

2. **Describe** how the Greenhouse Effect works (natural process):

3. What are the major **anthropogenic greenhouse gases** being emitted by industrial societies today? What are their major **sources**? **Describe** how these gases can alter the balance of Earth's energy budget:

4. What are some viable **alternatives** to these emitters of greenhouse gases? Briefly **describe** how these alternatives can reduce global emissions. _____

5. Read the 2 attached articles about the Paris Climate Agreement and U.S. federal government's decision to withdraw from the agreement. Do you feel that **either** of these events will **affect how** climate change will be addressed? You can refer to environmental health, economics, etc.

6. Now read the article on Bloomberg's American Cities Climate Challenge. Do you believe that **solutions** to our environmental challenges will be found at the **national/federal** or **state/local** level? **Why?**

7. Find a website that **challenges** the prevailing scientific consensus on climate change. **Summarize** the main points of these skeptics: _____

Source: _____

Global climate deal: In summary

By Helen Briggs BBC News 12 December 2016

A global climate agreement has been finalised in Paris. What has been agreed?

Overview

The deal unites all the world's nations in a single agreement on tackling climate change for the first time in history. Coming to a consensus among nearly 200 countries on the need to cut greenhouse gas emissions is regarded by many observers as an achievement in itself and is being hailed as "historic". The Kyoto Protocol of 1997 set emission cutting targets for a handful of developed countries, but the US pulled out and others failed to comply. However, scientists point out that the Paris accord must be stepped up if it is to have any chance of curbing dangerous climate change. Pledges thus far could see global temperatures rise by as much as 2.7C, but the agreement lays out a roadmap for speeding up progress.

What are the key elements?

- To keep global temperatures "well below" 2.0C (3.6F) above pre-industrial times and "endeavour to limit" them even more, to 1.5C
- To limit the amount of greenhouse gases emitted by human activity to the same levels that trees, soil and oceans can absorb naturally, beginning at some point between 2050 and 2100
- To review each country's contribution to cutting emissions every five years so they scale up to the challenge
- For rich countries to help poorer nations by providing "climate finance" to adapt to climate change and switch to renewable energy.

What's in and what has been left out?

The goal of preventing what scientists regard as dangerous and irreversible levels of climate change - judged to be reached at around 2C of warming above pre-industrial times - is central to the agreement. The world is already nearly halfway there at almost 1C and many countries argued for a tougher target of 1.5C - including leaders of low-lying countries that face unsustainable sea levels rises in a warming world. The desire for a more ambitious goal has been kept in the agreement - with the promise to "endeavour to limit" global temperatures even more, to 1.5C.

Dr Bill Hare, CEO of Climate Analytics, says the objective is "remarkable". "It is a victory for the most vulnerable countries, the small islands, the least developed countries and all those with the most to lose, who came to Paris and said they didn't want sympathy, they wanted action."

Meanwhile, for the first time, the accord lays out a longer-term plan for reaching a peak in greenhouse emissions "as soon as possible" and achieving a balance between output of man-made greenhouse gases and absorption - by forests or the oceans - "by the second half of this century". "If agreed and implemented, this means bringing down greenhouse-gas emissions to net zero within a few decades. It is in line with the scientific evidence we presented," says John Schellnhuber, Director of the Potsdam Institute for Climate Impact Research.

Some have described the deal as "woolly" because some of the targets were scaled down during the negotiations. "The Paris Agreement is only one step on a long road, and there are parts of it that frustrate and disappoint me, but it is progress," says Greenpeace International executive director Kumi Naidoo. "This deal alone won't dig us out the hole we're in, but it makes the sides less steep."

What about money?

Money has been a sticking point throughout the negotiations. Developing countries say they need financial and technological help to leapfrog fossil fuels and move straight to renewables. Currently they have been promised US \$100bn (£67bn) a year by 2020 - not as much as many countries would like. The agreement

requires rich nations to maintain a \$100bn a year funding pledge beyond 2020, and to use that figure as a "floor" for further support agreed by 2025.

The deal says wealthy countries should continue to provide financial support for poor nations to cope with climate change and encourages other countries to join in on a voluntary basis. Dr Ilan Kelman of UCL, London, says the lack of time scales are "worrying". "The starting point of \$100bn per year is helpful, but remains under 8% of worldwide declared military spending each year."

What happens next?

Only elements of the Paris pact will be legally binding. The national pledges by countries to cut emissions are voluntary, and arguments over when to revisit the pledges - with the aim of taking tougher action - have been a stumbling block in the talks. The pact promises to make an assessment of progress in 2018, with further reviews every five years.

As analysts point out, Paris is only the beginning of a shift towards a low-carbon world, and there is much more to do. "Paris is just the starting gun for the race towards a low-carbon future," says WWF-UK Chief Executive David Nussbaum. Prof John Shepherd of the National Oceanography Centre, University of Southampton, says the agreement includes some welcome aspirations but few people realise how difficult it will be to achieve the goals.

"Since the only mechanism remains voluntary national caps on emissions, without even any guidance on how stringent those caps would need to be, it is hard to be optimistic that these goals are likely to be achieved."

Trump withdrew from the Paris climate deal a year ago. Here's what has changed.

by Chris Mooney, The Washington Post Energy and Environment Analysis June 1, 2018

A year ago today, President Trump shocked the world by announcing that the United States would be the first and possibly only country to join, but then subsequently withdraw from, the Paris climate change agreement. In his speech, Trump cited "the draconian financial and economic burdens the agreement imposes on our country" — even though in fact, each country chooses its own contributions under the agreement. Trump's move felt dramatic at the time and was hugely controversial. A year later, though — and despite his administration efforts to roll back environmental protections — there has been little change in the metric that matters most: the nation's overall greenhouse gas emissions trajectory. One prominent group studying how countries are faring in their Paris goals, the Climate Action Tracker, just improved its assessment of the United States' expected performance, rather than downgrading it, citing a continuing reduction of carbon in the electricity sector that is being driven mainly by market forces, rather than Trump policies.

"Although the Trump administration is working hard on rolling back climate policies, we do not yet see an effect on our projections of greenhouse gas emissions," said Niklas Höhne, a founder of NewClimate Institute and professor at Wageningen University in the Netherlands. "In fact, still it's the opposite. We have revised our projections for the U.S. in 2030 downward because there have been more renewables online and less coal." It's just one indicator of just how complex it is to assess the effect of Trump's Paris move. Underscoring that ambiguity, the United States isn't even out of the Paris agreement yet — it merely announced an intention to withdraw but can't formally do so until the year 2020. "It's hard to say what the impact of all of this has been," said Jessika Trancik, a climate policy researcher at MIT. "But maybe that is the story." Trancik argues that what has really occurred is not a big change in the numbers, per se, but

rather a policy vacuum and lack of a “national narrative” around what the United States intends to do about the globe’s biggest environmental problem. Others — international actors, states and cities — have tried to fill that gap but with uncertain results.

The Trump administration, since the Paris withdrawal, has largely lacked a consistent message about climate change (although the White House did consider adopting one after Trump’s speech). Instead it has had many contradictory voices, from the climate change doubt of Environmental Protection Agency Administrator Scott Pruitt to the recent embrace of climate science by NASA Administrator Jim Bridenstine. Similarly, while the administration has launched a wave of attempted regulatory rollbacks of Obama policies meant to curb climate change, like the Clean Power Plan, litigation by states and environmental groups makes it unclear how far those will advance. Thus far, market trends that continue to punish coal and reward renewable energy and natural gas remain the dominant driver of the U.S. energy picture. “We’re on track to meet or exceed the Clean Power Plan goals, and all of that is driven by cheap renewables and cheap natural gas,” said Kate Larsen, who manages climate change research at the Rhodium Group.

The lingering effect of last year’s announcement, however, has still been a climate of uncertainty for business leaders who thought they were supposed to be acting on climate change — and for other countries who thought the world was united. “Officially all nations have maintained that despite what the U.S. has announced it is going to do, that they are still going to stick with Paris,” said John Sterman, an MIT professor who works with the D.C. based Climate Interactive on projections of where the world is headed on climate change. “That’s the official story, and that’s good. But I don’t think there’s any doubt that behind the scenes, if the U.S. is not going to follow through, other nations are finding it harder to maintain their commitments in view of domestic political pressures.” Most of all, while the United States has not made any sudden or dramatic turn in its emissions trajectory, that’s not really the point. Even achieving the Obama administration’s Paris goals, of a 26 to 28 percent emissions cut below 2005 levels, would ultimately be too little, at least if the agreement’s formal objectives are to be taken seriously. The whole world is off course on climate change by that metric, meaning that many countries, including the United States, under-promised in Paris. The world’s commitments thus far, assuming they are realized, would lead to a warming of 3.3 degrees Celsius (5.94 degrees Fahrenheit), rather than the 2 or 1.5 degree Celsius (3.6 or 2.7 degrees Fahrenheit) targets of the Paris agreement, according to Sterman.

So the United States, as the second largest global emitter of greenhouse gases, would need to do considerably more than President Barack Obama promised to cut its emissions. Instead, it is underperforming even those modest commitments. The country is currently on course for a roughly 11 to 13 percent decrease in its emissions below 2005 levels by the year 2025, according to a new analysis by the Climate Action Tracker, which is produced by Climate Analytics, the NewClimate Institute and Ecofys. That’s about halfway to the Obama administration’s pledge. Höhne cautions, though, that it’s early. Attempted Trump rollbacks continue and weakened fuel efficiency standards for cars, if those come to pass, could certainly lead to increased carbon dioxide emissions. One analysis by the Rhodium Group suggests they could add over 100 million tons annually by the year 2035 because of an auto standards rollback alone. Another analysis, also released last year by the Rhodium Group, found slightly better overall numbers for the United States — a 15 to 19 percent projected cut in emissions by 2025 — but still, well short of the Obama promise. These figures on the national level, however, are being amplified by intense activity at the state and local level, with Virginia and New Jersey becoming the latest states looking to cut their emissions, new electric vehicle policies in Colorado and California, and much more. Much of this has been an explicit reaction to Trump’s Paris withdrawal.

“There’s a lot that is happening, fortunately,” said Vicki Arroyo, the director of the Georgetown Climate Center. “Nobody would say it’s enough, but at least we’re not losing the momentum in the way we feared a year ago.” The effects of state and local policies are hard to quantify, and new commitments are still rolling out. Höhne thinks all of this could potentially rescue the Obama administration’s Paris commitment — meaning the United States could still meet its official goal. But not everyone is so sure. “Cities that are

progressive and doing more are in states with pretty clean energy already, or that have made those types of commitments, so it's hard to know what's additional," Larsen said. In the end, then, despite the uproar over the Paris withdrawal, it's notable that U.S. greenhouse gas emissions are hardly set to explode and the country is still slowly moving toward lower greenhouse gas emissions. But what Trump's move did do was create a fog when it comes to what U.S. national policy is or should be — something not even the administration seems to know. The fundamental reality remains that neither the U.S. pledge nor other countries' commitments under the deal were strong enough to achieve what all those countries said they wanted in the first place. Slow progress didn't end under Trump, but according to physics, slow progress and the world's climate change goals are not compatible.

Bloomberg Philanthropies Announces the American Cities Climate Challenge to Support Mayors Tackling Climate Change in the United States

NRDC June 01, 2018

One year after President Trump's decision to withdraw from the Paris Agreement, Bloomberg Philanthropies launches \$70 million program to support the leading role American cities are playing in fighting climate change

NEW YORK, NY – Today, Michael R. Bloomberg, the United Nations Secretary-General's Special Envoy for Climate Action and co-chair of America's Pledge, announced the \$70 million American Cities Climate Challenge, a major new effort to expedite progress in reducing greenhouse gas (GHG) emissions while growing local economies during a time of inaction from the federal government. Through a competitive process, Bloomberg Philanthropies will select the 20 mayors demonstrating the strongest leadership and commitment to move America forward on delivering the goals of the Paris Agreement – a 26% reduction in emissions from 2005 levels. Selected cities will participate in a two-year program designed to significantly deepen the impact of their efforts to tackle climate change. The \$70 million investment includes funding from a philanthropic partner and additional charitable partners may join the effort in the future.

The announcement coincides with the one-year anniversary of the Trump Administration's statement of its intent to withdraw the U.S. from the Paris Agreement. Since June 2017, U.S. cities – along with states, businesses, and other nonfederal actors – have united as drivers of ambitious climate action, continuing the work to cut emissions while protecting public health and fostering economic growth. The actions taken by these nonfederal actors will be aggregated quantified through America's Pledge.

The new Bloomberg Philanthropies program will select the 20 cities that will lead America's efforts to reduce climate emissions. The Challenge is open to the 100 most populous cities in America. Together these cities have the potential to deliver 20% of the remaining Paris Agreement target, over 200 million megatons of carbon pollution by 2025, the equivalent of closing 48 coal-fired power plants. To be eligible to apply to the Challenge, mayors from these 100 cities must have signed the We Are Still In declaration by June 19, 2018. To be selected, cities must demonstrate a track record of achievement and a deep ambition to use the next two years to ramp up progress. The program will focus specifically on transportation and building sectors, which typically total 90% of citywide emissions and are areas over which mayors have significant authority.

"Mayors don't look at climate change as an ideological issue. They look at it as an economic and public health issue," said Bloomberg. "Regardless of the decisions of the Trump administration, mayors are determined to continue making progress. The Challenge will work with our country's most ambitious mayors to help them move further, faster towards achieving their climate goals."

Through the American Cities Climate Challenge, selected cities – the 20 “Leadership Cities”– will be accepted into a two-year acceleration program with powerful new resources and access to cutting-edge support to help them meet – or beat – their near-term carbon reduction goals. Bloomberg Philanthropies will provide the cities with a robust technical assistance and support package valued at more than \$2.5 million per city. Resources include: a philanthropy-funded Climate Advisor to facilitate the development and passage of high impact policies; data, design, and innovation resources to help city officials design and deliver bold programming; leadership development support; implementation coaching; rapid response grants to accelerate impact; and peer-to-peer learning and networking. World-class partners for the American Cities Climate Challenge will be led by the Natural Resources Defense Council and Delivery Associates.

Mayors across the country recognize the real and urgent threat climate change poses for their communities. From retrofitting buildings in St. Louis, to installing solar arrays in Orlando, to raising \$120 billion to build out 100 miles of new zero-emission rail-transit in Los Angeles, American cities are already leading the way on climate action, while also creating local jobs, protecting public health and improving the quality of life for citizens.

“Cities across America are on the front lines of climate change – their residents are feeling the heat and watching the floodwaters rise around them,” said Rhea Suh, president of the Natural Resources Defense Council. “This challenge will empower America’s cities to pursue innovative policies and programs to cut their carbon pollution. NRDC is eager to work with these cities, Bloomberg Philanthropies and partner groups to help tackle the greatest environmental challenge of our generation.”

The American Cities Climate Challenge will also support America’s Pledge initiative, chaired by Bloomberg and California Governor Jerry Brown, helping coordinate between key real estate, finance, and private sector leaders, as well as Governors, to track and report ongoing progress. While cities can make significant progress on climate on their own, coordination and partnership among states, cities and the private sector is key to achieving local and national climate goals. “Cities and local leaders are on the frontlines of the fight against climate change – the existential threat of our time,” said California Governor Edmund G. Brown Jr. “This initiative will help cities redouble their efforts to spur innovation and curb carbon pollution.”

The first round of applications will open June 19 and will close on July 13 . Winners will be announced in the fall. Visit bloomberg.org/climatechallenge for more details on timeline, eligibility, and partners. “Climate change affects each American family, workplace and community. The American Cities Climate Challenge will help us move forward with the aggressive, local actions we need to protect future generations,” said Gina McCarthy, former EPA Administrator, Director of Center for Climate, Health and the Global Environment at the Harvard T.H. Chan School of Public Health and Advisor at Pegasus Capital Advisors. “This is not just an environmental issue, it’s a public health issue – we cannot wait to act.”

The American Cities Climate Challenge is part of Mike Bloomberg’s American Cities Initiative, a suite of more than \$200 million in investments to strengthen city halls and advance critical policies.