Resource 1- Human acts that cause harm to the environment.

Mining - the act of extracting ores and coal	Use of fossil-fueled vehicles like cars and planes
Use of single-use plastics like straws in restaurants	Industries that use chemicals in their manufacturing process
Use of chemicals and pesticides in growing crops	Coal-based power plants
Using ships to transport goods	Forest clearing for timber (deforestation)
Dumping waste in landfills	Enlarging cities by clearing land and building settlements

Names: _____ Section _____ Date_____

BRAIN STORMING WORKSHEET

Mention five possible threats that the following human activity may pose to our environment e.g. pollution, erosion, global worming etc.

HUMAN ACTIVITY:

01

02

03

04

05

Do you think that the advancement of civilization is possible along with conserving and protecting the environment? How?

Resource 2- **The Effects of Deforestation on the Amazon Rainforest**

Activity: Look at the information blocks below. Shade the key with four different colors and then sort the information below into the correct four categories:

Key:

Why is deforestation happening?	**Resources of the Amazon Rainforest**	**Local effects**	**Global effects**

One-third of the world's trees still grow in the Amazon Rainforest.	Minerals provide the region with a vast natural resource. They include diamonds and gold.	For resources: land covered in a rainforest is cleared for settlement.
Deforestation has a direct effect on global climates, contributing to the Greenhouse effect.	Deforestation has an impact on the world's oxygen supply, as one third is stored in the Rainforests.	Large multi-national companies use the land to run cattle farms, to sell beef to developed countries.
Timber, mainly hardwoods, is taken for markets in developed countries. This is a valuable source of income for Brazil.	A typical patch of Rainforest, holds 1500 species of plant, 750 species of trees, 700 species of animals	One-quarter of the world's fresh water is stored in the Amazon Basin and this store will be reduced if the Rainforest is cut down.
Some of the cattle ranchers and settlements have been abandoned, due to poor soil quality on the previous Rainforest area	Reduction in the number of tribespeople, a decrease of 96%. The land was taken from them.	Soil becomes infertile (not as nutrient-rich) as the canopy layer is removed and the rainfall can remove more of the soil.
As large areas of the Rainforest are cut down there is a loss in biodiversity.	There are 25 million landless people in Brazil – new land is needed for settlements	Hydro-electric power is an important renewable resource.
To develop all of Brazil, the government has developed a series of roads into the Amazon Rainforest.	There is a growing need for land to be used for farming – cattle, and agriculture.	The Rainforest is used as a world tourist site and is protected as a world heritage site.

Resource 3-
Case study 01-
Read the following case and prepare a presentation by answering the questions given below.

1. What is deforestation?
2. Why is the Amazon rainforest considered as 'a home to indigenous people, a sponge for carbon in the atmosphere, and an economic gem providing for millions'?
3. What are the human activities that cause deforestation in the Amazon rainforest and what are the ways to reduce them?
4. How can the Amazon Basin countries preserve the rights to the indigenous groups living there?
5. What is a zero-deforestation policy and how can the corporations be benefited by adopting it?
6. How can the local and international NGOs play a major role in combating deforestation?
7. Why is deforestation in the Amazon rainforest not only a matter of concern for the Amazon basin countries but also a global problem?

Deforestation in the Amazon Rainforest: A Comprehensive Solution

We are a world of consumers that will soon consume ourselves. To satisfy our incessant hunger for products, we strip our environment of its natural resources at an unsustainable rate. We choose to burn down miles of forests and bulldoze football fields' worth of our world's last resources as if we have the luxury of an endless supply. Without immediate action, the Amazon Rainforest will fall victim to these destructive practices and be too far gone to save. Across the world, there is no greater resource than the Amazon, which acts as a home to indigenous people, a sponge for carbon in the atmosphere, and an economic gem providing for millions.

The United States must take on an active role in preventing further deforestation in the Amazon Rainforest. The economic and environmental repercussions of deforestation reach far beyond the borders of Amazon Basin countries and directly affect the United States and its citizens through events such as superstorms and droughts.

Historically successful programs to combat deforestation include the United States-Peru Environmental Work Program, remote-sensing technology created by the State Department, and debt-for-nature initiatives. The United States-Peru Environmental Work Program has been successful in combating deforestation. However, it's limited by the fact that it is restricted to Peru only, and must be expanded. In addition, one of the biggest factors in the rapid deforestation of the Amazon Rainforest is the demand for hydroelectricity, because trees must be cleared to create space for hydroelectric dams. U.S.- subsidized nuclear energy will reduce deforestation by reducing reliance on hydroelectricity. The U.S. must use its global influence to implement these policy recommendations to fully support the international movement against deforestation.

While United States involvement is essential, the Amazon Basin countries play a more direct role in stopping deforestation, as their governments have the power to enact laws and regulations within much of the Amazon rainforest. Despite recent efforts by these countries to prioritize conservation, the rainforest continues to lose forested land to cattle ranching, illegal logging, and unsustainable agricultural practices. Incentivizing ranchers to move out of the Amazon Rainforest into the Cerrado region will reduce cattle ranching within the Amazon, which accounts for three-fourths of deforestation in Brazil. To combat illegal logging, the Amazon Basin countries must enact a comprehensive policy that requires tracking timber to ensure its legality, increasing the number of permits for local loggers to limit large-scale illegal logging, and giving tax breaks to companies that purchase their timber from legal sources. Furthermore, in order to promote an environmentally friendly means of reaping economic benefits from the rainforest, countries should both allocate subsidies to farms that employ sustainable agroforestry and support the ecotourism industry.

Indigenous groups that live in the Amazon Rainforest have perhaps the greatest stake in its conservation, and yet they have been left in the dust by major government policies and corporate deals. Native peoples are defenseless without rights to their own land and representation in the political process. State governments,

therefore, are able to take over vast swaths of indigenous territory in conservation efforts and debt-for-nature swaps, which prevent natives from hunting, farming, and living on their own land. We recommend that indigenous people be given rights to land and the resources on it, as well as continue to be supported by international and local bodies. Without a sound means for inclusion, indigenous groups will continue to be ignored and their problems will only persist as deforestation threatens their homes and livelihoods.

Corporations are the main drivers behind the deforestation occurring in the Amazon Rainforest. American and multinational corporations flock to the Amazon, drawn in by the natural resources and valuable land. Currently, soy and cattle moratoriums have been effective in reducing soy and cattle production. These efforts by corporations have been largely successful, but in order to ensure sustainable use of Amazonian land and resources, corporations should implement a zero-deforestation policy. This policy will not only guarantee sustainable use of the resources that the Amazon provides, but will also benefit publicity and public relations for consumer brands. In accordance with the reform, corporations will utilize technology to track the route of products and raw materials to ensure products come from a sustainable source. Doing so will allow corporations to legally label their products as not contributing to deforestation. Lastly, we recommend that corporations incentivize farmers that sell materials to them up-front so they can finance the transition to a zero-deforestation operation. These policies lay out a clear path for corporations to curtail deforestation while still maintaining profits.

Another key factor in limiting deforestation is the active participation of non-governmental organizations. Through sweeping governmental reforms at the national level, Amazon Basin countries often prioritize the goals of the country over those of the people, leaving many indigenous groups voiceless as their homes are destroyed by deforestation. NGOs fill this gap between the state and the people, acting as negotiators in politically-charged situations. Both international and local NGOs working in the Amazon have unique strengths in combating deforestation. To maximize the efficiency of their work, international and local NGOs must collaborate to give immediate help on the ground while maintaining a global audience. We recommend that NGOs diversify their sources of funding, and focus on establishing sustainable methods of support to ensure that the money directed toward these NGOs is used appropriately in order to have the greatest positive impact on the rainforest.

Many Americans do not show concern at the mention of deforestation in the Amazon Rainforest due to the fact that the problem is happening thousands of miles away. Deforestation, however, has lasting effects on the entire world. This is not just an Amazon Basin problem. Deforestation puts millions of lives at risk. When people slash and burn through dense jungle, carbon that was previously stored within the trees is released into the atmosphere. The CO2 gas rises up into the ozone layer, where it traps heat from the sun in our atmosphere. Earth, in turn, warms up. According to the United States Environmental Protection Agency, the global rise in temperature can cause ocean levels to rise, crops to die, diseases to spread, and ecosystems to collapse. Cutting down the Amazon is only one of the beginning steps to the demise of our world. People will die from more intense natural disasters, ravaging diseases, and the collapse of our farming industry. It is imperative that we stop the wave of death before it arrives.

Millions of lives and livelihoods depend on the fate of the Amazon Rainforest. Without collective action to stop deforestation in the Amazon, we will lose this precious resource and the prosperity it brings. This case study outlines how the United States can use its international influence to balance and include the interests of corporations, indigenous groups, non-governmental organizations, and Amazon Basin countries in a productive plan for the future.

Case Study 02-
Read the following case and prepare a presentation by answering the questions given below.

1. How does the expansion of the palm oil industry in Indonesia cause a threat to its environment?
2. Do you think that Indonesia's mono-crop culture is a threat to its agriculture? Why?
3. How does palm production reduce biodiversity in Indonesia?
4. How does the palm oil production process increase greenhouse-gas emissions?
5. What impacts does palm oil production have on human health?
6. How are human rights ignored in the palm oil industry?
7. What steps should the government of Indonesia take to improve its environment and human health condition?

Ecological Impacts of Palm Oil Expansion in Indonesia

by Chelsea Petrenko, Julia Paltseva, and Stephanie Searle

The high yields, low cost, and stability of palm oil make it the most widely used vegetable oil in the world, and global production of the commodity is steadily rising in response to population growth and policies that promote the use of palm and other oils in biofuels. Indonesia is the world's leading producer of palm oil, supplying approximately half of the commodity globally, and is itself driving increased palm oil consumption through a domestic biofuel policy. While the oil palm is a highly efficient crop, there are severe environmental and social consequences of the rapidly expanding industry.

Given that the global land area for agriculture is limited, increasing demand for palm oil leads to expansion of this industry onto other cropland, secondary forests already logged for timber, and native tropical forests. Business-as-usual oil palm expansion, which increasingly replaces tropical forests with monoculture crop systems, depletes biodiversity, destroys the old-growth rainforest, and causes air pollution. Furthermore, much of the rainforest in Indonesia grows on carbon-rich peatland, the destruction of which adversely affects both biodiversity and the climate.

Southeast Asia overlaps with four of the world's distinct "biodiversity hotspots," each of which has unique geological history and biota. Unfortunately, tropical forests in Southeast Asia are being destroyed at a faster pace than other regions in the world. Indonesia lost an estimated 0.84 Mha of primary forest per year from 2000 to 2012, totaling over 6.02 Mha, and significantly outpacing deforestation rates in Brazil; half of this forest loss has been attributed to oil palm expansion. The consequences of this loss to biodiversity are devastating, as a single hectare of tropical rainforest in Indonesia harbors over 200 plant species. Furthermore, more than 60% of Indonesian rainforest species are endemic to that region. Iconic species such as the orangutan, found only on Sumatra and Borneo, are rapidly declining in numbers due to forest loss. Unique fishes living in peat swamp forests are also at risk from habitat degradation. Additionally, pests and alien species such as rats tend to thrive in plantation environments. Although not all biodiversity loss in the region is directly attributable to oil palm plantations, palm production has been found to reduce biodiversity more than other types of crop plantations.

Land-use change in the tropics accounts for 10-20% of total global greenhouse gas (GHG) emissions, making it the second-largest GHG source in the world. The carbon footprint of the palm oil industry has two components: emissions from deforestation, and emissions from the processing of palm oil. Converting forests to oil palm plantations results in the loss of large amounts of carbon from biomass and from the disturbed soil. In particular, drainage of peat swamps for oil palm establishment is associated with extremely high CO2 emissions when the organic matter that has accumulated over millennia is allowed to decompose. Because of the extensive emissions associated with palm oil expansion, the carbon savings are far outweighed by the losses. It is estimated that it would take between 75 and 600 years for the carbon savings of petroleum displacement by palm oil biofuel to balance the carbon lost during the growth and manufacturing of the product.

Wildfire smoke is a major source of air pollution that adversely affects human health and productivity in Southeast Asia. Despite regulations against land-clearing fires, "slash and burn" agriculture is a common occurrence in the dry season. In Katapang, Indonesia, fire was the cause of 90% of deforestation between

1989 and 2008, and 20% of wildfires across Indonesia can be attributed directly to oil palm plantation practices. Wildfire smoke can cause respiratory and cardiovascular disease and even death. In addition to devastating health effects, wildfires have adverse economic effects. Closed businesses, schools, and limited transportation can bring economies to a halt, and the effects of fires spread far beyond the geographic region where they originate.

Pollutants from agrochemicals associated with palm oil production (fertilizers, pesticides, and rodenticides) have harmful impacts on terrestrial and aquatic ecosystems. Palm oil mill effluent, which is microbially digested in open ponds, often overflows into waterways during heavy rains. The use of dangerous herbicides and pesticides also directly affects the health of workers who handle these chemicals.

Some stakeholders experience significant gains from the burgeoning global palm oil trade (growers, investors, and employees), but other groups, such as traditional landowners, experience land losses and restrictions on land use rights. Native Customary Rights are often ignored when plantations are established, leading to conflicts between indigenous peoples and palm oil companies and sometimes serious human rights abuses.

It is clear that business-as-usual expansion of the Indonesian palm oil industry will come at a great environmental cost. In order to meet Indonesia's greenhouse gas reduction goals, protect biodiversity, and reduce air and water pollution, stricter law enforcement is needed and new development must be diverted from primary and secondary forests. New oil palm plantations sited on degraded or Imperata grasslands could realize significant carbon savings with low biodiversity impacts. However, the limited area of these land types will not support all future growth of the palm oil industry if demand continues to increase in line with expectations. Policies that continue to promote growth for the use of palm and other oils in biofuel will thus likely exceed the capacity of the industry to expand sustainably. The use of available palm and other agricultural residues in biofuel are more effective solutions for meeting climate and other environmental goals.

Case Study 03-
Read the following case and prepare a presentation by answering the questions given below.

1. Why does Zhang say that the air sparkles?
2. What effect does graphite mining have on the villagers?
3. What is the graphite used for?
4. Do you think that the 'clean' technology promotion of the tech companies is nothing but eye-wash? Give reasons.
5. Do you think that the statement by the Apple spokesman about the use of synthetic graphite in Apple products is true? Give reasons.
6. What could have been done to strengthen the cleanup effort besides fining the companies liable for pollution?
7. What health complexities are the villagers suffering from?
8. What could the residents do to make their place livable and protect their environment?

In your phone, in their air

A trace of graphite is in consumer tech. In these Chinese villages, it's everywhere.

At night, the pollution around the village has an otherworldly, almost fairy-tale quality.

"The air sparkles," said Zhang Tuling, a farmer in a village in far northeastern China. "When any bit of light hits the particles, they shine."

By daylight, the particles are visible as a cloud of lustrous gray dust that settles on everything. It stunts the crops it blankets, begrimes laundry hung outside to dry and leaves grit on food. The village's well water has become undrinkable, too.

Besides the family home is a plot that once grew saplings, but the trees died once the factory began operating, said Zhang's husband, Yu Yuan.

"This is what we live with," Zhang said, slowly waving an arm at the stumps.

Zhang and Yu live near a factory that produces graphite, a glittery substance that, while best known for filling pencils, has become an indispensable resource in the new millennium. It is an ingredient in lithium-ion batteries.

Smaller and more powerful than their predecessors, lithium batteries power smartphones and laptop computers and appear destined to become even more essential as companies make much larger ones to power electric cars.

The companies making those products promote the bright futuristic possibilities of the "clean" technology. But virtually all such batteries use graphite, and its cheap production in China, often under lax environmental controls, produces old-fashioned industrial pollution.

At five towns in two provinces of China, Washington Post journalists heard the same story from villagers living near graphite companies: sparkling night air, damaged crops, homes, and belongings covered in soot, polluted drinking water — and government officials inclined to look the other way to benefit a major employer.

After leaving these Chinese mines and refiners, much of the graphite is sold to Samsung SDI, LG Chem and Panasonic — the three largest manufacturers of lithium-ion batteries. Those companies supply batteries to major consumer companies such as Samsung, LG, General Motors and Toyota.

Apple products use batteries made by those companies, too — specifically from Samsung SDI and LG Chem. But Fred Sainz, an Apple spokesman, said that for current products, the company has switched to

synthetic graphite, which is not mined. The company declined to say when it made the change to rely exclusively on synthetic graphite.

Some provinces in China sought to crack down on the polluters, and three years ago they issued fines to several graphite companies.

But pollution continues. Villagers said the cleanup efforts failed — they were short-lived or otherwise inadequate — because local authorities are closely allied with company officials and unwilling to acknowledge the gravity of the environmental trouble.

Complaints about pollution are often met with intimidation. People living near graphite plants frequently appeared fearful of pressing their grievances.

“Here he comes,” whispered one older woman in Mashan, near the city of Jixi in northeastern China, turning her back and pointing furtively at a village official who was approaching. She and her husband had been talking to a reporter about long-standing graphite pollution in her neighborhood. While some talked freely, there were people in all of the five areas with graphite plants who, like this couple, were reluctant to speak on the record.

In addition, plant managers and party officials sometimes sternly discouraged journalists from speaking with villagers. At three of the villages, the taxi carrying Post journalists was followed.

Whatever the obstacles, the villagers who would talk offered remarkably consistent accounts of the pollution. The graphite, they typically said with disgust, makes everything *mai tai*, a regional expression meaning dirty.

Since the graphite factory opened in Zhang’s village about five years ago, the graphite has become more than a nuisance. The couple lives near Jixi, a city less than 50 miles from the Russian border. The dust has covered their corn crop, so much so that walking by a row of cornstalks leaves their faces blackened. And it seems impossible to keep it out of the house — at the dinner table, it often leaves them chewing the particles in their teeth.

They worry, too, about the health consequences, especially of breathing it in. Inhaling particulate matter can cause an array of health troubles, according to health experts, including heart attacks and respiratory ailments.

But it’s not just the air. The graphite plant discharges pollutants into local waters, Zhang and Yu said — a nightly event that they can detect by smell: The discharges leave a chemical odor that irritates their noses and throats. Those emissions have not only made their water undrinkable, they said, but also kept the local river from freezing in winter. They also think the discharge poisoned the poplar trees they were growing for lumber outside their home, just beyond their coops for ducks and geese and chickens.

“All the trees were fine until the graphite plant started,” Yu said. “It killed my trees.”

“We want to move, but we don’t have any money,” Zhang said.

The couple said they and others have complained to the local government but were told the graphite company is too big and beyond their power to contain. The company, they said, refused to meet with them and others in the affected area. “Of course I would move if I had money!” Yu added, a trace of anger straining his face. “Who would want to live in this *mai tai* place? Here the dust is everywhere.”

Source: https://www.washingtonpost.com/graphics/business/batteries/graphite-mining-pollution-in-china/

Case Study 4:
Read the following case and prepare a presentation by answering the questions given below.

1. How did eco-tourism damage Brazil's Amazon wilderness?
2. What steps did the Brazilian government take to control ecotourism in the Amazon?
3. How is the worldwide media playing a role in increasing the number of visitors in the Amazon wilderness?
4. As tourism is a big-business in Amazon, how can the Brazilian government keep the business by protecting the rainforest?

Tourism Damages Amazon Region

Tourism's negative impact on Brazil's Amazon wilderness is now being recognized by Jose Sarney's government as a serious new threat. The tourism industry has already contributed to extensive damage, including widespread pollution, destruction of wildlife, and cultural erosion among the aboriginals.

But President Sarney is moving to prevent further destruction by expanding preservation programs. Key to the Brazilian government's efforts to regulate a rising flood of visitors, and to stop the decimation of a region already smoldering under siege of development, are programs for ecologically-conscious tourism.

In April, Sarney announced the first step of a broad preservation package: a $100 million, five-year plan to divide the entire 1.9 million square-mile Amazon basin into separate zones for economic and environmental use - making easier the control of land use. Forty-nine newly-signed environmental regulations include the creation of new parks and recreational preserves. And the most significant program, which will give the government more control over tour operators, requires that their staff be tested, licensed and intensively trained in environmental concerns.

Ironically, the worldwide media focus on Amazon's impending destruction and the need to prevent it is also responsible for attracting the increasing numbers of visitors. Brazilian "nature tourism" operators confirm the surge, reporting 1989 bookings up more than 300 percent over 1988 - predominantly from Europe, North America, Japan, and urban Brazil.

In fact, wilderness tourism is growing so quickly that experts question whether these new preservation measures are not largely cosmetic - a public relations effort by the government to stave off intensified international outcry against destruction of the rainforests. Environmentalists contend that the limited funds allocated will not be sufficient for the programs to take effect in time. Instead, the environmentalists are seeking a rapid increase in public awareness that will foster self-restraince in the marketplace.

Says Carlos Quintela of the Nature Conservancy, a private conservationist agency, ``The words eco- and nature-tourism are so easy to sell that the marketing has begun before an infrastructure has been set up." And growth is outstripping the government's ability to put controls in place.

But Amazon tourism is a profit-driven industry, unencumbered by ecological considerations, and offers the Brazilian interior its biggest potential source of revenue since the discovery of rubber. ``It's not the fact that tourism is business," says Dr. Quintela, ``but that it is big business."

However, the greatest obstacle to regulating the interior tourism industry is its chaotic state. Jose Carlos Fonseca, a spokesman for the Brazilian Embassy in Washington, says the Ecological Tourism Program can only begin to tackle the situation and will be limited until it gains local financial support from the state governments. Even now, experts say it may be too late to regulate an industry composed of hundreds of small businesses peppering a territory two-thirds the size of the United States. The vast majority are mom-and-pop operations that spring up wherever visitors will pay to sight-see.

Officials compare controlling tourism in the Amazon with trying to stop a gold rush. They note that a savvy tour operator can earn an average year's wages in a single day. And, usually, they add, at the expense of the environment. A wide swath of litter forms a paper chase along the jungle highways, and pollution from

plastic containers to sanitary napkins, deface the serene surface of nearly every lake in the central state of Mato Grosso. Snack bars and lodgings, scattered along roads, hundreds of miles from the nearest building or health codes, are run without consideration or concern for the environment.

There are no provisions for garbage collection or sewers. High water carries the waste down the millions of miles of tributaries into the Amazon river, through which flows one-fifth of the world's freshwater.

Unregulated fishing is so extensive that many districts are reportedly nearly depleted of some species, the Forestry Department says. And local operators confirm that explosives have been fired into rookeries to frighten birds into the air and provide tourists with video footage.

The impact of wildlife has been devastating. One of the largest rookeries in the Pantanal province has been abandoned, and the young left to hawks. Wildlife has become more sparse over the past three years in the southern sections of the Amazon region, as visitors routinely throw stones to make the wild animals react. Dr. Lee Harper, a biology professor at St. Lawrence University in New York, comments that ``those developing tourism in Brazil haven't realized that people would rather see a live caiman than a dead one."

Hunting, which is illegal in Brazil and carries severe penalties, can nonetheless be booked easily, either locally or from the US. Carlos Quintela of the Nature Conservancy, a private conservationist agency based in the US says the proportions of poaching is out of control. ``Between the sportsmen and the poachers, hunting is so big for some species that it is not just killing or harvesting, it is comparable to strip mining," he said, ``and little game is left for the Indians' subsistence."

To make matters worse, free-lance jungle guides openly solicit travelers at ports and airports, luring them with inexpensive trips into the Amazon's Stone Age villages, and bush pilots offer flights to restricted Indian reservations.

Jesus Delgado, professor of preservation management at the University of Sao Paulo, says that the cultural effects are even worse than the environmental impact. President Sarney has banned all visits to primitive Indians, except for authorized scientific purposes, but, here also enforcement is sparse and ineffective. A Brazilian TV news reporter was recently shown interviewing a federal guard in Araguaia National Park when a large boat roared past loaded with illegal tourists. The guard shrugged and said he stood powerless, being one man in a territory the size of Belgium. Prof. Delgado, who says the entire forestry agency has only 500 employees, calls the reserves ``paper parks."

The Brazilian Interior Ministry responds that the government is buying up private land as fast as possible. The Ministry says the Ecological Tourism Program will inspire local governments to assist in tourism management as they realize that their communities will benefit from tourism income.

The hope, Fonseca says, is that the tourism industry has the potential to be the least damaging form of development. He sees in the President's programs ``a hope of a growing governmental awareness of ecology." ``Brazil is changing its tune," Fonseca says, ``and is listening to what the developed world has learned instead" of repeating its mistakes.

Delgado feels it is the tourists themselves who will have the final say about whether the controls work. He views them as both the problem and the solution. ``No matter how complete the controls and tourism management," he warns, ``preservation measures will not be effective until travelers themselves learn not to throw rocks, and stop encroaching upon restricted Indian reservations, no matter how alluring."

He adds, ``Tourism can no longer be separated from other man-made disruptions of the ecology, such as mining and deforestation."

Source: https://www.csmonitor.com/1989/0606/otour.html

Case Study 5:
Read the following case and prepare a presentation by answering the questions given below.

1. How wise is the plan of coal power expansion whereas the whole world is trying to move to more sustainable energy production?
2. Why are China, the UK, and Japan investing in coal power plants in Bangladesh when they are getting rid of it?
3. What are the possibilities of renewable energy sources for Bangladesh?
4. Why does Bangladesh need more power? Why is power important to the development of the economy?

Choked by Coal: the Carbon Catastrophe in Bangladesh

New analysis shows China, UK, and Japan driving 63-fold coal power expansion in Bangladesh.

Massive coal-based power expansion in Bangladesh is set to propel it into the ranks of the world's worst polluters, says a major new report out today. The expansion not only threatens global climate targets but promises to further aggravate catastrophic environmental insecurity within a country where floods, cyclones, droughts, and pollution have already taken thousands of lives.

'Choked by Coal: the Carbon Catastrophe in Bangladesh', published by Market Forces and 350.org, and co-published by Bangladesh Poribesh Andolan (BAPA), Transparency International Bangladesh (TIB) and Waterkeepers Bangladesh exposes foreign-led finance as the driving force behind plans for 29 coal-fired power stations, an expansion that has seen Bangladesh leap, within just 3 years, from 12th to 6th in terms of global coal power under development. If built, these plants would increase the country's existing coal capacity 63-fold, from 525MW today to 33,200MW.

Groups within Bangladesh are outraged. "Building polluting and out-dated coal-fired power stations when the rest of the world is switching to renewables is a colossal act of self-sabotage," said Bangladesh Poribesh Andolon (BAPA). "UNICEF has already linked climate change to devastating floods, cyclones and other environmental disasters threatening the lives and futures of more than 19 million children in Bangladesh," said Dr. Abdul Matin, General Secretary of BAPA. "The proposed coal expansion will see this country being led further down a devastating path."

As of August 2019, Bangladesh's installed power capacity was 19,000 megawatts (MW), only 3% of which is coal-fired. 90% of the country's population currently benefits from electricity coverage.

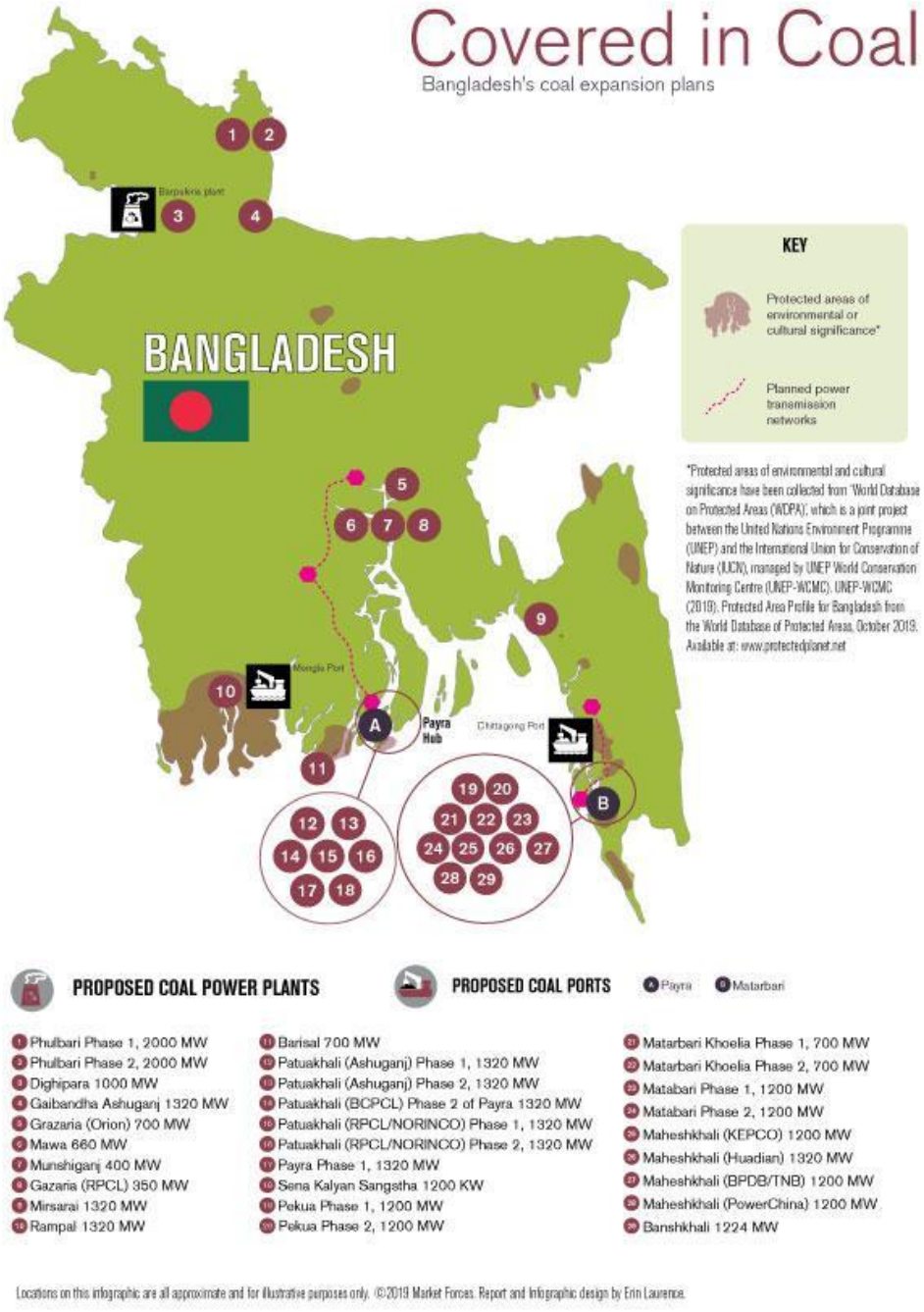
Chinese banks and companies are leading the dirty energy drive, funding over half the projects. The UK and Japan-based companies are involved in three proposed coal projects each, despite transitioning to cleaner energy within their own borders. The UK, for instance, plans to phase out coal power by 2025. "It seems the financial institutions and governments of China, Japan, India, and the UK are more interested in squeezing a final dollar out of the dying coal industry than they are of the devastating consequences for both Bangladesh and the global climate."

"There is simply no way to square coal expansion with commitments to limit global warming to 1.5°C. The countries and financial institutions financing Bangladesh's coal boom are blatantly flouting their promises to achieve the Paris Agreement's climate goals."

350.org said "While many nations across the globe increasingly realize the importance of phasing out from fossil fuels, coal companies supported by major financial institutions want to lock Bangladesh into dirty, dangerous and expensive fossil fuel infrastructure. Bangladesh is already one of the countries most affected by climate change, and cannot become the dumping ground for coal due to vested corporate and political interests. The long-term costs of this obsolete technology to the local communities will pile up for decades. A strong people's movement has already proposed an alternative plan to generate 55% of electricity from renewable energy sources by 2041, which is a crucial tool to a transition towards a sustainable, fair and accessible new energy system."

According to the report, a clean and sustainable energy future is possible for Bangladesh. Only 10% of the proposed coal plants have progressed to the construction phase, while the remaining projects have merely been announced or are in preliminary, pre-construction stages. Potential for up to 53 GW of solar power capacity exists within the country, which could replace planned coal power projects as a lower-cost alternative for electricity generation.

Source: https://www.marketforces.org.au/bangladesh-choked-by-coal/



"Bangladesh is a fast-growing country which needs power, but that does not have to come at the expense of the lives and livelihoods of millions," said Waterkeepers Bangladesh. "Across the border and in many countries around the world, renewable energy is already cheaper than coal. Bangladesh has already demonstrated commendable use of solar energy for domestic and other small-scale consumption and has the opportunity at this critical juncture to follow the same path, but to do so, it's imperative for foreign investors to clean up their dirty money."

"We also call upon the authorities to develop and implement a specifically time-bound strategic plan to effectively comply with national and international commitment to move to renewable energy. To meet its energy demands, Bangladesh does not need to transform itself from a most adversely affected country by climate change to one responsible for climate change".

"We call upon the Government to freeze all the under-construction coal-based power projects until such time as independent, robust, credible and internationally acceptable environmental impact assessment of each project is separately conducted by expert entities without any conflict of interest," said Dr. Iftekharuzzaman, Executive Director of TIB.

Source: https://www.marketforces.org.au/bangladesh-choked-by-coal/

Resource 4: Research links

1. **It is more important for the people of Brazil to use the resources of the Amazon to improve their quality of life, instead of trying to preserve the environment.**

Visit the following links to learn more.
on deforestation in the Amazon Rainforest- https://www.nationalgeographic.com/environment/global-warming/deforestation/
FAQs about the Amazon rainforest, the world's lung- https://sgerendask.com/en/has-the-cut-down-of-trees-in-the-amazon-jungle-stopped/
Why are rainforests being destroyed?- https://www.rainforestconcern.org/forest-facts/why-are-rainforests-being-destroyed
The economic benefits of the rainforest - https://www.amazon-rainforest.org/economic-importance/

2. **The Chinese government should not impose controls or restrictions on graphite mining in China, since it leads to significant employment and economic benefits.**

Visit the following links to learn more.
A trace of graphite is in consumer tech. In these Chinese villages, it's everywhere.-
https://www.washingtonpost.com/graphics/business/batteries/graphite-mining-pollution-in-china/
A boom in Mining Rare Earths Poses Mounting Toxic Risks-
https://e360.yale.edu/features/boom_in_mining_rare_earths_poses_mounting_toxic_risks
China Wrestles with the Toxic Aftermath of Rare Earth Mining- https://e360.yale.edu/features/china-wrestles-with-the-toxic-aftermath-of-rare-earth-mining

3. **Bangladesh needs power in order to develop as a nation, so building more coal power plants is good.**

Study on coal power expansion: https://www.dhakatribune.com/bangladesh/environment/2019/11/07/coal-power-expansion-study-apprehends-environmental-disaster

Update on the coal fired power capacity in Bangladesh: https://www.dhakatribune.com/bangladesh/power-energy/2019/06/27/bangladesh-trebling-its-coal-fired-power-capacity

Information about power plants: https://www.iea-coal.org/bangladesh-13-coal-fired-power-plants-to-start-generation-by-2023/