

The Living World: Svalbard

Where is Svalbard?

Svalbard is a **Norwegian territory** located between Norway and the North Pole in the **Arctic Ocean**. Svalbard is one of the most **northerly** groups of islands in the world that is **inhabited**, with a **population of around 2,700**.

Svalbard is classed as a **cold environment**; temperatures rarely exceed **10°C**, even in summer, and can fall below **-20°C in winter**. Summer temperatures average 3 to 7°C and winter temperatures average -13 to -20°C.

Glaciers cover around **60% of the land**, and **barren rock** or **tundra** is the terrain elsewhere. The extremely cold climate means **trees cannot grow in Svalbard**, and there is also **no arable farming**.

Those living in Svalbard have had to **adapt to the adverse living conditions** of this cold environment in many ways. The **natural resources** in Svalbard have allowed residents to make **developments** in sectors such as:

- Mineral extraction
- Energy
- Fishing
- Tourism

However, they face **challenges to development** from:

- Extreme cold temperatures
- Inaccessibility to areas
- Provision of buildings and infrastructure.

Opportunities for Development in Svalbard

Mineral extraction

Svalbard has large **coal reserves**, which have been extracted in Svalbard's many coal mines throughout the 20th century. Coal mining was the **main economic activity** on the islands for years, and currently provides over **300 jobs**.

However, after the opening of a **new mine near Svea in 2014**, the majority of coal mines stopped activity due to a **drop in the price of coal**. Only one mine is still currently operating in the whole of Svalbard, which supplies the coal-fuelled power plant.



Svalbard (dark green) in respect to Norway (light green).
(Source [Wikimedia / Rob948](#))



Longyearbyen, Svalbard's capital.
(Source: [en.visitsvalbard.com](#))



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Energy Developments

The majority of Svalbard's energy is generated from burning **coal** mined locally, like in Longyearbyen's coal-fuelled power plant. However, with coal operations soon ending, Svalbard is looking into new opportunities for energy development, including **geothermal energy**.

Like Iceland (which gets its energy almost exclusively from geothermal sources) **Svalbard is close to the Mid-Atlantic Ridge**, a constructive plate margin.

Svalbard may be able to **harness this energy in the future**, but little research has been done as to whether this will be feasible or if the areas of geothermal activity are even accessible.



Coal shipment port in Svalbard.
(Source: [Thomas Nilsen](#))

Fishing

The Arctic seas that surround Svalbard are **rich in marine life**, especially the **Barents sea south of Svalbard**. Within the Barents sea, there are over **150 species of fish**, including large numbers of **cod, herring and haddock**. In fact, the Barents sea has the largest stocks of cod in the world!

Fishing in Svalbard has the opportunity to be a **major economic activity**, allowing the country to trade fish to other countries.



A fishing boat off the coast of Svalbard.
(Source: [highnorthnews.com](#))

Tourism

Extreme tourism in Svalbard has grown popular in recent years. People choose to visit Svalbard for many reasons, such as the unique **wildlife** (like polar bears), **glacier walks**, views of the **northern lights** and extreme activities on offer.

In 2011, **70,000 people visited Longyearbyen**, 30,000 of these were cruise passengers. Tourism is a major sector in Svalbard, and 300 people have jobs in this sector.



The Northern Lights in Svalbard.
(Source: [visitsvalbard.com](#))



Challenges to Development in Svalbard

Extreme Temperature

The **extreme cold temperatures** bring many challenges to development in Svalbard.

Winter temperatures frequently fall below -20°C , and even in the town of Longyearbyen **temperatures can fall below -30°C** . Daylight hours are also very short in winter, and some months are in darkness 24/7.



Longyearbyen in winter. (Source: [Erik Abel](#))

These conditions make day to day life challenging to residents of Svalbard. To go outside, people have to wrap up in **many warm and windproof layers**. This can make movement difficult, especially in jobs that are labour intensive like construction work.

The extreme temperatures make **growing food almost impossible**, so the majority of food has to be imported from other areas of the world.



Dressing for Svalbard. (Source: [fullsuitcase.com](#))

Accessibility

Many areas of Svalbard are inaccessible due to its **remote location and climate**. **International travel** to Svalbard is limited to Longyearbyen, either by **plane** from Norway or Russia, or by **boat** (though this is difficult in winter due to **sea ice**). This limits the **transport of goods** to and from Svalbard, and also makes it difficult for residents who need to leave for healthcare etc.

As well as travelling to Svalbard, **transport around Svalbard** is equally as difficult as many areas are inaccessible. There is only **50km of road in Longyearbyen**, and no other communities are connected by roads in the whole of Svalbard. This means the only way to travel to other communities is either by **boats in summer or snow mobiles in winter**. There are actually more snow mobiles than people in Svalbard!

As well as issues with roads, **mountains, glaciers, snow and fjords** that cover much of the landscape make many areas **completely inaccessible**, which limits development opportunities.



(Source: en.visitsvalbard.com/things-to-do/activities/snowmobile)



Construction and Infrastructure

The **provision of infrastructure and buildings** presents many challenges in the cold environment of Svalbard. Construction, maintaining buildings, and providing **utilities** like heating and water all create unique issues.

The ground in Svalbard is mainly **permafrost**, which is permanently frozen ground. In the past, permafrost has provided **solid foundations for construction**; either **wooden poles were hammered into the permafrost** or the houses were built on **wooden stacks**.

However, the **warming climate in Svalbard** has caused the **permafrost to thaw**. This has made the ground unstable, and many homes are slowly sinking into the waterlogged ground. Issues with **fungi** decomposing the wood have also become an issue. The lack of **solid foundations** is causing houses to **sag into the ground** and become **damaged**.



Thawing permafrost in Svalbard.
(Source: thebarentsobserver.com)

The warming climate is also causing more issues. **10% of Longyearbyen's population** have been forced to evacuate due to the risk of **avalanches**, and many areas are now unsafe to live in.

As well as housing, the extreme climate makes providing **utilities** a challenge. All pipes (such as water and sewage) are **raised above the ground** to prevent freezing, as seen in the photo to the right. Water is **heated** before it enters homes to stop water freezing.



Overground pipe in Longyearbyen.

(Source: <http://www.shonellerton.com/articles/travel/europe/svalbard/part-1/>)

