

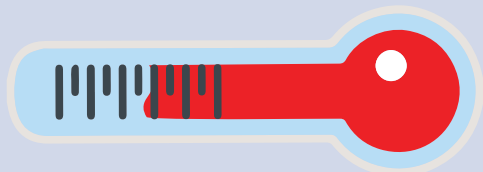
Cheat Sheet

CLIMATE CHANGE EFFECTS AND LOW-CARBON FUTURE



INTRODUCTION

Based on the studies of climates in the past, scientists believe that the world's climate has been changing constantly, since 4.5 billion years ago.¹ However, the rate of change is now getting faster and the result is making the temperature in our planet Earth hotter.



WHY IS THIS SO AND WHAT IS GLOBAL WARMING?

“Coal, oil, and natural gas are called fossils fuels. When people burn fossil fuels, they create carbon dioxide and other gases. The gases collect in the Earth's atmosphere and trap some of the heat from the Sun. As more heat is trapped, the Earth is gradually getting warmer.”² This is global warming induced by human activities.

HOW IS THE WORLD CLIMATE AFFECTED BY GLOBAL WARMING?

Scientist noted that with the world's temperature fast rising especially over the last two decades, the occurrence of natural disasters such as droughts, famines, storms, coastal floodings, and habitat destruction are getting more frequent.

GLOBAL WARMING

ATMOSPHERE

Carbon dioxide

Carbon dioxide

WHY ARE FOSSIL FUELS BURNED?

TO MOBILIZE VEHICLES

Burning oil as a fuel is necessary to start and provide power in the engines of vehicles.

TO SUPPLY ELECTRICITY

Fossil fuels are burned in power stations to generate electricity and supply power.

NUMBER OF VICTIMS OF NATURAL DISASTERS

STORM 242,000 PEOPLE	EXTREME TEMPERATURE 164,000 PEOPLE	FLOOD 157,000 PEOPLE	DROUGHT 22,000 PEOPLE	LANDSLIDE, WILDFIRE 20,000 PEOPLE

Source: United Nations Office For Disaster Risk Reduction

WHY DO WE NEED TO BE CONCERNED?

Over the last 20 years from 1995 to 2015, the number of natural disasters has increased tremendously. The United Nations Office For Disaster Risk Reduction estimated that about 3.7 billion people have been affected by 2,495 weather-related disasters which struck the Asian region.

Cyclone Nargis, which struck Myanmar in 2008, was the worst disaster to hit Asia with 8,000 people killed.

Climate change has also resulted in weather-related disasters such as drought in India in 2002 and sandstorms in China. The the number of people affected were 300 million and 100 million respectively.³



TOP 5 DISASTER-PRONE COUNTRIES



472
THE UNITED STATES
OF AMERICA



441
CHINA



288
INDIA



274
THE PHILIPPINES



163
INDONESIA



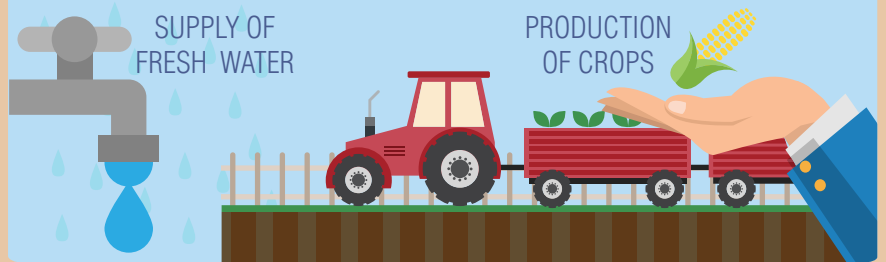
HOW TO MANAGE THIS PROBLEM?

The world leaders met in Paris in December 2015 to discuss and agree on the efforts needed to manage this problem. The Paris climate agreement was a culmination of years of negotiation efforts among world leaders. The first warning about global warming came about 50 years ago.⁴

HERE ARE SOME HIGHLIGHTS:

1 LIMITING GLOBAL RISE IN TEMPERATURE TO BELOW 2 DEGREES °C

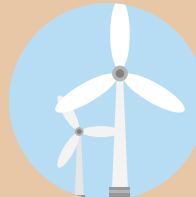
IT IS CRUCIAL TO LIMIT THE LEVEL OF GLOBAL WARMING IN ORDER TO MANAGE OUR ENVIRONMENT SUCH AS:



2 TAPPING ON RENEWABLE ENERGY FROM OTHER SOURCES :



SOLAR POWER



WIND POWER



HYDROELECTRIC POWER



TIDAL POWER

3 MITIGATING MEASURES

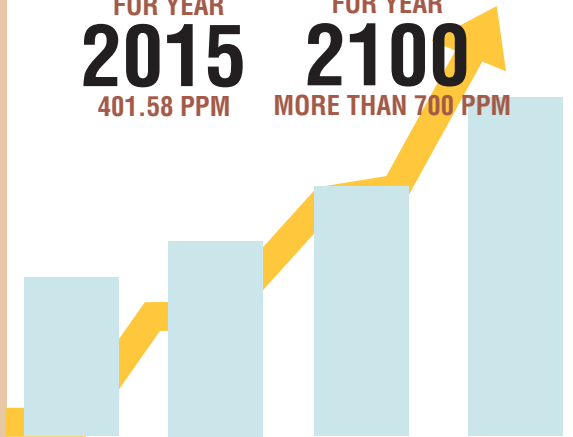
Implementing mitigation measures such as carbon-curbing pledges by rich nations to muster US\$100 billion per year in financial support for poor countries from 2020.⁴



CURRENT AND PROJECTED CARBON DIOXIDE LEVELS ⁴

CURRENT FOR YEAR 2015
401.58 PPM

PROJECTION FOR YEAR 2100
MORE THAN 700 PPM



GIVES RISE TO:



WARMER CLIMATE



OCCURRENCE OF SEVERE WEATHER-RELATED DISASTER

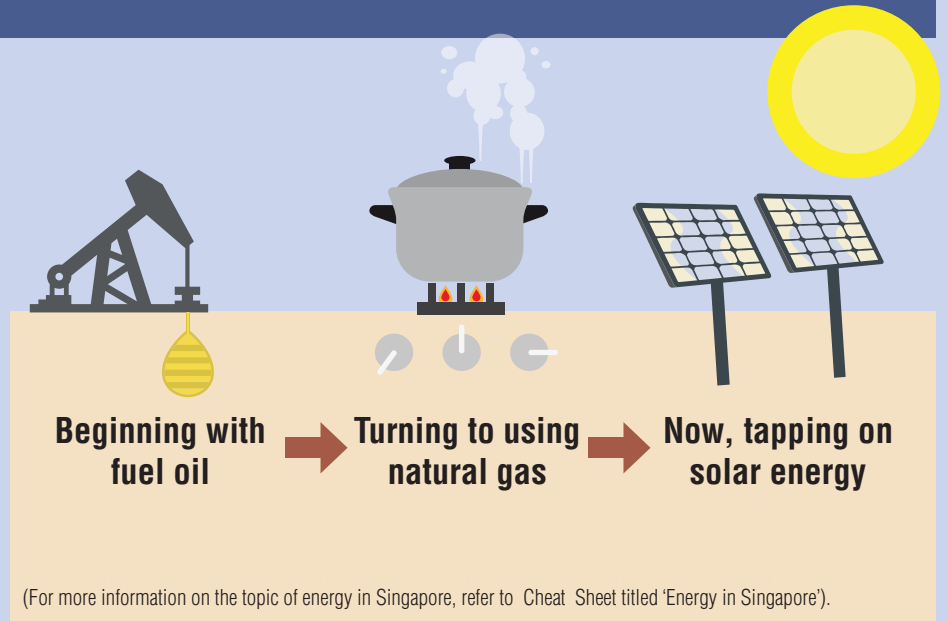


RISE IN SEA LEVEL

KEY PILLAR IN SINGAPORE'S GREEN EFFORT: SOLAR ENERGY

Singapore has been implementing efforts to reduce the emissions produced for domestic use by households and industry needs. Although Singapore is described as 'renewal-energy disadvantaged' with limited access to alternative energy sources such as hydroelectric, wind or geothermal power, Singapore has pledged that its greenhouse emissions will peak around 2030 and not beyond.⁵

In a bid to reduce greenhouse emissions, Singapore is gradually shifting away from the burning of fuel oils to more sustainable sources of energy.



Singapore aims to promote greater energy efficiency mainly via having more green buildings, aiming for the petrochemical industry to continually upgrade using the least pollutive and most efficient technology available and improving public transport. Example of uses of smart technology for homes and commercial as show below:⁵

HOUSING DEVELOPMENT BOARD (HDB)

For newer housing estates, the HDB has committed to the target of 220 megawatt-peak (MWp) of power generated through solar panels at some 5,500 blocks of flats. The power generated from solar panels will be used for common services such as lifts, lighting in common areas and pumps.

Eco-friendly features such as LED lighting with motor sensors will be installed in public areas. For new housing projects, special designs will increase wind flow and reduce heat gain, so as to reduce the reliance on air-conditioning at homes.

PUBLIC UTILITIES BOARD (PUB)

The PUB is embarking on a feasibility study for the installation of solar panels at its reservoirs and other facilities. Since climate change can be attributed to consumer lifestyle, business sector and policy, Singaporeans too can also contribute by using less energy, buying less and wasting less.

LAND TRANSPORT AUTHORITY (LTA)

Transport is responsible for about 20% of the carbon emissions in Singapore. Using public instead of private transport is one of the best ways to help protect our environment. By reducing the number of cars on the roads, the carbon emissions will also be reduced. Fewer car on the road means that by 2030, 75% of all journeys during peak hours will be undertaken on public transport.





INFORMATION LITERACY

Finding credible online resources would be most effective and productive when you use the right keywords and search strategies. For keywords relating to this topic, do think in terms of these:

SPECIFIC RESEARCH TOPICS

GLOBAL WARMING

CLIMATE CHANGE

GREENHOUSE EFFECT

OZONE LAYER

TYPES OF DOCUMENTS



NEWS UPDATE



RESEARCH REPORT
AND WEB ARTICLE



SPECIFIC SITES
ORGANISATION/
INSTITUTION

POSSIBLE INTERNET DOMAIN (WHICH HOST THE SITE)

.edu
EDUCATION

.org
ORGANISATION

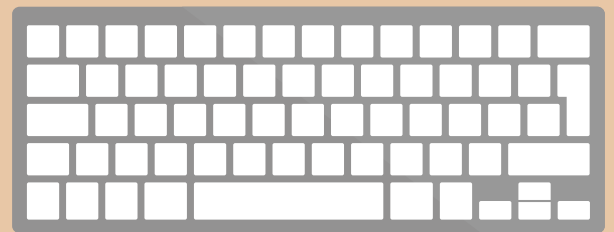
.gov
GOVERNMENT

Putting them into search strategies as follow:

climate change AND site:.org

global warming research AND site:.gov

climate change global warming AND news



Disclaimer: This production is intended for educational purposes only. Readers are advised to conduct further reading from other credible sources.

REFERENCES

1. Parker, R. (2009). Climate Crisis. New York: Rosen Central. p. 10
2. Royston, A. (2009). Climate Change. London: Heinemann Library. p. 6
3. United Nations Office for Disaster Risk Reduction. (2015). The human cost of weather related disaster. Retrieved on 12 February 2015 from http://www.unisdr.org/2015/docs/climatechange/COP21_WeatherDisastersReport_2015_FINAL.pdf
4. Gleason, Nancy Webster. (2015, December 15). Paris climate change good for more than the environment. The Straits Times. p.A20.; Cheam, Jessica. (2015, December 22). Paris agreement: Game-changer or epic failure?. The Straits Times. p.A21.; Fogarty, D. (2015, November 30). World leaders gather to combat climate change. The Straits Times. p.4. Developing nations 'could face \$1 trillion climate bill per year'. (2015, November 26). The Straits Times. p.A16.
5. Tan, Audrey. (2015, December 15). Singapore 'on right track' in fighting climate change. The Straits Times. p.A4; Sheng, Andrew. (2015, December 12). Going for green. The Straits Times. p.A54. Land Transport Authority. (2013). Land Transport Master Plan 2013. p.40. Retrieved on 12 March 2016 from <https://www.lta.gov.sg/content/dam/ltaweb/corp/PublicationsResearch/files/ReportNewsletter/LTMP2013Report.pdf>

Further reading:

Dancel, Raul. (2015, December 26). Natural disasters exact huge toll on Asia. The Straits Times. p.16.

New York Times article "Paris climate deal alone won't save the planet: Scientists. In The Straits Times. 2015, December 14. p.A6.