

Lesson ideas for teachers

Hveragerði: location and physical geography

Hveragerði ('Hveragerdi' is the alternative spelling) is a town of some 2400 people in the rural southwest of Iceland a little less than an hour's drive from the capital, Reykjavik. Known as Iceland's 'green town', it is famous for its steam geysers, bubbling mud pools, forests and greenhouses. Indeed, what makes Hveragerði special is that, along with Rotorua in New Zealand, it is one of only a handful of geothermal towns in the world. It is rather less well known as a town of artists, writers and poets.

Hveragerði is an excellent focus for a study of the **endogenous** and **exogenous** factors that shape a place. It has also undergone considerable changes in terms of how it is perceived both by local people and by people across Iceland. Its functions as well as its place meanings for people have been transformed over time, making it an interesting and relevant place to investigate at AS and A-level.

Definitions of endogenous and exogenous factors that shape a place

Endogenous factors	Exogenous factors
Internal or local factors that contribute to the character of a place. These can include location, topography, physical geography, land use, built environment, infrastructure, economic and demographic characteristics.	External (non-local) factors that affect the character of a place, e.g. the immigration of people from a distant location or the influence of external economic, political or cultural factors (players or institutions). Exogenous factors involve the relationships with other places.

Resource 1 shows the location of Hveragerði and maps the tectonic activity in Iceland. In a sense, tectonic forces provide the broad geological context accounting for Hveragerði's location (Resource 2). While the manifestation of tectonic forces in terms of geothermal activity (hot springs, etc.) can clearly be considered to be an endogenous factor at the local scale, these forces can also be considered at a larger scale to be an exogenous factor. This would be an interesting debate.

Resource 3 is a photograph showing the River Varma that flows along the northern edge of this settlement, demonstrating the influence of another aspect of the local physical geography on the development of the town.

Student activities

- 1 Students could use Resources 1–3 to build up an understanding of the importance of endogenous physical factors (geology, topography, geomorphology) in the development of Hveragerði.
- 2 They could discuss whether geological factors are endogenous and/or exogenous in the case of Hveragerði.

Lesson ideas for teachers (continued)

The development of Hveragerði

Hveragerði has undergone a considerable amount of rebranding or reimagining in recent years, as a result of people's changing perceptions of the risks and rewards associated with geothermal activity. In the early days, people regarded the area as highly dangerous and one to be largely avoided; for this reason, the area was known locally as the 'killing springs'. However, in due course, opinions shifted and the benefits of plentiful hot water started to outweigh the potential dangers. People made use of the hot water in daily chores – washing and cooking – and the constant flow of the River Varma enabled electricity to be generated, powering a rudimentary woollen industry. The hot-water-heated greenhouses enabled flowers and vegetables to be cultivated and, by the mid-twentieth century, Hveragerði had become a thriving small settlement. Today Hveragerði is still renowned for its plants, promoted by the tourist board as Iceland's 'green town'. The influx of artists and poets in the 1940s gave the town another dimension, which it also retains today, with its art galleries and its street art adorning some of the town's buildings.

Most recently, tourism has led to further growth. Located on Iceland's main ring road and less than an hour from Reykjavik, Hveragerði provides opportunities for visitors to experience both the 'real' Iceland out of the city and the unique features associated with geothermal activity. Popular activities in the area include hiking and horse riding as well as soaking in the naturally occurring hot streams and pools. Tourists can visit the geothermal area in the centre of Hveragerði and enjoy 'earth cooking' in the local restaurants. The town is fast becoming a vibrant honeypot site.

Resource 4 outlines the development of Hveragerði and highlights the different phases and elements that have contributed to the nature of the modern town. Resource 5 shows geothermal activity in the area, suggesting the contrasting aspects of danger and opportunity.

Student activities

- 3 Students could use Resource 4 to construct a timeline to outline the developments and changing characteristics of Hveragerði. They might try to indicate how the town has become multifaceted in its function and place meaning. They could use the internet to find some photos to illustrate the timeline.
- 4 Students could study the photograph in Resource 5 and suggest why, at different points in history, local people have held different views about the geothermal activity in the area.

Modern Hveragerði

Resource 6 is a detailed town plan of Hveragerði produced by the local tourist board. Available in all hotels and guesthouses as well as the town's tourist information office, the town plan is clearly directed at visitors. It is worth stressing to students that interpretation

Lesson ideas for teachers (continued)

of this type of resource must take account of the target audience – it is clearly highlighting those aspects deemed to be of interest to visitors.

Resource 7 is an infographic outlining Hveragerði's demographic characteristics.

Student activities

- 5 Using Resource 6 and the website www.hveragerdi.is, students could work in pairs to identify the attractions for visitors and assess to what extent Hveragerði portrays itself as a tourist destination. They might also compare this resource to reviews of the town found on TripAdvisor (<https://www.tripadvisor.co.uk/>) or a similar site authored by visitors, and consider the power of the international tourist in influencing the development of this place.
- 6 Students could use Resource 7 to consider the significance of Hveragerði's demographic characteristics as an endogenous factor. They might also consider the level of detail provided, and list other aspects of the town's demography about which they would like information.

The influx of artists: the role of an exogenous factor

In the 1940s, artists and poets established in Reykjavik started to relocate to Hveragerði in search of better living and working conditions. As this cultural movement grew, increasing numbers moved into the town, creating a small artistic colony on its western side – the so-called 'Poet Lane'. This influx contributed significantly to the development of Hveragerði, in terms of not simply the number of people but also the creation of its cultural character, which in turn has had an impact on its wider place identity across Iceland. Street art and the presence of a number of art galleries are significant in this location, even to the casual observer.

Resource 8 describes the movement of artists and poets to Hveragerði. An illustration and a photograph show the changes that have taken place in Poet Lane.

Resource 9 provides evidence of Hveragerði's cultural character, including street art plus a poem written by a British poet, Sheena Pugh. Like many Icelandic artists, Sheena was inspired by the landscape and human activity in this place.

Student activities

- 7 Students could use the information in Resources 8 and 9 to discuss the reasons for this cultural migration from Reykjavik to Hveragerði, and to assess the impact of the arrival of a group of artists on the development of the town.

Students could interpret the earlier photograph in Resource 8 to assess the quality of life experienced by the newcomers. The more recent photograph in Resource 8 can be used for comparison, along with a virtual tour around Hveragerði using Google Street View and the photospheres that have been uploaded to Google's map of the town.

Lesson ideas for teachers (continued)

- 8 Practice exam question: ‘Assess the contribution of different endogenous and exogenous factors to the development of a distant place you have studied.’

Students might be encouraged to create a spider diagram (or similar) to brainstorm and organise the range of factors they have examined in their investigation of how this place has developed. Encourage them to consider how these factors are linked or interact, and to reach a conclusion about which, in their opinion, have proved most influential. They might also consider the future development of Hveragerði.

Resources

- 1 Where is Hveragerði?
- 2 Iceland: tectonic forces
- 3 Hveragerði’s physical geography
- 4 The historical development of Hveragerði
- 5 Geothermal activity at Hveragerði
- 6 Hveragerði town plan
- 7 Demographic data for Hveragerði
- 8 The artists’ colony in Hveragerði
- 9 Street art and poetry: Hveragerði’s cultural character

Online materials

- Overview of the development of Hveragerði:
http://iceland-times.com/section.php?id=4945&id_art=5012
- Detail on the movement of artists and poets from Reykjavik:
<http://listvinir.is/en/skaldagatan/>
- Tourist information: <http://www.hveragerdi.is/English/>
- Visitor reviews: www.tripadvisor.com
- The map in Resource 6 can be found at:
<http://www.hveragerdi.is/files/c07bbcbe64b493ba8b035b18672d112d.pdf>
- Visit South Iceland: <https://www.south.is/en/inspiration/towns/hveragerdi>
- Population data for Hveragerdi – this will provide some demographic endogenous information: <https://www.citypopulation.de/php/iceland.php?cityid=UA050>

Where is Hveragerði?



TOPIC

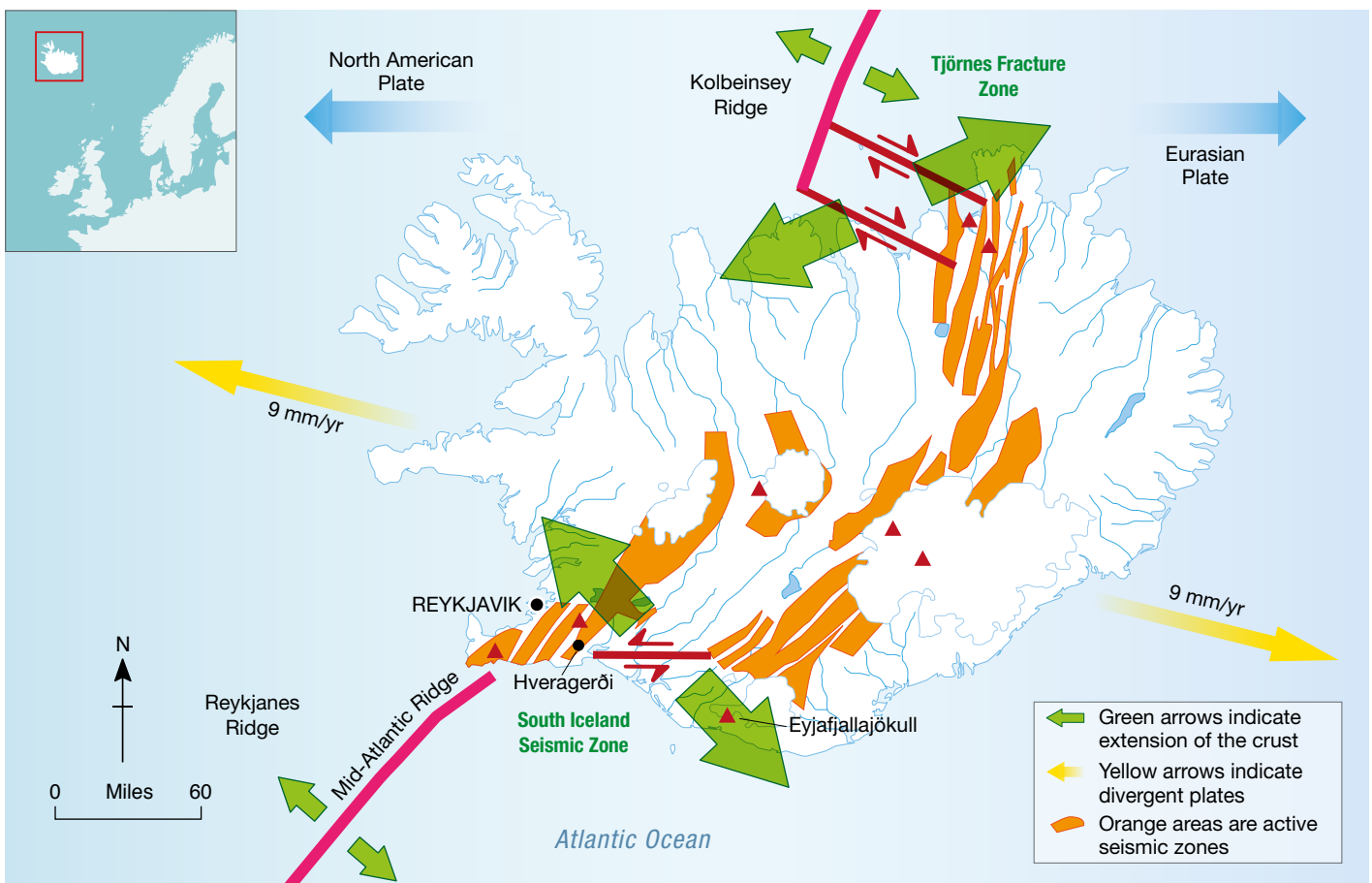
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Iceland: tectonic forces

Iceland is essentially a surface outcrop of the Mid-Atlantic Ridge marking the constructive (divergent) boundary between the North American Plate to the west and the Eurasian Plate to the east. As the map below shows, this boundary is marked by an extensive area of rifting and fracturing caused by powerful tectonic processes forcing the plates to diverge and expanding Iceland outwards from its centre.

Hveragerði is located in the centre of the South Iceland Seismic Zone at the foot of an upland range and sheltered by a steep cliff face. The town itself has grown across part of the extensive coastal plain, raised by isostatic readjustment after the last glacial period. Geothermal activity characterises this part of southern Iceland as steam and hot water escape to the surface along cracks and fissures in the surface rocks. At Hveragerði there are extensive hot springs and bubbling mud pools. Geothermal power stations in the vicinity exploit this geothermal activity in generating electricity.

In 2008, a powerful earthquake measuring 6.1 rocked the area, causing injuries and damage to buildings and roads. The earthquake impacted on the geothermal activity, reducing hot spring effusions in the centre of Hveragerði but forming new springs in the hills above the town. The changes in activity and location of the hot springs have to some extent affected tourism within the town (footpaths, access, etc.).



Hveragerði's physical geography

The landscape of central Iceland is riven by faults and ruptures because the Earth's crust has split apart along the constructive plate margin. Recent isostatic recovery after the last glacial period has resulted in emergent features such as the relic cliffs in the background of the photograph. These cliffs provide shelter for the town from the cold northerly winds. An extensive coastal plain stretches out in front of the upland plateau, which is essentially a vast raised marine platform resulting from isostatic recovery.

The geothermal activity in the area is the result of water seeping underground and being heated by hot rocks close to the surface. This accounts for the many hot springs, geysers and mud pools in Hveragerði.

The River Varma has eroded a steep-sided valley with waterfalls and rapids. In the past, this 'warm' river fed by hot springs in the mountains led to the development of a small-scale industry in the form of a wool factory, using electricity generated by the river.

The trees in the photograph have been planted relatively recently. Some of them help to prevent soil erosion by stabilising the slopes.



TOPIC

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The historical development of Hveragerði

Hveragerði (pronounced 'Kveragerthi') is a town of some 2400 people in the southwest of Iceland a little less than an hour's drive from Reykjavik. Known as Iceland's 'green town', it is famous for its steam geysers, bubbling mud pools, forests and greenhouses. It is rather less well known as a town of artists, writers and poets. What makes Hveragerði special is that, along with Rotorua in New Zealand, it is one of only two geothermal towns in the world.

The 'killing springs'

The name of the town, Hveragerði, was first used in about 1700 and then only as a name for the hot spring area; there was no settlement. While today its geysers and mud pools are central to its character and economy, local people feared the area in the past. Names coined for the springs, such as the 'killing springs', reflect the stories of accidents that happened.

The wool factory

In the early twentieth century, people's fear of the hot springs subsided as they started to notice the potential benefits and opportunities presented by this naturally occurring hot water. The first development took place on the banks of the River Varma that flows through the present-day town. Unlike most rivers in Iceland, the Varma did not freeze in the winter, due to the flow of hot water into its tributaries. This meant that it had the potential as a power source throughout the year. In 1902, a small wool factory was constructed on the banks of the river to process wool from Icelandic sheep. Electricity was generated at the nearby waterfall to power the factory, which remained open until 1914.

Early settlement

The generation of electricity from the river was instrumental in the growth and development of the town from the 1930s. In fact, Hveragerði was the first town to have electric lighting in rural Iceland. The early settlers made use of the naturally occurring hot water to carry out daily tasks such as washing and cooking. Bread (known as 'lava bread') was cooked in the ground – this practice continues for tourists – and potatoes were boiled in linen bags in the hot springs.

Horticulture

Today, Hveragerði is well known as Iceland's greenhouse capital, cultivating an extraordinary range of fruit and vegetables and enabling Iceland to be virtually self-sufficient in a number of products. The first greenhouse was constructed in 1929 and many others were constructed shortly afterwards, growing salad crops, tomatoes, strawberries and peppers. Some greenhouses – most notably the Garden of Eden constructed in 1958 and unfortunately destroyed by fire in 2011 – even managed to grow tropical crops

The historical development of Hveragerði

such as bananas, and these became a focus for early tourism in Iceland. Gardening and greenhouses have had a huge influence on the nature of the town and on its sense of identity; there is an annual flower festival and Flower Ball dedicated to the flower heritage of the town. The Iceland Horticultural School (agricultural college) is located in the town.

Recreation and the Arts

The naturally occurring hot springs have not only provided heat and power for the people of the town but also hot water for the town's swimming pool. First built in 1938, the pool was extended to 50 m in 1945, making it the largest swimming pool in Iceland and consequently a huge draw to people in Southern Iceland who wished to learn to swim. Today, swimming and the associated hot tubs are an Icelandic institution.

In the 1940s, Hveragerði became an attractive location for poets and artists wishing to move away from the rapidly expanding and developing city of Reykjavik. Little more than an hour away from the capital, Hveragerði represented a quieter and more reflective locality. Several well-known poets and artists moved to the town. In fact, one of the town's streets (Frumskogar) is known as the 'Poet Lane'. This artistic legacy remains strong today, with several galleries in the town as well as street art in the form of murals on walls and gable ends of houses.

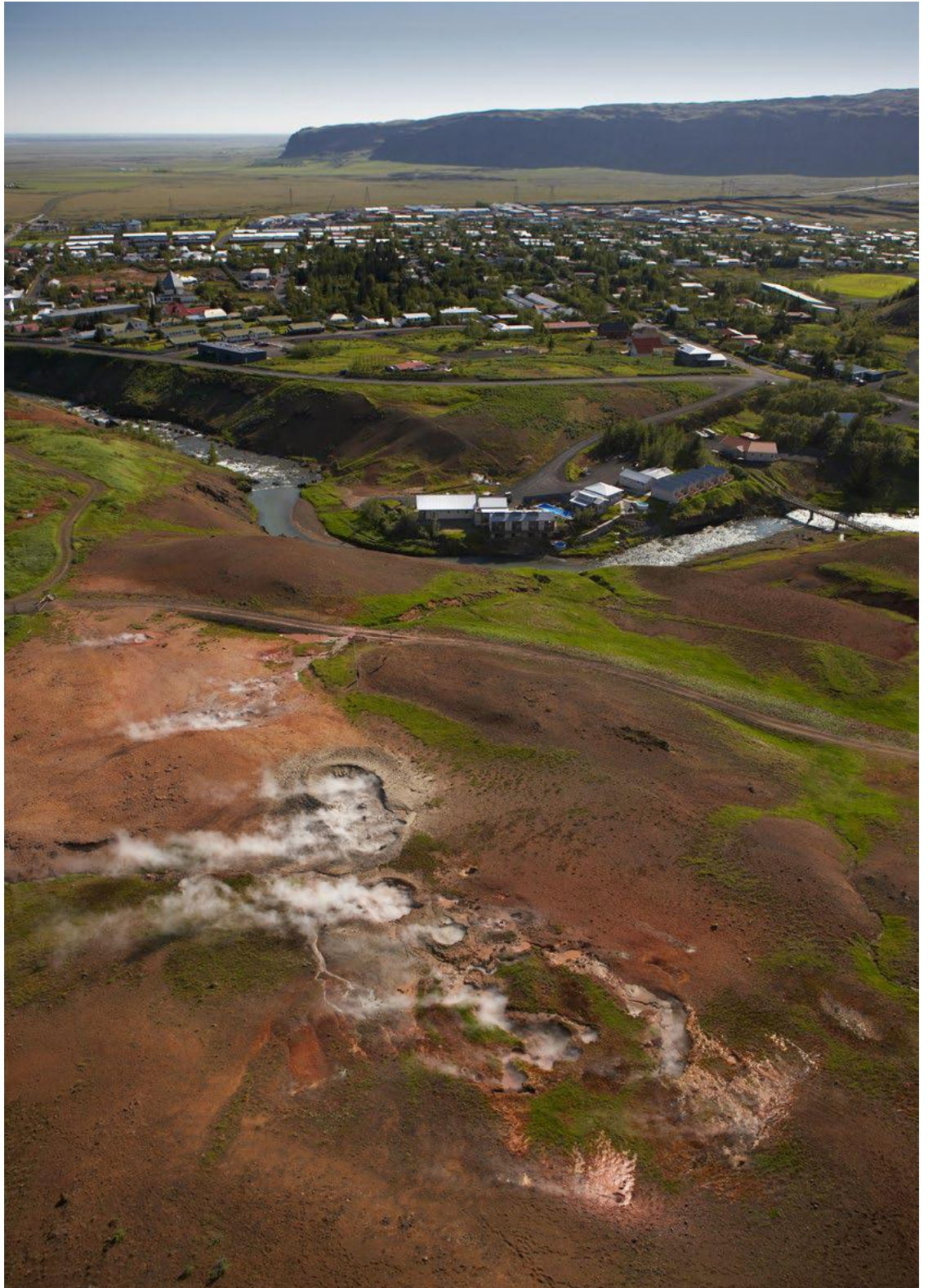
The growth of tourism

Tourism has grown exceptionally quickly in Iceland over the last few years, with numbers increasing by 30% between 2015 and 2016 to well over one million tourists a year (about four times the population of the country). Iceland is now very accessible by air and it is no longer seen as an extreme destination, attracting people from all over the world to see the Northern Lights in winter as well as the extraordinary landscapes. Situated close to Reykjavik and on Iceland's main 'ring road', Hveragerði is well placed to attract tourists who wish to visit the geothermal area and the greenhouses or try 'earth cooking' in the town's restaurants.

There are several hotels and guesthouses in and around Hveragerði, exploiting the town's geothermal legacy with hot tubs and swimming pools. In 2015, planning permission was granted for a large new 65-room hotel and spa offering a natural pool, mud baths and steam baths. It is expected to be completed in 2017. There are plans for a Museum of the Icelandic Horse to be constructed too.

Today, Hveragerði is a colourful and thriving settlement, with a balanced economy and a rich culture. Since 2015 the population has increased by over 2% a year. It has become a popular tourist attraction, with opportunities for hiking, horse riding and swimming.

Geothermal activity at Hveragerði

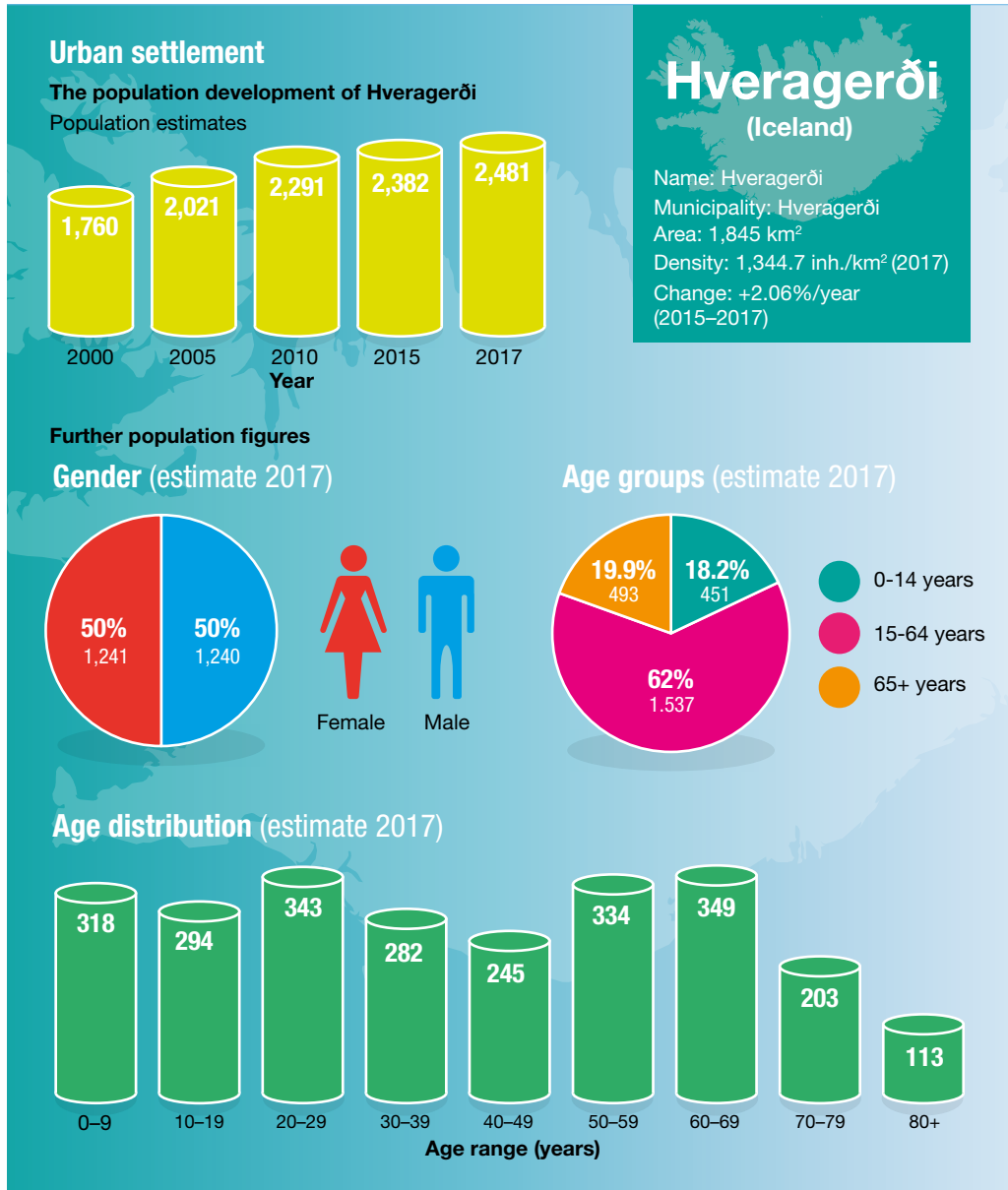


Hveragerði town plan



Source: South Iceland Tourist Information Office (www.south.is)

Demographic data for Hveragerði



The artists' colony in Hveragerði

'The poets, who moved to Hveragerði in 1940, the year Iceland was occupied by the British army, and the following years, did so hoping to find better conditions than they lived in during the depression before WWII. They heard that heating was cheap and that cooking even took place in the hot springs themselves. There was a great shortage of housing in Reykjavík during this time and families were forced to live very close together.

First to move were Jóhannes úr Kötlum and family in October 1940 and Kristmann Guðmundsson, in February 1941. Both families had lost their lodgings in Reykjavík.

Around the same time, the painter Kristinn Pétursson moved to Hveragerði. His hope was that the mud springs in Hveragerði would benefit his health. The sculptor Ríkarður Jónsson built a summerhouse in Poet Lane in the same year as Kristmann and Jóhannes.

There was something seductive about living in a small peaceful village known for growing flowers and vegetables. Rev. Helgi Sveinsson and family moved to the same street as the poets the following year and a trio of poets that loved writing verse on the small town daily life was born. Some of the poems became famous, and collaboration between the poets and the gardeners produced annual gardening/artist dances. The trio wrote the first poem on Hveragerði, with each verse concluding in the words: 'Hveragerði is the best place in the world'.

Poet Lane in Hveragerði

In the spring of 1941, Jóhannes úr Kötlum and Kristmann Guðmundsson had houses constructed in the westernmost street of the village, which was still unnamed at that point.

The third poet, Rev. Helgi Sveinsson, moved into the street the following year and after that it was called Poet Lane.

It wasn't until 1946 that the streets in this new part of town were named and Poet Lane became 'Frumskógar' (Jungle). By that time, poets Gunnar Benediktsson and Valdís Halldórsdóttir had joined the group and Gunnar had become town council chairman. According to Gunnar, this was not a 'proper street for years, apart from the houses being mostly parallel through the rough, tussocky ground'.

The artists worked together. They had wells drilled in the street for hot water, installed pipes to convey it to their houses and placed containers onto the pipes for cooking.'

Extract from the following website: <http://listvinir.is/en/skaldagatan/>

The artists' colony in Hveragerði

Hveragerði – an impression of Poet Lane (Frumskógar) in the 1970s



Frumskógar in 2015



Street art and poetry: Hveragerði's cultural character

(a) 'Men growing flowers: Hveragerði' by Sheenagh Pugh

*What a place to grow flowers;
a few houses clustered just under
a sullen, low-lying mist, sulphur springs
hissing from the ground, the shadow
of a mountain, strictly non-scenic.*

*And what growers of flowers;
these men, their faces ribbed
like the volcanic rock, the hard grasp
of their hands numbed of feeling.
It is these hands*

*that foster in the glass houses
the fragile ferns; these fish-eyes
that watch the colours spill
out of the calyx, the delicate shape
unfold itself,*

*and why, after all, should not
men in the bleak terrain
that makes their life, nurture
some bright thing: what a place
to grow flowers.*

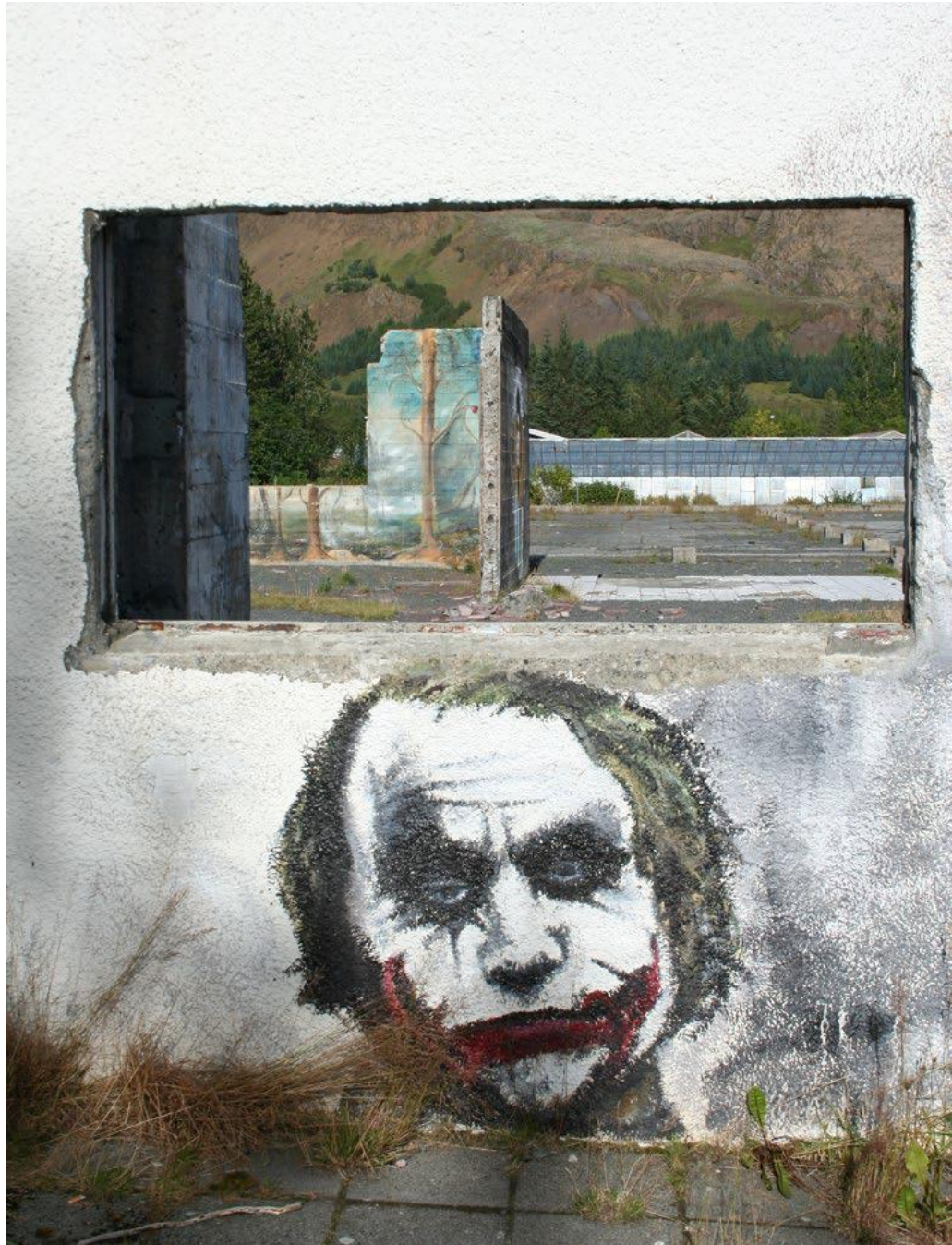
From *Selected Poems* by Sheenagh Pugh (Seren, 1990)

(b) Street art on the gable wall of the school



Street art and poetry: Hveragerði's cultural character

(c) Street art on derelict walls – the former Eden greenhouse



Student questions

Hveragerði: location and physical geography

- 1 Use Resources 1–3 to consider the importance of endogenous physical factors – geology, topography, geomorphology – in the development of Hveragerði. ('Hveragerdi' is the alternative spelling.)
- 2 Discuss whether geological factors are endogenous and/or exogenous in the case of Hveragerði.

The development of Hveragerði

- 3 Use Resource 4 to construct a timeline to outline the developments and evolving characteristics of Hveragerði. Try to indicate how the town has become multifaceted, both in its function and its place meaning. Use the internet to find photographs to illustrate your timeline.
- 4 Study the photograph in Resource 5 and suggest why, at different points in history, local people have held different views about the geothermal activity in the area.

Modern Hveragerði

- 5 Using Resource 6, a map produced for the tourist information website www.hveragerdi.is, work in pairs to identify the attractions and facilities for visitors. Then compare this resource to the reviews posted on a website like TripAdvisor. Comment on the power of the international tourist in shaping this place today.
- 6 Use Resource 7 to summarise Hveragerði's demographic characteristics. Consider the significance of the character of the resident population as an endogenous factor affecting the character of the town. Do you have enough information to make a judgement? What other information would be useful?

The influx of artists and poets: the role of an exogenous factor

- 7 With reference to Resources 8 and 9, discuss:
 - the reasons for this migration of artists from Reykjavik to Hveragerði;
 - the impact of this immigration on the development of the town.
- 8 Practice exam question:

'Assess the contribution of different endogenous and exogenous factors to the development of a distant place you have studied.'