

The Future Generation's Grasp of Renewable Energy and Sustainable Development

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In a world plagued by environmental challenges, it's time to discuss why sustainability and renewable energy matter. A new era where we must be wise about where we get our energy is upon us as fossil fuels are diminishing. It's not an option; it's mandatory. We're moving from



the old ways to a new, greener future. Let's see why this change is essential for a better and cleaner tomorrow.

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We know that fossil fuels are slowly decreasing, but why else is it important to work on sustainability and renewable energy technologies? Well, there are a number of reasons why we should focus on this important issue. First of all, renewable energy addresses the

urgent issue of climate change through minimizing greenhouse gas emissions and in turn also decreasing our dependence on fossil fuels [5].

Sustainable development and renewable energy promote energy security by diversifying our energy sources. Countries boost their resilience to supply geopolitical uncertainties and invest in renewable sources that then promise a more reliable and secure energy future [3]. Reduced usage of fossil fuels that contribute to the atmosphere's pollution will rapidly result in improvement in public health [2].

The chase of sustainable energy will lead to technological innovation. Research and development can result in the making of modern, coherent technologies which puts nations at the front of a swift developing world [3]. Other than technological advancements, the



renewable energy branch creates various economic opportunities. Job growth will be seen in fields such as solar and wind power, and other clean energy industries. This will provide a diverse economy [22].

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In the future, various renewable energy sources will play an important role in fulfilling the UN's Sustainable Development Goals (SDG). Solar energy, which is the most

common renewable energy at the moment, is basically photovoltaic panels that can generate electricity on a big scale, which provides a clean energy source [4]. Wind energy is just wind

turbines that then use the power of the wind to produce sustainable electricity [4]. There are many other renewable energies, such as, hydropower, geothermal energy, bioenergy, and various others that are being experimented with [2].

In my opinion, there are a few SDGs that these clean energies can fulfill. For example, SDG 12, which focuses on responsible consumption and production patterns [9]. Using the renewable energies I mentioned before, this goal can be achieved significantly by promoting cleaner energy sources. Renewable energies have a lower environmental impact in contrast to fossil fuels, which are a hazard to the atmosphere as mentioned before. Using these alternatives instead can help lessen pollution, fight climate change and ultimately minimize economic disturbance [8]. The production and usage of renewable energy involves more sustainable applications unlike nonrenewable sources [1]. E.g. solar panels can be recycled, and wind turbines can easily be disassembled and recycled after. This encourages sustainable practices.

Other Sustainable Development Goals that I think can be achieved using renewable energy and sustainable development is SDG 7, which emphasizes affordable and clean energy [9]. SDG 13, climate action and SDG 17, partnerships for the goals. All these can be simplified with the help of clean energy technologies [9].

On an individual level, we can do quite a few things to make an impact. One important thing that we can all do is recycle. It may seem little in day-to-day life, but it has a big impact on our planet. Using recycled materials for new products takes less energy than manufacturing from raw materials [7]. Recycling also helps with reducing pollution, greenhouse gas emissions and waste in landfills [18]. It plays a significant role in sustainable living and resource management.

Nevertheless we have issues with recycling. One of our current issues is the lack of education [6]. Many people know that recycling is crucial, but they are unsure how to do it correctly. Others may not even know anything about recycling, and some know but do it in the wrong way. There should be more education and awareness about recycling.

Another problem in recycling materials is the cost of it [6]. High prices make recycling harder to accomplish. Here are some consequences of high-pricing.

- Some cities don't have the money nor the government support to guarantee proper services [6].
- Buying products made from raw materials is cheaper than buying reused materials, because of that companies tend to use newly made materials [6] [18].
- Workers may not get paid enough and the working space is dangerous and harmful for their health [6].

Finland might look like it is doing very well in recycling and keeping up with the EU requirements, but that is not quite true. Finland's recycling rate in 2020 was 41.6%, which does not meet the EU requirements of more than 55% [16]. Additionally, Finland has a risk of not meeting the EU target of 50% plastic waste recycling with a low 39% [14]. This year's Earth

overshoot day in Finland was already on March 31st, which is quite early compared to other European countries [15]. However, since then Finland has taken action and the rate of recycling has risen by 5% in 2022.

There are a few reasons why Finland is so behind compared to other European countries. One of the main issues of recycling in Finland is low collection rates, meaning that not enough people are putting their waste into the correct recycling bins [23]. Another issue is that Finland relies heavily on exporting its waste for recycling which can lead to increased pollution from transportation and make it more difficult to control the quality of the recycled materials [23]. Furthermore, Finland has quite a small population and fewer industries, which makes it harder to have enough recyclable materials and the necessary infrastructure for efficient recycling.

Different materials require different amounts of energy and time to recycle. Aluminum and steel cans are 100% recyclable[7]. Recycling aluminum and steel also uses over 90% less energy than making new ones, which makes them good for recycling [19]. Paper and cardboard are one of the easiest and commonly recycled materials [7]. Recycling paper products reduces deforestation and that decreases greenhouse gas emissions.

Some plastics like plastic bags and water bottles can be hard to recycle, because they often contain mixed materials [20]. Plastic bags are one of the hardest things to recycle. If they end up in the wrong place, they can get caught up in equipment. They can also melt together and cause the machines or even the entire center to shut down [25].

In the future, what would progressive and sustainable societies look like, if they fulfilled their energy demand through renewable energy technologies? We can not be certain what the future holds, but we can have some predictions. If renewable energy were implemented completely, energy would be primarily generated from clean sources such as solar, wind, geothermal and maybe even more advanced technologies like fusion [5].



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Green urban planning would be another aspect. Cities would be built and designed with sustainability, including green spaces, renewable sources, and eco-friendly transportation options [24].



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Urban areas will be using renewable energy sources for various different everyday tasks. There would be technologies using renewable energy to protect and restore natural ecosystems. Biodiversity would be a priority, and with that the impact of humans on the

environment should be minimized [24]. In this vision of the future, societies thrive in harmony with the environment, benefit from clean and sustainable energy, and actively work towards a more resilient and equitable world [24].

The recycling of materials in the future should aim to be circular, with materials being reused and recycled many times, while reducing water and saving resources [21]. Since technology is advancing with AI and robots, the sorting and processing of materials should become more efficient and effective [27]. The recycling stations should be cheap and easy for everyone to use and also found around the world including countries that collaborate and take steps forward in this direction [26]. The recycling of materials is not just a process but a complete and integrated system that has everyone working together to reduce waste and use resources efficiently [26].

I have noticed that in Aalto, phone charging stations are charged by renewable energy sources and the recycling here is very efficient in every department. Furthermore, Aalto University addresses environmental impacts through sustainable development, focusing on energy consumption, transportation, and recycling [10]. Aalto University Campus and Real Estate, uses geothermal and solar energy, reducing annual CO₂ emissions by 40% since 2012 [11]. Most buildings, built in the 1960s, can be improved through renovations to enhance energy efficiency and functionality, which is already underway [11].

“80-90% of the used for heating and cooling in the Aalto Works block will be from local renewable energy sources. The aim is to obtain the energy potentially to be purchased from the most ecologically produced energy possible”, says Aalto University Campus and Real Estate's Development Manager Antti Säynäjoki at the Energy Saving Week theme event [11].

Aalto University has various events and initiatives regarding recycling and sustainability. One recent project that has caught my attention is the “Sustainability Action Booster” program,

which includes a plastic recycling workshop [17]. This project's aim is to increase awareness to students by giving them easy access to recycled plastic materials for their projects. The goal is to raise awareness about the environmental impact of plastic waste and inspire creative reuse of materials. Generally speaking, Aalto University is dedicated to encouraging sustainability and ethical trash disposal, both within the campus and in the surrounding community [17].



Working at Aalto University has been a great experience. We saw how committed to sustainability and renewable energy Aalto is, and that really inspired us. We got to meet and work with some amazing people who are passionate about their jobs. There was a lot of hard work, but it was also fun and rewarding. Overall, working at Aalto University was a fantastic opportunity to gain some valuable experience for the future and knowledge on how to make the world a greener, and more sustainable place.

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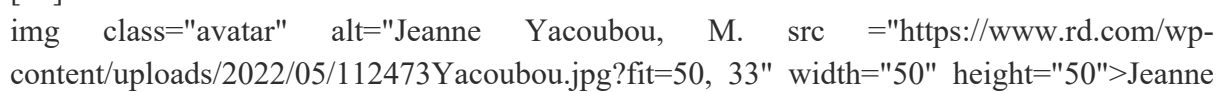
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