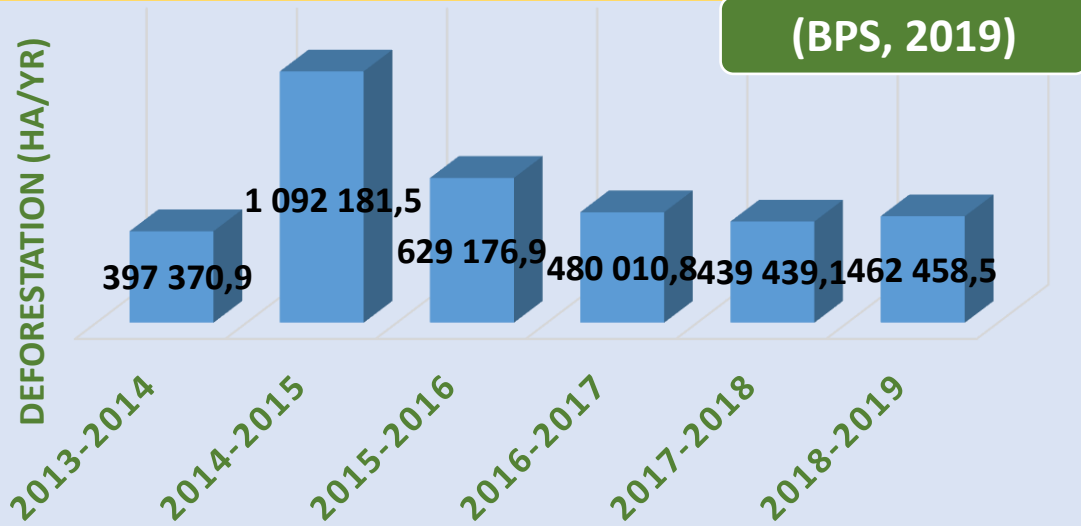
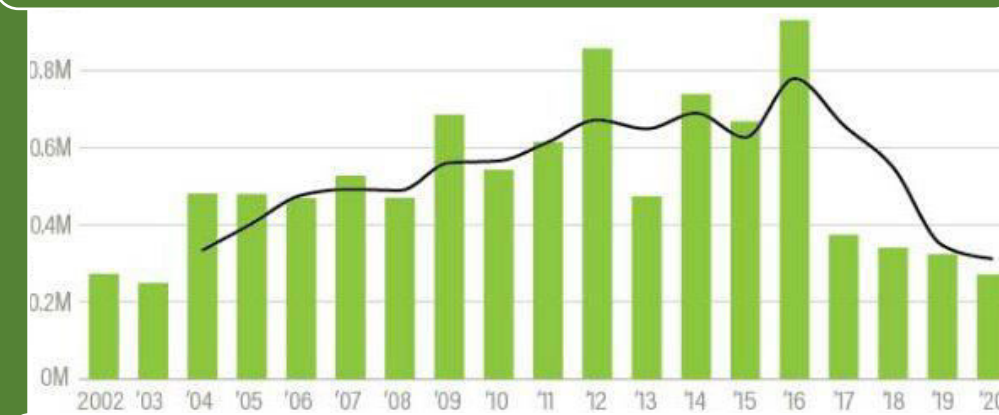


INDONESIA'S NET DEFORESTATION RATE 2013-2019



Indonesian Primary Forest Loss, 2002-2020

Indonesian Primary Forest Loss, 2002-2020 (hektares)



Global Forest Watch and World Resources Institute, 2020

FOREST WATCH WORLD RESOURCES INSTITUTE

Rate of Deforestation significantly decreased in the last five years (40-50%)(BPS, 2019)

The deforestation rate has decreased significantly in the last 20 years (Widodo's speech at COP 26, Nov.1, 2021 Scottish Eveny Campus Glasgow Scotland's)

In 2019/2020 is the lowest rate of deforestation in the last two decades. In fact, in 2020, deforestation is only 115.2 ha, which is the lowest.



The Fact



Per capita CO₂ emissions

Carbon dioxide (CO₂) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.

Our World
in Data



Source: Our World in Data based on the Global Carbon Project

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY

Note: CO₂ emissions are measured on a production basis, meaning they do not adjust for emissions embedded in traded goods.

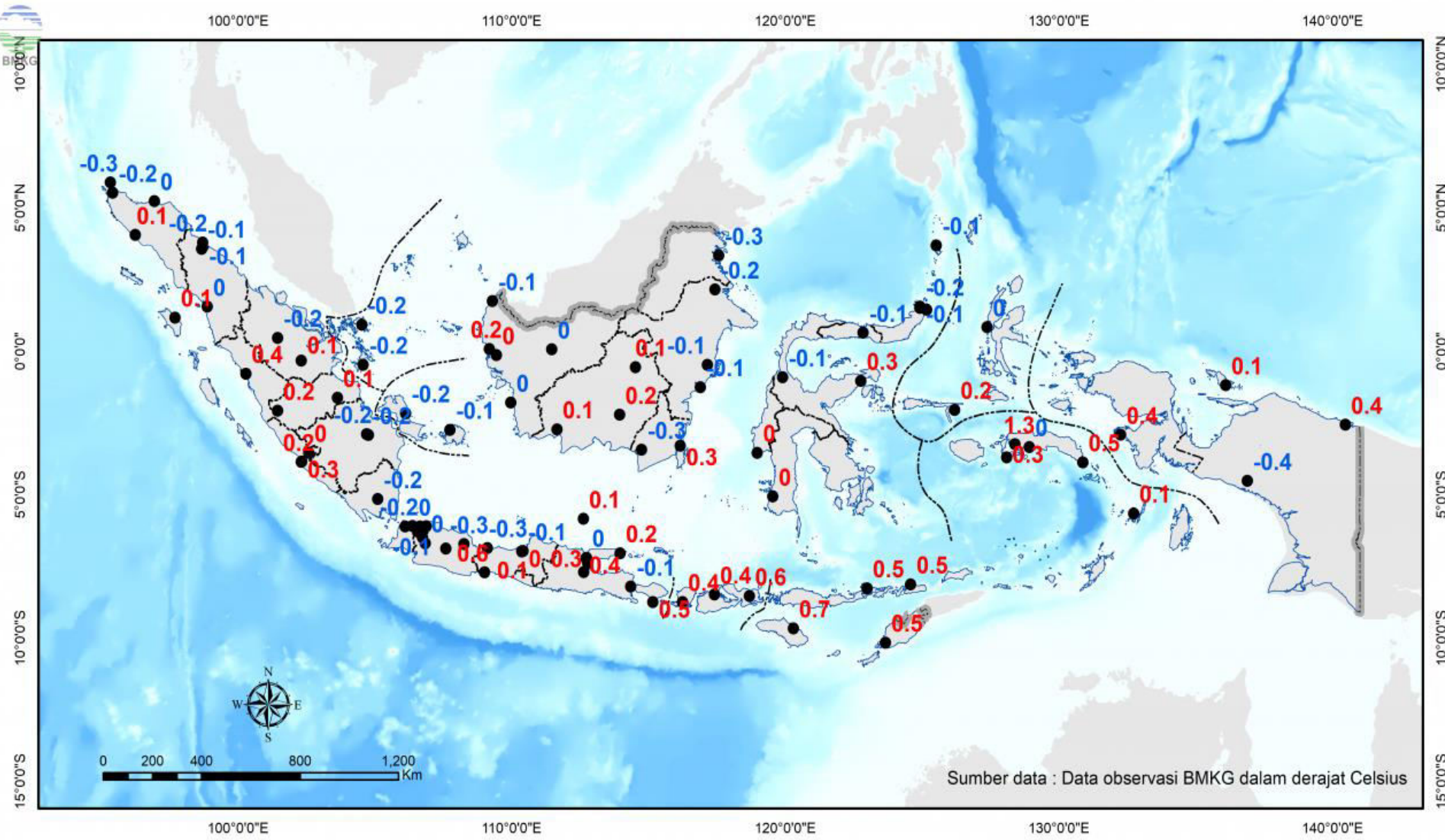
The decline in the rate of deforestation is not balanced with the rate of CO₂ gas emissions that continue to increase, especially from fossil combustion. This condition causes the volume of CO₂ gas to be higher and increases air temperature

Solution:

Forest resources function as carbon sinks, so they can certainly reduce the volume of CO₂ emissions.

In particular, Vegetation is the main tool in reducing CO₂ emissions

<https://ourworldindata.org/co2/country/indonesia>



Sumber data : Data observasi BMKG dalam derajat Celsius

*Rising
Temperature and
Global
Warming*

The average air temperature in various cities in Indonesia shows a fairly high variation, and in general there is an average increase of 0.5°C. An increase in temperature is positively correlated with an increase in CO₂ emission from fossil fuel burning for energy and cement production.



The average of air temperature difference between 2020 and 2019

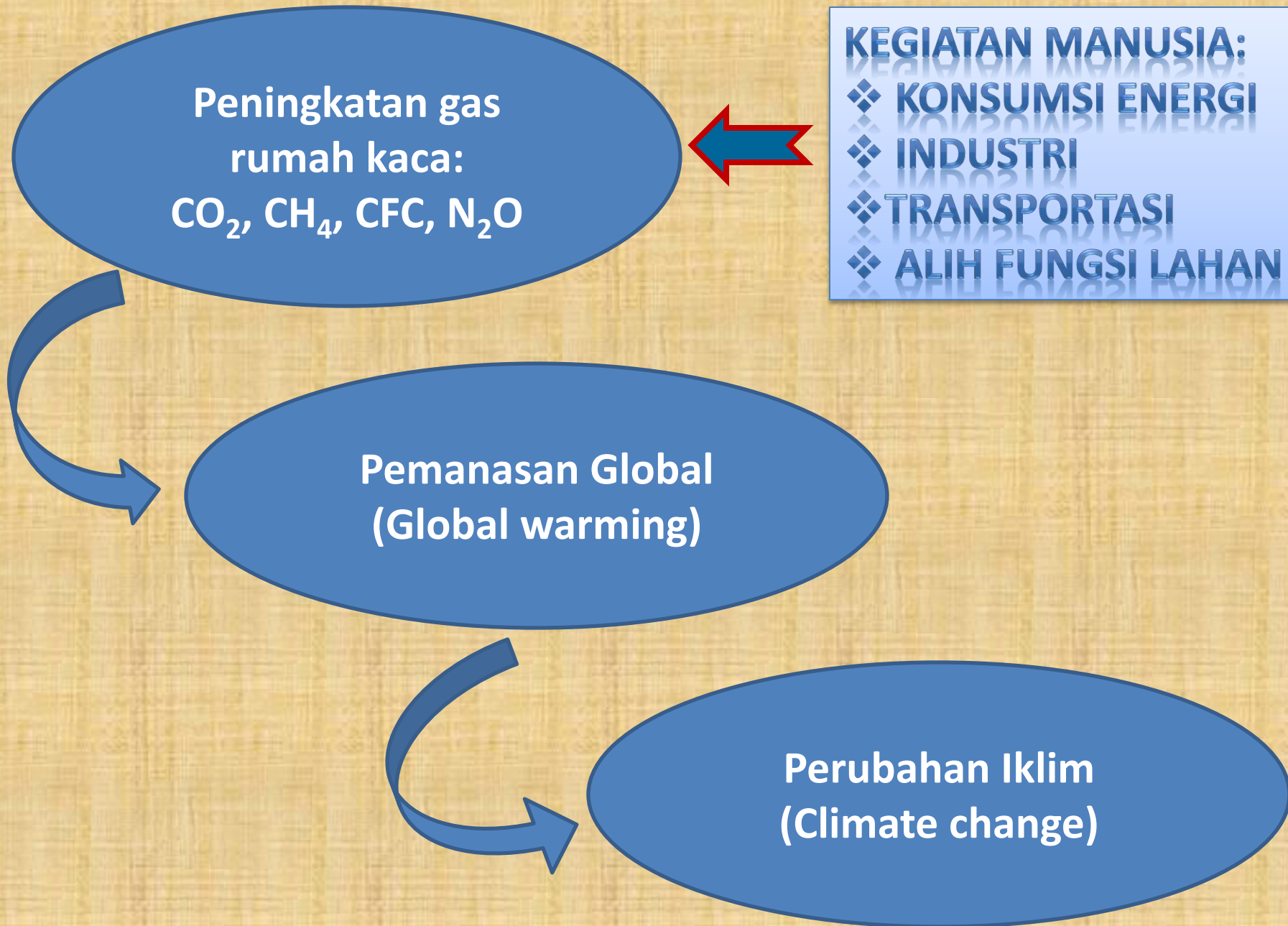
**Information:
BMKG Observation
Station**

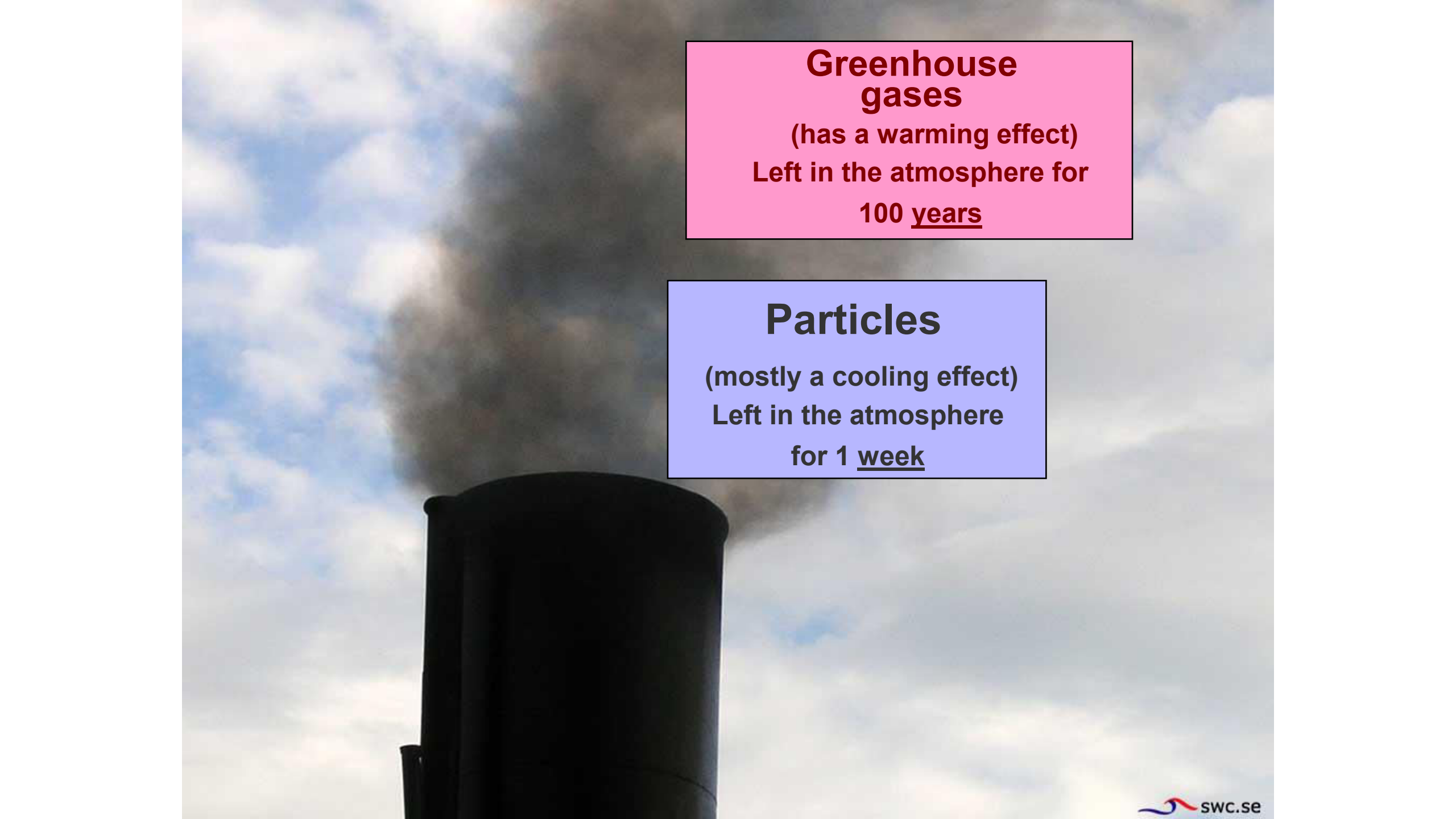
KEGIATAN MANUSIA:
❖ **KONSUMSI ENERGI**
❖ **INDUSTRI**
❖ **TRANSPORTASI**
❖ **ALIH FUNGSI LAHAN**

**Peningkatan gas
rumah kaca:
CO₂, CH₄, CFC, N₂O**

**Pemanasan Global
(Global warming)**

**Perubahan Iklim
(Climate change)**



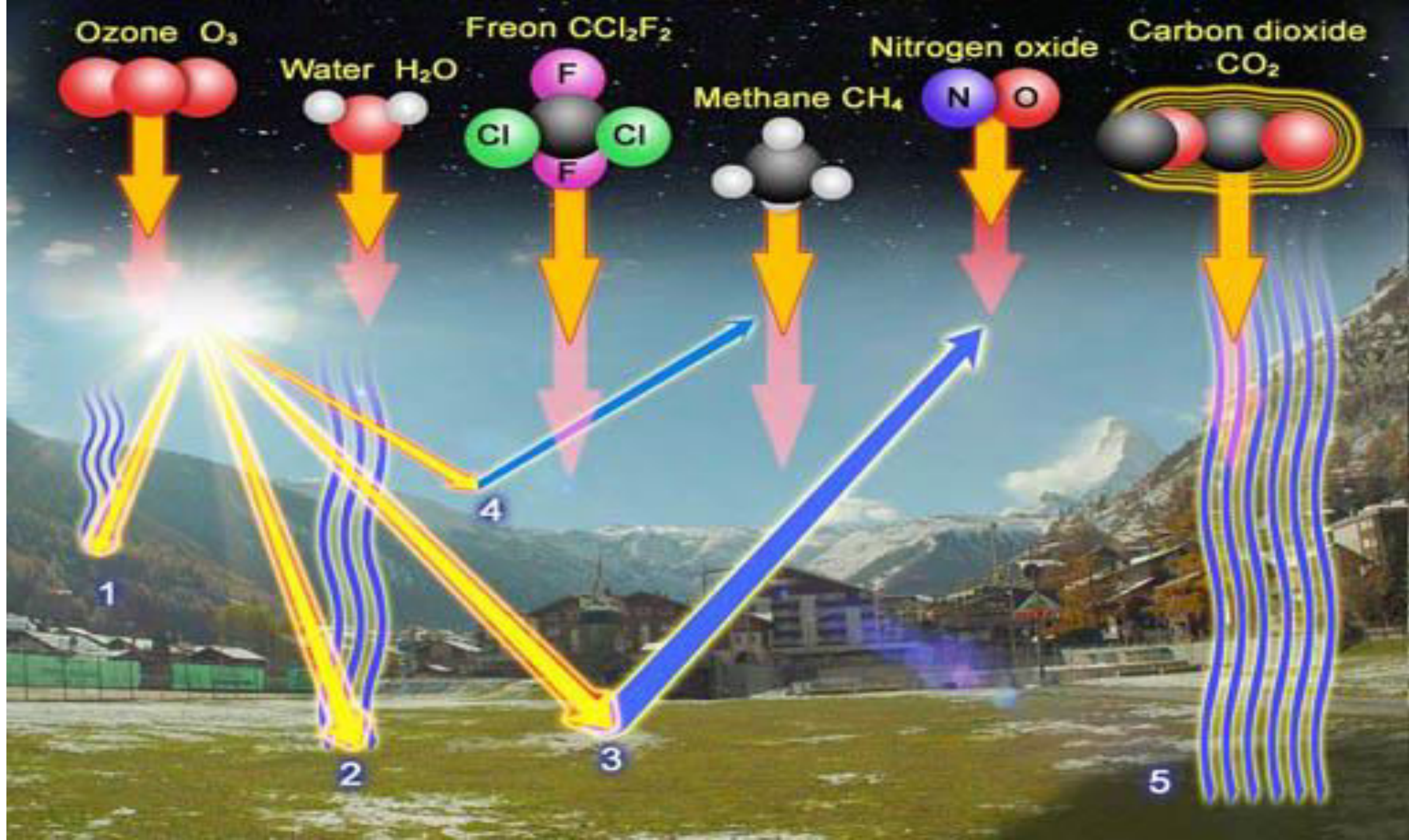


Greenhouse gases

**(has a warming effect)
Left in the atmosphere for
100 years**

Particles

**(mostly a cooling effect)
Left in the atmosphere
for 1 week**



CO_2 (300 ppm) adalah regulator neraca energi bumi dan atmosfer → stabilisator suhu udara.

Tanpa GRK, suhu udara menjadi 34°C lebih rendah drpd suhu harian (sekitar 30°C)

Karakteristik CO_2 : tidak tembus LWR (long wave radiation: $4-120 \mu\text{m}$) yang berasal dr permukaan bumi, dan tembus SWR: $0,3-4 \mu\text{m}$.

Terjadi peningkatan gelombang thermal yang diserap atmosfer shg meningkatkan suhu sbg ekspresi energi kinetik partikel udara

- ✓ It's getting warmer.
- ✓ More evaporation. And more rain.
- ✓ Sea-levels are rising, Glaciers are melting, Extreme weather...

Plants and animals adapt, or disappear.

People and societies adapt.

INDONESIA

- **Emisi karbon terbesar di Indonesia berasal dari deforestasi.**
 - **Salah satu penyebab deforestasi adalah penambangan batu bara**
- **Lebih dari 50% sumber listrik berasal dari batu bara dan batu bara melepaskan karbon sebanyak 29% per unit energy dibandingkan minyak bumi, dan gas alam.**

**Adaptasi dan Mitigasi Pemanasan Global (Hairial *et al.*, 2007)
(Menekan dampak perub. iklim dan menurunkan efek GRK untuk
memperlambat laju pemanasan)**

Anomali Cuaca:

**Perubahan pola curah hujan
Prioritas Kajian Iklim di Indonesia**

**Kegagalan Panen Akibat Salah Musim
Penurunan Produktivitas Tanaman Akibat
Perubahan pola hujan**



What happened then ?

What should be done ?

Perubahan temperatur global (relatif terhadap kondisi sebelum industri)

0° C

1° C

2° C

3° C

4° C

5° C

Pangan

Penurunan hasil panen di banyak daerah, khususnya di negara berkembang

Kemungkinan peningkatan panen di beberapa daerah yang tinggi

Penurunan hasil panen di banyak negara maju

Air

Pegunungan es kecil mulai menghilang – persediaan air menipis di beberapa daerah

Penurunan ketersediaan air di banyak daerah, termasuk Mediterania & Afrika bagian Selatan

Peningkatan muka air laut mengancam kota besar

Ekosistem

Kerusakan terumbu karang

Peningkatan kepunahan jumlah spesies

Kondisi Cuaca yang Ekstrim

Peningkatan intensitas badai, kebakaran hutan, kekeringan, banjir, dan gelombang panas

Risiko dari perubahan besar yang bersifat mendadak

Peningkatan resiko dampak balik yang berbahaya dan mendadak, perubahan skala besar pada sistem iklim