



# Encouragement Award

## Science Writing

### Year 7-8

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## The World In 2050

### Introduction

Currently, we live in a world where the population is growing, where most people have access to food and water, and air quality is mostly safe. However, all this is changing as the human race continues to develop and adapt. While there are many positive aspects to this, such as improved technology, and economic growth, there are also many negative aspects as well. Slowly, our earth will start to get overpopulated, our access to drinkable water will become inadequate, and our air quality is already depleting. While our technology continues to develop, our environment is slowly diminishing due to deforestation and pollution. By the time it is 2050, much of our earth may already be inhabitable due to global warming, heavy pollution and the growing sea level.

### Air Quality

By 2050, air pollution is set to be the world's top environmental cause of premature death (overtaking lack of sanitation and dirty water). According to the 2021 air quality index, the PM2.5 concentration (<2.5 micrometre particulate matter) of many cities is already twice as high as the WHO (World Health Organisation) recommended amount, and this will continue deteriorating as we get closer to 2050. Nowadays, only 2% of the global urban population are living at acceptable levels of PM10 concentrations (below the WHO Air Quality Guideline of 20  $\mu\text{g}/\text{m}^3$ ), and over 70% of urban residents living in BRIC and ROW countries are exposed to PM10 concentrations above 70  $\mu\text{g}/\text{m}^3$ . In 2050, the percentage of people living in cities with PM10 concentrations above the highest WHO target (70 $\mu\text{g}/\text{m}^3$ ) will be even higher across all regions, and compared to the year 2000, 2050 will face a 50% increase in nitrogen oxides, and a 90% increase in sulphur dioxide. A study based on a global atmospheric chemistry model showed that in 2050, if nothing is done, there will be an estimated 7 million air pollution related deaths annually. Currently, the leading cause of death annually is heart disease, with over 600,000 deaths annually. This number is just a fraction of the 7 million deaths that could be caused by air pollution in 2050.

### Water Shortages & Stress

At the moment, of the 333 million cubic metres of water on our planet, only 0.3% is drinkable. This is already a very small portion, and by 2050 over half our population may live with limited to no access to drinkable water. A study done by MIT using the Integrated Global System Model Water Resource System (IGSM-WRS) concluded that population growth and economic growth were the leading socioeconomic factors of water shortage and stress. Climate change is also a major contributor to this, especially in some of the more developed countries. According to a water stress ranking done by the World Resources Institute, 37 countries face extremely high levels of water stress, and will use over 80% of their available water supply annually. The 2018

edition of United Nations (UN) World Water Development Report stated that in 2050, nearly 6 billion people will suffer from clean water scarcity. This is around 60% of the total estimated population in 2050. According to the same report, "This is the result of increasing demand for water, reduction of water resources, and increasing pollution of water, driven by dramatic population and economic growth". Water shortage will affect everyone, because without enough clean, drinkable water, hygiene, health risks, and inflated food prices will become major issues. Because water is crucial to hygiene, and hygiene is crucial to health, a world without an adequate amount of clean water will face more diseases, and infections. This will affect communities that already have a water shortage first, but if nothing is done, water shortage will begin to affect everyone. Without enough clean water, many who cannot afford to drink it will resort to sourcing water from uncleanly places. This poses the risk of catching diseases such as cholera, typhoid fever, and other water-borne illnesses, which can lead to death.

### Natural Disasters

In 2020, there were roughly 6,800 natural disasters around the world. This may seem like a very high number, but most are small-scale and do not cause much harm to the environment or to us. However, this will not be the case in 2050. Quoting Michael Mann, the director of the Earth System Science Center at Pennsylvania State University, "By 2050, if we fail to act, many of the most damaging, extreme weather events we have seen in recent years will become commonplace". "In a world where we see continual weather disasters day after day (which is what we'll have in the absence of concerted action), our societal infrastructure may well fail ... We won't see the extinction of our species, but we could well see societal collapse." According to the 2017 report, Building Resilience to Natural Disasters in our States and Territories, prepared by Deloitte Access Economics, from 2006 to 2016, Australia has spent an average of 18 billion annually on natural disasters. Their report also found that by 2050, this number may be as high as 36 billion, which is double that of what the government spends now.

### Conclusion

Although the outlook is bleak if we choose to do nothing about our environment, we can change this outcome by doing something about it. With many advances in technology throughout the past few decades, it is almost certain that by 2050, we will have come up with new technologies that can change the world as we know it. However, you now know what could happen should we choose not to do anything. The air quality will be harmful, large scale natural disasters will become commonplace, and drinkable water will become a rarity. We clearly have to do something to help our environment, but if we are going to make a move, we have to do it soon.

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