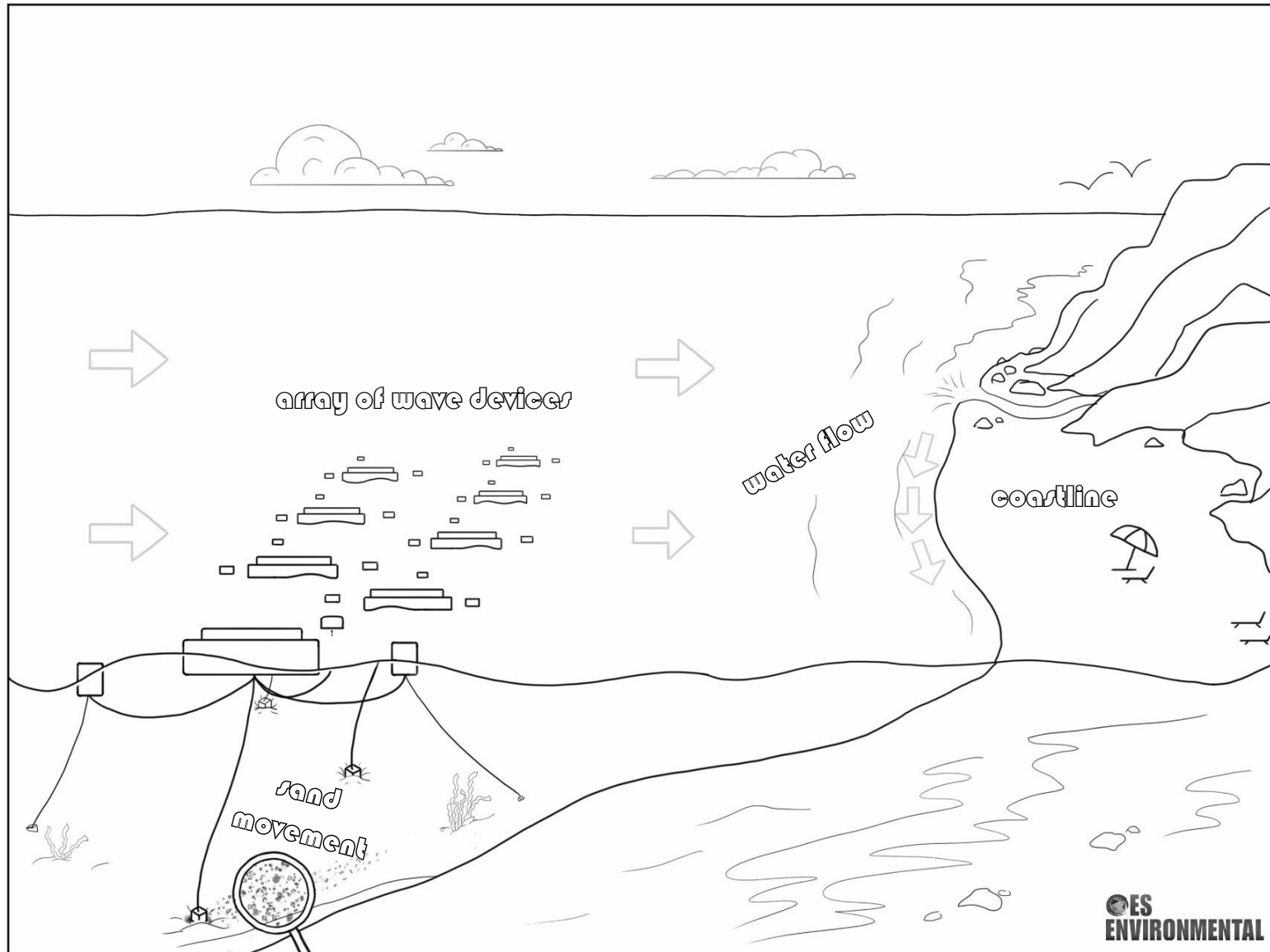


## Changes in Oceanographic Systems – Wave Energy

There are many important processes in the ocean, including the movement of the waves and tides, sediment (like sand and rocks), and nutrients – these are oceanographic systems. Marine animals and the environment rely on these processes and placing marine renewable energy devices in the water can affect them. Both wave energy devices (shown below) and tidal energy devices (shown on the next page) can reduce the power of the waves or the tides as they use those water movements to create energy. This can change the direction and power of waves on the surface, make the water move more slowly or in new ways around the device, or change the movement of sediment.



## Changes in Oceanographic Systems – Tidal Energy

The changes to oceanographic systems are mostly a concern when there are many devices grouped together (called an “array”). Understanding how water movement, the coastline, and other parts of oceanographic systems will change when new devices are placed in the ocean is important for scientists to keep animals and people safe. Researchers have used computer models to predict potential effects on the environment, but field data collected around arrays of wave and tidal energy devices are needed to better understand these impacts to oceanographic systems.

