



LEARN MORE ABOUT THE CLIMATE FRESK



The Climate Fresk





WHY THE FRESK ?



-  To initiate and inspire commitment in consciousness and behaviour
-  Group interaction and collaboration

Engaging and collaborative

To learn more about the climate system

The consequences of the disruption of the climate system

Outcome of The Climate Fresk

1

Meaningful discussion on the key learnings of the collage and on individual and collective **solutions to mitigate climate change**

2

Raise awareness of climate change and ecological issues, and help Digiminders **contribute to the answers to these challenges**

3

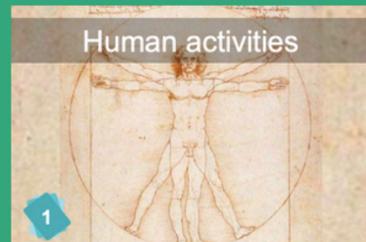
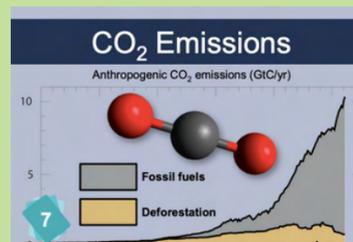
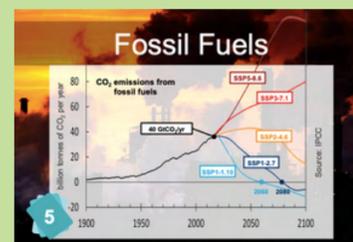
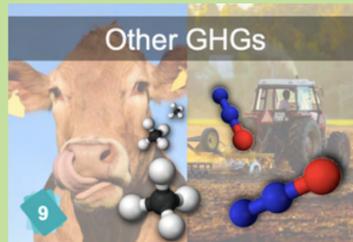
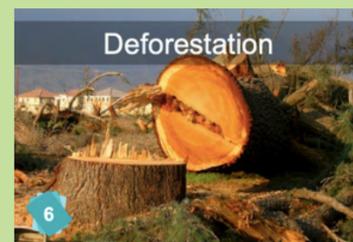
Each Digiminder wrote down **concrete commitments and actions** to implement, that is being transcribed into a **Digimind Charter**





1. Human activities emitting GHG

Square of the primary causes



Human population increases from 1-8 billion in 200 years

Human need:

- For food -> livestock farming (agriculture) which emits methane & nitrous oxide
- To keep warm -> electricity, gaz
- To move -> airplane, cars
- Consumption of goods -> from the other side of the world & is programmed for obsolescence (40% GHG)

Human activities need:

More & more fossil fuel energy ->CO2 emissions & CO2 from deforestation (80% from agriculture)

More and more CO2 -> heating up our atmosphere

Greenhouse gases -> CO2 emissions + methane + nitrous oxide - our heat gets trapped

Aerosols are emitted by a large number of Industries and transport which creates a curtain which stops some of the sunlight from entering the atmosphere -> cooling system. But are responsible for a lot of death.

2.HUMAN-INDUCED CLIMATE CHANGE

From fossil fuels to energy balance



Energy Budget is linked to the rise of temperature of water and air

- Disrupt the water circle
- The expansion of water (from high temp.) -> the ice sheets raise the level of the sea.

The Energy budget tells us where the energy that adds up on earth due to Radiative forcing.

Temperature Rises and Melting of Sea Ice are on the same level: because Energy Budget is a volume of energy going somewhere

Emissions go into three carbon sinks:

- 1/4 photosynthesis
- 1/4 Oceans
- 1/2 into the atmosphere

Carbon Sinks

Comes from : CO2 Emissions, deforestation and fossil fuels.

Goes : absorbed by photosynthesis or by the ocean, or it stays in the atmosphere.

Carbon sinks is linked to ocean acidification and to the concentration of CO2
Carbon sinks in the ocean -> Ocean acidification & calcification difficulties (plankton, shellfish, corals)

Radiative forcing:

The difference of energy from what comes in and leave the atmosphere

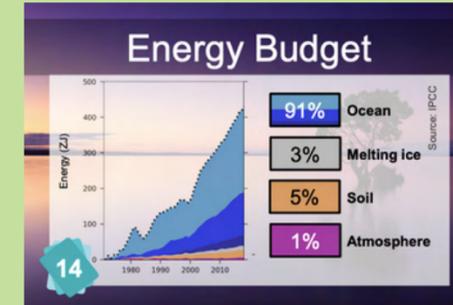
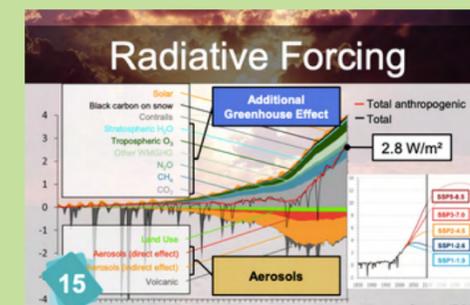
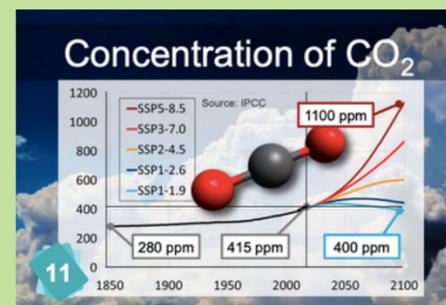
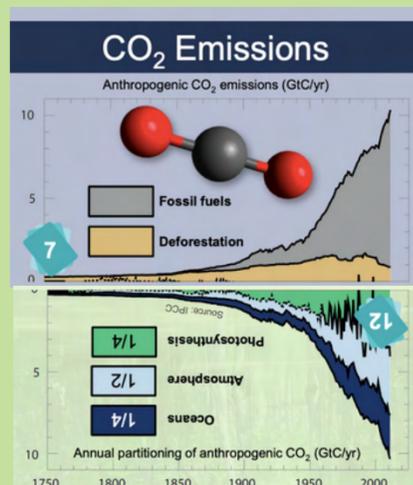
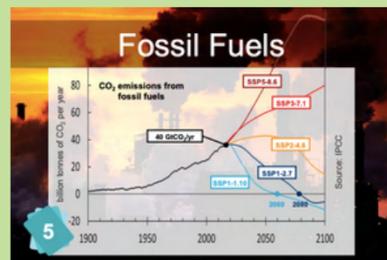
The energy coming from the sun:

- Some is going to the atmosphere, and a part absorbed by the greenhouse gas.
- Some is partly sent back in space
- The "Aerosols" augment the reflection towards space.

So the air heats up

Water heats up -> The ice melts

Radiative Forcing is due to Additional Greenhouse Effect, which has a positive forcing, and to aerosols, which have a negative forcing.





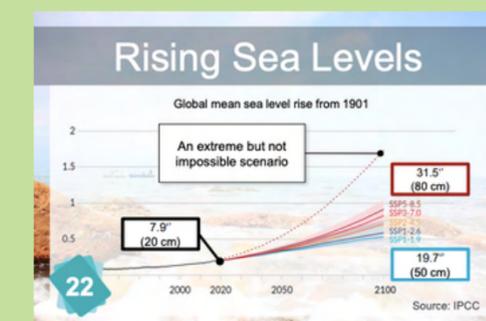
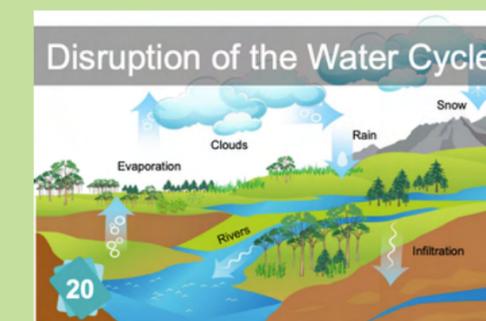
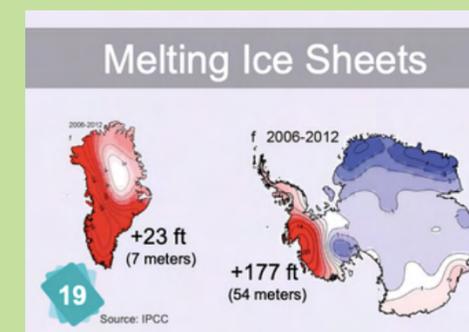
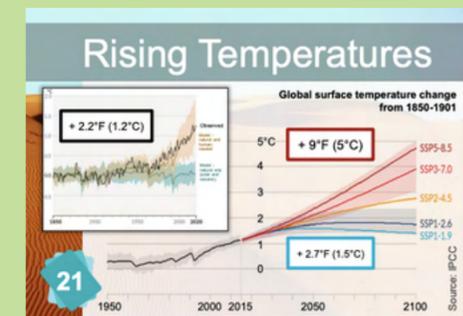
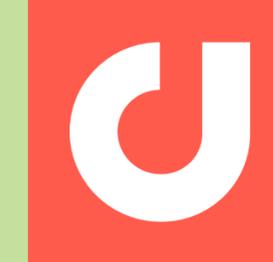
3. THE MAIN IMPACTS OF CLIMATE CHANGE

Rising water and air temperatures and melting glaciers

Higher temperatures are worsening many types of disasters, including storms, heat waves, floods, and droughts. A warmer climate creates an atmosphere that can collect, retain, and unleash more water, changing weather patterns in such a way that wet areas become wetter and dry areas drier

Melting glaciers add to rising sea levels, which in turn increases coastal erosion and elevates storm surge as warming air and ocean temperatures create more frequent and intense coastal storms like hurricanes and typhoons

Because they are darker in colour, the ocean and land absorb more incoming solar radiation, and then release the heat to the atmosphere. In this way, melting ice causes more warming and so more ice melts.





4. Extreme climate phenomena

Increase in the frequency and intensity of extreme weather events



Heat Waves are a demonstration of the rise of the temperature & Rise of the temperature provokes Heat Waves

- Droughts + Heat Wave -> Forest Fires

The glaciers are melting -> less fresh water resources, less water in the summer in rivers.

Decline in **Agricultural Yields** has a lot of different causes:

- Lack of fresh water - Marine Subversion
- The sea water is salted and it is not good for the crops, it will have an impact on the agricultural yields.

River flooding & Drought are the consequences of the disruption of the **Water Cycle**

- River flooding -> too much water
- Drought -> not enough water
- Marine Submersion -> due to extreme events such as Cyclones or low pressure areas, but are made worse by the rise of sea levels.

Cyclones are causing massive low pressure areas & will locally raise sea level, create strong wind and waves that will invade shores.

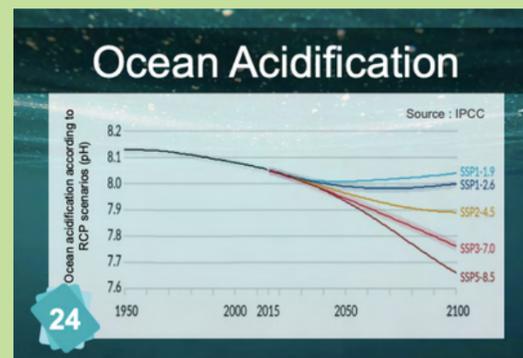
5.IMPACT ON THE OCEANS

Loss of marine and terrestrial biodiversity



Ocean Acidification hindered the calcification process, which impact the Pteropods and Coccolithophores. Indeed, ocean acidification reduces the amount of carbonate, a key building block in seawater. This makes it more difficult for marine organisms, such as coral and some plankton, to form their shells and skeletons, and existing shells may begin to dissolve. This leads to a decrease in their population. When populations of shelled organisms begin to decline, food for dependent species also begin to decline, so Marine Biodiversity is disrupted.

Marine Biodiversity is also impacted by the rise of the temperature of the water directly.



5. BIODIVERSITY AND HEALTH CRISIS



Loss of marine and terrestrial biodiversity

Decline in Agricultural Yields has a lot of different causes:

Lack of fresh water due to Marine Submersion as the sea water is salted and it is not good for the crops, it will have an impact on the agricultural yields.

Biodiversity protects ecosystems against infectious diseases, researchers have concluded. The finding suggests that loss of species from an environment could have dangerous consequences for the spread and incidence of infections, including those that affect humans

Terrestrial Biodiversity is impacted by all the components of climate, which are temperature and the frequency of rain. So the Disruption of the Water Circle and rise of the temperature will have an impact on Terrestrial Biodiversity

6. Risk of sudden loss of control



Positive feedback loops (why not exceed 2 degree celsius or 450ppm)

Weakening Gulf Stream and Permafrost -> positive retroactivity.

if the climate increases by more than 2 degrees -> risk of losing control of the climate.

if the Gulf Stream weakens, it cannot transport the warmer waters towards the north as effectively. Warmer waters start to pile up along the east coast of the United States. As a result, the North Atlantic starts to cool down, because it is not receiving as many warm waters anymore.

Severely disrupting the rains that billions of people depend on for food in India, South America and West Africa; increasing storms and lowering temperatures in Europe; and pushing up the sea level of eastern North America. It would also further endanger the Amazon rainforest and Antarctic ice sheets.

Looking forward, as thawing permafrost dumps more of its massive supply of greenhouse gases into the air—warming the climate and melting even more carbon- and methane-emitting permafrost—an unstoppable feedback loop may be triggered, one that could ultimately turn the Arctic from a carbon sink that absorbs emissions to a carbon source.



7. CONSEQUENCES FOR HUMANITY

Square of the harmful consequences



Human health is impacted by Famines, that are linked to the decrease of agricultural yields and freshwater resources

Diseases Vectors have an impact on Human Health

Decrease of Agricultural Yields → Famines

Famines -> Human Health

Famines → Climate Refugees

Human health and Climate Refugee → Armed Conflicts

Armed Conflicts → Climate Refugees

Armed Conflicts → Human Health

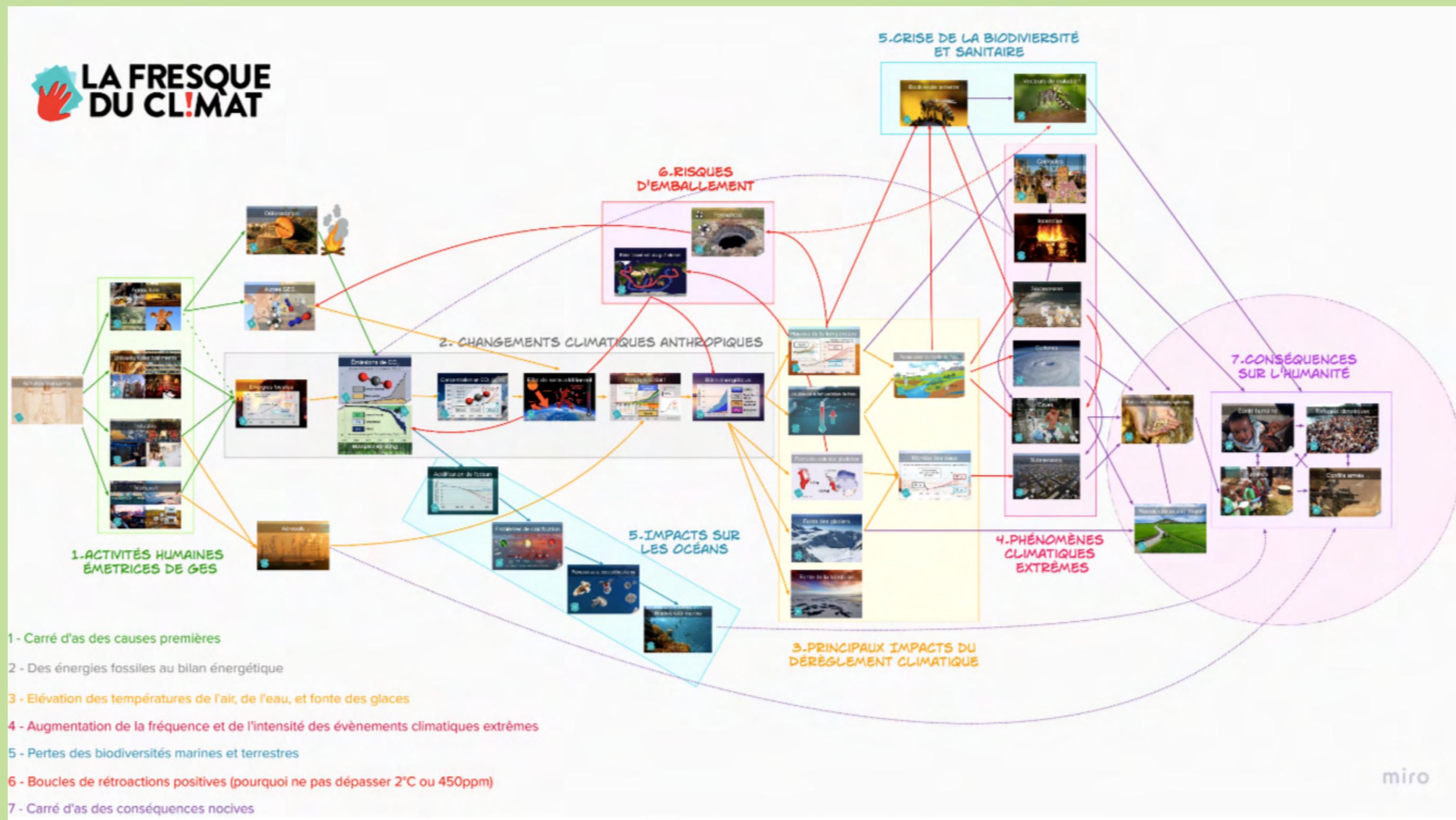
Armed Conflicts → Famines - because people are not in the right conditions to harvest

If we have Armed conflicts -> the population will decrease

Ressource will be lacking to feed the entire population and we can have regulation by nature eventually.



The solution



MORE RESOURCES

The 42 cards of the Climate Fresk English - [link](#)

The 42 cards of the Climate Fresk French - [link](#)

The Climate Fresk youtube channel - [link](#)

