



Journey to Planet Earth
Transcript for Episode 08:
The State of the Planet

Complete Version

Journey to Planet Earth is produced by

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I'm Matt Damon and welcome to Journey to Planet Earth. In this episode we will investigate some of the most critical questions of the 21st century. Are populations soaring out of control? Will there be enough water and food for future generations? And global warming -- a false alarm or a gathering storm? We will visit parts of the world suffering from human overcrowding, hunger and despair -- places where disease is rampant. But we'll also bring you stories of hope and courage -- and celebrate the beauty and diversity of the natural world. Ultimately, our story is really about why we as individuals and members of a global community should take these issues seriously before it's too late. I think we owe it to our children and grandchildren. So please join me now -- as we begin our journey.

(Series Title)

JOURNEY TO PLANET EARTH

(Underwriting Credits)

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(Episode Titles)

The State of the Planet

Narrated By
Matt Damon

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(Sunrise)

Since the first of time, before our ancestors even thought of time, first light reveals a treasure almost beyond imagination -- the elegance of diversity and the rich tapestry of the natural world. Ours is also a world shaped by people -- by those who are strongly tied to the land -- who draw from its bounty -- suffer during hard times -- only to be renewed by the birth of each new generation.

(Cities)

This is also a place our ancestors never could have dreamed of -- mega-cities of glass and steel -- home to expanding populations -- powered by a global economy -- fueled by never ending images of consumption. Even when the sun gives way to the glow of neon, we've found a way to continue the frenzy -- a way to freeze time -- until we reach the very edge of night. Yet all too often first light brings a more sobering reality -- that perhaps all is not well with the state of the planet.

Eugene Linden
Author/Journalist

I think that the Earth has been sending us distress signals and the distress signals have to do with the pressures of human population and the pressures of the human economy on the ecosystems.

Tom Lovejoy
The Heinz Center

If current trends continue, by 2050 something on the order of a third or 40% of all species will either have become extinct or will be on the threshold of going extinct.

Peter Gleick
Pacific Institute

More than a billion people don't have access to safe drinking water. 2.6 billion people, almost, almost half the world's population doesn't have access to adequate sanitation services.

Rajul Pandya-Lorch
International Food Policy Research Institute

More than 130 million children who are under the age of five will still remain malnourished by 2020.

Lester Brown
Earth Policy Institute

We are in effect, outgrowing the Earth. We need another planet but there's no other habitable planet that we can go to.

How could this have happened? How could our planet be faced with seemingly unprecedented environmental challenges? Perhaps it's best to start with numbers -- numbers that have literally shaped the human condition.

(Population Graphic)

From the time of our prehistoric ancestors, it took until about 1800 for our planet's population to reach one billion people. It took another 125 years to reach 2 billion -- less than 50 years to reach 4 billion -- and only 25 years more years to reach six billion people. Incredibly, the world's population grew more in the past fifty years than in the preceding 4 million years.

(People Montage)

Today our numbers have surged to nearly six and half billion and our population is increasing by nearly 80 million people each year -- 220,000 each day. During the course of this program 15 thousand children will be born. Yet as ominous as these statistics are -- the population explosion that began in the mid nineteenth hundreds is finally slowing down -- and it's happening in some of the most unexpected places.

(Bangladesh)

Bangladesh is one of the world's most densely populated countries. This is where nearly 145 million people -- roughly half the population of the United States -- are crammed into an area the size of Wisconsin. Not very long ago the average births per woman was just over six. Today it's half that and still falling.

Bob Engelman
Population Action International

Bangladesh is one of the success stories of the effort that's been going on really since the 1970s. This isn't the result of population control. This is result of governments and healthcare providers and nonprofit organizations making available to women and men the means to basically plan their own pregnancies and have children when they want to have children.

Throughout Bangladesh's countryside, thousands of community health workers are helping to reduce fertility rates.

Amy Coen

Population Action International

The greatest success story in the world is that population is slowing -- women are getting what they want. They're getting family planning. They're getting the means to slow their family size. And when they get that. Not only do you give these people a healthy family, you give them hope.

Most experts predict that in about fifty years our planet's population will level off at about nine and a half billion and then slowly begin to fall. Despite this extraordinary achievement -- there's a dark side to our victory over the population explosion -- and it can be found in the crowded urban slums and rural shantytowns of the developing world.

(Developing World Montage)

This is where families walk great distances just to gather water from tainted ponds and streams. Where women search barren landscapes for scraps of firewood for heating and cooking. And men scratch out a meager existence on small plots of arid land. While the unemployed -- suffering from extreme poverty and anger -- often turn to violence and even terrorism.

Venkateswar Ramaswamy

Calcutta Community Leader

It's because of years and years of deprivation, poor sanitation, scarcity of drinking water, general degraded environment, that a kind of rage builds up, and it just needs small sparks to set it on fire and riots can break out.

Homer-Dixon

University of Toronto

It's very easy for the billion or so people in rich countries in rich countries to forget exactly what life is like for the 3 to 4 billion very poor people on this planet. We have to remember that 3 billion on this planet survive on less than \$2.00 a day -- somewhere around 1 to 1 1/2 billion survive on less than a dollar a day.

Too often -- those of us living with the luxuries of the West assume that the battle to save the environment will be fought here -- amid the turmoil of the developing world. But now we are told that there's another -- more familiar battleground -- and it's located in our planet's richest country -- the United States.

(New York City)

As a result of immigration and low infant mortality, over the next fifty years the United State's population is expected to reach 420 million. The implications are enormous.

Bob Engelman

Americans use a tremendous amount of energy, a tremendous amount of natural resources, more even than the average European or Japanese.

Fred Myerson
Georgetown University

The average person in the United States produces five times the global average of greenhouse gases. And when you compare it to Bangladesh it's more like a hundred times. When you add 140 or 150 million Americans to the world population, in terms of consumption, it's a really big impact.

Americans live in a hi-tech world of automobiles and factories requiring huge amounts of energy. Our life styles impose more than a hundred times the stress on the planet than many of those in the developing world. This raises one of the most fundamental questions of our time: can our planet provide future generations with even the basic necessities of life?

(Water Montage)

Though our planet is covered by an extraordinary amount of water – over 97 percent is undrinkable seawater and another 2% is locked-up in our polar ice caps. Satellite imagery shows a more promising sight -- the vast amount of water vapor circling the Earth. The whitest areas indicate rain or snow -- the only source of our planet's freshwater. A closer view shows intense activity over the Amazon Basin of South America.

(Amazon River)

We have journeyed here to dramatize the inequitable distribution of our planet's fresh water. The amount of rainwater collected by the Amazon is enormous. In fact the river carries one fifth of the world's fresh water. However the Amazon also flows through one of our planet's most sparsely populated regions -- a treasure of biodiversity and indigenous cultures isolated from the rest of the world. But as a result of its remote location, relatively few can benefit.

(Rivers Montage)

Unlike the Amazon, many of our planet's greatest rivers are in danger of running dry. That includes the Amu Darya -- the Nile --the Colorado -- the Mekong and the Yellow River. In a world that's growing by 80 million people each year -- and where the demand for water doubles every 20 years -- this doesn't bode well for the state of our planet -- especially in the cities of the world.

(Cities Montage)

Recently, our planet's urban population reached a watershed mark in recorded history. It may have happened when a Kurdish refugee sought relief in Istanbul, or a woman left Peru's countryside to give birth in the slums of Lima, or an unemployed student left his village in Guatemala for a job in New York City, or a young rice farmer started a new life working in the food stalls of Shanghai. The exact person or location is not important but the event was truly historic. For the first time the urban population of our planet outnumbers those living in rural areas. In 1950 there were 86 cities with a population over one million. Today there are more than 400. Within ten years 600 cities will each be home to over a million people. The health affects are significant-- particularly in the developing world -- in places like Africa -- in places like the shantytowns of Kenya.

Ronald Rosenberg
U.S. Army Medical Research Unit

I think that Americans have a romantic view of Africa. They think about the savanna and these huge herds of elephant, and antelope and lions, but in fact, modern Africa is really much more like this, with large cities like Nairobi that act as magnets to bring people in from the countryside where they're having trouble making a living. When they come into a city like Nairobi, they bring with them a nucleus for epidemics.

In Nairobi the biggest health problem is the lack of clean water.

Peter Gleick

Perhaps the greatest failure of development in the 20th century was our failure to meet basic human needs for water for everyone. And the direct implication of this failure to provide basic human needs for water are water-related diseases. Three to five million people die a year, 20 or 30,000 perhaps a day, from water-related diseases that are easy to prevent.

(Nairobi)

We now live in a world where the quality of water can be considered a major human rights issue. In the poverty stricken slums of the developing world, people have little choice other than to dump raw sewage into their local river. Elsewhere in the world, the advantage of newly acquired wealth is clearly apparent.

(China)

Suzhou Creek is an ancient canal cutting through the heart of Shanghai. Today it's the city's lifeline. Each day thousands of barges carry food and construction materials in and out of Shanghai. A few years ago the canal was literally a sewer. Like the local waterway in Nairobi -- Suzhou Creek received massive amounts of wastewater and pollution from factories flanking the canal. The only difference is that Shanghai was a city in the midst of an economic boom. To remedy the problem authorities invested billions of dollars to build a series of huge tunnels to collect Shanghai's wastewater which was then treated and flushed out to sea. The clean-up of Suzhou Creek was made possible because of one thing -- a thriving economy.

(Haiti)

Located 600 miles off the southeast coast of the United States is the Caribbean island nation of Haiti. This is the Western Hemisphere's poorest country and unlike Shanghai it suffers from severe economic depression and political instability. In the slums of Port-au-Prince, the nation's capital -- a quarter of a million Haitians are at the mercy of local gang members who control all forms of commerce -- including the sale and distribution of safe drinking water. The children that live in these back alleys are the innocent victims of poverty. Their life expectancy is almost thirty years less than children born in the United States.

Homer-Dixon

Squatter settlements need large amounts of water, and you'll find that often rich groups and powerful groups who control the water resources will use their power to basically extract huge profits by selling water to the squatter settlements.

In Haiti -- a week's supply of water could be equal to a day's wages. When a nation can't afford to provide the basic necessities of life -- water becomes a rare and often unaffordable commodity. Fortunately, even in the world's poorest countries, there are small victories.

(Zimbabwe)

In a remote corner of Zimbabwe, in Southern Africa, during the dry season it may not rain for months. Watering holes and grasslands disappear. Elephants invade farms and pastures in search of food. An unforgiving sun turns villages into dusty wastelands.

Seasonal drought has always been part of this nation's history. But when the rains don't come most farm families are forced to struggle with hunger -- sometimes famine -- as their tiny plots of land turn brown. Yet there are communities in Zimbabwe that have found ways to cope with the lack of rain. In the village of Chinamora, singing is a way to share in the joy of the harvest and the small miracles that come with water. For the past ten years the women who tend this communal farm have prospered -- even during times of severe drought. It happened because an elementary school principal decided to build a small dam.

David Jura

I built this one physically myself using these hands -- very tough. It all began in 1992 in April until 1995 on the fourteenth of December. That's when I put on finishing touches of this wall. It was pretty tough.

What David Jura did, was capture the spring run-off from local streams. His dam remains sustainable because he limits the amount of land that can use the water collected each year.

David Jura

So we are going to use this water here for irrigation -- for the communal people. They will benefit.

By providing a reliable and sustainable source of water, David bettered the lives of the women of Chinamora. And despite the seasonal challenges of an ancient landscape, these farmers won a small victory. They are not unlike farmers throughout the world -- those who live on a thin edge -- an edge sharpened by unpredictable harvests -- and severe drought -- even in places closer to home.

(Rio Grande River)

The Rio Grande River marks much of the twelve hundred mile border between Mexico and Texas. Compared to the Amazon, it's a rather insignificant river. In fact, more water flows down the Amazon in an hour than flows down the Rio Grande in a year. But for those living in one of the most arid regions of North America -- the Rio Grande has always been a primary source of water.

(Citrus Farm)

Jimmy Steindinger -- a Texas citrus farmer -- has prospered because of the Rio Grande.

Jimmy Steindinger

You know, without water, it's just like without money. If you go to a banker, the first thing they ask is if you got any water for your farm or for your crop. If you don't, they won't hardly loan you any money, so water to me is like having money in the bank, because without that, I can't make a crop. And without makin' a crop, I don't make no money. I've been farming 36 years now -- I never did worry about the water because I always felt like I was gonna have plenty of water.

(Falcon Dam)

Even in times of drought -- the river always provided. Fifty years ago the Mexican and United States governments built the Falcon Dam across the Rio Grande. They also created a huge reservoir that was suppose to supply the region's water needs well into the 21st century.

(Border Town)

But, in the five decades since the dam was built, much has happened in the Rio Grande Valley. New cities sprang up on both sides of the border. Commerce flourished -- and as the population exploded from 200,000 to 20 million -- the demand for water increased.

(Falcon Dam)

Along the Falcon Dam reservoir, the history of the water crisis is literally etched in stone. A series of high water marks along the shore show a dramatic and steady loss of water. The first to suffer were local farmers.

(Trees Being Up-rooted)

Jimmy Steindinger has been forced to destroy twenty acres of productive grapefruit trees. There's simply not enough water for irrigation. For Jimmy, the destruction of a mature and fertile crop is both an emotional and expensive experience.

Jimmy Steindinger

It feels pretty bad to see these tress that I have planted eleven years ago -- having to take them out because I don't have enough water.

Jimmy Steindinger has just become a statistic -- another victim of a global water crisis that threatens to be even more serious in the years ahead.

Bob Engelman

Forty or fifty years ago water shortage wasn't on anybody's radar screen. Heck, twenty years ago it wasn't on anybody's radar screen. That's typical of the way a lot of population and environment interactions are happening in the world. Things just get gradually a little bit more stressful in an ecosystem or an environment, but people figure they can live with them. And then suddenly some kind of tipping point is reached. Suddenly water that was available for generations just isn't there anymore.

(Wetlands Montage)

Another casualty in the global competition for water is the world's wetlands. Fed by the seasonal flow of streams and rivers, this is a rich habitat for thousands of species of plants and animals -- with it's own sense of time and rhythm. Once covering 12% of the planet's land area, today half the world's wetlands are gone -- victims of rivers running dry or their conversion to farmland or human settlements. Gone are irreplaceable breeding grounds for plants and animals. Gone are aquatic ecosystems that cleansed a river's water. Gone are woodlands that eased the burden of floods. Little more than a decade ago, the loss of wetlands in the United States resulted in a catastrophic flood.

(Flood)

It happened when a series of storms stalled over the upper Mississippi River basin. For months the rains kept coming. Though the weather pattern was unusually severe, the actual amount of rainfall along the

Mississippi hasn't changed for thousands of years. What did change was the loss of more than ninety percent of the floodplain wetlands that once absorbed the seasonal high waters of the Mississippi. As the waters began to rise, riverside communities, in a final act of desperation, reinforced their lines of defense. But in the end the Mississippi, fed by thousands of surging streams and rivers, crashed through levee after levee. Without the protection of the Mississippi's original wetland ecosystem, the river won.

(Water Montage)

In addition to the world's wetlands there's another water resource under siege. To meet the needs of a thirsty planet, aquifers are being pumped out faster than nature's ability to replenish them. But these natural underground reservoirs hold more than 30 percent of the world's supply of fresh water. This does not bode well for those living in the less developed countries -- where aquifers are often the only source of unpolluted water.

Lester Brown
Earth Policy Institute

More than half the world's people now live in countries where water tables are falling and wells are going dry. In many ways I think it's the most underestimated resource issue in the world. In recent months we've been hearing a lot about, world oil prices, the depletion of oil reserves and trying to estimate when world oil production will peak and turn downward as reserves are depleted. This is obviously important but it's not as important as the depletion of underground water resources. We'd lived for millions of years without oil. We would live only a matter of days without water. There are substitutes for oil. There are no substitutes for water.

But the depletion of underground water resources is not limited to poorer countries. Fly over the prairies of the United States and you'll see thousands of dark circles etched into the desert landscape.

(Ogallala Aquifer)

Each circle is cultivated land -- irrigated with water pumped from the largest aquifer in the world -- a gift left behind by melting glaciers during the last ice age. Called the Ogallala aquifer, it supplies water to 25 percent of the country's irrigated land. It helped make the Great Plains the breadbasket of the world. During the time of harvest -- farmers work round the clock. In return, they manage to produce more than a third of the world's grain exports. But in a sense, farmers are also exporting our country's only irreplaceable source of water. It's not an easy trade-off.

(Corn Farming)

Each year irrigated farming draws almost a foot and half of water from this ancient aquifer -- while nature puts back in the form of rain less than half an inch. In the past fifty years the Ogallala aquifer has lost over a third of its volume. This has farmers worried -- they just don't know how long the water will last. The only thing they're sure of is that if things don't change the aquifer will ultimately run dry.

Lester Brown

What happens to water resources is going to shape our future in ways that I don't think we can now easily imagine.

This raises another question of great concern for the state of the planet. Can we provide enough food to satisfy the needs of our children and grandchildren?

(Food Markets)

If you were to visit the food markets of the world -- one thing would be immediately apparent. More food is available to more people than ever before. It's a testament to the ingenuity of the world's farmers, ranchers and fishermen.

Rajul Pandya-Lorch**International Food Policy Research Institute**

The current status of global food production is relatively good. You look at the population increase that has taken place in the last three decades, despite the addition of almost three billion people we have actually increased the available food per person, by almost 20%. Do we have enough food to feed the world? Yes. Does everybody have access to that food? Unfortunately, no.

Despite the global abundance of food -- more than 800 million people go hungry each day.

Radjul Panya-Lorch

It's not just a question of increasing food production or increasing production on the farm. It is getting that production out to the people and in cost effective ways.

Compounding the problem, hunger frequently leads to a cycle of environmental decline. Desperation can leave the land over-cultivated and over-grazed. Though feeding the poor remains a pressing challenge, much can be learned from the world's most populous country.

(Shanghai)

China is a place where past and future intersect. Steeped in ancient cultures and deeply held traditions -- this is also a country of newly found wealth. It's hard to believe that only four decades ago famine claimed a staggering 30 million lives. Today the nightmare of extreme hunger is long gone. Local markets overflow with fresh produce and once unimaginable luxuries like milk, eggs, and meat. The abundance of food is both a monument to the country's economic boom and a glimmer of hope to the poorest countries of the world.

(Farming)

The Yangtze River Delta contains China's most fertile soil. On this flat, watery landscape, every available acre of land is under cultivation. The results are remarkable. In a country of over a billion and a quarter people, very few go hungry. Yet China's agricultural success does not come cheaply and it is at the center of fierce competition for water and land between farmers and developers.

Lester Brown

In this competition farmers almost always lose. For example, if you have 1,000 tons of water in China, you can use that to produce one ton of wheat, which is worth at most \$200, or, you can use that 1,000 tons of water to expand industrial output by \$14,000, or seventy times as much. If your goal is economic growth and job creation you do not use scarce water to produce wheat.

(Pants Factory)

Less than a decade ago these streets were surrounded by farms. They are now home to dozens of small and medium-sized industrial enterprises. This garment factory was once farmland. Instead of 3 tons of rice, the yearly harvest is 120,000 pairs of trousers. Almost every worker was lured off the farm. And their farming skills, honed year after year, are disappearing along with China's most productive land.

Despite these problems, China has found ways to feed its population. The challenge for the poorer countries of the world is to somehow duplicate that achievement. It won't be easy, especially when an even greater threat to the state of the planet may be looming on the horizon.

(Chicago Heat Wave)

A few years ago, Chicago was at the epicenter of an extraordinary weather event. Almost seven hundred and fifty people died -- thousands more were hospitalized. The victims did not suffer from a terrorist attack or an industrial gas release. Their deaths were due to a dramatic and unprecedented ten-day heat wave.

Nurse

This is the worst. Even plane crashes, train crashes, everything. This is the worst.

Hospital Worker

I've never seen anything like this in the history of the Cook County Medical Examiners Office.

By the third day, Chicago's morgue was full -- and refrigerated trucks were called in to store the dead. Since the Chicago tragedy, heat anomalies have struck dozens of cities like Paris, London, Calcutta, and Melbourne. Tens of thousands have died. The scientific community now tells us that we all live in a world where the level of carbon dioxide in the atmosphere is higher than it has been for hundreds of thousands of years -- and global temperatures are rising faster than at any other time in recorded history. The consequences of these human induced changes are becoming more and more profound.

(Glacier Bay)

The world's glacial regions have long been a treasure of natural beauty and biodiversity. Today they are also under attack.

Bruce Molnia

U.S. Geological Survey

Glacier National Park is a good example of how the Earth's surface is responding to climate change. Today there are about 20 glaciers left in the Park. A hundred and fifty years ago it was probably two and a half times that number. In other parts of the world we see between two and three degree Fahrenheit increase in temperature in the last century.

(The Arctic)

Our planet's polar regions also show signs of dramatic change because of global warming.

Sheila Watt-Cloutier

Inuit Circumpolar Conference

Climate change is not a theory. It's a reality here in the Arctic. We are getting, ice forming much later in the year and breaking up much earlier in the year. We are getting insects that have never been up here in the Arctic before. We're getting birds, species of birds and fish that have not been up here before. Our whole world is being altered up here in the Arctic and I think the world has to pay heed to that.

And as glaciers and polar sea ice melt, the world's oceans are slowly rising.

(Louisiana Coastline)

Thousands of miles to the south, Louisiana's coastal marshes and wetlands have always been prime breeding grounds and nurseries for birds and animals. Today they are slowly being covered by the Gulf of Mexico. Just a few years ago this bay was a sugar beet farm – and a pasture for grazing cattle. Dead oak trees are recent reminders of a once healthy coastline.

Denise Reed**University of New Orleans**

What we see now is salt marsh. Obviously, these trees did not grow in the situation that we now see them, they didn't grow with their feet in the salt water. So they really are very good indicators of environmental change, and also, really of environmental change on the human kind of time scale

Each year over 25 square miles of Louisiana coastline are washed away.

Robert S. Jones**Terrebonne Parish Public Works**

If a foreign country was invading the United States, and it was taking 5 or 10 square miles a year, nothing would be spared to stop that foreign country from taking the land. But when it's a process like the Gulf of Mexico taking it, people say that's natural. I disagree.

Tony Janetos**The Heinz Center**

There's no question that sea level is rising. The big question is, is how fast will that continue and how big a sea level rise will we get over the next hundred, or even two or 300 years. I think one of the things we've really learned about the climate system is that our hands are on it. The implications of that are really quite severe.

(Montage)

Glaciers melting, sea levels rising, heat waves – these are only a few of the early warning signals of man's greatest environmental challenge.

Eugene Linden**Author/Journalist**

The planet is sending us these distress signals and we need to understand what it is saying, what we are doing, and how we can stop what we are doing. The point at which you see change may be too late -- you may not be able to stop those changes.

Fortunately, there are ways to respond to the dangers of global warming. Remember the tomato farmers of Chinamora -- and how they benefited from the water provided by David Jura's dam? Though they managed to avoid famine during times of drought -- they still lose water and soil to evaporation and erosion. In a warmer and dryer world – they will need new ideas.

(Pennsylvania Farm)

Eight thousand miles away are the gently rolling hills of southern Pennsylvania. Steve Groff may have some answers. Steve is a tomato farmer and like the women of Chinamora deeply attached to the land. But the devastating cycle of topsoil loss does not exist on Steve's farm. Instead of plowing the land, in the fall he plants a cover crop that is rolled onto the earth to form a protective carpet. A specially designed tractor then places the tomato seedlings directly into this natural mulch. The soil is never turned up.

Several months later the land is ready to be harvested. This is called no-till farming and it's now practiced by 23 percent of our country's farmers.

Steve Groff

The reason I got away from plowing the soil was because I saw too much soil erosion. My soil was washing away when we had rain and since soil is my number one asset, I want to try to manage it in such a way to keep my soil in place. The other thing that the cover crops have done for us is being able to reduce our insecticides and our fungicides in our vegetable crops. We've done some testing comparing the conventional versus no-till tomatoes, and on our farm where we've got about a 10 percent yield increase.

There are no global views on the minds of these Pennsylvania farmers, yet how they meet their economic needs speaks volumes to people all over the world -- especially to the women of Chinamora -- and a school teacher who built a dam.

(Negev Desert)

Far from the produce farms of Pennsylvania -- the Negev Desert is one of our planet's driest regions. Though temperatures soar to over 110 degrees -- this has become the perfect laboratory for a team of Israeli scientists. Yosef Mizrahi is developing heartier types of plants and better irrigation techniques for areas of the world that may suffer from the severe affects of global warming.

Yosef Mizrahi

Water is the first and the most important limiting factor under our conditions. The drip irrigation system was developed in Israel and this is the most efficient irrigation system in the world. You supply the water with the fertilizer directly to the root zone so you are not wasting water. If you will sprinkle -- the water will evaporate and you will lose a lot of water. But if you use the dripper at the base of the plant you apply as much as needed to the root zone. I'm doing this research to produce plants that can be producers when the warming tendency will go up in the globe. Here we have a plant that under these conditions can be a producer for you and it produces very nice and attractive fruit. I can open it and you can see how it looks. The flesh is edible and you can eat it.

While some scientists labor in the harsh desert climate of the Middle East, others are creating their own weather conditions -- in the middle of a far milder Iowa landscape. Here researchers are developing new high yielding varieties of soy, corn and wheat that are drought resistant and require fewer chemicals.

Joe Keaschall

Pioneer Hi-Bred International

We test products across many, many different kinds of environments. We like to expose our varieties and hybrids to drought, to heavy disease pressure, to heavy insect pressure, to heavy rains. We want them to be stable enough to handle almost any kind of weather that it can be exposed to.

(Hot House)

Break-throughs in genetic engineering can go a long way towards feeding almost 80 million extra mouths each year -- even in a warmer world. But to help future generations slow down or stop global warming -- we need to conserve energy and limit our dependence on fossil fuels.

(Wind Generators)

Wind power provides one of several alternatives. In a remote valley in California four thousand turbine generators produce enough electricity to serve the yearly needs of about 84,000 households. Clean and renewable, it's a technology that could provide up to 10% of the earth's electricity within two decades. But wind power coupled with alternatives like solar energy and fuel-efficient cars represent far more than just a response to the challenges of global warming. It's a testament to the power of human ingenuity – of man's ability to cope with our planet's most pressing problems. Yet in the end -- there are no easy answers – no quick fixes.

(Closing Montage)

In many ways the most important challenge to the state of the planet is recognizing the seriousness of the problems that lie ahead.

Thomas Homer-Dixon

Climate change, water scarcity, land degradation, loss of energy supplies around the world because of the depletion of forests these are problems that are facing humanity as a whole.

Tony Janetos

What happens in China, what happens in India, what happens in Asia, and Europe, and South America affects us environmentally. It affects us economically. It affects us culturally. It affects our stability.

Bob Engelman

If I had to use one word to describe the environmental state of the planet right now, I think I would say precarious. It isn't doomed. It isn't certainly headed toward disaster. But it's in a very precarious situation right now.

In the end -- all we want is for first light to still reveal the rich tapestry of the natural world -- and with each new day -- a chance for every child born into poverty to share the same dreams we in the West so often take for granted. What we need are the efforts of people everywhere -- all those who are willing to find ways to strike the right balance -- between what we want -- and what nature can provide. Though separated by distance and culture -- for the six and a half billion people who draw sustenance from the resources of the world -- there are common bonds. Bonds that are renewed by each generation -- bringing new ideas -- new attitudes -- new hope. Planet Earth. This is our home -- this is where our journey of discovery must begin.

(Web Site Announcement)

To discover more about today's featured stories, educational resources, or download teacher's guides and other information about the environment please join me on the Journey to Planet Earth web site at pbs.org.

(Tail Credits)

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