

# 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.<sup>1</sup> However, the rate of change is now getting faster and the result is making the temperature in our planet Earth hotter.

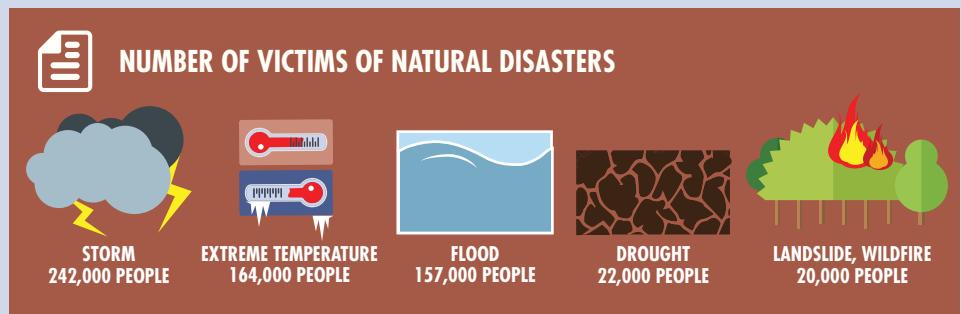
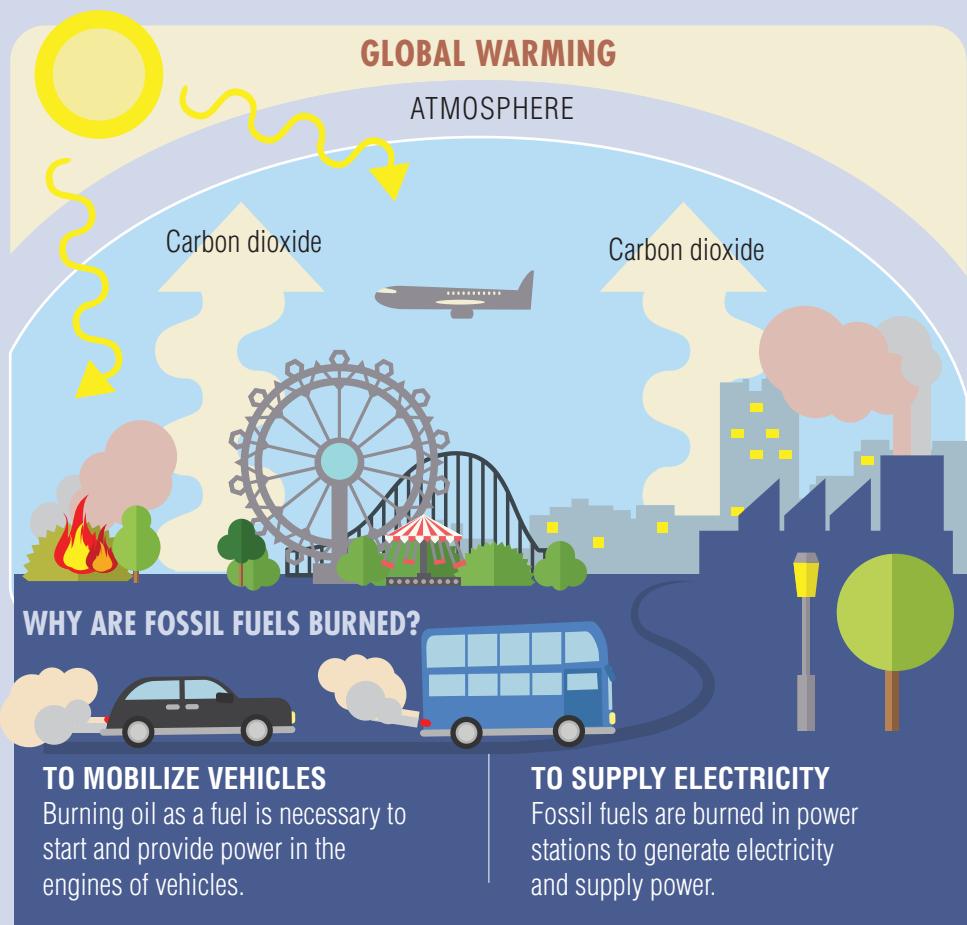


### WHY IS THIS SO AND WHAT IS GLOBAL WARMING?

"Coal, oil, and natural gas are called fossil 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."<sup>2</sup> 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.



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 number of people affected were 300 million and 100 million respectively.<sup>3</sup>

## CURRENT AND PROJECTED CARBON DIOXIDE LEVELS<sup>4</sup>

**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

## TOP 5 DISASTER-PRONE COUNTRIES



## 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.<sup>4</sup>

## 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.<sup>4</sup>

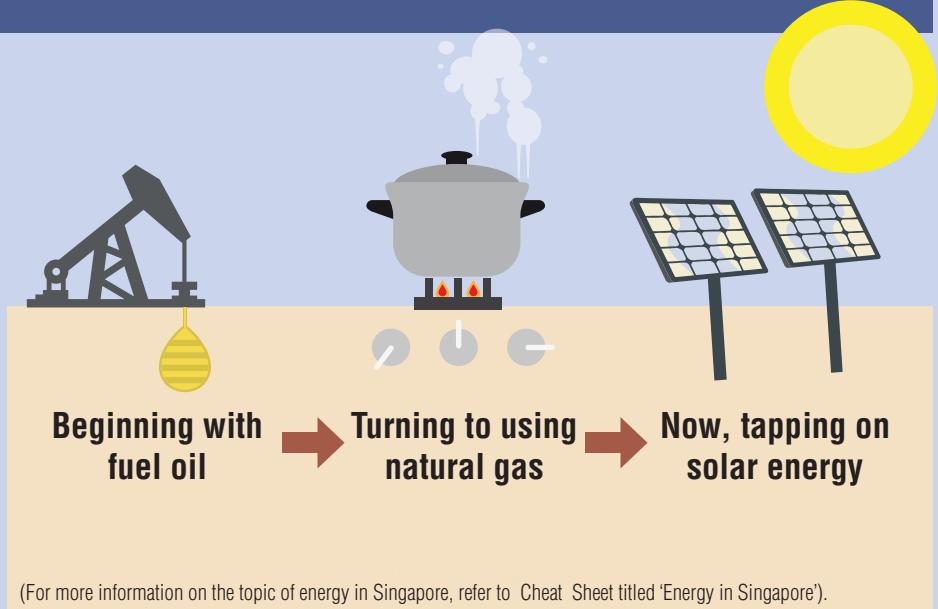


## KEY PILLAR IN SINGAPORE'S GREEN EFFORT: SOLAR ENERGY

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.<sup>5</sup>

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



(For more information on the topic of energy in Singapore, refer to Cheat Sheet titled 'Energy in Singapore').

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:<sup>5</sup>

### 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.



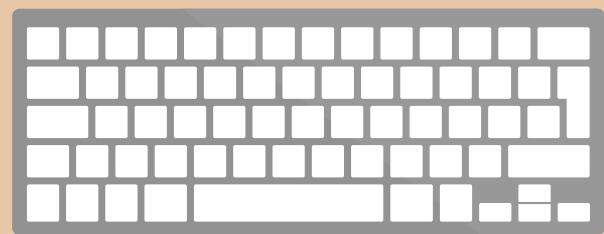


## INFORMATION LITERACY

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:



Putting them into search strategies as follow:



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](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/lta/web/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.