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Unit

1

Freshwater Crisis

淡水危機



Reading

The water we drink today has likely been around in one form or another since dinosaurs roamed the Earth hundreds of millions of years ago. While the amount of freshwater on Earth has remained fairly constant over time—circulating continuously through the atmosphere and back into our cups—the population has exploded, putting the world's water resources in crisis. This means that competition for clean, plentiful supplies of water for drinking, cooking, bathing, and life-sustaining purposes is intensifying every year.

自從恐龍在數億年前漫遊地球以來，我們今天所喝的水可能就一直以某種形式存在。隨著時間的推移，地球上的淡水量一直保持相當穩定——不斷地經由大氣層循環並返回到我們的杯子中——但人口激增，使得世界水資源處於危機之中。這意味著，每年爭奪飲用、做飯、洗澡和維生的潔淨、充足水源的競爭愈來愈激烈。

Freshwater makes up a very small **fraction** of all water on the planet. Just 1% of our freshwater is easily **accessible**, and much of it is trapped in glaciers and snowfields. In essence, only 0.007% of the Earth's water is available to fuel and feed its 8 billion people.

淡水僅佔地球上所有水的很小一部分。只有 1% 的淡水很容易獲得，而且大部分被困在冰川和雪原中。實質上，地球上只有 0.007% 的水可用來為 80 億人口提供燃料和飲用。

Wherever they are, people need water to survive. Not only is the human body 60 percent water, this resource is also essential for producing food, clothing, and computers, removing our waste, and keeping us and the environment healthy.

無論身在何處，人們都需要水才能生存。人體內不僅 60% 為水，而且水資源對於生產食物、衣服和電腦，排除廢棄物以及保持我們和環境的健康也是不可或缺。

Due to geography, climate, engineering, regulation, and competition for resources, some regions seem relatively flush with freshwater, while others face drought and **debilitating** pollution. In much of the developing world, clean water is either hard to come by or a commodity that requires **laborious** work or significant funds to obtain.

由於地理、氣候、工程、法規和資源競爭的關係，一些地區似乎有相對充裕的淡水，而其他地區則面臨乾旱和破壞性的污染。在許多發展中國家，乾淨的水要麼難以獲得，要麼是需要費力工作或大量資金才能獲得的商品。

According to the United Nations, water use has grown at more than twice the rate of population increase in the last century. By 2025, an estimated 1.8 billion people will live in areas plagued by water **scarcity**, with two-thirds of the world's population living in water-stressed regions as a result of growth in use and climate change. The challenge we now face as we head into the future is how to effectively conserve, manage, and distribute the water we have.

根據聯合國的資料，在上個世紀，用水量的增長速度是人口增長速度的兩倍以上。到 2025 年，估計將有 18 億人生活在受缺水困擾的地區，且由於使用量增長和氣候變化，全球三分之二的人口將生活在用水緊張的地區。隨著我們邁向未來，我們現在所面臨的挑戰是如何有效地節約、管理和分配我們擁有的水。

Major causes of water scarcity

- Climate change
- Natural **calamities** such as droughts and floods
- Increased human consumption
- Overuse and wastage of water
- A global rise in freshwater demand
- Overuse of **aquifers** and their consequently slow recharge

缺水的主要原因

- 氣候變化
- 自然災害，例如乾旱和洪水
- 人的消費增加
- 過度使用和浪費水
- 全球淡水需求上升
- 含水層的過度使用及其導致的緩慢補給

Promising solutions to the global freshwater crisis

- Inventing new water conservation technologies
In areas where aquifers are drying up and rainwater is increasingly unpredictable, innovation is needed.
- Recycling wastewater
Israel is the world leader in wastewater recycling. Nearly 90 percent of its wastewater is recycled. Israel has historically suffered from water scarcity, but now, it has achieved water security, and even exports water to its neighbors.

- Improving **irrigation** and agricultural practices
Some 70 percent of the world's freshwater is used for agriculture. Improving irrigation can help close supply and demand gaps.
- Appropriately pricing water
Raising prices will help lower waste and pollution.
- Improving water catchment and harvesting
Water catchment systems are essential for areas with no other reliable water sources. They provide independent control of water resources.
- Improving distribution infrastructure
According to statistics from the Taiwan Water Company, the water **leakage** rate in Taiwan is as high as 20%. Although "repairing water pipes" does not sound very glamorous, the contracting and tendering funds required are much less than the tens of billions of dollars needed for "building **reservoirs**", and it has an immediate effect on the problem of water shortage.

●● 可望成功解決全球淡水危機的方案

- 發明新的節水技術
在含水層枯竭且雨水變得愈來愈難以預測的地區需要創新。
- 回收廢水
以色列是廢水回收利用的全球領導者。其廢水中近 **90%** 被回收利用。以色列歷來遭受缺水之苦，但現在已經實現水量供應安全，甚至可向鄰國出口水。
- 改善灌溉和農業實作
世界上約有 **70%** 的淡水用於農業。改善灌溉有助縮小供需缺口。
- 適當訂定水價
提高價格將有助於減少浪費和污染。
- 改善集水系統
集水系統對於沒有其他可靠水源的地區至關重要，可供使用者獨立控制水資源。
- 改善配水基礎設施
根據台灣自來水公司的統計，台灣的漏水率高達 **20%**。儘管「修理水管」聽起來並不悅耳，但承包資金和投標金額比「建水庫」的幾百億要少得多，而且對缺水問題具有立竿見影的效果。

●● Vocabulary

1. **fraction** (*n.*) 小部份；片斷；分數
 - When I won a million dollars in the lottery, I only kept a *fraction*, and donated the rest to charity.
 - As a young person who has only lived two decades, I have only lived a *fraction* of my full lifespan.
2. **accessible** (*adj.*) 無障礙；易接近的
 - Did you know your medical records are now *accessible* via your doctor's online patient portal?
 - Unfortunately, alcohol is quite *accessible* to underage college students.
3. **debilitate** (*v.*) 使人衰弱
 - Determined to continue forward, he would not let the injury *debilitate* him.
 - The effects of diabetes can work to *debilitate* you if you don't monitor your blood sugar.
4. **laborious** (*adj.*) 費力的
 - I hired this specific carpenter because of his *laborious* attention to detail.
 - Moving the oversized couch proved to be very *laborious*.
5. **scarcity** (*n.*) 缺乏
 - After a harsh storm, there is usually a *scarcity* of bread and milk in the grocery stores.
 - Because of the *scarcity* of apartments in the city, the rental rates are quite high.
6. **calamity** (*n.*) 災害
 - The approaching hurricane is sure to be a *calamity* that will affect the lives of millions.
 - I was worried after the fortune teller warned me of a great *calamity*.
7. **aquifer** (*n.*) 含水層
 - The discovery of the *aquifer* was a blessing to the farmers who were in danger of losing their crops because of the drought.
 - With your donations, the organization will build a system of underground pipes that will carry water from the *aquifer* to the village.

8. **irrigation** (n.) 灌溉
- Jill recently purchased a set of overhead sprinklers to use for *irrigation* in her greenhouse.
 - The two states have agreed to share water from the lake through a system of *irrigation* canals.
9. **leakage** (n.) 洩漏
- The *leakage* of technological secrets is reaching alarming proportions.
 - The disadvantages are that the batteries are inconvenient to change and severe battery *leakage* could be disastrous to the circuit board.
10. **reservoir** (n.) 水庫
- The fire department was rehearsing a water rescue drill at the *reservoir*.
 - We took our paddleboat out on the *reservoir*.

Reading Comprehension

A. Choose the correct answer for each question or statement.

- While the amount of freshwater on Earth has remained fairly constant over time, what is the main cause of the freshwater crisis?
 - Population growth
 - Water pollution
 - Greenhouse effect
 - Deforestation
- According to the United Nations, water use has grown at _____ the rate of population increase in the last century.
 - less than half
 - near
 - more than twice
 - more than three times
- By 2025, an estimated _____ of the world's population will live in areas plagued by water scarcity, with _____ of the world's population living in water-stressed regions.

a. one-sixth, one-third	b. 1.8 billion, two-thirds
c. one-quarter, two-thirds	d. one-third, three-fourths

- Which country is the world leader in wastewater recycling, with nearly 90 percent of its wastewater being recycled?
 - Israel
 - Japan
 - New Zealand
 - Singapore
- Seventy percent of the world's freshwater is used for what?
 - Agriculture
 - Livestock
 - Industry
 - Human livelihood

B. Complete each sentence with the correct word.

fraction	accessible	debilitate	laborious	scarcity
calamity	aquifer	irrigation	leakage	reservoir

- A quick punch to the throat will _____ most attackers.
- Several people became ill after drinking water from the _____ located under the chemical plant.
- The _____ of jobs in the town has caused the crime rate to increase dramatically.
- Due to the drought, the _____ was almost bone-dry.
- Because my internet service is not working, my favorite website is not _____ at this time.
- Large areas of land have been contaminated by the _____ from the nuclear reactor.
- Dealing with a five-year-old boy is often _____ and exhausting.
- To avoid a(n) _____, the police are asking everyone to move away from the burning building.

9. Lightning strikes so quickly that it travels between the sky and the ground in a _____ of a second.
10. With our new _____ system, we will be able to make plants thrive even in dry terrain.

Group Discussion

1. Will freshwater run out?
2. How can we solve the freshwater crisis?

