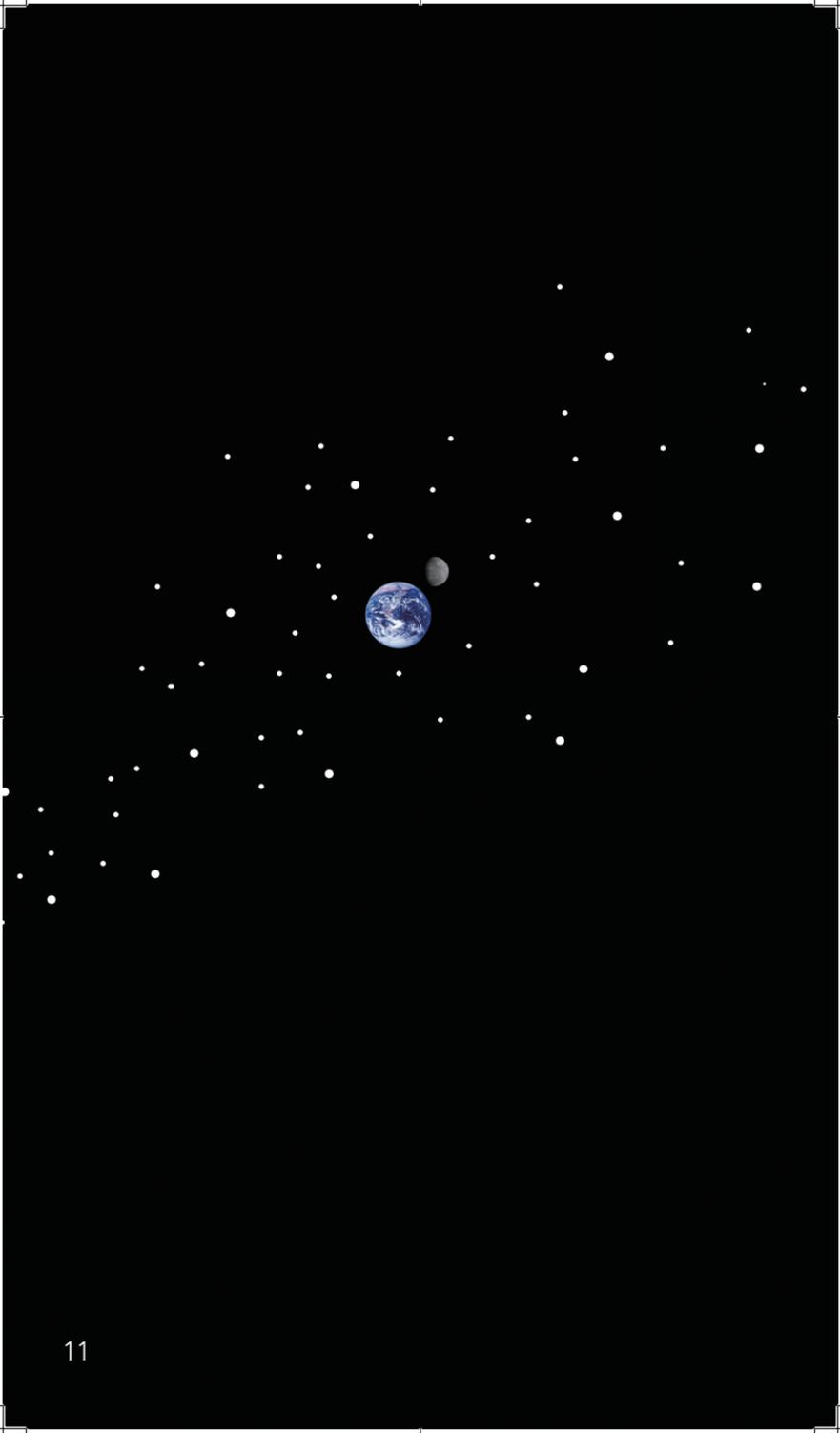
I'm going to visit a friend in the hospital.



**Jiro:**  
How are you feeling?

**Earth:**  
Not too well, I'm afraid. The fever's not coming down.





**Dr. Gaia:**

Earth, as far as we know today, is the one and only planet in the whole wide universe that supports life. It's a system—a life form—that has evolved its environment over a very long period of time through the interaction of plants and animals—including us humans—as well as air, water, and land, so they can all exist on this planet. But selfish human activities have knocked the system out of sync. And Earth has become sick.



## Population Explosion

**Jiro:**

What has caused Earth to become ill?

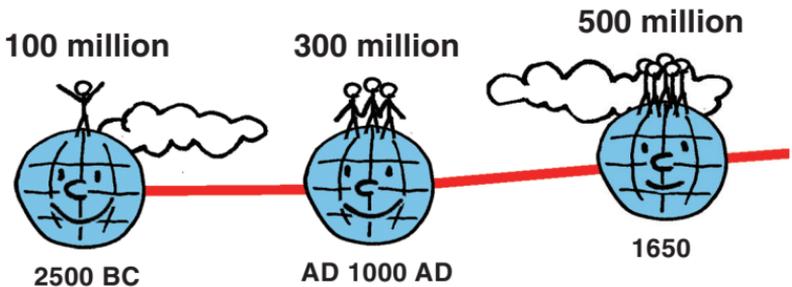
**Dr. Gaia:**

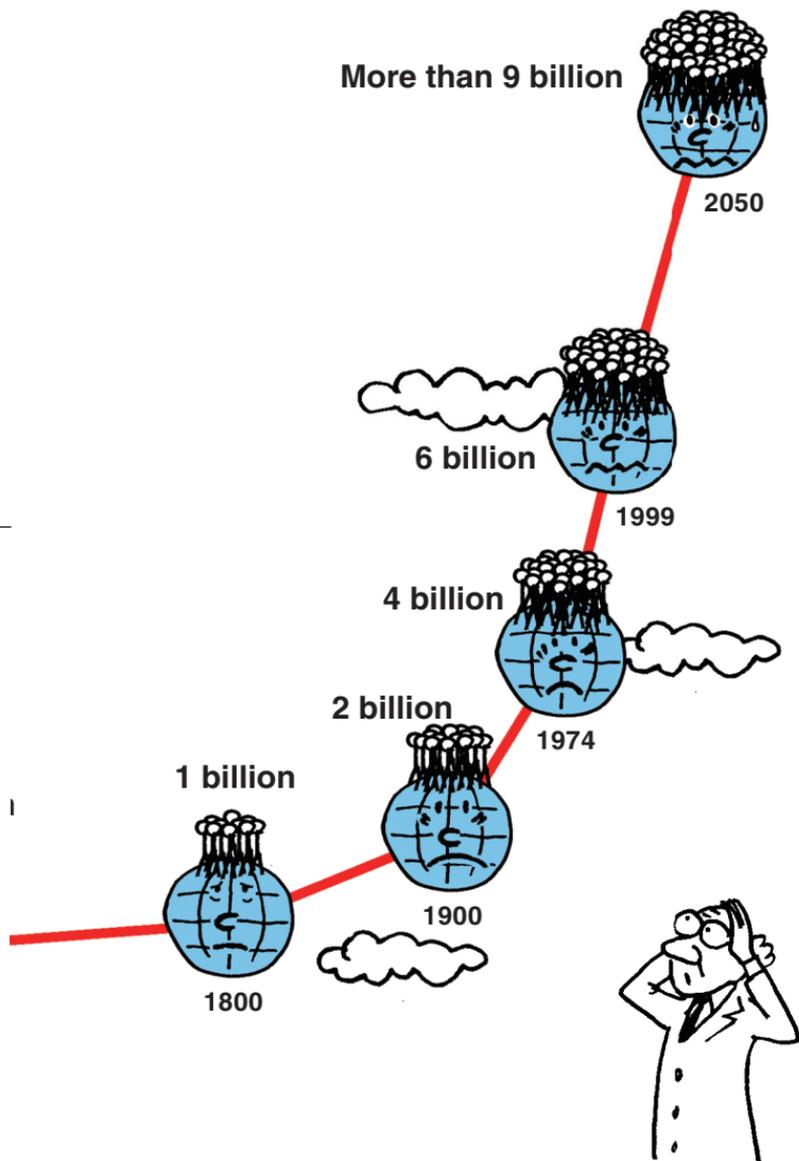
There are many reasons. One is population explosion—the exponential growth of Earth’s population.

Back in AD 1000, there were only 300 million people on Earth, and now the population has hit 7.2 billion. In the five decades between 1960 and 2010 alone, the global population has grown 2.5 times. We predict that we’ll reach 9 billion by the year 2050.

Every year about 130 million people are born and 60 million people die. The difference of 70 million is how much the population increases every year. That calculates to 137 people every minute!

Earth is much smaller than we imagine and it has limited resources. With a smaller population, human activities had a smaller impact and nature could restore itself. However, now with so many people on Earth, damages caused by humans far surpass Earth’s ability to heal itself, causing all kinds of problems.



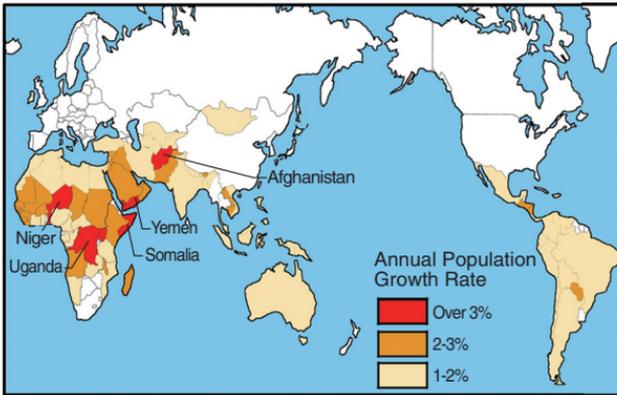


**Jiro:**

How can we stop population explosion?

**Dr. Gaia:**

Here are the most populous countries in the world. First is China with 1.39 billion people. Second is India with 1.26 billion. Third is the United States with 320 million. Fourth is Indonesia with 250 million. Asia alone is inhabited by 60 percent of the global population. However, those heavily populated countries are not the ones with the population problem. Take a look at the map below.



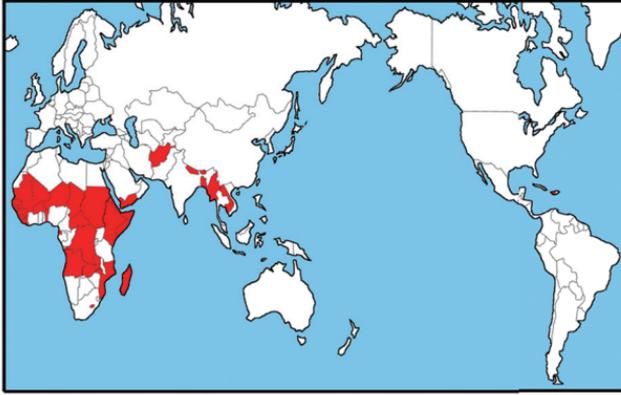
**Natalie:**

Wow, they're mostly countries in Africa!

**Jiro:**

And Afghanistan, Yemen, and other Muslim countries. I'm surprised there's rapid population growth in countries where there's a war going on, like Afghanistan and Somalia.





World's Least Developed Countries

**Dr. Gaia:**

The countries colored red on the map above are the “Least Developed Countries” identified by the United Nations. Do you see that it overlaps with the countries with the population explosion problem? It used to be that in these least developed countries, the birth rates were high but mortality rates were also high, which stabilized population growth. But with assistance from foreign nations providing modern medical services, their mortality rates dropped. But the birth rates remained high. This is how the population exploded. And in these countries parents don't have the means to look after their children as much as in the developed countries. Also, children are a necessary labor force. That's why people have more children there.



On the other hand, developed countries urbanized and industrialized. And with better access to education, more women entered the work force and couples chose to pursue a better life for themselves rather than having many children.

As you can imagine, in these countries birth rates started to drop. Aging population and population decline have become major problems for these countries.

Seeing this, it has been suggested that improving the economy of the least developed countries could help slow down the population growth rate such as it did in the industrialized countries.

## Global Food Shortage



Over 40 million children are overweight or obese.  
UN News/ WHO Photo

### **Jiro:**

How many people can Earth support, Dr. Gaia?

### **Dr. Gaia:**

A single human being can survive his or her entire life with 150 kilograms of grain per year. Currently, the world produces more than 2.4 billion tons of grain—enough to support more than 10 billion people. But that's only when the food is distributed equally.



In poor countries, 1 billion people suffer from hunger. Every year 15 million people—thus every minute 17 people—die from starvation. On the other hand, in rich countries food is wasted with 200 million people suffering from obesity due to overeating.



©Nyani Quarmyne

A Malian child refugee in Mauritania  
MEDECINS SANS FRONTIERES JAPON Photo / ©Nyani Quarmyne



**Dr. Gaia:**

People in rich countries like the United States that make up only 20 percent of the world population consume 50 percent of the global grain supply. That amounts to 3 times what people eat in the poor countries.

Japan depends on 60 percent of its food supply comprising of imported goods. But 17 million tons of that is disposed without being consumed. When we look at industrialized countries as a whole, about 220 million tons of food is discarded. That nearly equals the amount of entire food production in sub-Saharan Africa.

**Natalie:**

I can't believe we're throwing away food when there are people dying from starvation!



## Grains or Meat?

**Jiro:**

How come people in rich countries eat so much grain?



**Dr. Gaia:**

Well, they consume about 500 kilograms to one ton of grains per year but not all of that are eaten directly as “grains.” They’re consumed indirectly as meat and dairy products too.

Cows, pigs, and chickens raised for meat are fed grains. It takes 11 kilograms of grains to produce a kilogram of beef, 7 kilograms to produce a kilogram of pork, 4 kilograms to produce a kilogram of chicken. But the energy we gain from eating a kilogram of meat is about the same as consuming a kilogram of grains.

**Natalie:**

Eating meat is like eating food for more than one person.

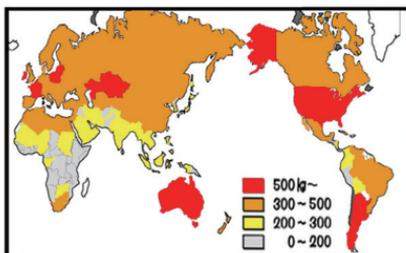
**Dr. Gaia:**

Nowadays, the grain market has globalized and farmers would rather sell their grains to the rich countries for animal feed at a higher price than sell them cheaply to the poor countries for food. Of all the grains produced in the world, about 40 percent become animal feed instead of going directly into people’s mouths. That’s particularly true for corn. 800 million tons of corn are produced worldwide, and 500 million tons, two-thirds of the entire production, becomes animal feed.



**Dr. Gaia:**

And lately, bioethanol, made from grains like corn, has drawn significant attention as a clean and cheap alternative energy source that could replace gasoline. So now grains are used to make car fuel. That's driving up the price of grains making it even more difficult for the people in poor countries to get access. In the United States, 24 percent of corn produced is already utilized for ethanol production.



Global Grain Consumption

**Natalie:**

I can't believe that people have to compete not only with animals, but also with cars for food! That's not right at all!



**Bioethanol:** Alcohol produced from grains such as corn, as well as sugar canes. It is mixed with gasoline as fuel for cars.

## Global Water Crisis

**Dr. Gaia:**

Humans not only need food, but they also need 2-3 liters of water a day to survive. But only 1 out of every 5 people in the world has access to clean water. And every minute, 2.8 children die from dehydration, drinking contaminated water or from other water-related problems. Apart from drinking, we need water for daily activities such as cooking, doing the laundry, taking baths, or using the toilet, and that amounts to more than 100 liters. We also need water for agricultural and industrial use.

**Jiro:**

Japanese people like to take baths, so I bet we use more than 100 liters.

**Dr. Gaia:**

You're right. The Japanese use 245 liters a day. That's a lot of water. Compare that with the average amount for Africa—63 liters.

Earth is called “the water planet” and as the name suggests, it holds about 1.4 billion cubic kilometers of water. But 97.5 percent of that is salt water, which we can't use. Most of the remaining water is snow or ice packed in the high mountains, or in the North or South Poles. So we can actually use only 0.01 percent of the entire water supply.

By the year 2025, humans will use up 90 percent of the available water supply. It's sure to intensify the global water crisis. Rivers and lakes bordering international borders will see frequent conflicts over water and that will unquestionably snowball into bigger international conflicts.



Global Water Conflicts

**Dr. Gaia:**

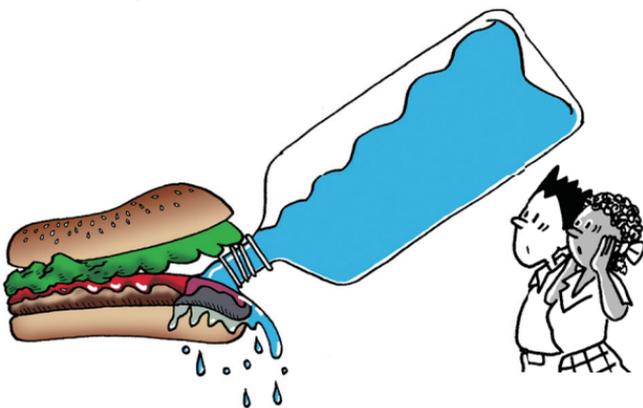
Agriculture requires an enormous amount of water too. About 70 percent of water used by humans is for agriculture. Now here's a nice hamburger. How much water do you think it takes to make a hamburger like this?

First, you need 2 liters of water to grow the lettuce in the hamburger.

Then, another 72 liters to grow the wheat for the buns. For a handful of beef used to form a single hamburger patty, it's a whopping 900 liters!

**Natalie:**

What! You need nearly 500 2-liter bottles of water to make this little hamburger? I can't believe it!



**Dr. Gaia:**

It's said that, by 2030 global food demand will increase 58 percent. Agricultural land needs urgent expansion, but we must do it carefully or it will bring a slew of negative consequences by degrading the global environment.

When primeval forests like the Amazon are cultivated without much concern for the environment, global warming will become more severe.

The amount of water we can use is limited, too. And Irrigation, if not done carefully, could cause desertification. We have a bitter history of drying up the Aral Sea, so we don't want to repeat such devastation elsewhere.

**Jiro & Natalie:**

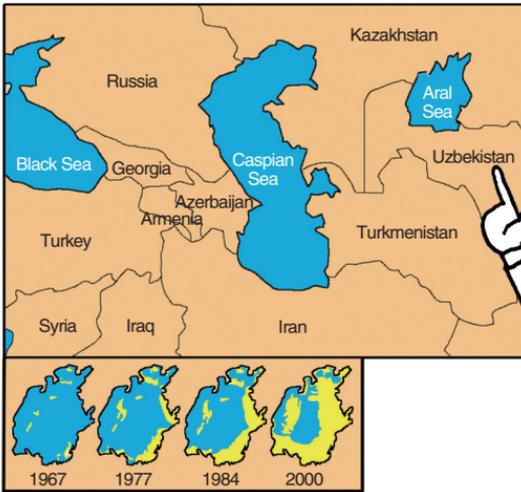
Aral Sea?

**Dr. Gaia:**

The Aral Sea was a gigantic lake on the Kazakhstan-Uzbekistan border. It was the fourth largest lake in the world up to 50 years ago. Lush forests covered the area around the lake, inhabited by tigers, wild horses, and other big mammals. The lake was also a stopover site for migrant birds. Lots of large ships used to fish in the lake.

But in the 1960s, during Soviet rule, massive amounts of water were diverted from the river flowing into the Aral Sea to irrigate the large-scale cotton production nearby.

Without ample water flowing from the river into the lake, the Aral Sea dried up rapidly. The fishing industry that depended on the Aral Sea was devastated, leaving large fishing ships at the bottom of the dried up lake. The Aral Sea came to be known as a “graveyard for ships.”



Arid Aral Sea





Aral Sea's Ship Graveyard

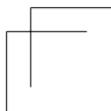
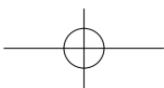
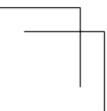
**Jiro:**

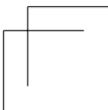
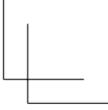
Was the cotton cultivation successful?

**Dr. Gaia:**

It went well until the 1980s, but then in the 1990s salt started to surface above ground in the cotton fields. When you think about it, it makes sense because that land used to be the bottom of the ocean. Excessive irrigation caused capillary action, a phenomenon where the salt below ground elevates to the surface. When this happens plants cannot grow there anymore. The fields were abandoned and eventually they joined the desertified parts of the Aral Sea. People whose livelihoods were dependent on cotton production also lost their key industry of fishing. Furthermore, the salt from the dried up land carried by sand storms harmed people's health. The Aral Sea irrigation project became known as "the largest environmental disaster of the twentieth century." And though it should've taught us an important lesson, we are once again repeating history—Africa's Lake Chad, as well as China's Yellow River, are drying up from having too much water diverted from them for irrigation.

When there's excessive development beyond Earth's natural ability to heal, its environment is destroyed, harming all life forms including us humans. Once destroyed, the environment can never go back to its original state.





## Chapter 2

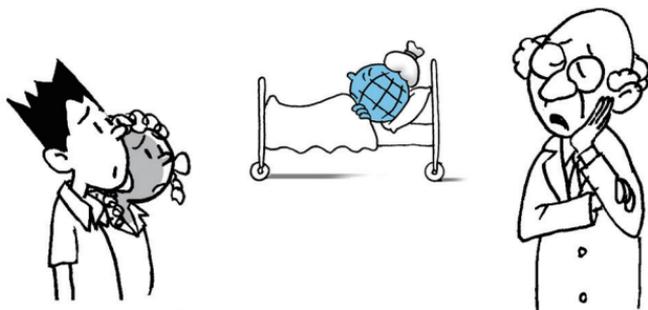
# Global Warming and Abnormal Weather Conditions



## Global Warming

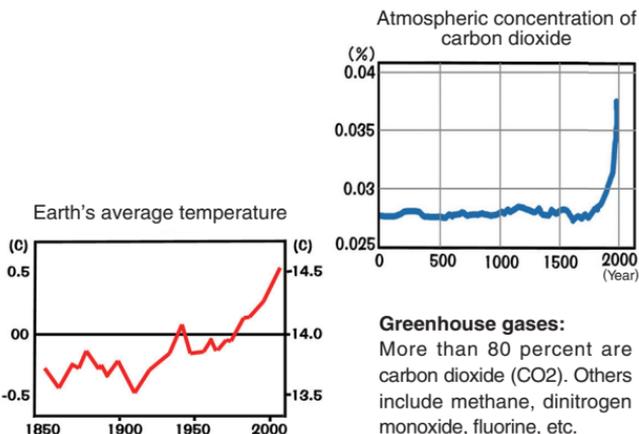
**Jiro:**

How come Earth's fever won't come down?



**Dr. Gaia:**

Well, as the global population increased, industry flourished, and as a result greenhouse gas such as carbon dioxide (CO<sub>2</sub>) emitted into the air through human activities increased dramatically.



**Dr. Gaia:**

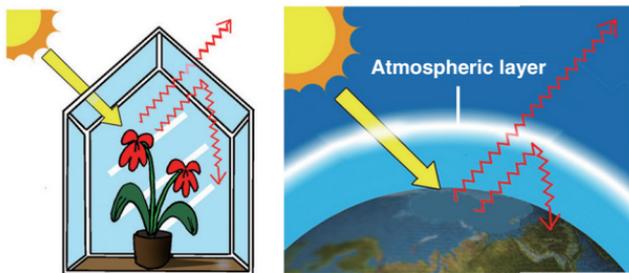
Do you know what a greenhouse is, Jiro?

**Jiro:**

Isn't it a special glass building to grow flowers and vegetables sensitive to the cold weather?

**Dr. Gaia:**

Bingo!



The glass panel on the greenhouse lets in sunlight and heat, and keeps a portion of that heat inside. That's how it keeps its interior warmer than its exterior.

Gases like carbon dioxide act just like the glass panel on the greenhouse and keep the Earth warm. This, we call the "greenhouse effect," and the gases "greenhouse gases." If we don't have these greenhouse gases, the Earth's temperature will fall to minus 18 degrees Celsius.

Up to around the 18th century the amount of greenhouse gases in the atmosphere was just at the right amount and Earth's average temperature was kept at about 14 degrees Celsius. However since the industrial revolution, and particularly from the late twentieth century, greenhouse gas emission surged, rapidly warming Earth.

## Sea Level Rise

### Natalie:

According to the graph on the last page, Earth's temperature rose merely 0.75 degrees Celsius in the last 100 years. Why all the fuss?



### Dr. Gaia:

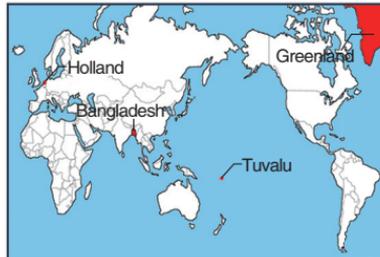
That meager 0.75-degree rise in the temperature has drastically disturbed the global climate. First off, the ice on the North Pole and the South Pole, as well as mountain glaciers, both acting as Earth's "air conditioner", have started to melt. The icefields in the North Pole are quickly melting away, their ice thinning and decreasing



High risk of extinction  
Source/WWF

in size. They've shrunken 40 percent in the last 40 years. And it's believed they will completely disappear in 50 to 70 years.

With this, there's also major concern over the extinction of polar bears that live in the ice fields of the North Pole hunting seals. Ice at the South Pole is melting, too. In February of 2002 alone, an ice shelf 1.5 times the area of Tokyo disappeared. The ice at the North Pole doesn't affect the amount of water even when it melts because it floats in the ocean, but ice at the South Pole and Greenland sits on the continent and the island itself, which means that the melted ice will run off into the ocean raising the sea level. It's said that if all of the ice in Greenland melts, the sea level will rise 7 meters.



**Natalie:**

Oh no! If the sea level rises 7 meters, lots of cities and even countries will sink into the ocean!



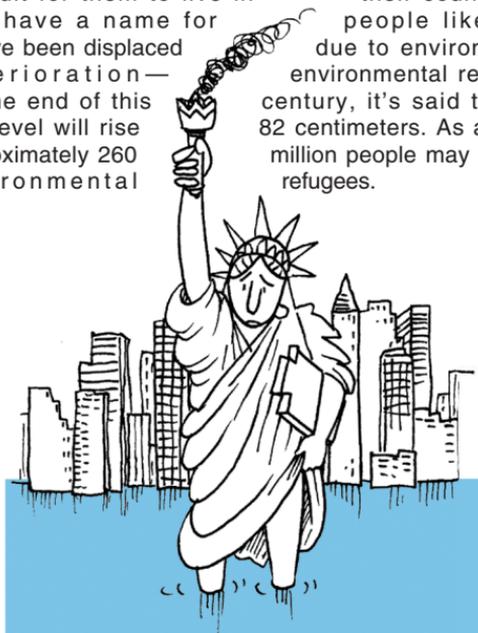
Tuvalu town sunk below water in spring tide

**Jiro:**

Countries with low elevation like Holland and Bangladesh are in big trouble! Even New York and Tokyo will lose major chunks of their land.

**Dr. Gaia:**

In the past 100 years the sea level has risen 17 centimeters. The island nation of Tuvalu in the South Pacific has lost 7 percent of its land under water. As of now, it's understood that the rise in sea level is attributed to water expansion caused by global warming rather than the ice melting in the South Pole and Greenland. The people of Tuvalu have started to move to nearby New Zealand because it's becoming very difficult for them to live in their country. We now have a name for people like them who've been displaced due to environmental deterioration — environmental refugees. By the end of this century, it's said that the sea level will rise approximately 260 centimeters. 82 million people may become environmental refugees.



## Intensifying Typhoons and Hurricanes

**Natalie:**

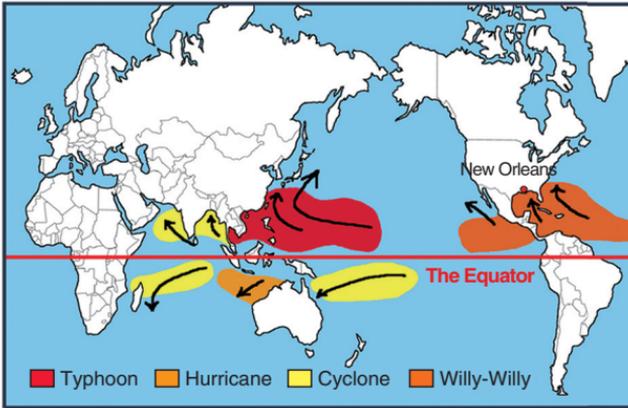
Speaking of sinking under water, I remember seeing pictures of the city of New Orleans swamped with water.

**Dr. Gaia:**

Oh yes, but that wasn't because of sea level rise. A huge hurricane hit New Orleans and flooded the city.

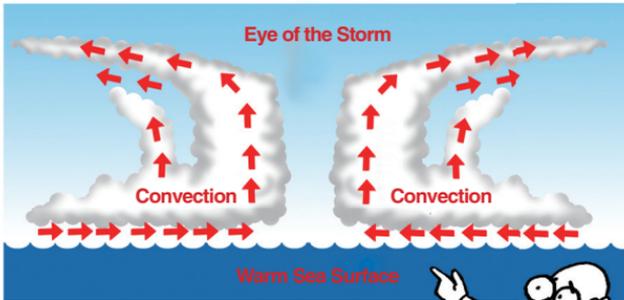


When atmospheric temperature rises, the surface temperature of the sea also rises. That causes lots of typhoons and hurricanes, and makes them very powerful, too. In the summer when the surface temperature of the sea near the equator becomes high, a tropical storm emerges. Depending on where it appears it's called by different names—typhoon, hurricane, cyclone, willy-willy.



**Dr. Gaia:**

When the surface temperature of the ocean along the equator rises in the summer, the moist air above heats up, becomes lighter as it expands, and travels further upward in a phenomenon called convection. That creates a thundercloud called cumulonimbus. The cumulonimbus forms a big swirl, blown around by the winds around the equator, and soon starts to spin around. Now a tropical storm is born, eventually giving rise to a typhoon or a hurricane. Global warming causes typhoons and hurricanes to intensify because higher surface temperature of the ocean causes stronger convection that releases more moisture.



Such was the case of the large-scale hurricane "Katrina" that formed in the Gulf of Mexico in August 2005. Hurricane Katrina brought very heavy rainfalls and extremely strong winds,



Hurricane Katrina

breaking the levy along the Mississippi River and flooding the city of New Orleans. 80 percent of the homes in the city were flooded, 1,800 people died, 700 went missing, and 1.2 million people evacuated into nearby states.



## Catastrophic Drought and Flooding

**Dr. Gaia:**

Not only does the ocean's rising surface temperature cause typhoons and hurricanes to become more powerful, but it also brings terrible drought and flooding caused by torrential rain.

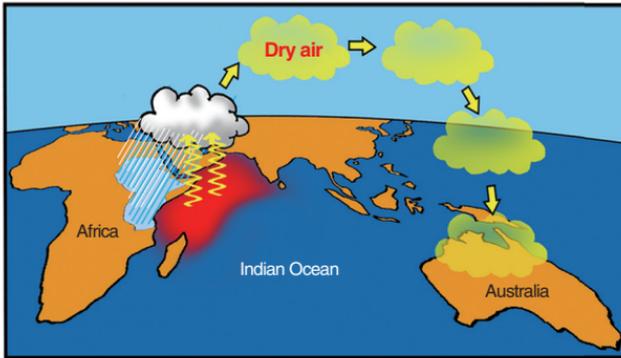
**Jiro:**

No way! Drought AND flooding both? But they're practically opposite things!

**Dr. Gaia:**

It's definitely "abnormal" weather.

Well, this is how both can happen at the same time. For instance, when the surface temperature on the west side of the Indian Ocean dramatically rises, the air packed with moisture flows upward creating a convection, forming a gigantic rain cloud causing heavy rainfall in eastern Africa. The dry air after dropping all of its moisture in eastern Africa travels on a jet stream to Australia and Indonesia, now causing severe drought.



**Dr. Gaia:**

In 2007 Australia saw a 40 percent decrease in grain production suffering from years of severe drought. In the same year, in eastern Africa torrential rain caused catastrophic flooding in 18 countries and 1.5 million people fell victim. All around the world, especially in the tropic and subtropic regions, they're seeing less rain fall year after year, and at the same time getting excessive rainfalls.

**Jiro:**

It must be really difficult for farmers in that area.

**Dr. Gaia:**

In different parts of the world, food production is down due to drought.

Even if there's rain, it's difficult to accumulate such huge amounts of water from short, heavy rainfalls. Plus flooding destroys farms and the crops. And furthermore, it washes away soil from the farms. There is no good news for the farmers.



## Deforestation

**Dr. Gaia:**

Amazingly, one-third of the world is covered in forests. The trees in the forests soak up the carbon dioxide in the air and in return give us oxygen.

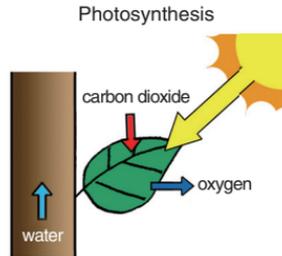
Maybe you've heard of the term "photosynthesis" in your science class.

**Jiro:**

Yup, it's when plants absorb carbon dioxide and use the sun's energy to create nutrients, and then release oxygen, right?

**Dr. Gaia:**

You're spot on! Plants gobble up the carbon dioxide produced by human activities.



**Natalie:**

But what happens to all the carbon dioxide once the plants take it in?

**Dr. Gaia:**

It's stored inside the plant's stem, leaves, and fruit as carbohydrates. That's why burning plants produce carbon dioxide.

You're familiar that coal is made from fossilized trees from ancient times? It's said that oil and natural gas were created similarly, from ancient dead plants and animals pressurized and heated deep inside the earth. That's why these fuels are called "fossil fuels." Since the industrial revolution of the 18th century these fossil fuels become the core energy source and source for fuel for human economic activity. And of course, burning fossil fuels creates carbon dioxide.

**Dr. Gaia:**

Forests help slow down global warming by swallowing up a tremendous amount of carbon dioxide. However, those precious forests are being cut down all over the world.

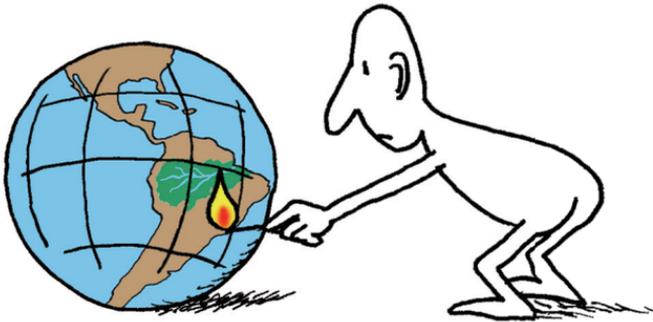
In the 10 years between 2000 and 2010, every year about 13 million hectares of forestland, about one third of the area of Japan, were destroyed. The main cause of this loss is logging and forest fires, but actual fires caused by lightning and other natural phenomenon were minimal. Humans caused most of the fires.

**Natalie:**

Why would they burn the forests?

**Dr. Gaia:**

It's called "slash-and-burn" farming, where they burn the forests to cultivate land for farming. Ashes from the fire become good fertilizer. Let's take a look at the Amazon.



## The Amazon



**Dr. Gaia:**

The tropical rainforest in the Amazon spreads along the largest river in the world, the Amazon River. It accounts for 13 percent of the world's forest and its area is 14 times Japan's landmass. It's also home to 5 million species of plants and animals.

It is sometimes said that The Amazon rainforest perhaps provides Earth with one third of the oxygen and absorbs one quarter of the carbon dioxide. But every year, 3 million hectares of the rainforest

is disappearing because of logging and slash-and-burn farming.

**Jiro:**

When forests are burned, there will be fewer forests to absorb the carbon dioxide. And the burning releases carbon dioxide into the air. That'll really speed up global warming, won't it? What are they growing that requires burning the invaluable forest?

**Dr. Gaia:**

Well, they grow whatever's high in demand globally at that time. In the 1960s and the 1970s there was high demand for beef, so the forest was cleared to establish ranches. In the 1990s people wanted soybeans. Since 2000, bioethanol has been in high demand so they're producing sugar canes needed to produce bioethanol.

**Natalie:**

Isn't bioethanol considered a clean energy source that doesn't release carbon dioxide into the air? But if you're destroying the very forest that's helping to get rid of carbon dioxide... that doesn't make sense at all!

**Dr. Gaia:**

Right. So now people are deeply concerned that global warming itself is destroying the Amazon rainforest.

Normally the moist air traveling across the Atlantic Ocean would hit the Andes producing rainfall, which pours into the Amazon River hydrating the lush rainforest (Figure 1). But with global warming, the surface temperature of the Atlantic Ocean along the Brazilian coast shoots up, creating convection there forming rain clouds, and eventually rainfall. When this happens, the Amazon River ends up with dried up air and no rain, thus causing the river to dry up (Figure 2).

In fact in 2007, the water volume of the Amazon River dropped considerably. If global warming continues at this rate, it's speculated that by the year 2100 two-thirds of the Amazon River will be arid.

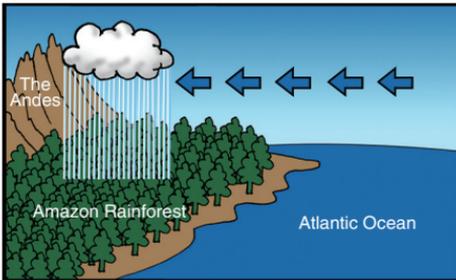


Figure 1

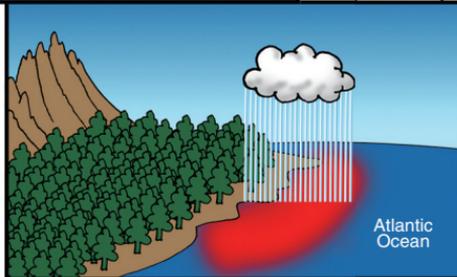


Figure 2



## Taiga

### Dr. Gaia:

The coniferous forest called taiga in Siberia is even larger in scale than the Amazon rainforest, making up 20 percent of the world's forests. This taiga too, is in danger because of fire, logging, and global warming.



### Jiro:

Are people slashing-and-burning in the taiga too?



© WWF Japan/ Mutai Hashimoto

### Dr. Gaia:

No, there is no slashing-and-burning here because its environment isn't suited for agriculture. Instead, people's mismanagement of fires caused it to burn. It resulted in the burning of an area approximately equal to Hokkaido in 2002, and almost half the landmass of Japan in 2003. The taiga is so vast that there are no roads or access to water to put out the fire. Once it starts to burn, nothing can be done except wait for the fire to burn itself out.

Taiga exists on top of soil called "permafrost," that's frozen throughout the year down to 100 meters below ground. Like deserts, the forest above this permafrost is able to survive in this harsh environment with extremely little rainfall (only 200 to 300 millimeters annually), through hydration from the frozen ground. Global warming has started to melt the permafrost and without it, the water from it will quickly seep deep into the ground.

### Jiro:

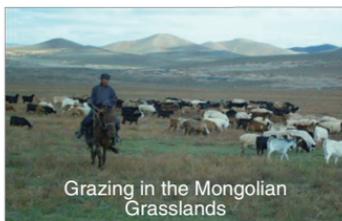
Sounds like it's going to end up like the Amazon!



## Desertification of Grasslands

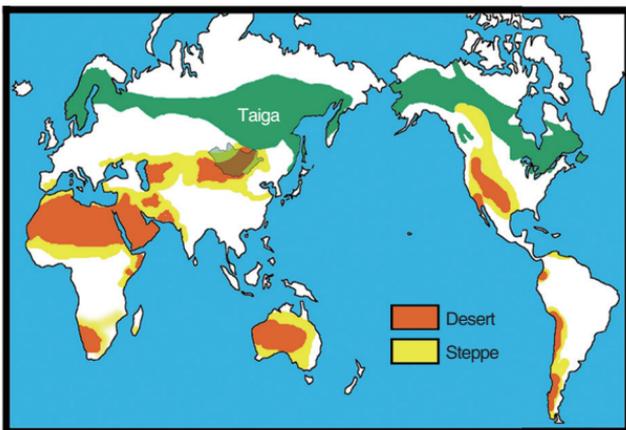
### Dr. Gaia:

To the south of the taiga is an immense area of grassland in Mongolia called the steppe. Desertification has reached here too. Sheep and goats graze in the grassland, for raising



these livestock is the main industry in the area. However, overgrazing is causing desertification. Too many livestock are completely devouring the vegetation, giving little chance for the land to re-generate itself.

So as you've learned, such climate changes as drought and decrease in rainfall caused by global warming, combined with man-made causes such as slash-and-burn farming, logging, irrigation mismanagement, and overgrazing are advancing the desertification in a quarter of Earth's land (3.7 billion hectares) in Africa, the Middle East, China, and Mongolia resulting in 1 billion people being negatively affected by this phenomenon.



## The Kyoto Protocol

### Dr. Gaia:

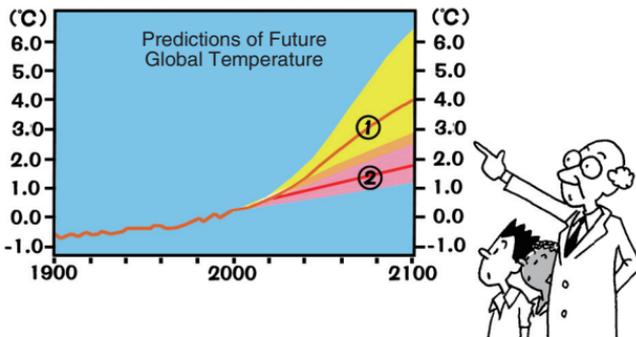
So far we've talked about how global warming has a negative impact on the environment. We've learned that not only humans are in danger, but also plants and animals are facing extinction because of climate change, and even because of diseases of tropical origin now spreading in other areas. Global warming is altering the delicate balance of the global ecosystem.

### Jiro:

Come to think of it, tropical plants, insects, and birds can be seen in Tokyo these days. Local residents near the Tama River call it "Tamazon" because tropical fish originally dumped into the river by someone have multiplied over time and are taking over the river. Can't global warming be stopped?

### Dr. Gaia:

Take a look at this model created by the Intergovernmental Panel on Climate Change. It predicts the future temperature of the world and there are two scenarios—the good and the bad.



**Dr. Gaia:**

If we humans continue to rely on fossil fuels like oil and coal for further economic growth (1 in chart on left page) the temperature will increase 3 to 5 degrees Celsius by the year 2100. This is the bad case scenario.

If we form a set of stringent rules and adhere to them, cutting down carbon dioxide emission (2 in chart on left page), there will be an increase of 2 degrees Celsius by 2100. This is the good case scenario.

**Jiro:**

We're in big trouble if the temperature rises 5 degrees. We need to quickly establish a stringent set of criteria.

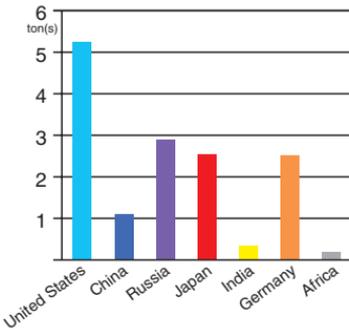
**Dr. Gaia:**

I agree. It's said if the temperature rises even 2 degrees, typhoons and hurricanes will significantly intensify, and flooding, sea level rise, food shortage brought about by drought and water shortage will bring devastating consequences for us humans.

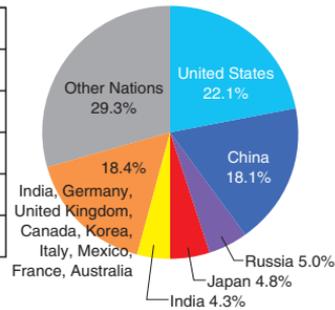
In 1997 delegates from 172 nations rallied in Kyoto and formed an agreement to reduce greenhouse gas emission by an average of 5 percent from 1990 levels by 2010. The agreement is called the Kyoto Protocol.

However, the United States, the largest emitter of greenhouse gases, withdrew from the agreement due to pressures from its industries. And the agreement didn't include China either, the second greatest emitter of greenhouse gases. Nor did it include developing countries such as India to take on the obligations listed in the agreement.

Carbon Dioxide Emission Per Capita



Carbon Dioxide Emission by Nation 2004



## COP

### (Conference of the Parties to the Framework Convention on Climate Change)

#### **Natalie:**

Well of course developing countries shouldn't bear the burden of reducing carbon dioxide emissions!

Ever since the industrial revolution took off, the developed countries have used all the coal and oil they can get their hands on, and let off all the carbon dioxide they've produced without any restrictions, allowing them to develop their industries and provide better life for their citizens. But they're the major source of the global warming we face today.

Meanwhile people in developing countries have been living poor, humble lives without cars or air conditioners.



They didn't create the cause of global warming. And now at this stage when they finally have the chance to develop their economy to build a comfortable society for themselves, they could never get out of poverty if their use of fossil fuels is restricted. That's so unfair!

#### **Dr. Gaia:**

You have a point there, Natalie.

Countries like China and other developing countries seeing remarkable economic growth are taking a similar stand.

But countries like Tuvalu and Bangladesh which suffer the direct impact from climate change and rise in sea level are arguing for a more stringent greenhouse gas regulation to be set as soon as possible. It's a reasonable argument when you think of the plight they're in—their sheer existence is in serious danger.

On the other hand, industrialized countries like the United States and Canada are very reluctant due to concerns over the expected negative impact on their economic growth. In contrast, the EU (European Union) is being proactive putting forth concrete policies to meet their goal of 20 percent reduction in emissions from 1990s level by the year 2020.



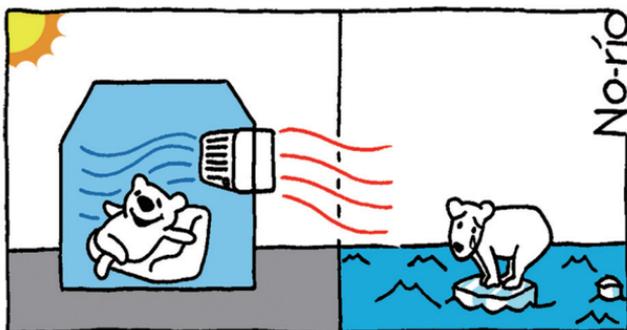
**Jiro:**  
What about Japan?



**Dr. Gaia:**

Every year a conference called COP is held and many countries come together to discuss global warming countermeasures. In December 1990, the 15th conference (COP 15) convened in Copenhagen, Denmark with 190 countries in attendance. Japan announced an ambitious goal of 25 percent emissions cut from 1990s level by the year 2020, though that was met with deep skepticism. It did manage to clear the Kyoto Protocol's goal of 6 percent reduction by 2012.

The objective of COP 15 was to create a new framework for global warming countermeasures in replacement of the Kyoto Protocol that was to expire in 2012 and to include countries like the United States as well as developing countries like China and India that were not obligated to reduce their emission levels. However, with strong opposition from China, the conference failed to reach an agreement. Minimize global temperature rise to no more than 2 degrees Celsius; industrialized countries should provide developing countries with financial assistance to support their efforts towards global warming countermeasures—the conference ended with the announcement of these non-binding goals.



In the negotiations that took place following COP 15, the Kyoto Protocol was extended to 2020 and an agreement was reached to create a new framework to follow at COP 21 in Paris, in 2015.

# Countermeasures Against Global Warming

**Jiro:**

Hmm... Limiting temperature rise to 2 degrees Celsius... Wouldn't even a 2-degree rise be bad for future generations like my children and their children?

**Dr. Gaia:**

Well, a rise of 2 degrees is just about the limit to which humans can cope. But as you've pointed out Jiro, we must strive towards "sustainable development" to protect Earth so that the next generation won't have to suffer from the problems created by us.

**Jiro:**

So what exactly is being done to counter global warming?

**Dr. Gaia:**

Let's take a look at some efforts made by the European Union (EU), which is so far the most advanced in setting targets against global warming.

EU has set 3 targets:

- 1) 20-30 percent reduction of greenhouse gases by 2020
- 2) 20 percent increase in renewable energy use

Fossil fuels are a depleting energy source that cannot be created once they're gone. Once they are extracted and used, they're gone forever. On the other hand, wind and heat from the sun are called "renewable energy sources" as they will be available no matter how much we use. European countries together are now cooperating with each other to build an enormous solar power plant in the Sahara Desert to cover 15 percent of all of energy consumed in Europe.

### 3) Improve energy efficiency by 20 percent

For example, a car that can run 12 kilometers with a liter of gas is 20 percent more efficient (**energy-saving**) than a car that can only run 10 kilometers with the same amount of gas.

In Germany there's a unique system in which power companies buy electricity created by solar power or wind power generators owned by individuals at a higher price. Other countries have implemented such a system, but Germany's has been the most effective so far. They aimed to cover 12.5 percent of all energy consumed by 2010, but they met this target much earlier, in 2007. Additionally, they imposed an "**environmental tax**" on oil and electricity, and as a result car use fell with more people using bicycles and trains, reducing carbon dioxide by 3 percent in 5 years. They hope to reach 30 percent by the year 2020.

#### **Jiro:**

Wow. I was feeling really discouraged hearing all kinds of problems all over the world, but I feel much better now that I know there's a greenhouse gas reduction target in place and a country like Germany is actually meeting its goals.



## Things We Can Do

### Jiro:

Is there anything we as individuals could do to combat global warming?

### Dr. Gaia:

There are lots of things you can do.

People in industrialized countries release several tons of carbon dioxide per person every year. Like Germany, by avoiding cars and taking the train, riding a bicycle, or walking more instead, a country's carbon dioxide emission could be reduced by a significant percentage.

Let's think about what we can do with these three keywords starting with "R" in mind—reduce, reuse, and recycle.

### Reduce

- Avoid using cars and walk, ride bicycles, or use mass transit such as trains.
- Turn down the power level by 1 or 2 steps on air conditioners and heaters.
- Try buying food produced in the area that you live.
- Much energy is used to transport products too.
- Use energy-saving light bulbs and appliances.
- Turn off lights when not in use.

*Use returnable bottles!*



### Reuse

- Buy drinks in returnable bottles instead of plastic bottles and aluminum cans.
- Bring your own water bottle.
- Bring your own bag when shopping, instead of accepting bags stores give you.
- Don't buy disposable products.
- Buy products that last and use them for a long time.
- Fix items that become broken instead of throwing them away.
- Compost garbage.

### Recycle

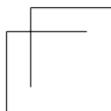
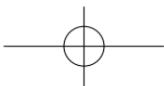
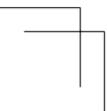
- Separate garbage accordingly and recycle plastic bottles, aluminum cans, glass, paper, and other recyclable items.

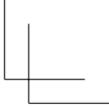
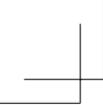
See how there're so many things you could do? And they're things that can be done by anyone right now.

### Natalie:

As the Japanese concept "mottainai" suggests, I guess the important thing is to buy as little as possible, to use the items thoroughly, and not to throw things away so easily.

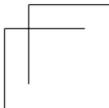
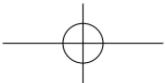
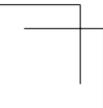






Chapter 3

# War and Peace Dividend



## Wars and Conflicts

**Jiro:**

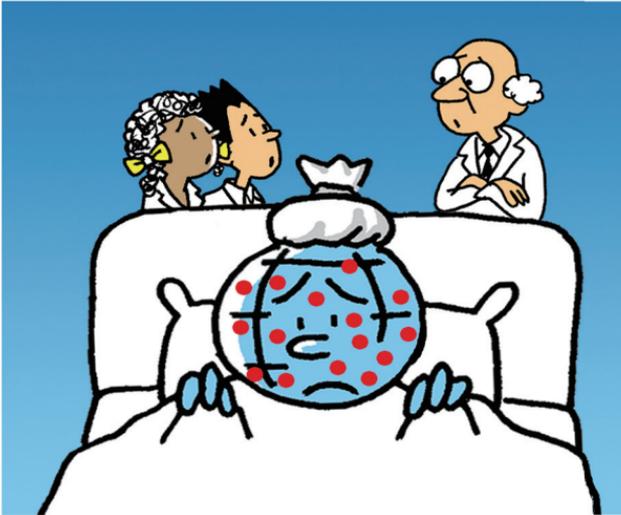
What are all those red dots on the map? **Jiro:**

What are ethnic groups and how are they different from racial groups?

**Dr. Gaia:**

Those are war and conflict zones. Wars are large-scale fights between nations. Conflicts are smaller in scale, fought between peoples of differing ethnic groups and/or religions. That's how they differ, but in reality the difference is quite ambiguous.

It's said that there are more than 40 wars and conflicts going on at this moment, and over 2.3 billion people are caught in the middle suffering the consequences. Not only do wars and conflicts destroy people's lives, but they also hurt the environment. It's the ultimate act of environmental destruction. Parties involved in wars and conflicts will do anything to take down the enemy.



**Dr. Gaia:**

Here's an example from history. The pesticide used during the Vietnam War polluted the whole nation and also caused birth defects in many children born thereafter. Another example is when during the Gulf War oil fields were destroyed. The burning oil fields released a tremendous amount of carbon dioxide into the atmosphere, not to mention the leaking crude oil that leaked into the Persian Gulf, which devastated the surrounding ecosystem.

**Natalie:**

Why are there so many wars and conflicts? Looks like they're spreading to other places, too!

**Dr. Gaia:**

Humans are animals that like to form groups. Once they find similarities with others, they group together forming a bond with each other. When they encounter those that do not share their similarities, they see them as "others that are different from us" and sometimes discriminate against or even abuse them. You throw in other interests as territories and resources into the mix, and this leads to people taking up arms and starting a war.



Conflict zones around the world

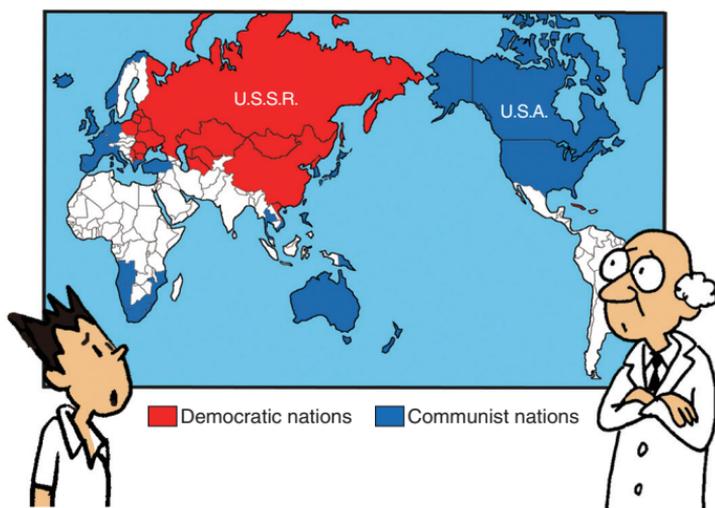
## The Cold War (1945-1991)

**Jiro:**

What similarities and differences lead people to form groups?

**Dr. Gaia:**

In the aftermath of World War II, the democratic United States—which won the war—and the communist Soviet Union became two super powers, dividing the world into the two with some nations in the democratic camp and others siding with the communist camp. Essentially, this was hostility that grew from ideological difference. Eventually, the United States and the Soviet Union started a nuclear arms race and racked up nuclear weapons that could obliterate humankind a dozen times over. As a result, from fear of the entire human race being wiped out if an actual war should happen, a situation developed in which the two nations remained hostile towards each other but did not enter into direct war. This condition was named “Cold War” and it continued until 1991 when the Soviet Union collapsed.



**Natalie:**

So basically, because they produced so many weapons that they couldn't fight each other. That's just ridiculous.

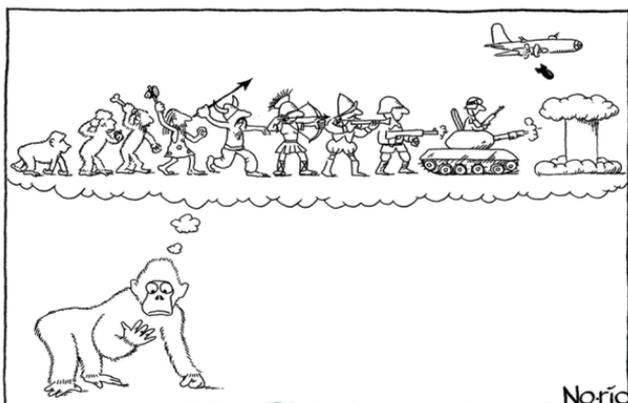


**Dr. Gaia:**

Though the Cold War did not start a nuclear war between the United States and the Soviet Union, it did lead to numerous conventional wars and internal conflicts in countries in Asia, Africa, and Latin America, where there was much power struggle between the supporters of the two ideological camps. In place of the United States and the Soviet Union, those smaller nations and guerilla groups backed by each super power warred with each other. That's why the Cold War is sometimes called a "proxy war." The United States and the Soviet Union each recklessly provided their supporting side with weapons, and as a consequence, a tremendous amount of dangerous arms flooded the world. There are 550 million guns out there in the world—that's one for every 12 people. The Soviet Kalashnikov rifles alone amount to 100 million.

**Natalie:**

In Africa, guerilla child soldiers have those Kalashnikov rifles!



## Ethnic Conflicts and Racism

### Dr. Gaia:

Contrary to expectations of a peaceful post-Cold War era after the collapse of the Soviet Union in 1991, conflicts between ethnic groups broke out increasingly all across the world.

### Jiro:

What are ethnic groups and how are they different from racial groups?

### Dr. Gaia:

“Ethnic group” refers to a group of people who share the same language, religion, history, and tradition. There are about 3,000 ethnic groups in the world.

During the Cold War, the hostility between the two super powers—the United States and the Soviet Union—actually suppressed ethnic and religious disputes. However, as it drew to a close with the Soviet collapse, they erupted everywhere.



### Jiro:

Wow, there are 3,000 ethnic groups?  
We only have 200 countries, though.

### Dr. Gaia:

You’re right and that’s the problem. Most countries have multiple ethnic groups within them. From among the groups, the group with the majority of people tends to take power. Then they will govern favoring their own people, leaving the minority group(s) out—by discrimination, and at times even by persecution. The disenfranchised minority group(s) will take up arms and rise in resistance, attempting to overthrow the sitting government, or further try to become their own independent country.

Another problem is that some of the countries in the world were produced as a result of major powers drawing borderlines on their own terms, dividing up ethnic groups into smaller fragment groups. An example of this is what happened to the Kurdish people (population 30 million). The people have been forcibly divided, some living in Turkey, others in Iran and Iraq, and as a result, they’ve each started their own independence campaign in their respective countries.

**Dr. Gaia:**

Now “racial group” is a different approach of classifying humans. It’s based on skin color, hair color and type, anatomy, among other factors relating to biological attributes. Essentially, it’s everything related to external appearance.

In the past, the idea of polygenesis was the most widely accepted theory, which said that the origin of each race differed and therefore each group’s abilities also vary. Some used this idea to justify their racist ideas. However, technology and DNA research have progressed since then, and the theory of monogenesis, which asserts the common origin of all humankind, has become a near-certain fact. So, things like skin color and hair type or color, are just differences in physical appearances that developed over time because of environmental differences like temperature and other external factors. Therefore, there are no differences in intelligence or abilities based on race.

**Natalie:**

That may be true, but until quite recently in the United States and South Africa, white people discriminated against black people! In the 1960s, the African-American pastor Reverend Martin Luther King, Jr. made this moving speech. Every time I hear this, it brings tears to my eyes!

*“I have a dream that my four little children will one day live in a nation where they will not be judged by the color of the skin but by the content of their character.”*



Reverend Martin Luther King, Jr.  
(1929-1968)

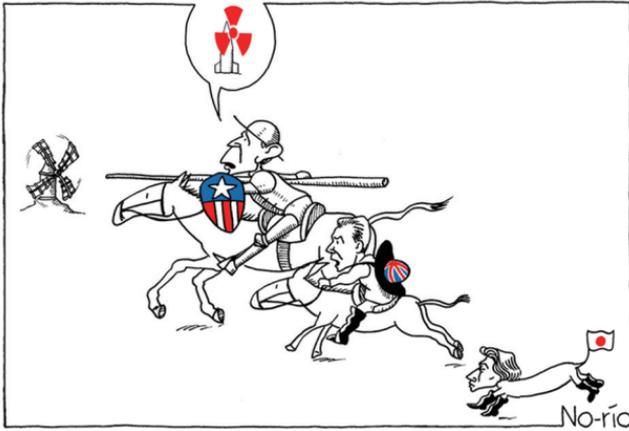


## The Fight Against Terrorism

**Dr. Gaia:**

On September 11, 2001, the World Trade Center in New York City and the Pentagon in Washington D.C., became a target of suicidal attacks by hijacked planes controlled by members of the Islamic extremist group Al Qaeda. More than 3000 people fell victim to the attack. Soon after, then President George W. Bush declared “war against terrorism” and ordered the attack on Afghanistan, where Al Qaeda was based and were also harboring their leader Osama bin Laden.





**Dr. Gaia:**

In 2003, President Bush waged war again, this time on Iraq, on the suspicion of its dictator Saddam Hussein possessing weapons of mass destruction (nuclear, biological, as well as chemical) in the country. Eventually, Iraq lost the war as a result of high-tech warfare by the United States, leaving hundreds of thousands of victims. Hussein's regime ultimately fell. However, to this day, neither evidence suggesting possession of weapons of mass destruction nor Iraq's ties to Al Qaeda have been found. And despite the United States' desperate efforts of democratizing Afghanistan and Iraq, they have not been successful—in both countries, terrorism is still abound and the countries are still yet in a state of war.

**Jiro:**

So they waged war based on just a suspicion without any evidence, and took them down?

**Dr. Gaia:**

Since this war, Muslims all over the world strongly resented the United States and other nations that followed it into war, pushing Islamic extremists to undertake more terrorist acts.



## The Separation of Church and State

**Natalie:**

So how can we stop racism, and ethnic and religious conflicts?

**Dr. Gaia:**

Well, ethnic and racial discrimination always begins by finding things that are different in others—it's the idea of "us vs. them." So to resolve this, just do the opposite. Recognize the fact that "they" are humans just like "us" and be good neighbors, socialize, and engage in dialogue with them.

**Natalie:**

That means separating opposing racial and ethnic groups that should be talking to each other—like they did segregating living districts in South Africa during apartheid, and building walls between conflicting parties in Israel and Palestine—doesn't help the situation at all.

**Dr. Gaia:**

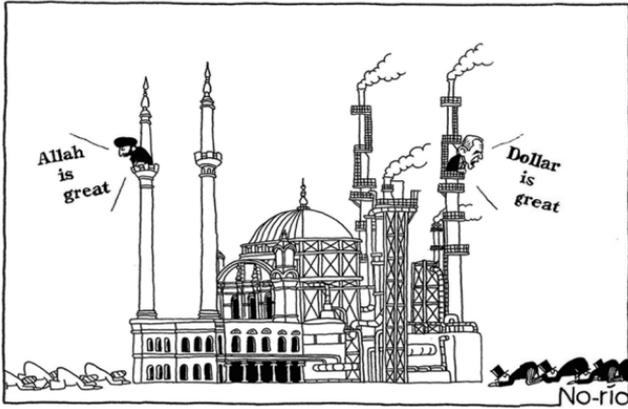


Currently in the Middle East, many of the countries are in a state of internal conflict and are troubled by countless terrorist acts. But among them is a country like Turkey, a country that has strived to preserve peace and democracy. Let's take a look.



In the Middle East, what's behind most of the conflicts is religion. In Turkey, over 90 percent of its citizens are Muslims, but there are also Christians, Jews, and people of other religions. More than 20 different ethnic groups coexist and live together peacefully there.

To protect peace and democracy in the country, the Turkish constitution declares the separation of church and state—secularism. The Turkish government cannot utilize religion for its purpose, discriminate people on the basis of religion, or support a specific religion in the public realm. Similarly, its citizens cannot display ideas and behaviors related to a particular religion. For instance, in governmental assemblies and schools, headscarves and long beards are prohibited, both of which are symbols of the Muslim faith. The annual fasting of month-long Ramadan cannot be forced onto people—people choose whether to participate or not. So even during Ramadan, restaurants are open in Turkey.



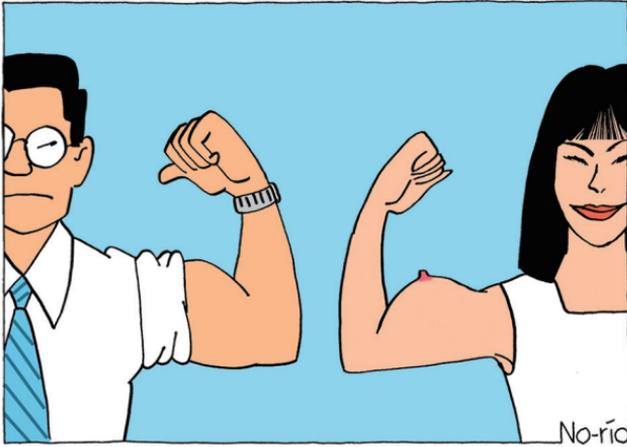
**Jiro:**

In that regard, Japan is very tolerant of all religions. The town that I live in has a population of 180,000 most of which are Buddhists. There are also about 5 or 6 Christian churches, both Catholic and Protestant, so there are probably about 1000 Christians, as well. There's no discrimination against them. But then, no one can tell who's Christian and who's not. Since we're all Japanese, we can't tell from our appearances or how we dress. There's no need to ask people of their religion. In Japan, it doesn't really matter what religion your neighbors are—there are no problems or it isn't a big deal even if you don't know.

Natalie and I—we're both of different nationalities, religions, and ethnic groups, but we're really good friends. When we eat together, Natalie prays and I put my palms together and say "Itadakimasu" which means, "I humbly receive this food" in Japanese. Before a meal, we all thank God or nature in our different ways. But even if we are different in religion, race, or ethnicity, as humans we all act and think similarly. I really feel that way.

**Natalie:**

Many Japanese people take their babies to a Shinto shrine soon after they're born for a blessing, but get married in a Christian church even when they're not Christians because it sounds "romantic," and have funerals in a Buddhist temple. Well, in my opinion, I think the Japanese are not really tolerant of religions, but just too ignorant and lax about them. To think that there are countries in the world warring over religion!



## Against All Kinds of Discrimination

### **Natalie:**

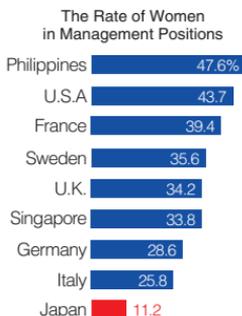
You know, discrimination isn't just about race and ethnicity. Women are also discriminated against all over the world. In the Sahel region (southern part of the Sahara Desert) where I come from, drawing water and carrying it home is a job for women and children. We have to travel far to where water is available and bring the heavy water back several times a day. That takes up all the time so there's no time for school.

### **Dr. Gaia:**

The world of Islam is a male-dominated one, and for those countries where they still follow strict Islamic Law, women are discriminated against and face all kinds of restrictions. Many Muslim men feel women do not need education. Malala Yousafzai, a Pakistani girl who stood up for girls' right to education, was once even shot in the head by the Taliban.

**Jiro:**

I know her! She's the 17-year-old activist who won the 2014 Nobel Prize for Peace! In Japan, there isn't much difference in the quality of education for men and women. The problem is after they get out of school. Japanese society is still male-dominated and the numbers of females in top management levels, the Diet, and in the Ministries are way lower than those of other nations.



**Natalie:**

Japan is really worried about its rapidly falling birth rate, but in reality it's very difficult for women to raise children and work. Since there weren't many female politicians and Diet members, I guess politicians in Japan never really put an effort into setting up facilities and policies that would help women. Plus, I feel Japanese society isn't friendly towards other minority groups—the LGBT community, the physically challenged, foreigners like me, Japan-born Korean residents, etc.

**Dr. Gaia:**

You're absolutely right. Discrimination against women and people of minority groups are prevalent in Japanese society. There needs to be some sort of a quota system to set aside a certain number of positions for women in management, the Diet or the Ministries, or an affirmative action plan to give priority status in entering schools and securing jobs. And with the critical issue of low birth rate and the aging population close at hand, Japan should further value the talents of women as well as foreign workers.



## Discrimination Against Animals

**Jiro:**

I'm really concerned about discrimination against animals. In western cultures, people don't see humans as animals. They think that god created animals for humans. But the Japanese believe there aren't many differences between animals and humans—that humans are animals. This idea comes from Shintoism, which sees gods dwelling in all elements of nature, and from Buddhism, I think.

**Natalie:**

Don't Buddhists believe in "reincarnation"? And that one of the things you might be reborn into is an animal?

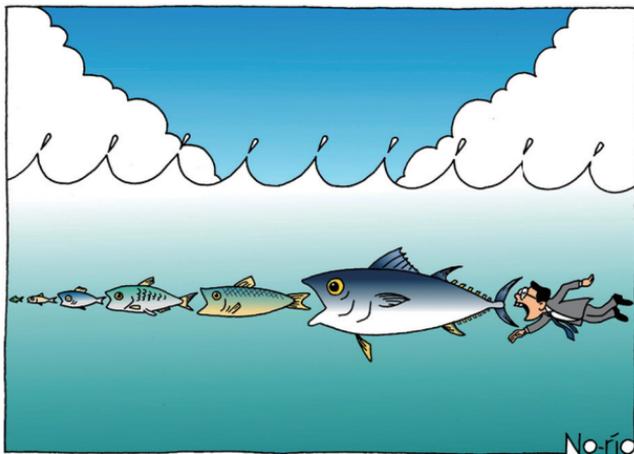
**Jiro:**

Well, I personally don't believe in reincarnation, but I do believe in the ecological cycle. When we die we go back into the earth and become nutrients for the plants, and the plants in turn will become food for animals and be part of their being.

**Dr. Gaia:**

In the "Ten Commandments" Moses received from God it says "Thou shalt not kill [humans]," but the Buddhist "Five Precepts" prescribes that we should not kill all beings. It treats all life, including insects and plants, with an equal level of importance. However, for us humans to live, we must take lives to nourish ourselves. So, it says plants—grains, vegetables, and legumes—can be consumed.

In principle, Buddhists must be vegetarians, but different regions and sects have different rules for what can be consumed. When Buddhism came to Japan, everyone except monks was allowed to eat seafood and chicken. Only after westerners came to Japan during the Meiji era, the Japanese started to eat other kinds of meat like beef.



**Natalie:**

But the Japanese are overeating fish like tuna and eel. For tuna, the Japanese alone consume about a quarter of the world's tuna catch.

**Jiro:**

True. To preserve the species, we must eat less of it. But at the same time, I don't get how some people think killing whales is barbaric just because whales are considered intelligent animals. Like how there's no difference between humans and animals, there's no difference between different kinds of animals either. So I think it's a bit strange to single out certain animals to protect them, based on our human values. I believe there's a need for a wider perspective—a way to protect the entire ecosystem (that includes us humans) as a whole, or to coexist with it.

**Dr. Gaia:**

Yes—from the standpoint of preservation of all species, as well as from the perspective of fair distribution of food, perhaps we should take a second look at the positive value of vegetarianism.

## Ethnic Reconciliation

**Dr. Gaia:**

In the unfortunate state of an armed conflict as a result of ethnic, religious, or racial disputes, the most important thing in resolving the situation is not to engage in retaliation. Retaliation leads to more retaliation, which will exacerbate and escalate the state of affairs, leading the conflict into an endless cycle of war.

**Natalie:**

But that's just blind idealism! In reality, it's impossible to make the conflicting parties stop fighting each other!

**Dr. Gaia:**

It's not as impossible as you think. There's a man who made the impossible possible. What Nelson Mandela of South Africa did is a great example. In the past, South Africa adopted a policy of apartheid with the whites severely discriminating against the blacks. Back then Mandela was the leader of the anti-apartheid movement, and because of that the white government sentenced him to life in prison. Ultimately, Mandela was kept in prison for 27 years.

Eventually, Mandela was successful in abolishing apartheid in 1991, and in 1993 received the Nobel Prize for Peace. In 1994, an election took place that included all racial groups, and Mandela became the first black president of South Africa.

When he became President, he set up the Truth and Reconciliation Commission (TRC) and hearings were held across the country. Hearings were like trials, but they were actually a chance for the perpetrators to face their victims, admit their crimes and ask for forgiveness. It was a place for all the discrimination, violence and abuse, as well as the truth to be divulged out in the open, and at the same time for the perpetrators to receive amnesty. One thing the TRC was not was a trial for retaliation.

Gradually, the disparity between whites and blacks narrowed, reconciliation efforts advanced over time, and there haven't been any large-scale conflicts.



South Africa

**Natalie:**

Wow, what a great leader he was!



**Jiro:**

Japan fought a fierce war with the United States in the Pacific War (1941-1945). The war ended with the dropping of the atomic bombs in Hiroshima and Nagasaki, killing almost 200 thousand civilians, with Japan soon after surrendering to the United States. But today, the United States has become Japan's best partner, and although there're many actively involved the anti-nuclear movement, we don't see people getting back at the American government or the pilots for dropping the bombs.

**Natalie:**

For many people, memories of war weigh heavy in their souls and aren't easily erased. I don't think a lot of people could understand the fact that the Japanese don't harbor vindictive feelings about atomic bombs being dropped on their country.

*"We cannot change the past, the act of discrimination or the fact of being discriminated, but we must change our attitude and forgive each other. What we need is reconciliation."*



Former President of  
South Africa,  
Nelson Mandela  
(1918-2013)

## Japan—The Only Country to Fall Victim of the Atomic Bomb— For a Nuclear-Free Future

### Jiro:

You already know that towards the end of World War II, the American military dropped atomic bombs on Hiroshima and Nagasaki killing 200 thousand people, right? Well, on March 11, 2011, the huge earthquake that shook a large portion of eastern Japan, and the monstrous tsunami that hit afterwards caused a serious accident—the meltdown of the Fukushima No. 1 Nuclear Plant. The whole plant was contaminated with nuclear radiation, and people living within the 20km radius of the plant had to leave the area. More than 100 thousand people had no choice but to evacuate. To this day, many of them still cannot return to their homes. Wide areas of farmland in the area, as well as the nearby sea have been contaminated, resulting in a devastating blow to the agriculture and the fishing Industries.

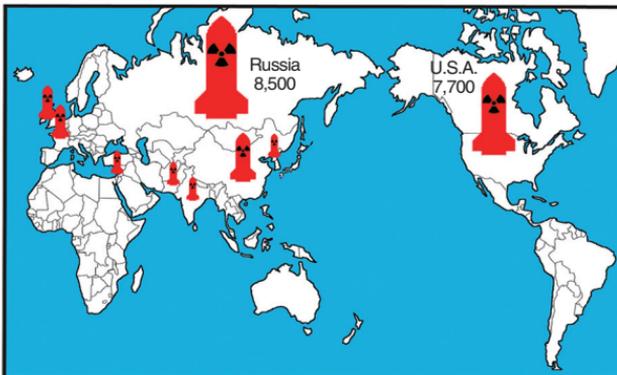
I feel strongly, that as a country that has been twice a nuclear victim, it's our duty, as citizens of the country, to raise our voices against nuclear power. 54% of Japanese citizens are against re-starting of the nuclear plants. Only 27% are for it. But the Japanese government has since then restarted the nuclear facilities, and moreover selling our nuclear technology to other countries! They pitched it as "safer than before the 3.11 accident."

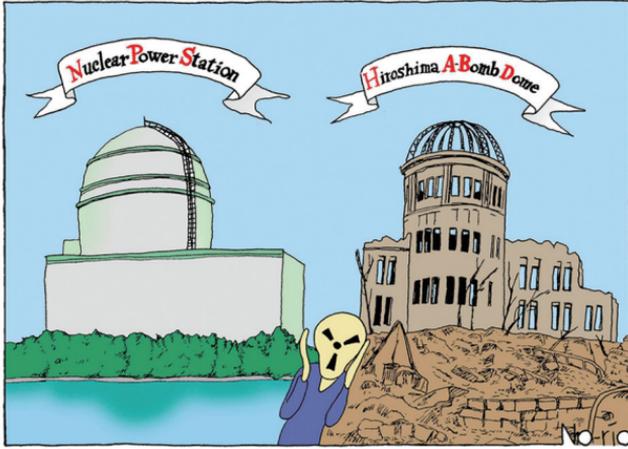
### Natalie:

So how many nuclear weapons are there in the world?

### Dr. Gaia:

There're approximately 17,300, mainly in the United States and Russia.



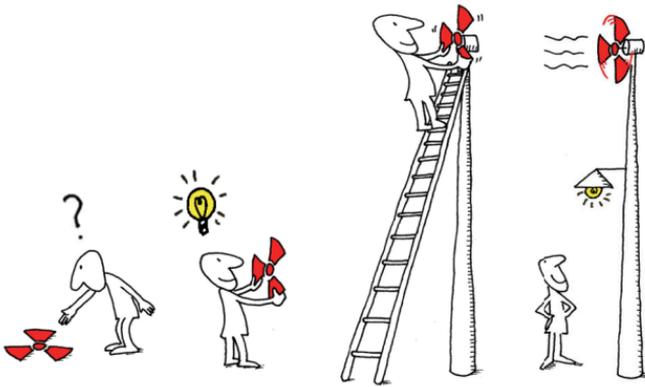


**Natalie:**

How many nuclear plants are there in Japan?

**Jiro:**

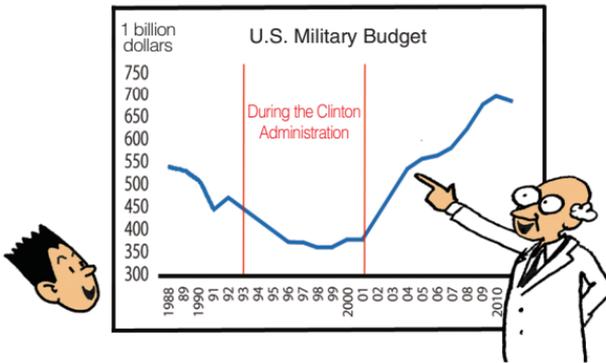
There're 48 in 17 locations, but not all are currently active. But the Japanese government says that they will be operational as soon as their safety has been confirmed—even when the majority of Japanese citizens are against restarting the plants. The people want a nuclear-free future!



## Peace Dividends

### Dr. Gaia:

Are you familiar with the term “peace dividend”? It was once thought that, when Cold War ended and peace prevailed, since the enormous military budget would be cut significantly, it would make tremendous amount of money available for public welfare and for boosting the economy, thus making society better. In fact, when Cold War ended in 1991, followed by the Clinton Administration taking office (1993-2001), the U.S. military budget was cut significantly, and as military technology such as the Internet and GPS technology were released to the private sector, the IT industry took off, pulling the U.S. economy upwards. America saw a boost in the economy and the long-running budget deficit was alleviated.



### Jiro:

That's very similar to what happened in post-World War II Japan. The newly erected Japanese constitution pledged to forever renounce war in Article 9, thus disbanding the Japanese military, allowing the country's military budget to be utilized towards reconstruction and Industrial development. The military industry was dismantled as well, and as a result highly skilled military personnel, like those who engineered the Zero Fighters during the war, went into the car Industry. A former Navy engineer founded Sony. The “miraculous economic recovery” of post-war Japan was possible because the constitution created peace dividends by allowing Japan to abandon war.

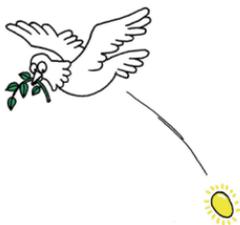
**Dr. Gaia:**

Wars cost a tremendous amount of money. So it's an utterly inefficient way to resolve conflicts and disputes.

Since 2001, it's been estimated that the United States has spent about 3 trillion dollars on wars against Afghanistan and Iraq. On top of that, 6,765 lives of American troops have been lost. Hundreds of thousands of local civilians have most likely been killed, as well. Even after 13 years, a democratic government is yet to be established in either Afghanistan or Iraq—terrorism is still rampant and both countries are still at war.

Shortly after the end of the Cold War, the military budget was significantly cut globally across the board, and a peaceful mood prevailed the world. However, the military expenditure of nations jumped right back to Cold War level after 2001, pushing the total to 1.8 trillion dollars. If even a small portion of that could be utilized, so many of the world's problems could be solved!

- Global warming countermeasures in developing countries  
54 billion dollars
- Prevention of global desertification  
8.7 billion dollars
- Providing safe and clean water for children around the world  
9 billion dollars
- Providing elementary education for children around the world  
20 billion dollars
- Eradication of global poverty  
27 billion dollars



You see, there're so much more we could do. People of younger generations like you two must build peace, and from the dividend it yields, make this world a better place for all.

**Jiro & Natalie: Leave it to us!**





# *The Earth Charter*

*Values and Principles to  
Foster a Sustainable Future*

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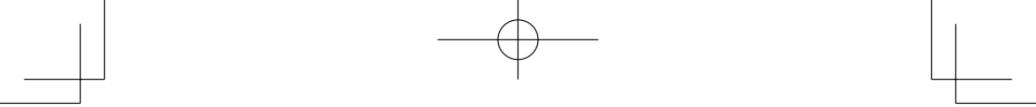
## **PREAMBLE**

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We stand at a critical moment in Earth's history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations.

### **Earth, Our Home**

Humanity is part of a vast evolving universe. Earth, our home, is alive with a unique community of life. The forces of nature make existence a demanding and uncertain adventure, but Earth has provided the conditions essential to life's evolution. The resilience of the community of life and the well-being of humanity depend upon preserving



a healthy biosphere with all its ecological systems, a rich variety of plants and animals, fertile soils, pure waters, and clean air. The global environment with its finite resources is a common concern of all peoples. The protection of Earth's vitality, diversity, and beauty is a sacred trust.

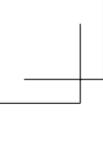
### **The Global Situation**



The dominant patterns of production and consumption are causing environmental devastation, the depletion of resources, and a massive extinction of species. Communities are being undermined. The benefits of development are not shared equitably and the gap between rich and poor is widening. Injustice, poverty, ignorance, and violent conflict are widespread and the cause of great suffering. An unprecedented rise in human population has overburdened ecological and social systems. The foundations of global security are threatened. These trends are perilous—but not inevitable.

### **The Challenges Ahead**

The choice is ours: form a global partnership to care for Earth and one another or risk the destruction of ourselves and the diversity of life. Fundamental changes are needed in our values, institutions, and ways of living. We must realize that when basic needs have been met, human development is primarily about being more, not having more. We have the knowledge and technology to provide for all and to reduce our impacts on the environment.



The emergence of a global civil society is creating new opportunities to build a democratic and humane world. Our environmental, economic, political, social, and spiritual challenges are interconnected, and together we can forge inclusive solutions.

### **Universal Responsibility**

To realize these aspirations, we must decide to live with a sense of universal responsibility, identifying ourselves with the whole Earth community as well as our local communities. We are at once citizens of different nations and of one world in which the local and global are linked.



Everyone shares responsibility for the present and future well-being of the human family and the larger living world. The spirit of human solidarity and kinship with all life is strengthened when we live with reverence for the mystery of being, gratitude for the gift of life, and humility regarding the human place in nature.

We urgently need a shared vision of basic values to provide an ethical foundation for the emerging world community. Therefore, together in hope we affirm the following interdependent principles for a sustainable way of life as a common standard by which the conduct of all individuals, organizations, businesses, governments, and transnational institutions is to be guided and assessed.

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## PRINCIPLES

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### I. RESPECT AND CARE FOR THE COMMUNITY OF LIFE

1. **Respect Earth and life in all its diversity.**
  - a. Recognize that all beings are interdependent and every form of life has value regardless of its worth to human beings.
  - b. Affirm faith in the inherent dignity of all human beings and in the intellectual, artistic, ethical, and spiritual potential of humanity.
  
2. **Care for the community of life with understanding, compassion, and love.**
  - a. Accept that with the right to own, manage, and use natural resources comes the duty to prevent environmental harm and to protect the rights of people.
  - b. Affirm that with increased freedom, knowledge, and power comes increased responsibility to promote the common good.
  
3. **Build democratic societies that are just, participatory, sustainable, and peaceful.**
  - a. Ensure that communities at all levels guarantee human rights and fundamental freedoms and provide everyone an opportunity to realize his or her full potential.
  - b. Promote social and economic justice, enabling all to



achieve a secure and meaningful livelihood that is ecologically responsible.

#### 4. Secure Earth's bounty and beauty for present and future generations.

- a. Recognize that the freedom of action of each generation is qualified by the needs of future generations.
- b. Transmit to future generations values, traditions, and institutions that support the long-term flourishing of Earth's human and ecological communities.

In order to fulfill these four broad commitments, it is necessary to:



## II. ECOLOGICAL INTEGRITY

#### 5. Protect and restore the integrity of Earth's ecological systems, with special concern for biological diversity and the natural processes that sustain life.

- a. Adopt at all levels sustainable development plans and regulations that make environmental conservation and rehabilitation integral to all development initiatives.
  - b. Establish and safeguard viable nature and biosphere reserves, including wild lands and marine areas, to protect Earth's life support systems, maintain biodiversity, and preserve our natural heritage.
  - c. Promote the recovery of endangered species and ecosystems.
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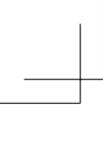
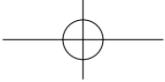
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- d. Control and eradicate non-native or genetically modified organisms harmful to native species and the environment, and prevent introduction of such harmful organisms.
  - e. Manage the use of renewable resources such as water, soil, forest products, and marine life in ways that do not exceed rates of regeneration and that protect the health of ecosystems.
  - f. Manage the extraction and use of non-renewable resources such as minerals and fossil fuels in ways that minimize depletion and cause no serious environmental damage.



**6. Prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach.**



- a. Take action to avoid the possibility of serious or irreversible environmental harm even when scientific knowledge is incomplete or inconclusive.
- b. Place the burden of proof on those who argue that a proposed activity will not cause significant harm, and make the responsible parties liable for environmental harm.
- c. Ensure that decision making addresses the cumulative, long-term, indirect, long distance, and global consequences of human activities.
- d. Prevent pollution of any part of the environment and allow no build-up of radioactive, toxic, or other

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- hazardous substances.
- e. Avoid military activities damaging to the environment.

7. Adopt patterns of production, consumption, and reproduction that safeguard Earth's regenerative capacities, human rights, and community well-being.

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- a. Reduce, reuse, and recycle the materials used in production and consumption systems, and ensure that residual waste can be assimilated by ecological systems.
- b. Act with restraint and efficiency when using energy, and rely increasingly on renewable energy sources such as solar and wind.
- c. Promote the development, adoption, and equitable transfer of environmentally sound technologies.
- d. Internalize the full environmental and social costs of goods and services in the selling price, and enable consumers to identify products that meet the highest social and environmental standards.
- e. Ensure universal access to health care that fosters reproductive health and responsible reproduction.
- f. Adopt lifestyles that emphasize the quality of life and material sufficiency in a finite world.



**8. Advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired.**

- a. Support international scientific and technical cooperation on sustainability, with special attention to the needs of developing nations.
- b. Recognize and preserve the traditional knowledge and spiritual wisdom in all cultures that contribute to environmental protection and human well-being.
- c. Ensure that information of vital importance to human health and environmental protection, including genetic information, remains available in the public domain.



**III. SOCIAL AND ECONOMIC JUSTICE**

**9. Eradicate poverty as an ethical, social, and environmental imperative.**

- a. Guarantee the right to potable water, clean air, food security, uncontaminated soil, shelter, and safe sanitation, allocating the national and international resources required.
- b. Empower every human being with the education and resources to secure a sustainable livelihood, and provide social security and safety nets for those who are unable to support themselves.
- c. Recognize the ignored, protect the vulnerable, serve those who suffer, and enable them to develop their capacities and to pursue their aspirations.



**10. Ensure that economic activities and institutions at all levels promote human development in an equitable and sustainable manner.**

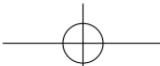
- a. Promote the equitable distribution of wealth within nations and among nations.
  - b. Enhance the intellectual, financial, technical, and social resources of developing nations, and relieve them of onerous international debt.
  - c. Ensure that all trade supports sustainable resource use, environmental protection, and progressive labor standards.
  - d. Require multinational corporations and international financial organizations to act transparently in the public good, and hold them accountable for the consequences of their activities.
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**11. Affirm gender equality and equity as prerequisites to sustainable development and ensure universal access to education, health care, and economic opportunity.**

- a. Secure the human rights of women and girls and end all violence against them.
  - b. Promote the active participation of women in all aspects of economic, political, civil, social, and cultural life as full and equal partners, decision makers, leaders, and beneficiaries.
  - c. Strengthen families and ensure the safety and loving nurture of all family members.
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12. Uphold the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being, with special attention to the rights of indigenous peoples and minorities.
- Eliminate discrimination in all its forms, such as that based on race, color, sex, sexual orientation, religion, language, and national, ethnic or social origin.
  - Affirm the right of indigenous peoples to their spirituality, knowledge, lands and resources and to their related practice of sustainable livelihoods.
  - Honor and support the young people of our communities, enabling them to fulfill their essential role in creating sustainable societies.
  - Protect and restore outstanding places of cultural and spiritual significance.
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#### **IV. DEMOCRACY, NONVIOLENCE, AND PEACE**

13. Strengthen democratic institutions at all levels, and provide transparency and accountability in governance, inclusive participation in decision making, and access to justice.
- Uphold the right of everyone to receive clear and timely information on environmental matters and all development plans and activities which are likely to affect them or in which they have an interest.
  - Support local, regional and global civil society, and
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- promote the meaningful participation of all interested individuals and organizations in decision making.
- c. Protect the rights to freedom of opinion, expression, peaceful assembly, association, and dissent.
  - d. Institute effective and efficient access to administrative and independent judicial procedures, including remedies and redress for environmental harm and the threat of such harm.
  - e. Eliminate corruption in all public and private institutions.
  - f. Strengthen local communities, enabling them to care for their environments, and assign environmental responsibilities to the levels of government where they can be carried out most effectively.



**14. Integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life.**

- a. Provide all, especially children and youth, with educational opportunities that empower them to contribute actively to sustainable development.
- b. Promote the contribution of the arts and humanities as well as the sciences in sustainability education.
- c. Enhance the role of the mass media in raising awareness of ecological and social challenges.
- d. Recognize the importance of moral and spiritual education for sustainable living.

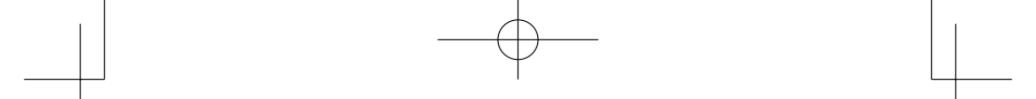


15. Treat all living beings with respect and consideration.

- a. Prevent cruelty to animals kept in human societies and protect them from suffering.
- b. Protect wild animals from methods of hunting, trapping, and fishing that cause extreme, prolonged, or avoidable suffering.
- c. Avoid or eliminate to the full extent possible the taking or destruction of non-targeted species.

16. Promote a culture of tolerance, nonviolence, and peace.

- a. Encourage and support mutual understanding, solidarity, and cooperation among all peoples and within and among nations.
  - b. Implement comprehensive strategies to prevent violent conflict and use collaborative problem solving to manage and resolve environmental conflicts and other disputes.
  - c. Demilitarize national security systems to the level of a non-provocative defense posture, and convert military resources to peaceful purposes, including ecological restoration.
  - d. Eliminate nuclear, biological, and toxic weapons and other weapons of mass destruction.
  - e. Ensure that the use of orbital and outer space supports environmental protection and peace.
  - f. Recognize that peace is the wholeness created by right relationships with oneself, other persons, other
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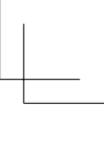
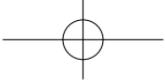
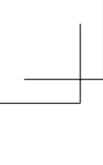


cultures, other life, Earth, and the larger whole of which all are a part

## THE WAY FORWARD

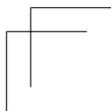
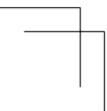


As never before in history, common destiny beckons us to seek a new beginning. Such renewal is the promise of these Earth Charter principles. To fulfill this promise, we must commit ourselves to adopt and promote the values and objectives of the Charter. This requires a change of mind and heart. It requires a new sense of global interdependence and universal responsibility. We must imaginatively develop and apply the vision of a sustainable way of life locally, nationally, regionally, and globally. Our cultural diversity is a precious heritage and different cultures will find their own distinctive ways to realize the vision. We must deepen and expand the global dialogue that generated the Earth Charter, for we have much to learn from the ongoing collaborative search for truth and wisdom. Life often involves tensions between important values. This can mean difficult choices. However, we must find ways to harmonize diversity with unity, the exercise of freedom with the common good, short-term objectives with long-term goals. Every individual, family, organization, and community has a vital role to play. The arts, sciences, religions, educational institutions, media, businesses, nongovernmental organizations, and governments are



all called to offer creative leadership. The partnership of government, civil society, and business is essential for effective governance. In order to build a sustainable global community, the nations of the world must renew their commitment to the United Nations, fulfill their obligations under existing international agreements, and support the implementation of Earth Charter principles with an international legally binding instrument on environment and development. Let ours be a time remembered for the awakening of a new reverence for life, the firm resolve to achieve sustainability, the quickening of the struggle for justice and peace, and the joyful celebration of life.





# *The Earth Charter Manga*

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Born 1947 in Tokyo. Upon graduation from Tokyo University of Foreign Studies with a B.A. in Spanish Studies, starts his career in McCann-Erikson Hakuhodo Co., Ltd. Leaves the company in 1977 to move to France, works on various film and language video productions. Following his return to Japan in 1987, his cartoons are run in various newspapers and magazines, domestically and internationally. He is awarded the Bungeishunju Manga Award for his work "Booing!" (Asahi Shimbun Company) in 1991. In 2000 he wins the Grand Prize at the International Editorial Cartoon Festival in Rouen, France. He has been a member of the World Economic Forum (Davos Summit) Cartoon Division since 2003. His recent publications are *Manga—The Palestinian Issue* (2005), and *Modern History in Manga: Why the Americans Won't Stop Warring* (2009), both published by Kodansha.

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