

**[Article] Advantages and disadvantages of renewable energy,**  
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Important: *This article was rewritten to make it easier for students to understand.*

## **Advantages and Disadvantages of Renewable Energy**

Renewable energy is getting more popular around the world. It comes from sources like the sun, wind, and water, which are always there and don't run out. Using renewable energy is better for the Earth than burning fossil fuels like coal, oil, and gas, which can make the air dirty and harm the environment. But there are good and bad things about renewable energy. Let's look at both.

### **Advantages of Renewable Energy**

#### **Never Runs Out**

One great thing about renewable energy is that it never runs out. The sun will always shine, the wind will always blow, and water will always flow. This means we can use these sources forever. Fossil fuels, like coal, oil, and gas, will eventually run out because they take millions of years to form. As they become harder to find, they also get more expensive and can cause more damage to the environment as we try to get them.

#### **Clean Energy**

Renewable energy helps keep the air clean because it doesn't produce harmful gases that make the Earth warmer. Burning fossil fuels creates a lot of these gases, which is bad for our planet. Using renewable energy like solar and wind power doesn't produce these gases, which helps fight global warming and keep our planet healthier.

#### **Cleaner Environment**

When we burn fossil fuels, it creates pollution that can make people sick and harm animals. For example, burning coal can release dirty particles into the air and chemicals into the water. Renewable energy, like solar panels and wind turbines, doesn't make this kind of pollution. Using more renewable energy means we can have cleaner air and water, which is better for everyone, including plants and animals.

#### **Energy Independence**

Renewable energy can help countries make their own energy instead of buying it from other countries. This makes them less dependent on others and can help avoid problems if there are price changes or shortages. For example, if a country uses its own solar or wind power, it doesn't have to worry about running out of energy if another country decides to stop selling oil or gas.

#### **Low Maintenance**

Some types of renewable energy, like solar panels, don't need much care once they are set up. Solar panels don't have moving parts, so they don't break down often and can last more than 25 years with little upkeep. Hydropower plants, which use water to make electricity, also need very little maintenance and can work for many years without problems.

#### **Affordable Energy**

The cost of making electricity from renewable sources like solar and wind has gone down a lot. It is now cheaper than coal, oil, or gas in many places. Almost all solar and wind projects cost less than coal or gas plants. As more people and businesses use renewable energy, they save money on their electricity bills.

#### **Job Creation**

The renewable energy industry is growing fast and creating many new jobs. Clean energy jobs now make up more than half of all jobs in the energy sector around the world. This growth also helps workers who used to work with fossil fuels find new jobs in renewable energy. As the demand for clean energy increases, more people will be needed to build, install, and maintain these systems.

## **Disadvantages of Renewable Energy**

### **High Initial Costs**

Setting up renewable energy systems can cost a lot of money at first. For example, installing solar panels for a small business can be very expensive. However, governments often give money back through incentives and tax credits to help reduce these costs. While renewable energy saves money in the long run, the initial cost can be high.

### **Location Needs**

Renewable energy systems often need specific places to work well. Solar farms need lots of sunlight, hydropower needs moving water, wind farms need open spaces, and geothermal power needs hot water sources. These systems also usually need more land than traditional power plants. This can make it hard to find the right places to build these systems.

### **Weather Dependent**

Renewable energy production can be affected by the weather. Solar power needs sunlight, so it doesn't work well on cloudy days. Wind power needs wind, so it doesn't work well on calm days. Hydropower needs rain to fill up rivers and dams, so it doesn't work well during droughts. This can make it hard to always have a steady supply of energy.

### **Energy Storage**

Because renewable energy depends on the weather, we need batteries to store energy when it's sunny or windy to use when it's not. These energy storage systems can be expensive, but new technology is making them more affordable. Batteries help make sure we have enough energy even when the weather isn't cooperating.

### **Getting Materials**

Building renewable energy projects can be delayed by problems getting the needed materials. It can be hard to get the raw materials, machines, and skilled workers needed. For example, a lot of the material used in solar panels comes from China, so any problems there can affect the global supply. This can make it hard to build renewable energy projects on time.

### **Waste and Pollution**

Making and installing renewable energy equipment can still produce greenhouse gases. There is also waste produced when these items are made and when they are thrown away, like old wind turbine blades and solar panels that end up in landfills. It's important to find ways to recycle these materials to reduce their impact on the environment.

### **Conclusion**

Renewable energy has many benefits, like being good for the environment, creating jobs, and becoming more affordable. However, there are also challenges, such as high initial costs and the need for specific locations. Understanding both the advantages and disadvantages can help us use renewable energy more effectively and make better decisions for our planet.