Buddhist Perspective on Climate Change

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The topic of our Dharma talk this late afternoon is the Buddhist perspective on climate change. You might, at least some of you, wonder what this has to do with your mindfulness retreat. Well, let's wait and see whether there is any connection or not, and whether what we're doing here has anything to do with the climate.

The structure for today's Dharma talk will be as follows. First, we shall focus on observed changes in the global climate system. Then we will take our exploration a little bit closer to where we are here right now, namely to the northeast of North America. After that, we shall also take a closer look at somewhere quite different, quite far from here—namely Nepal—and how climate change has affected that country and the indicators for climate change there.

Having done all of this, we shall take a closer look at some of the causes of climate change and then go on to discuss or highlight the more Buddhist perspective on climate change. Part of that will be an exploration of whether we have a responsibility or not. Is there an individual as well as a universal responsibility, or is this certainly something that just doesn't concern us?

Within this last year, two major reports were released. One, if I remember correctly, was in September of last year: the summary for policymakers as issued by the IPCC, which stands for the Intergovernmental Panel on Climate Change. That summary is available on the internet and elsewhere and provides very interesting reading on the topic. We will not have time to go into all those many details—there are plenty of facts and figures—but we'll keep it to the key findings of the IPCC: key findings with regard to the atmosphere, with regard to the oceans of the globe, the cryosphere (which concerns the ice masses), and the main finding with regard to sea level. Carbon and other biogeochemical cycles is another area, and certainly we shall also mention the detection and attribution of climate change. To whom can climate change be attributed?

This is the most recent report, and please do know that hundreds if not thousands of scientists in the field were involved in preparing it. The report says clearly: warming of the climate system is unequivocal, and since the 1950s many of the observed changes are unprecedented over decades to even millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased. That's the overall summary concerning the major aspects of our globe. Although, unfortunately—and some of you might have noticed this already—this summary is not talking about the impact on, or considering, wildlife and the impact on species.

The more specific summary for the atmosphere is given as follows: each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. In the Northern Hemisphere, 1983 to 2012 was likely the warmest thirty-year period of the last 1,400 years. This statement was given with medium confidence.

When it comes to the specific conclusion for the oceans, the statement is as follows: ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of energy accumulated between 1971 and 2010. There's high confidence for this finding. It is virtually certain, the scientists say, that the upper ocean—extending from the surface all the way to 700 meters below—warmed from 1971 until 2010, and it likely warmed between the 1870s and 1971.

The cryosphere concerns itself with ice sheets. The statement of the scientists here is the following: over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent. There's high confidence for this finding. Each of the findings is attributed with a certain level of confidence—sometimes extremely high confidence, sometimes high confidence, and certainly sometimes less certain confidence.

As for sea level: the rate of sea level rise since the mid-nineteenth century has been larger than the mean rate during the previous two millennia. There's high confidence for this statement. Over the period 1901 until 2010, global sea level rose by 0.19 meters—almost twenty centimeters. This, we will soon see, has an impact on certain populations, namely coastal populations. People living in coastal areas are likely to get wet feet, and maybe more than this.

The main finding with regard to carbon and other biogeochemical cycles is stated in the following words: the atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide, causing ocean acidification.

Before this IPCC report was published, there was a heated debate in the scientific community as to whether climate change is happening at all—maybe it's just imagination—and secondly, what to attribute this climate change to, with some stating that it had nothing to do with human activities. The most recent IPCC report from 2013 came up with a really clear statement.

It says, under the heading of detection and attribution of climate change: human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since the earlier assessment report—number four, which if I'm not mistaken was from 2007. Earlier on, the level of confidence wasn't that great yet. However, with the 2013 report

there was hardly any room left for doubt. The report states that it is extremely likely—which means 95 to 100 percent likely—that human influence has been the dominant cause of the observed warming since the mid-20th century.

Now, all of us happen to be humans, which certainly means this concerns us greatly.

A number of countries, when addressing climate change issues, initiated what are called climate change assessments. What these assessments do is look at the respective country, observe changes within that country, and then make predictions of what might happen next. Not long ago, the U.S. National Climate Assessment was published, and for this report too, many hundreds of scientists were involved in putting it together. The United States National Climate Assessment was ordered by the government itself.

This national climate assessment is interesting because it clearly states findings not only for the country as a whole, but also for various geographic regions—one of them being the Northeast, another the Northwest, then the Southwest, and so on. Since we're here in Barre, Massachusetts, as part of the Northeast, let us, just for the sake of general knowledge, take a closer look at what this climate assessment finds with regard to the impact of climate change.

The report states: Heat waves, coastal flooding, and river flooding will pose a growing challenge to the region's environmental, social, and economic systems. This will increase the vulnerability of the region's residents, especially its most disadvantaged populations. Infrastructure will be increasingly compromised by climate-related hazards—infrastructure such as roads, bridges, buildings, airports, and seaports—including impacts from sea level rise, coastal flooding, and intense precipitation events. Agriculture, fisheries, and ecosystems will be increasingly compromised over the next century by climate change impacts. Farmers can explore new crop options, but these adaptations are not cost- or risk-free. Moreover, adaptive capacity, which varies throughout the region, could be overwhelmed by changing climate. While a majority of states and a rapidly growing number of municipalities have begun to incorporate the risk of climate change into their planning activities, implementation of adaptation measures is still at early stages.

Now, in the case of Nepal—a small landlocked country in Asia, placed right between two superpowers, namely China to the north and India to the south—even though it is contributing less than 0.01 percent of global carbon emissions, there is little that Nepal can do to decrease greenhouse gases. What has been noticed over the years in Nepal is a decreasing amount of snow on Mount Everest caused by rising temperatures. Nepal's glaciers—and Nepal covers a substantial part of the Himalayas, especially that part where eight of the highest peaks are located—have retreated by 21 percent over the past 30 years, and more reduction is expected in the near future.

Now this itself has some serious consequences, namely that the number of glacial lakes at high altitude is increasing—between 20 and 26 in Nepal—and if they burst, there will be major flooding in the mountain areas. The glacial melt is increasing as temperatures rise and will lead to increased summer flows in some

river systems for a few decades, followed by a reduction in flows as the glaciers disappear. Scientists say the effects of climate change could be devastating, as the Himalayas provide food and energy for approximately 1.3 billion people living in downstream river basins.

It is this last aspect that is being increasingly highlighted by scientists, for instance, scientists from ICIMOD—the International Centre for Integrated Mountain Development, a regional scientific institute. What is happening is that black carbon is being pushed towards the Himalayas. There are well-known channels for this black carbon, which is emitted by millions and millions of households cooking with solid fuel such as firewood. The black carbon haze, or so-called atmospheric brown cloud, is also owing to millions of vehicles, many of them not properly maintained. Furthermore, thousands of brick kilns contribute to the black carbon pollution, as well as a number of heavy industries.

All of that atmospheric brown cloud—a brown haze—gets moved towards the Himalayas and has a major impact on air quality. More than this: black carbon has a tendency to absorb sunlight and warm up the atmosphere. When layers of the atmosphere in which the black carbon is predominant come in contact with the snow and glaciers, it leads to increased melting. Plus, when black carbon particles settle on the glaciers, the color black absorbs the sun's rays, and that too contributes to a warming and melting of the glaciers.

Within the next couple of decades, scientists expect an increase in meltwater from the glaciers. However, once the glaciers have greatly receded, there will be no more water supply for the major rivers in the northern part of the Indian subcontinent.

So a greatly decreased inflow of water for the Ganges River, for the Brahmaputra, for the Indus-Sutlej River, for the Salween, and other major rivers. When those major rivers in their respective river basins carry less water, there will be less water available for agriculture, and this will have an impact on the population. Obviously, it will. And then there can be even further consequences in terms of food security and beyond. So there are some really major consequences to be expected from climate change.

Now, are those changes always the same in every country, in every place? They're not. There are huge differences between the impacts of climate change here in the northeast of the United States and the impact of climate change on the southwest of this country. And again, the impact on a country like Nepal is certainly quite different.

Various causes have been mentioned for climate change. Natural causes, for instance, such as changes in the Earth's orbit and the Earth moving closer to the Sun, changes in solar activity, and volcanic eruptions. And then as another major source, the IPCC has concluded that there is human activity—anthropogenic cause. These have greatly contributed to the changes in Earth's climate.

Now, many of these major changes have occurred since the industrial era began. And the industrial era began with which invention? The steam engine—there you go. The invention of the steam engine, the

combustion engine. At the time, it was heralded as a big innovation, and it has brought many changes, much more power, also much more comfort. But in the long run, the side effects of this invention have been disastrous.

Among the things that have greatly contributed to climate change, we have the greenhouse gases. Among those, carbon dioxide being the first one, methane the next one, nitrous oxide yet another one. Water vapor has also been mentioned. And the sources of carbon dioxide emissions include fossil fuel burning, cement manufacturing, and land use changes—by which is meant turning, let's say, an area covered by a dense tropical forest into an agricultural area, burning down parts of the tropical forest and then starting agriculture.

This much in terms of observed changes and the major sources that have caused climate change. Now let us take a look at the Buddhist perspective on climate change. Let us start with some very fundamental aspects, namely humanity's relationship to nature, or humanity's place in nature. You will surely know that there are certain religious systems that have proposed humans' role with regard to nature to be what? Domination. There you go—domination of nature, conquering nature.

Now, the Buddhist perspective, or let's take the Native American Indian perspective on this. Would Native Americans share this idea of conquering nature, domination of nature? Not at all. Well, with certain of the Buddhist teachings, it's about the same thing.

Peter Harvey, a professor of Buddhism originally from the UK, has stated the following in his book *An Introduction to Buddhist Ethics*, a book that I can highly recommend. Given all that has been said so far in his chapter on our relationship to nature, he says, "It is clear that the Buddhist ideal for humanity's relationship with animals, plants, and the landscape is one of"—and please note—"harmonious cooperation. The Buddha's teachings emphasizes a disciplining and prudent overcoming of the negativities within the conditioned nature of the human heart."

What do we do here during this retreat? We meditate and we try to overcome those negativities within the human heart.

"Such an approach goes hand in hand with a friendly attitude to the environment," Harvey continues. This can be seen in Zen scholar D.T. Suzuki's statement about making a good friend of a climbed mountain rather than conquering it. So our role as humans is not to conquer and subjugate the planet Earth but rather to live in harmony with it.

Now, an aspect that hardly gets highlighted in this discussion of climate change and the impact of humans on the environment is the ethical aspect of our actions. Our actions will have direct impact on the environment. If we as an individual, or as part of a corporation, or as a local society—if our carbon footprint is really high, well then there will clearly be an impact on the atmosphere and with this on the environment.

This, however, the Buddha says, is not the only thing to consider. There is the so-called Ādamika Sutta from the Aṅgūtrāṇikāya, namely volume two, section seventy-four to seventy-six, and that discourse is structured in a very simple way. It says if the king of a country is unrighteous, if the ruler or governor of a country is unrighteous, then the vassals of that country will also become unrighteous. When the vassals of that country are unrighteous, then the town and country folks will also become unrighteous.

And then it goes on like this. Because human beings become unrighteous, the sun and moon will be off course. And then the constellations and stars will be off course. Day and night will be off course. Winds will be off course. And even the deities will become upset. And when the deities, the discourse says, become upset, the rains will not be regular anymore. This certainly has an impact on the crops, of course. With little rain falling there would be poor crops, and certainly the human beings who have to make do with such poor crops will end up being weak and short-lived.

Then the discourse goes on. That Ādamika Sutta goes on to state just the opposite. If the ruler of a country is righteous, then the vassals and Brahmins of that country become righteous. If they are righteous, then the town and country folks will also become righteous. And then the same sequence again. At the end we will have crops that are abundant, and the people will be strong, healthy, and enjoy a long life.

So what we have here is an ethical consideration, an ethical consideration in the context of our environment. Hardly anyone is considering this these days.

Now, there is, as Peter Harvey has stated, the pan-Indian value of ahimsa, or non-injury, which then corresponds to the first of the five precepts which exhorts us to abstain from the onslaught on living beings—literally, breathing beings.

This first precept usually is understood as being limited just to fellow human beings, that we don't torment them, that we don't take their lives. But in the context of our climate change topic it becomes obvious that this precept takes on a new dimension. To abstain from onslaught on living beings includes even the tiny ants and insects of whatever form. It includes certainly the fish in the oceans and lakes. It includes the birds in the sky.

Now, if because of our way of living on this planet, certainly causing much carbon dioxide emissions—if because of this the CO2 concentrations in the atmosphere go really high, and that then leads to a warming of the global climate, and that then has an impact on many species, causing certain regions to become so hot that certain species just can't survive anymore—then what? Are we observing that first precept or not? Not. So collectively we are at fault.

The non-harming of animals could be understood out of this first precept, but could also be understood coming from a different point of view. Namely, if millions of species get harmed or become extinct because of climate change and because of our human anthropogenic activities, then we will pile a huge amount of unwholesome karmic results onto our own heads—and that's collectively speaking.

So ideally, we do not want to intentionally harm living beings. The Buddha is very clear about this, as is nicely expressed in the Dhammapada, verse 131, when he came across a group of children that were molesting a snake with sticks. The Buddha speaks to them: "Whoever, seeking his or her own happiness, harms with the rod or a stick pleasure-loving beings, gets no happiness hereafter." In other words, there will be unwholesome karmic results, and those will then contribute to our unhappiness.

Now, in certain passages, the first precept is formulated in a very beautiful way. Namely, it says one avoids killing of living beings and abstains from it, without stick or sword, conscientious, full of sympathy, desirous of the welfare of all living beings. "Full of sympathy" sometimes also gets translated as "with a trembling of the heart." One feels, one empathizes with some living being that is under attack.

Out of the four divine abodes—namely mettā, karuṇā, sympathetic joy (muditā), and equanimity (upekkhā)—out of those, mettā and karuṇā, loving-kindness and compassion, play a major role when it comes to our relationship to the environment, to nature. As Peter Harvey states, as all sentient beings like happiness and dislike pain, however much their specific desires and sensitivities vary, the Karaṇīyamettā Sutta, the discourse on loving-kindness, speaks of radiating loving-kindness to all types of beings—not only to our pet dog or pet cat or white mouse or whatever it might be.

"Whatever living beings there be," the Sutta Nipāta says in verses 146-147, and this really goes to the heart, "whatever living beings there be, feeble or strong, tall, stout, or medium, short, small, or large, without exception, seen or unseen, those dwelling far or near, those who are born or those who are to be born—may all beings be happy."

So there's an equal regard, a positive regard, towards all living beings.

Some researchers, Buddhist scholars among them, have pointed out that our current economic system is also at fault, or is at the root of this global eco-crisis, and that indeed seems to be the case. Our current global economic system is based on greed, and the greed leads to consumption. Marketing is artificially creating an increase of consumption by creating artificial needs. We think we need certain things when maybe we don't really need them.

Does genuine happiness and well-being truly arise when we go to a big shopping center and pile fifty items into our shopping cart, pay for all of this, and then take it back home? Does this really make us truly happy? No, not really. True happiness is more likely to be found in a place like this, when engaging in mindfulness practice.

Buddhist studies scholars have proposed that the root cause of our ecological crisis, as mentioned, lies in our greed. We would be well advised to reduce that greed as much as we can. Especially when we meditate, we realize for ourselves over years that gradually we manage to get by on less and less. Usually there is a simplification of lifestyle, which means we need less, and with this there is less need to purchase goods, less need to exploit nature, and less need for unnecessary manufacturing.

Researchers in the field of climate change have proposed some obvious solutions. They are calling for more research on the topic, and each and every country has to do that. In the case of Nepal, the research is still at the infant stage, even though the country is facing major climate change impacts. The second solution that has been proposed is creating awareness for climate change issues—and this is where we can come in. Thirdly, reduction of carbon emissions and other greenhouse gases, an area where we can also contribute. And fourth, preparedness for extreme climate conditions.

From a worldly point of view of what could be done as an individual contribution to addressing climate change, the website of the United States Environmental Protection Agency contains wonderful information—proposals for what one could do at home, at school, in the office, and on the road. I don't have time to go into all those suggestions, but they are really good and worth looking up and considering.

From the point of view of the Buddhist teachings, a number of principles apply. First of all, we have both a personal and a collective or universal responsibility towards the environment. This arises out of the first precept of not injuring living beings, and also out of compassion, namely *karuṇā*, or concern, which is a related term *dayā*, and sympathy, *anukampā* in Pali.

Dhammapada verse 129 has the following to say: "All tremble at violence, all fear death. Comparing oneself with others, one should neither kill nor cause to kill." So it is not just our fellow human beings who fear death, but the ant that is crawling across your path, or perhaps some spider in your room that prefers to live and not to get squashed.

Did the Buddha encourage animal sacrifices? Not at all. He followed through with the intuitive wisdom he gained, and that meant a clear no to animal sacrifices, which were common at his time and unfortunately are still common on the Indian subcontinent. It is said that the Buddha strongly recommended performing different kinds of sacrifices, namely by making offerings of vegetables, of fruit, milk, lighting a candle, or lighting some incense sticks.

Now, why do you think the second precept of avoiding stealing could be important in the context of our topic? The first precept is evident, but what about the second one? Someone said, "We're stealing the future of our children." That's a really good point. Yes, that's it. And in a book I found the following statement in this regard: we have a responsibility not to rob the planet of its trees, water, fresh air, and minerals in whatever form this might take place. Some big corporations feel they have a right to exploit planet Earth in every possible way and to rob the planet of its resources.

If you contrast this with the attitude of the Native American Indians towards nature, do you see any difference there? There is a huge difference—a tremendous respect for nature. Not even moving, or when moving, let us say, a stone or rock, then later putting it back where it originally was. And taking from nature only what is absolutely necessary, and not more.

In terms of cause and effect, action, and karmic results, the third volume of the Aṅguttara Nikāya, section

369 to 371, states the case of a big fruit tree with several branches, and each branch was yielding bountiful fruits—enough for the entire country. Yet one day an ignorant man came along and helped himself to the fruits of that tree as much as he could eat, and then went on to chop down that branch. The tree spirit that was inhabiting the tree was very upset and decided, "What is this? This I will stop," and made it so that the tree would not bear fruit anymore. Then the king of that kingdom, Koravya, complained to the king Sakka, saying that previously the tree was bearing lots of fruit, but now no more. "Please change this." And so Sakka then had an impact, speaking to that tree spirit. Part of the story was that eventually even a strong wind came and uprooted the fruit tree, and so the tree spirit was strongly affected by the karmic results of its deed.

In contrast to this, we have a discourse given in the first volume of the Saṃyutta Nikāya, section 33, entitled "Planters of Groves," and there it says: "For whom does merit always increase, both by day and by night? Who are the people going to heaven, established in Dhamma and endowed with virtue?" The answer is given: "Those who set up a park or a grove, the people who construct a bridge, a place to drink, and a well, those who give a residence—for them, merit always increases, both by day and by night."

Those are the people going to heaven, established in Dhamma and endowed with virtue.

So planting trees, setting up a park or a grove, is clearly mentioned here as a wholesome deed.

The Jataka, in its section 32, speaks of a person who, resting in the shade of a big tree, having rested there before moving on, shows his gratitude to this tree by chopping it down. This is clearly denounced as someone who is an evil and false friend, someone who doesn't know gratitude—first enjoying the shade of that tree, enjoying perhaps even the fruits of that tree, and then before continuing the journey, breaking branches, if not even chopping down the entire tree. So that's another reference.

Now, His Holiness the Dalai Lama, in an article published in a book entitled *Moral Ground*, states the following: "Universal responsibility to take action to protect the future of a planet in peril for the survival of humankind. The key thing is the sense of universal responsibility. That is the real source of strength, the real source of happiness. If our generation exploits everything available—the trees, the water, and the minerals—without any care for the coming generation or the future, then we are at fault, aren't we?"

And that's it.

So allow me to conclude today's Dhamma talk on the Buddhist perspective on climate change by wishing: May we be fully aware of our individual as well as collective or universal responsibility towards nature, towards the environment. And may our mindfulness practice here at the Forest Refuge help to purify the mind of negativities—of greed, of hatred, of delusion—as much as possible. And then may this lead to the arising of much loving-kindness, much compassion, much karuṇā, and of much contentment and understanding. In this way, may we contribute to a proper addressing of climate change, be it in a small or larger way during our very existence, and thus may future generations benefit from it.

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