

2c Example A

(c) Using your own knowledge, explain **one** way in which trees in the taiga biome are adapted to the climate.

(2)

taiga forest trees are evergreen so they don't shed ~~leaves~~ ^{leaves} during the winter so they don't have to expend energy in the summer regrowing leaves and can focus on growth during the short growing season.

2c Example B

(c) Using your own knowledge, explain **one** way in which trees in the taiga biome are adapted to the climate.

(2)

trees in taiga are ~~deciduous~~ ^{coniferous} so ~~they~~ ~~lose~~ ~~leaves~~ they don't have to keep regenerating leaves and the leaves don't fall off.

3c Example A

(c) A country's 'energy mix' is the range of different energy sources used by its people and industries.

Using evidence from Figures 5 and 6, explain **two** reasons why the people of Iceland need a diverse energy mix.

(4)

1. People in Iceland need a diverse energy mix as they rely on different energy sources for different things. Fossil fuels are used less for making electricity however they are still needed for shipping, aeroplanes and road vehicles so there needs to be a mix.
2. Many hotels in Reykjavik use geothermal energy as Iceland is located on a plate boundary and can supply this energy relatively cheaply, increasing profits for businesses and boosting the economy.

3c Example B

(c) A country's 'energy mix' is the range of different energy sources used by its people and industries.

Using evidence from Figures 5 and 6, explain **two** reasons why the people of Iceland need a diverse energy mix.

1. Some of the sources are non-renewable (4)
So you couldn't rely on it forever.

2. Some different energy sources are used for different things for example oil is needed for aeroplanes and ships.

2b Example A

(b) Study Figure 4.

Using Figure 4 and your own knowledge, explain **one** possible impact of replanting forests on Iceland's economy.

(2)

One ~~is~~ impact of replanting forests is wood production ~~and~~ and forestry work, ~~which~~ which give people more jobs.

2b Example B

(b) Study Figure 4.

Using Figure 4 and your own knowledge, explain **one** possible impact of replanting forests on Iceland's economy.

(2)

Increased amount of jobs and a higher GDP, as all work in forestry would increase with the replanting of the trees.

2a ii Example A

- (ii) Using Figure 3 and your own knowledge, explain **one human** reason and **one physical** reason why very little of Iceland's forest remains.

(4)

Human reason

Many parts of the forest were cleared for sheep grazing. Sheep need a lot of space and would be farmed for their meat and wool.

Physical reason

Strong winds have eroded the forest soil, making it harder for trees to get nutrients to be used in photosynthesis.

2a ii Example B

- (ii) Using Figure 3 and your own knowledge, explain **one human** reason and **one physical** reason why very little of Iceland's forest remains.

(4)

Human reason

Descendants of the Vikings cleared more forest for sheep grazing, a major change as a result of many timber tree species.

Physical reason

Strong winds eroded soil in plain timber forest grew so many died.

3f

(f) Study Figure 8.

Using evidence from Figure 8, assess the **environmental** impacts of renewable energy use in Iceland.

PEEL

causes more pollution
loss of biodiversity
loss of habitats

(8)

Many renewable energy plants are in use in Iceland to combat pollution and global warming, but the effects of making the renewable energy is harming the planet even more.

At the geothermal plant HGP (Hvellsheiði geothermal plant), during the process of creating the geothermal energy, when the water is drawn out of the rocks, it brings out sulphur and nitrogen gases with it, as stated in figure 8. This is only causing more harm to the planet, as these natural gases cause soil and air pollution. This is showing an environmental impact of renewable energy.

Another way in which the use of renewable energy in Iceland is affecting the environment is at KHEPS (Kárahnjúkar hydroelectric power station), where hydroelectric power is formed and used. Here, large reservoirs must be flooded to provide the correct environment for the power station, and because of this, wild reindeer and geese lost their breeding grounds, and some river fish species died out (as shown in figure 8).

This reduction of biodiversity and loss of habitats has an entirely negative effect on the environment, and completely counteracts the reason for the power stations in the first place, which was to make the country a more environmentally sustainable place.

Overall, the environment in Iceland is being negatively affected by Iceland trying to ~~also~~ achieve the opposite, which shows how the environment is impacted by ~~the~~ the manufacturing and usage of renewable energy resources.

4

Option 2: Increased planting of new trees

I think that Option 3 should be the option that Iceland's government ought to focus on last. Figure 6 shows that in 2018, most recently, Iceland's energy mix was only made up of 18% oil and coal, which are 2 types of fossil fuels. Compared to the 82% of renewable energy in the energy mix, this use of fossil fuels is not at a high level, and the dominant source of energy is renewable in Iceland. Furthermore, Figure 6 says that fossil fuel use has fallen as renewable energy sources have increased,

showing that the fossil fuel usage is not the biggest problem for Iceland, as it is declining currently. Figure 7 further contributes to this - Iceland has a 82% share of renewable energy compared to the UK which has 12%. Even though both are developed countries, Iceland still maintains a very high % of renewable energy, and is "A model for the world" (Figure 7).

I think that option 1 ought to be the option Iceland's government focuses on second. The sector of Aluminium manufacturing in Iceland makes up 36% of Iceland's earnings and employs 4,000 people, ~~which shows that it is a crucial~~ (Figure 5), which highlights that it is an important part of Iceland's economy. By making laws to limit aluminium production, many jobs could be lost and the % of Iceland's earnings in ~~Iceland's~~ Aluminium manufacturing may decline. This could have a negative effect (negative multiplier effect) on the economy, as business may be required to stop production or manufacturing if they do not meet the new laws, resulting in loss of employment, generating less money for Iceland's economy. However, laws that limit the harm done by aluminium production would have a positive effect on the environment.

Figure 8 shows that TNC's produce aluminium at coastal sites near power stations. Waste from this production may end up in the water (located on coastal sites), which contributes to water pollution and could even result in a loss of biodiversity if animals such as fish ~~lose their~~ ~~hab~~ experience a loss of habitat due to contaminated water. This would have a large impact on Iceland's environment.

I think that option 2 is the option that Iceland's government ought to focus on first. Figure 3 shows how much of Iceland's forests have been lost due to both human and physical factors, such as climate change from the last ice age and ~~strong winds eroding~~ Vikings clearing land. ~~It shows that~~ using the wood for resources.

The Figure shows that the descendants of the Vikings cleared more forest for sheep grazing, and by 1900, less than 10% of Iceland was still forested. We can also see this in Figure 1, where the Taiga forest is located on the outskirts of Iceland. By replanting new trees to replace the lost Taiga forest, Iceland will be able to encourage biodiversity, as the trees provide a habitat for species of animals to live in. Also, CO₂

levels in ~~to~~ Iceland will decrease, as the trees use ~~of~~ up more CO_2 for photosynthesis. This aids Iceland in meeting their forestry and land use goal in their Climate Action Plan, as more trees store more carbon, and if enough are planted, will achieve the 500% carbon storage goal that Iceland has set (Figure 10). To add to this, by replanting trees, Iceland encourages the Boserup theory.

Boserup believed that as population increases, humans will sustain the ^{demand} need for resources, instead of declining (like Malthus expected).

By planting new trees, Iceland can sustain the demand for resources, as those trees can be used to produce medicines and be a source of fuel, and then replanted again. Overall, this option has the most beneficial impacts, like increase in biodiversity and sustaining resource demand, so I believe it should be focused on first.