Evaluating the Present and Future Efficacy of Sweden's Shift to Renewable Energy from a Utilitarian Perspective

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

The effects of global warming are beginning to be felt worldwide, and several countries have taken the initiative to shift their internal energy use to combat its negative consequences. Sweden has perhaps been the most notable and successful country to significantly alter its energy portfolio. The Nordic country leads Europe in renewable energy share (66.4%), share of renewable energy used for transport (33.6%), and renewable share for heating and cooling (67.1%) (Eurostat, 2023). The majority of Sweden's renewable growth has come from solid biofuels, hydroelectric, and wind, showing a diverse investment of sources and therefore increased reliability in their outputs. Sweden is characterized by dense forests and fast-flowing water, giving it natural sources of energy that have the power to run the country. Sweden has met all its past energy targets and the government has now set a goal to source 100% of their electricity from renewables by 2040, a bold declaration which sets the bar for other countries to exchange their fossil fuels for cleaner energy (European Commission, 2017).

On an individual level, Swedes are adapting their actions to reduce harm on the environment, making changes in their lifestyles, and showing a deep level of environmental consciousness (Skill, 2008). By shifting from consuming products to investing in services and experiences, a smaller carbon footprint is easily achievable. Reducing working hours has been a strong initiative taken across Sweden to save energy, increase efficiency, and lower the burden on the working class (Barck-Holst et al., 2017). Infrastructure across the country is currently seeing upheaval, with priority placed on urban planning to support increased public transport and even the ability to walk to work.

A key debate within the global movement towards renewable energy is the way it will affect life satisfaction and overall happiness. The fossil fuels currently in use carry a certain inertia

with them that keeps prices and jobs stable while not requiring a political upheaval to keep the world moving. The adoption of renewable energy must prove to not only slow the progression of global warming but also to significantly improve the lives of people around the globe while maintaining profitability. If this is achieved, it can be theorized that this will provide the best path forward for humanity. In this paper, Sweden's shift to renewable energy will be looked at through a utilitarian lens where the overall happiness and quality of life of residents will be analyzed.

Literature Review

Sweden's implementation and effects of renewable energy use are well documented and have been longitudinally studied over the past few decades. Effects on personal wellbeing and interpersonal interactions have been observed, with changes due to renewable energy being widely noted. On a larger scale, consequences on the natural world, economy, and overall trust in the Swedish government have been discovered and discussed in research.

In his paper, "The strengths and weaknesses in the Swedish renewable energy sector : an assessment report", Jonas Grafström takes a holistic approach to analyzing how changes in the renewable energy sector have affected the country. According to Grafström, Sweden is amid a successful transition to cleaner energy, as in 2013, the renewable energy share of Sweden was already 52% of their total consumption. (Grafström, 2016, p. 9). Funding to kickstart the change to clean energy has been high in the past, with public capital funds giving substantial amounts of money to Cleantech companies and research. Sweden has been ranked as having the best inert conditions for change and start-ups, which has catalyzed past success in being an early adopter of clean energy (p. 10). A societal emphasis on research and innovation and a history of strong public backing meant that Sweden started with the tools required for success in an energy transition.

Political stability, cooperation with surrounding countries, and internal collaboration have also played to Sweden's benefit. Sweden has high biomass concentrations and plentiful streams and rivers that can power their renewable sector, giving them a head start over neighboring countries (p. 9). The prospect of job creation through renewables has also spurred a movement towards a cleaner energy portfolio in Sweden. The above factors have led to a successful entry into the renewable sector for Sweden, but these strengths are disconnected from how the lives of individuals across the country have been improved. The advantages described have more to do with how Sweden's inert conditions and progressive viewpoints have led to a fast adoption to renewable energy than how individuals have benefited. Therefore, from a utilitarian lens, this information does not support the idea that quality of life and wellbeing have been improved.

As a result of lowered funding and research in recent years, Sweden has begun to lag in developing innovative technology (p. 13). What this means on a larger scale is that Sweden is now inefficiently using their money and has a gap to make up to catch up to other countries in the renewable sector. Increasing this gap will only decrease investor confidence in renewables and further a negative cycle that may set Sweden's renewable shift back substantially. Recent hindrance in this manner has also produced frustration with consumers and legislators throughout Sweden. Cost of goods, including gas, have increased and the positive effects of green energy are hard to see on a personal level. Because of this, growing unrest could have negative effects on Sweden if progress continues to stall. As an early adopter of renewable energy, Sweden also lacks research on future economic and internal impacts of an overhaul of their energy system (p. 3). Other countries have the benefit of seeing how Sweden's economy has improved and can borrow technological innovations that years of research and funding created in Sweden and other green countries. Knowledge transfer between environmental firms is also weak in Sweden compared to

surrounding countries. The cross-fertilization of ideas to make progress is lacking, and thus new patents in Sweden have stagnated along with technological scale-up and new breakthroughs (p. 15). The unrest caused by Sweden's green energy transition is a strong factor in determining the success of the venture. Habits have been disrupted and the financial burden on average citizens have increased to support renewable energy, so the present-day outlook of Swedes on renewable energy trends negatively. The elite in Sweden (e.g., investors, politicians, and researchers) are noticing the slowed growth and public dissatisfaction across the country and may consider a middle-ground solution with continued fossil fuel use to sustain the economy. Any movement in this direction would diminish the long-term benefits of renewables and take away any utilitarian value gained from switching to renewable energy sources.

Another pertinent research paper in the field is "Low-carbon transitions and the good life", written by John Holmberg and other contributors. A major motivation for Sweden to continue its forward inertia into a cleaner energy transition is its effect on its residents, who in many ways have benefitted from a sustainable way of life. A method of quantifying the amount of good passed to individuals is by creating a division between objective and subjective measures of happiness, with Sweden excelling in both metrics (Holmberg et al., 2012, p. 11). From a narrow, material perspective, objective measures of happiness include GDP whereas subjective measures can be found as individual satisfaction with material assets. From a broader quality of life perspective, standard of living and capabilities are ways to show how Sweden is faring as a society with low-carbon transmissions. Overall well-being is difficult to measure but is a subjective way to show Sweden's success in their transition to renewable energy.

There has been a push in Sweden to develop hobbies and habits focused less on consumption and more on socialization and exercise. These activities do not contribute at all to

their environmental footprint, showing a positive feedback loop where happiness continually increases as the environment is more positively impacted (p. 36). Holmberg also discussed lowered working hours in Sweden, where energy and resources are saved when less time is spent in the office (p. 42). Car travel is a crux in the United States and most other countries around the world, and Sweden is looking into ways to circumvent this issue. Public transport and walking have been shown to significantly lower commute time, lower stress levels during the commute, and produce a fraction of emissions. In Sweden, recent urban planning emphasizes a focus on prioritizing a shorter commute time and leveraging public means of transportation (p. 63). Owning and driving cars does not actually increase happiness, but the societal pressure to drive a car has elevated the automobile industry to where it is today. Sweden's sustainable future can be thought of as more than a physical, industrial-level switch to less harmful means of acquiring energy, but instead as a mindset that residents of Sweden have adopted and propagated. Slight lifestyle and working modifications in a sustainable direction have shown conclusively to promote healthier and happier living, and individual momentum can lead to country- and eventually global-scale change. The utilitarian value of incentivizing sustainable infrastructural changes is high, which will become more apparent as countries continue to commit to improving their environmental footprint.

Conceptual Framework

The effect of Sweden's shift to renewable energy production can be procedurally examined by using a utilitarianism viewpoint. This ethical framework states that the difference between right and wrong is determined by the consequences of actions, not necessarily the means or intentions that led to them. Jeremy Bentham founded utilitarianism in the 18th century, and John Stuart Mill extended and revised Bentham's principles (Johnson, 2021). Two important sub concepts of

utilitarianism are rule utilitarianism and act utilitarianism, which oppose each other. Rule utilitarianism states that general rules should guide ethical decision making to establish norms that promote happiness, as calculating the consequences of every action taken lowers happiness. Act utilitarianism teaches that each action and consequence should be analyzed before it is taken to maximize positive outcomes, meaning that each individual act should be taken intentionally to maximize future good (van de Poel et al., 2011). A criticism of utilitarianism is that it can be interpreted to promote harming a small number of people to benefit the larger whole. To combat this, the ideology argues that hurting other individuals is a net negative for humanity by sparking fear and unrest within a population, and thus actions should be taken to protect those around you. Another gray area pointed out in utilitarianism is that morally wrong actions such as lying can be justified through beneficial consequences. This clash against other ethical frameworks such as virtue ethics shows a difference between traditional sets of human beliefs, as the concept of ends justifying their means is a favored attitude from a utilitarian perspective.

Analysis

The first aspect to analyze with regards to Sweden's green future is its effect on the physical environment. A change in personal lifestyles along with legislative changes to promote the use of clean energy means that Swedes will significantly clean up their country. Renewable energy sources such as biofuels and wind energy are notable for their marked decrease in emissions as compared to fossil fuels. Improving air quality is a critical issue to tackle at the present, and the burning of non-renewable fuels accounts for 75% of global greenhouse gas emissions (United Nations, 2021). A switch to cleaner fuel burning will not only lower carbon dioxide emissions, but also harmful side products of combustion such as particulate matter, sulfur dioxide, carbon

monoxide, and a variety of other harmful gases. Breathing in safer air helps humans greatly in the long term by lowering rates of cancer, heart disease, and respiratory diseases. Healthier living reduces the pain endured over one's lifetime and leads to sharper awareness, more activity, and better social functioning (Veenhoven, 1988). Longer lives lead to more opportunities to create happy memories, more time spent in a relaxed state after retirement, and a greater ability to spend time with family and friends, maximizing aggregated wellbeing. With these factors in mind, health and happiness are strongly correlated. A forward-thinking person would thus consider how harmful living conditions will be if the course of climate change is not reversed and would be more willing to make a short-term sacrifice to achieve this.

Biodiversity preservation is another initiative that Sweden and other sustainability-focused countries are pursuing as part of their transition to carbon-free futures. It should come as no surprise that reducing emissions, toxic liquid releases, and other forms of chemicals into the environment will support local ecosystems and keep them functioning healthily. Many important species around the world are extremely sensitive to toxins, temperature increase, and changes in acidity, so countries such as Sweden have the largest chance to keep nature intact. Humans are greatly benefited by spending time in nature through both hedonic and eudaimonic reasons. Exposure to nature can boost short-term mood and reduce negative emotions, principally through increased relaxation. Contact with nature has been shown to yield a better sense of meaning in life, including autonomy, vitality, and feelings of transcendence (Capaldi, 2015). Preserving trails, national parks, and other interactions between humans and nature are consistent with Sweden's sustainable philosophy and should lead to a prolonged sense of happiness among residents. Ocean acidification, temperature rise, and sea level rise are issues that will eventually become mortal threats to humans but managing them correctly can also work to increase human lifespans and

decrease overall suffering. Sweden, and the poles in general, are experiencing more drastic rises in temperature and sea level due to polar amplification (You et al., 2021). The increased instability created by these drastic effects requires more rapid efforts to fight, of which Sweden has the resources to combat against. It can not only be stated that happiness and well-being will be increased if action is taken to preserve nature, but that countries such as Sweden will need to continue to make sustainable legislative changes to preserve their land.

The personal changes that accompany a greener society give another important angle to realize when looking at the happiness of Swedish citizens. A shift to less energy-intensive and materialistic hobbies has shown potential to significantly amplify enjoyment of life outside of work while simultaneously taking better care of the environment. It is important to note that personal efforts taken to increase sustainability should not be pushed to excuse larger corporations of the guilt of climate change. Infrastructure changes, including energy sourcing and emissions, are the culprits of global warming, but from a consumer's perspective, sustainable hobbies often offer maximal utility. Less energy-intensive activities including conversing, engaging in group activities with friends, and walking have been shown to increase quality of life more than investing in material items (Högberg, 2023). The concept of working, earning, and spending on material items is ubiquitous worldwide as the sign of a successful life. Physical assets do not provide enough marginal utility to justify the resources involved in their creation and fail to provide a sense of fulfillment after basic needs are met. The inequality of incomes around the world suggests that the only activities that all can enjoy are those which are free and accessible. Happiness has been shown to be associated with more responsible consumption and a stronger adherence to sustainability and responsible behavior (Sameer et al., 2021). These ties show that happier countries are more

responsible with the environment, and countries that respect the environment trend towards being happier.

In addition to modifying their leisure habits, an overhaul of the way that Swedes work has made strides in personal health and sustainability. Carpooling and public transportation are encouraged and normalized throughout the country. The obvious downgrade in emissions is accompanied by a greater chance of human interaction during work commutes. If a time typically spent trapped in one's thoughts can be replaced by conversations and opportunities to connect with others, satisfaction with working and home lives should be benefited. Sweden is a country that is experimenting with shorter work weeks to examine their impact on energy consumption and worker contentedness. Reduced working hours had a positive effect on restorative sleep, stress, memory difficulties, negative emotion, sleepiness, fatigue and exhaustion on both weekdays and weekends (Barck-Holst, et al., 2017). Workers are also happier with their increased time for hobbies, unemployment rate decreases, and efficiency at the workplace is maximized since energy use is lowered. If workplace goals can still be met with less time in the office, this strategy has the potential to be adopted worldwide.

Sweden's progressive policy decisions and past efforts to make renewables work have set them up to thrive for the near- and long-term future. The renewable sector brings with it a slew of job opportunities, with technical, management, and wage-based roles opening within the wind, solar, and bioenergy sectors as a transition is completed. Lower unemployment rates mean that less Swedes must deal with the stresses associated with looking for work and providing for themselves without stable incomes. A future goal in Sweden is to obtain energy independence, and a complete shift away from fossil fuel use and import. Energy independence, defined as the point at which Sweden can source all their energy internally, will mark a point where Sweden will

stabilize their economy and political sphere. Once established, profitable, and sourced internally, green energy should lower political conflict and secure Sweden's industrial presence.

The biggest hurdle for Sweden in their renewable energy plan was to secure enough principal funding to build sustainable infrastructure. Though there is a positive correlation between renewable energy use, economic growth, and happiness index, it is necessary for banks and investors to give a constant stream of money to prolong the operation (Ostrowska et al., 2024). This was initially difficult as electricity and gas prices rose across Sweden, causing public unrest (Ybersbond, 2014). Education about renewables was and still is paramount to justify changes to the physical landscape in Sweden and short-term financial losses to change to renewable energy. The petroleum industry also had a great deal of influence in Sweden as it does in most of the world, so it was difficult for policy modifications to gain a foothold. The advantage of Sweden in this regard is they had enough momentum for change to get through these initial financial and personal sacrifices. Once renewable technology is established, there is no need for drilling or other increased competition on limited resources. Reduction of pollution and climate impacts alone have the capability to save $4.2 trillion across the world if accompanied by strong movement to cleaner energy (United Nations, 2024). Utilitarianism emphasizes added value of the long-term results of actions. Overhauls to renewable energy are therefore a quintessential example of the net good that can be achieved for future generations after small sacrifices by those currently in power.

Conclusion

A cost-benefit analysis investigating the impacts of clean energy can determine whether countries following a utilitarian mindset should invest their time and money into this solution. The environmental impacts of renewables are well known. Less emissions, pollutants, and

environmental invasion by drilling only stand to benefit the environment. The slight ecosystem disruption by turbines and other constructions are largely outweighed by these positives, and ties have been established linking health and happiness with environmental robustness. Social benefits of this switch are also well-studied. Interpersonal interaction, exercise, and spending time in nature have largely been shown to increase current and long-term satisfaction and life fulfillment. Social disadvantages have not been shown to be significant, and it is generally agreed upon that switching to sustainable habits provides only benefits to those willing to engage in these behaviors. The political and economic wellbeing of Sweden should be improved with their progress towards carbon neutrality. Disruptions, including increases in electricity prices and political disagreements, are sacrifices that will be resolved soon and are necessary losses to ensure future prosperity in a renewable regime.

Sweden's shift to renewable energy has therefore worked to increase overall well-being and happiness from a utilitarian perspective. A focus on sustainable resources and lifestyles has both good intentions and good outcomes, meaning it passes the test of utilitarianism and other ethical frameworks. The positive feedback loops between happiness, sustainability, and clean energy suggest that any progress made towards a greener energy portfolio can significantly increase the wellbeing of people around the world. Considering the world's current socio-political state and the cascading effects of climate change being experienced, there may not be a choice of whether to use fossil fuels or renewable energy. The past greed of those in power has put current and future generations in a position where overhaul is needed to ensure future survival on this planet. We have destroyed the only known place in the universe that can support life and have created happiness solely for the wealthy and powerful. To reverse this course and provide utility

for the rest of the world, it will require action and upheaval from the powerless majority to maximize happiness in the future.

Word Count: 3479

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