

Lesson 2 Going Green for a Blue Planet

Getbol: A Treasure House with Great Potential

Getbol, a Symbol of Biodiversity

Have you ever visited the Korean tidal flats known as getbol? Getbol is a muddy and flat environment that is exposed at low tide and is covered by water at high tide. Soil on land has flowed into the sea and accumulated for more than 8,500 years, creating one of the thickest tidal layers in the world. Since the soil includes organic matter from land animals and plants, getbol is rich in nutrients and provides habitats for thousands of species. In fact, getbol is home to approximately 2,150 species of plants and animals, including 22 globally threatened or near-threatened species.

Thanks to its rich biodiversity, getbol is visited by about 118 species of migratory birds every year. For millions of migratory birds that travel between Australia and the Russian Far East or Alaska, Korea's tidal flats are a vital stopover location. Without getbol, they would not have a place to rest and feed themselves during their long journeys, and they would become extinct.

Since getbol is not only a unique ecosystem crowded with diverse species but also a resting place for endangered birds, it was added to the UNESCO World Natural Heritage List in 2021. The list includes the four tidal flats on the western and southern coasts of Korea: Seocheon Getbol, Gochang Getbol, Shinan Getbol, and Boseong-Suncheon Getbol.

Climate Change and Carbon

When people think of a changing climate, images of melting glaciers and polar bears losing their habitat often come to mind. But this is only one aspect of the problem. Climate change is causing extreme weather conditions, which have become more frequent and intense worldwide. Heatwaves, droughts, floods, and wildfires are affecting countries around the world. In the autumn of 2019, for example, Australia was hit by one of the worst wildfires on record. Over six months, the wildfires burned about 10 million hectares of land, and killed hundreds of millions of animals. Approximately 30 percent of the koalas in the region are said to have been killed due to the fires.

This is why the international community has been seeking solutions to the climate crisis. In 2015, 195 countries signed the Paris Agreement to limit the temperature increase to 1.5°C above pre-industrial levels. The countries agreed upon the fact that the increase in atmospheric carbon is a major reason for climate change. One key strategy to combat it is to achieve "carbon neutrality," which involves maintaining a balance between the amount of carbon emitted and carbon absorbed.

The Earth's Atmosphere Is Like a Bathtub

Let's imagine that the Earth's atmosphere is a large bathtub, and the greenhouse gases emitted into the atmosphere are like water flowing from a tap into the bathtub. At the bottom of the bathtub, there's a drain that lets the water out. If we keep the tap running, the water level in the bathtub will rise, just as greenhouse gas emissions have led to an increase in atmospheric carbon. This rise in carbon levels has already resulted in negative environmental consequences, such as climate change. To make matters worse, if the water is not effectively drained, the bathtub will overflow. In other words, if we don't reduce carbon emissions sufficiently, atmospheric carbon will continue to accumulate.

Blue Carbon and Getbol

One of the most promising ways to reduce carbon in the atmosphere is to use the "good" carbon on Earth. The Earth's carbon can be divided into three types: black carbon, green carbon, and blue carbon. Black carbon is released while burning fossil fuels, such as coal, oil, and gas. It causes the greenhouse effect, leading to global warming and climate change. Green carbon, on the other hand, is carbon absorbed by and stored in land ecosystems, such as rainforests like the Amazon in South America. It plays a vital role in maintaining the ecosystem because it absorbs carbon dioxide through photosynthesis. Finally, blue carbon is the carbon stored in the ocean, including coastal and marine ecosystems such as mangrove wetlands, seagrass beds, and tidal marshes. The carbon absorption rate of marine ecosystems is about 50 times faster than that of land ecosystems. Blue carbon can store up to 10 times more carbon per unit area than forests on land, making it highly cost-effective.

A notable example of blue carbon can be found in tidal flats located around the ocean. Research conducted in 2021 has revealed that getbol in Korea stores approximately 13 million tons of carbon and absorbs over 260,000 tons of carbon dioxide each year. This means that getbol alone can offset the carbon dioxide emissions produced by 110,000 cars in a year. Considering that getbol contains numerous organisms and marine animals that store carbon, the treasure house of blue carbon has become a promising and sustainable solution to the current environmental problem. Scientists worldwide are continuing to explore the capabilities of tidal flats with the goal of having them officially recognized as blue carbon.

Efforts to Protect Getbol

Getbol in Korea was once considered useless muddy land, so much of it has been reclaimed for farming and urbanization. This has led to a decline in the area of tidal flats, causing a loss of biodiversity. To prevent further damage to the marine ecosystem, both the government and environmental organizations have been making efforts to protect the tidal flats by regulating unnecessary development. Without further efforts to restore getbol, we would fail to preserve this valuable ecosystem for future generations.