Candidate 2 evidence

Does nuclear or wind power have more potential in Scotland?

INTRODUCTION

Wind power is a very clean and sufficient method of generating energy. Wind energy is most commonly found by the coast as it works more effectively, Scotland is on a large coast. Wind energy is more effective by the coast because when the cooler air comes into contact with the heat generated from the sun, currents are created. The greater the current the greater the wind energy. Wind turbines take the natural air and use it to speed the blades of a wind turbine. Wind turbines use electo-magnetic energy and they depend on the speed rate of which the powerful blades spin at.

Nuclear energy is created from the splitting of uranium atoms. The nucleas is split into two large peices, known as the 'daughter Nuclei Before the nuetrons can collide with uranium they have to be cooled down first. The water plant is heated to generate the energy.

However, nuclear energy is a risky source of energy as it causes multiple effects. For example, Furkshima in 2011, here there were multiple deaths and deformities caused in humans. The accident was because of a malfunction in the power point. This indicates how nuclear energy isnt the best source for Scotland.

HYPOTHESIS

My hypothesis is that wind energy is a more effective way of generating energy in Scotland compared to nuclear.

NULL HYPOTHESIS

My null hypothesis is that both wind energy and nuclear energy have an impact and difference in Scotlands energy supply.

RESEARCH METHODS.

My first research method that I used was a survey monkey in December 2018. With this I created a survey with pre-determine answers. For example, I asked

- "Are wind turbines an efficient ~~and~~ and suitable way to generate electricity?"
- "Is nuclear power an efficient and suitable way to generat electricity?"
- "Are wind turbines an eyesore to Scottish landscape?"
- "Do you feel safe with nuclear power points in scotland?"

From this I gathered 31 respondants from individuals aging from 13-60. I posted my survey on social media accounts and emailed it to specific people. This was a good research method because it gathered primary-data. I was able to gain an ~~a~~ insight from those who are residents of Scotland and review their opinions. As of the wide age range, the possibility of answers being bias is unlikely as the older generation may see wind turbines as an ~~a~~ eyesore, whereas the younger not as much and the data balances itself out. It is an effective way of researching as it comes from the scottish population however my audience was limited. In comparison to the whole of Scotlands population, 31 responses is very little. The responses are from the North-East of Scotland and no where ~~el~~ else. This further more means that the rest of Scotland never had the opportunity to voice their opinion. People who live in the west of Scotland may have a completely different view. This means that my data does not represent the whole of Scotland and is unreliable. As an improvement I could've sent my survey to more places. Instead of 31 responses I could have got 100+. This being from

all areas around Scotland to give a more balanced and accurate view. I could have also given questions into further depth and opt areas to make a comment. This would've given the opportunity for residents to explain their points of view and thought process and I could've included it as primary data quotations.
The second research method I used was the internet. The internet is easily accessable and contains a wide range of information. I used multiple sites to gather information and one was data from the Scottish Government website. The Scottish Government gave me an excel concerning the generation of electricity within the UK. The spread sheet contained masses of statistics and information. The content of the information given also massively helped and improved my depth of knowledge and understanding on the use of energy. This was a good research method as the Scottish Government website is extremely reliable. The Scottish Government have to be accurate with their information to avoid political interferance. This further more means that in avoidence, the website has to be non-bias towards all things, indicate that facts and figures remain nuetral. However the use of other websites are not as reliable. The internet is so large that it is very easy to recieve and review incorrect information. There are multitudes of sites such as wikapedia that contain

information influenced by other people rather than factual information that are of use. Although data 6 is from the Scottish Scientist, estimations aren't 100% reliable. To avoid this problem and improve next time, checking data and estimations from other sites would be beneficial. This meaning that I could compare information from multiple sites to check the accuracy of them.

ANALYSING AND REFRENCING INFORMATION

As shown in processed source 1 Graph 1 we can see from the pie chart that 80% of respondents agree that wind turbines are an effecient and suitable way to generate electricity. Whereas the remaining 20% of respondants are either unsertain or dont think they are a suitable source of energy. The positive response towards wind turbines is the fact that they are a renewable source of energy. Wind turbines are a completly clean and efficient way of producing energy. They are completely reliable because it is a method that will never run out. All that is required is the speed of the wind and no Toxic pollution is released out into the air. This means that not only is it an effective method of giving Scotland energy but it also prevents climate change.
However many residents of Scotland complain that wind turbines are an eyesore to the land scape. As shown in processed data source 2, figure 2.1 we see multiple wind turbines along the country side. We also see that there is Wildlife living beside the industrial mechanisms. This argues that not only are they an eyesore to the landscape but they are using too large of areas of farm land and effecting the livestock. Furthermore indicating a reduction on Scottish farming. To back up the point concerning wind turbines being an eyesore, the president of the United States rejected the idea of building turbines beside his golf corse in

the North-East of Scotland. Donald Trump protested how they were damaging the envroment. Thus shows how wind turbines can impact the views on busness' and tourists. As instead of them investing money to Scotland to see massive wind turbenes, they will invest into different countrys.
Displayed in the processed Data 3 graph 2 we are shown the survey responses to "Do you feel safe with nuclear power points in Scotland?" From this there is mixed response. The most significant response to the fact that most are not aware of its dangers, 43.3%. 33.3%. said no and 23.3%. said yes. This 10% difference shows how there are more people who do not feel safe with power points in Scotland or are simply uneducated on its dangers. Nuclear energy can often have a malfunction in its power plants. This simple malfunction causes a hedge amoun of damage. For example in Ukraine, their power point had a catestrophic malfunction and this caused multiple deaths amongst the people. The people were severly damaged from the incodent, from losing loved ones, deformities due to radiation and the evacuation from their homes to migrat into neighboring countries. However those who still feel safe must rely on the advances made on technology and the control of radiation is continual.

The spread sheet in the processed data 4 graph 3, table 2 represents the percentage shares of generation electricity in 2009 and 2010. The spread sheet shows that in 2010, nuclear energy had 30·6% of electricity generated whereas other renewables only had 12·6% generated. This shows that nuclear energy is used more in Scotland. This could be because it is faster at generating electricity because it isn't weather-dependant. Solar pannels depend on the heat from the sun and wind turbines depend on the speed rate of the wind. This is not sufficient as the weather in Scotland often fluctuates and is unpredictable. Scotland faces a long winter where sunlight is very rare - meaning that solar energy ~~is very~~ can be slow. Whereas nuclear energy does not have this dependancy. Furthermore indicating why it is the most consumed energy supply in Scotland.

In processed data 5 we are presented with a nuclear power point in the west of Scotland. As we can see the power point is very large and dull. This rejects the wind turbine eyesore argument as it takes up more land use and is much larger than a wind turbine. 5·1 also points to the pollution being released into the enviroment. This shows that the enviroment is being intoxicated by the nuclear energy. Whereas wind turbines release no pollution and farmers get paid for giving up their land use.

Shown in processed data 6 graph 4 we are given a bar chart with current figures and the estimated figures for Scotlands Electricity Generation. We are shown all the different

Sources of energy supply in which Scotland uses. We see that in 2020, 2 years from now Wind is the main source of energy. This evidently indicates that the Scottish Government and scientists believe that wind energy will be the most effective way of generating electricity rather than nuclear energy. Although in 2010 nuclear energy was the most used and consumed source of energy within a 10 year time frame the use of wind energy has overtaken nuclear. This is because one day we will not be able to use nuclear energy and there would be no energy supply

CONCLUSION.

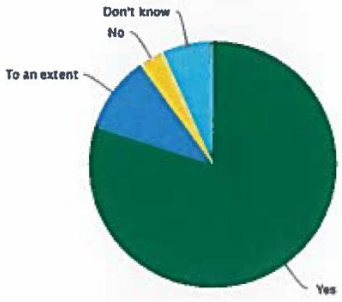
In conclusion I accept my hypothesis that wind energy is that wind energy is a more effective way of generating energy in Scotland compared to nuclear. This means I reject my null hypothesis is that both Wind energy and nuclear energy have an impact and difference in Scotlands energy supply. From the processed data we learned that 80% of survey respondants agreed that wind energy is a sufficient generation of energy. We evaluated the conjuction with the wind turbine eyesore. Concluded that most of the Scottish people are not aware of the nuclear risks but nuclear energy is the most used energy source in Scotland, However there is going to be an increase of wind energy in Scotland's future Overall, these sources helped gather the evidence I needed to conclude that Wind energy is the most effective and significant source of Electricity in Scotland as of all its benefits.

PROCESSED INFORMATION

PROCESSED SOURCE 1 GRAPH 1:

Are wind turbines an efficient and suitable way to generate electricity?

Answered: 30 Skipped: 1

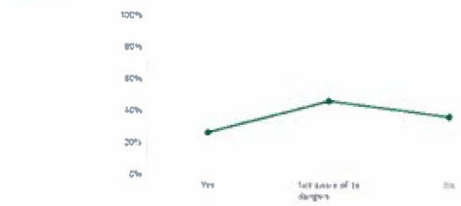


ANSWER CHOICES	RESPONSES	
Yes	80.00%	24
To an extent	10.00%	3
No	3.33%	1
Don't know	6.67%	2
TOTAL		30

PROCESSED DATA SOURCE 2 :

PROCESSED DATA 3 GRAPH 2:

Do you feel safe with nuclear power points in Scotland?



ANSWER CHOICES	RESPONSES	
Yes	23.33%	7
Not aware of its dangers	43.33%	13
No	33.33%	10
TOTAL		30

PROCESSED DATA 4 GRAPH 3:

Table 2: Generation of electricity by fuel in Scotland, Wales, Northern Ireland and England, 2009 to 2012 *GWh*

		2009					2010				
		UK total	Scotland	Wales	Northern Ireland	England	UK total	Scotland	Wales	Northern Ireland	England
Percentage shares of generation	Coal	27.3%	23.4%	20.5%	17.5%	29.1%	28.2%	29.5%	18.4%	24.4%	29.2%
	Oil	1.6%	2.5%	0.2%	1.4%	1.6%	1.3%	2.4%	0.5%	1.4%	1.1%
	Gas	44.2%	18.3%	45.6%	70.8%	47.9%	46.0%	18.8%	49.9%	64.2%	50.1%
	Nuclear	18.3%	32.6%	19.1%	-	16.2%	16.3%	30.6%	17.2%	-	14.1%
	Hydro natural flow	1.4%	0.5%	0.8%	0.4%	-	0.9%	0.5%	0.7%	0.5%	-
	Other renewables	5.3%	11.5%	4.2%	9.9%	4.2%	5.8%	12.6%	4.3%	9.5%	4.7%
	Other	1.8%	2.2%	9.6%	-	0.9%	1.5%	1.6%	9.0%	-	0.7%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Figures in this table do not sum exactly to the UK totals shown because of rounding

PROCESSED DATA 5:

PROCESSED DATA 6 GRAPH 4: