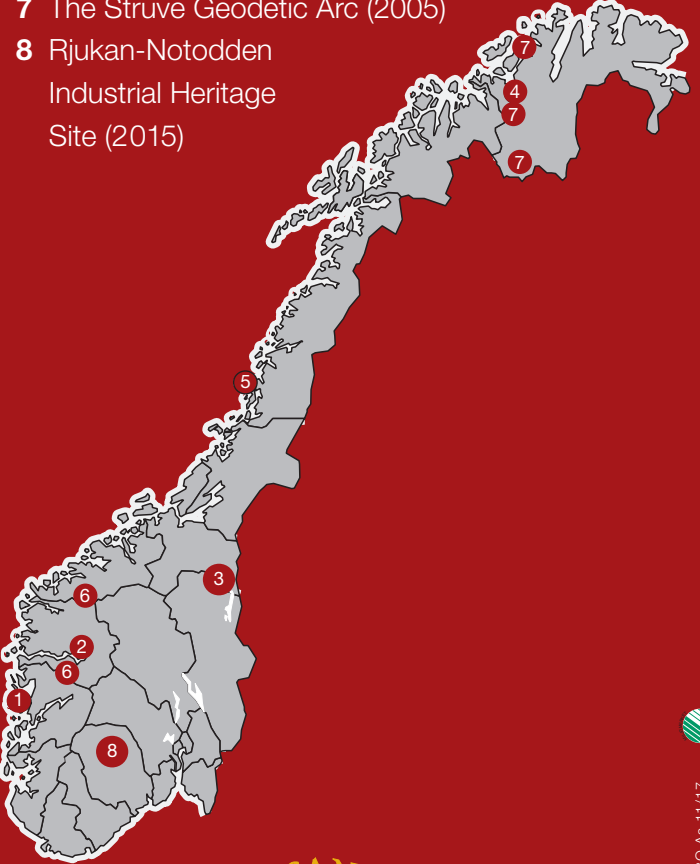


NORWEGIAN WORLD HERITAGE SITES

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Norsk Hydro's factory area at Notodden.

Company towns

The development and operation of the power stations, factories and transport arteries required a large, robust and dependable workforce. As a company, Norsk Hydro therefore took on the development and operation of company towns at both Notodden and Rjukan, with housing, schools, hospitals, parks, etc. Some of the country's best architects were commissioned for their design, and they were equipped with ultra-modern facilities. Notably, at Rjukan, water closets were installed in all buildings from 1912.



Photo: Trond Taugbøl, Directorate for Cultural Heritage

Notodden already had the makings of an urban environment when Norsk Hydro established itself there. It was a traffic hub, and the activities of the Tinfos company had contributed to the growth of the place. But Norsk Hydro's arrival boosted the speed of development, first at the Svelgfoss falls and then by the Heddalsvatnet lake.

Norsk Hydro played a part in the town planning and built and operated districts such as Grønnbyen (the Green Town) with its high standard of worker accommodation and Villamoen for engineers and office clerks. Grønnbyen is an early example of the garden city concept in Norway, and was a model for the workers' housing at Rjukan.



M/F "Storegut" with two train sets side by side on deck.
Photo: Per Berntsen

The areas are laid out on terraces in the landscape, with the factory area down by the water, the workers' housing at Grønnbyen on the level above and the office clerks' housing at Villamoen higher up still. Above it all reigns the white-painted Admini building, which was the company's head office for many years and remains in Norsk Hydro's ownership, although production has been closed down.

Workers' houses in Grønnbyen (the Green Town) at Notodden.
Photo: Trond Taugbøl, Directorate for Cultural Heritage

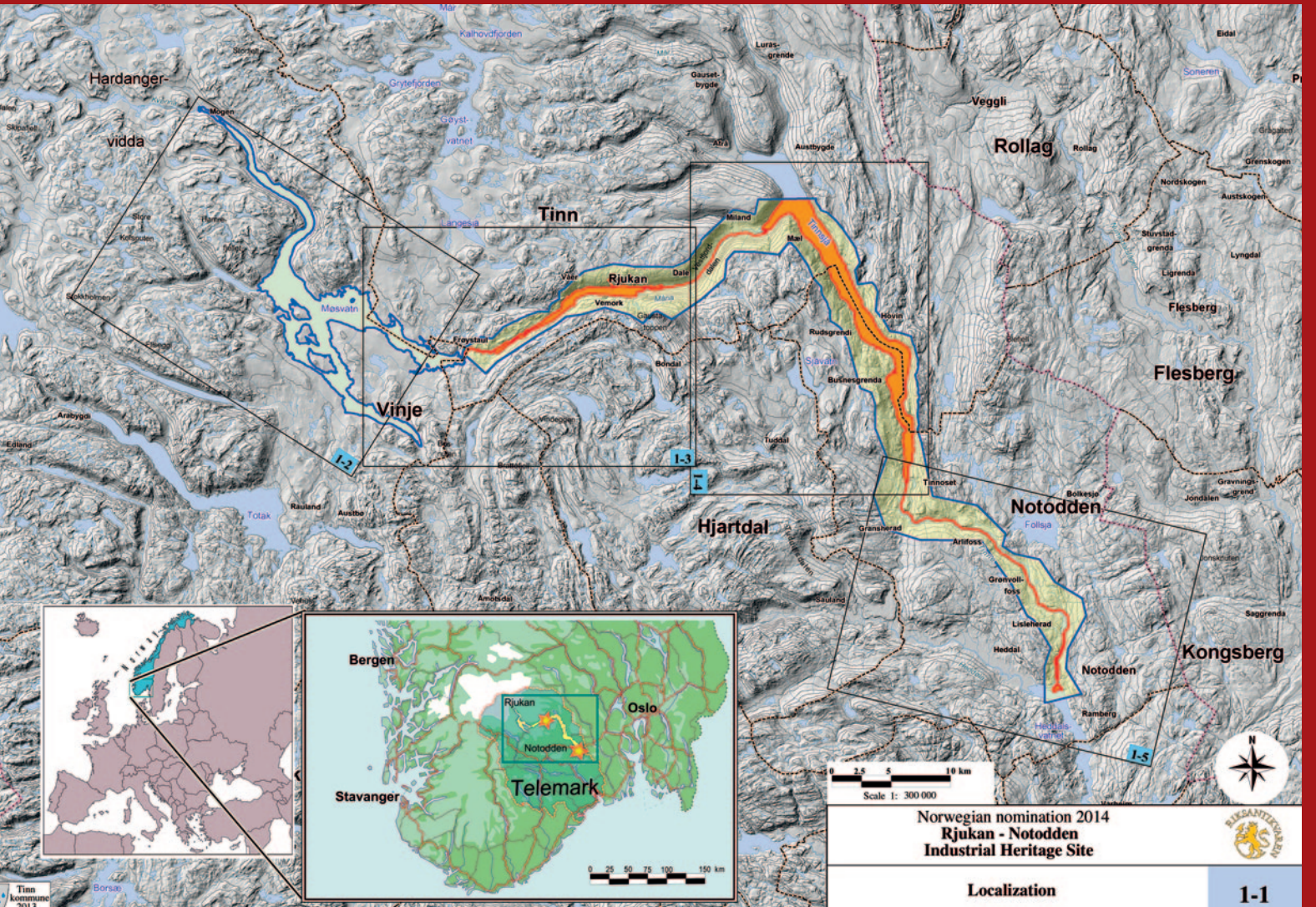


Tinfos II (2) hydropower plant at Notodden built in 1912.
Photo: Per Berntsen

Rjukan was built over a couple of decades, as its population rose from a few hundred to more than 10,000. The town was designed and built from the ground up as a pure Norsk Hydro company town, based on the belief that offering safe and modern housing gave it an advantage over other companies.

The houses were built in the period 1907 to 1925 or thereabouts, and constructed to 140 different models. The

Krossobanen cable car with one of its two gondolas.
Photo: Per Berntsen



architects also produced a holistic plan for the town. The design was based on the English garden city concept of organic urban structures, front gardens and open spaces.

The houses at Rjukan had hot water and electricity. Social infrastructure was provided, such as schools, kindergartens, hospitals, libraries, post offices, parks, sports facilities and community halls. Considerable practical and financial help was provided to churches. Norsk Hydro also assumed responsibility for street and road construction, the water and sewage system, street lighting and the common power supply, as well as the distribution of food, clothing and tobacco to the town's inhabitants.

By virtue of being the town's developer and owner, Norsk Hydro had direct control of more than 80% of the Rjukan community. The Rjukan World Heritage Site comprises the town and industrial facilities as they were prior to 1945.

Krossobanen – Rjukan's cable car

Rjukan's western fjord valley location leaves it sunless for six months of the year, due to the 1883-metre-high Gaustatoppen mountain. So, in 1928, Norsk Hydro built the Krossobanen, a cable car to carry the town's inhabitants up to the foot of the Hardangervidda plateau, and into the sunlight.

Rjukan– Notodden Industrial Heritage Site





United Nations
Educational, Scientific and
Cultural Organisation



World Heritage in Norway
• Rjukan-Notodden
industrial site

UNESCO

UNESCO is the abbreviation for the "United Nations Educational, Scientific and Cultural Organization". UNESCO's goal is to contribute to peace and safety through international cooperation within these areas. The organization was established in 1945, and Norway became a member in 1946.

❖ The UNESCO convention for the protection of the world's cultural and natural heritage

The convention for the protection of the world's cultural and natural heritage was approved in 1972, after cultural heritage and natural areas were increasingly exposed to threats from war, natural disasters, pollution, tourism or, more simply, neglect.

The convention encourages all countries to promote the protection of cultural and natural heritage of both local and national significance. The most important goal of the convention is to identify cultural and natural heritage of universal value. The need for a coordinated effort, both human and economic, was demonstrated by the international rescue of cultural heritage monuments in Egypt and Nubia, when the Aswan dam was built in the 1960's. Sixty countries, including Norway, participated.

Cultural and natural heritage can include monuments, single buildings or groups of buildings, cultural landscapes or natural areas. These can be created by nature, or by people in cooperation with nature. They can be buildings representing important historic developments, or natural phenomena of exceptional esthetic or scientific value.

Norway ratified the convention on May 12.1977. The World Heritage Committee has so far approved eight Norwegian nominations to the World Heritage List. Beeing nominated as a World Heritage Site does not include any new form of legal protection, rather it offers additional recognition and status.

Norway on the World Heritage Committee

The World Heritage Committee consists at any time of the representatives of 21 nations. The Committee's primary mandate is to implement the World Heritage Convention.

Norway has been a member of the World Heritage Committee on two previous occasions, from 1983 to 1989 and from 2003 to 2007. Norway has also now been elected to the Committee for the period 2017–2021.

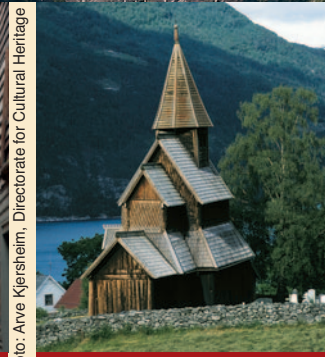
As a member of the Committee, Norway will prioritise improving the protection of existing World Heritage sites and also contributing to a more representative World Heritage List. After more than 40 years, the developing countries in particular continue to be under-represented on the List.

It is also important to raise awareness through the involvement of local communities and to highlight best practices in the management of sites on the List through the World Heritage Leadership programme. Norway will also stress the importance of List nominations being made on the basis of professional assessments rather than political interests. A further goal will be a more holistic approach to and management of the global natural and cultural heritage.

The Directorate for Cultural Heritage and the Norwegian Environment Agency represent Norway on the World Heritage Committee.



Bryggen in Bergen



Urnes Stave Church



Roros Mining Town



The Rock Art at Alta



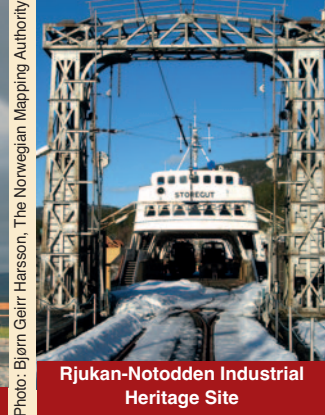
The Vega Archipelago



The West Norwegian Fjords



The Struve Geodetic Arc



Rjukan-Notodden Industrial Heritage Site



Sam Eyde statue in Rjukan centre with Sâheim power station in the background. Photo: Per Berntsen

RJUKAN-NOTODDEN INDUSTRIAL HERITAGE SITE

The Rjukan-Notodden Industrial Heritage Site is about the transformation of water into electrical power, which was then used to manufacture artificial fertiliser. The products of the two factories were transported out by railway and ferry. Two towns housed everyone who worked there.

The World Heritage Site is the story of Norsk Hydro, from its pioneer phase at Notodden to large-scale production at Rjukan. It represents what is known, historically, as the second industrial revolution, which was based on electrical power and the development of new industrial processes, the *first industrial revolution* having been primarily coal-fired.

In 1903, the engineer Sam Eyde (1866-1940) purchased the Rjukan Falls. In partnership with physicist Kristian Birkeland (1867-1917), and with financial backing from Swedish banker Marcus Wallenberg (1864-1943), he founded the Norsk Hydro company in 1905.

In 1906, Norsk Hydro acquired the Svelgfossen waterfalls from the Tinfos company and built three separate hydro-electric power stations: Svelgfos I and II and Lienfos near the test factories at Notodden. Here the new technology was tested out before extending the damming of the Møsvatn lake in Vinje municipality and the development of Rjukan Falls with the construction of Vemork power station in 1911. In 1916, Sâheim power station at Rjukan came on



The factory site at Rjukan with furnace house and boiler house. PHOTO: Per Berntsen

stream, along with an expansion of the processing facilities for manufacturing artificial fertiliser.

Norsk Hydro's artificial fertiliser production and the heavy water sabotage at Vemork during World War II are pivotal to the history of the power plant.

The Rjukan-Notodden Industrial Heritage Site is built around four themes from the period 1905-1945: hydro-power, industry, transport systems and company towns. The World Heritage Site covers 50 m², with a buffer zone of 340 km².

Hydropower

The natural conditions present in the landscape of this area form part of the universal value of the World Heritage Site. The production of hydroelectricity, through the Rjukan-Notodden complex, made Norway a world leader.

The two hydropower plants at Rjukan, Vemork and Sâheim were built in series. They are intimately related, technically, architecturally and as elements of cultural heritage.

Norsk Hydro's three power plants at Notodden have all been demolished, but the Tinfos I power station from 1901 and the intact Tinfos II from 1911, with its Holtakanal water supply, remain as features of the protected Tinfos cultural heritage and are part of the World Heritage Site. These plants supplied power to the test factory before Norsk Hydro's own stations were constructed.



The valley floor at Rjukan is characterised by planned settlement. PHOTO: Per Berntsen

Lake Møsvatn at Hardangervidda is regulated between 918.5 and 900 metres above sea level. As a result, its surface area varies significantly, from 78 km² to 80.9 km². This had huge consequences for settlement along the lake shore. Subsistence farming around the lake was dramatically altered by the impact of this new technology.

Licensing Acts

The Norwegian authorities realised that exploitation of Norway's waterfalls needed to be regulated. Landowners had been able to sell waterfall rights to speculators, both Norwegians and foreigners. In 1906, the first licensing acts came into force, and in 1907 proposals were made for permanent legislation, incorporating the principle of reversion to public ownership. This entailed that the development of natural resources under private auspices would revert cost-free to the state after 60 to 80 years.

Industry

The hydroelectricity was used to manufacture artificial fertiliser by means of new technology. The industrial facilities at Notodden and Rjukan were extended after the initial experiments in the test factory at Notodden in 1905. The two factories, with their electrochemical production lines manufacturing this new artificial fertiliser for a global market, add to the universal value of Rjukan-Notodden.



Gatehouse at the old Skarfoss Dam. PHOTO: Per Berntsen

In the years immediately following 1906, mineral fertiliser from Norsk Hydro was sold for export under the name "Norgesalpeten". The product had great significance for agriculture, both domestically and internationally. Slowly but surely, agriculture was transformed from a natural economy to a monetary economy.

Trade unions

This modern era of electricity and new industrial products is also typified by workers, through their trade unions, coming to constitute an independent and influential force in the organisation of work and community life at the new industrial sites.

Transport arteries

In the pioneer period, power transmission was well understood, but knowledge had not advanced enough to enable transmission over long distances. Artificial fertiliser production was therefore established close to the power stations.

For Rjukan-Notodden, the consequence was that infrastructure needed to be built to handle hydropower expansion, industrial development and the growth of two towns. Initially, from 1909 to 1917, all transport was by water between Notodden and the export port, via the locks on the Skien watercourse.



Vemork power station, site of the heavy water sabotage on 27 February 1943. PHOTO: Per Berntsen

From Rjukan and Vemork, freight was by Norsk Hydro's private railway as far as Mæl on the Tinnsjøen lake and then via Tinnoset on to Notodden.

Railways

The Tinns Line and the Rjukan Line were the first standard-gauge electrified lines in Norway and attracted international attention for their pioneer work on railway electrification. This contributed to the internationally agreed standard for electrification of the railways in 1910. The railway project was opened by King Haakon VII in 1909, and connected to the national rail network in 1917.

Ferries

The ferries on Tinnsjøen carrying goods and passengers are the only ones of their kind on the World Heritage List. During World War II, the ferry D/F "Hydro", loaded with barrels of heavy water, was sunk by saboteurs, and now lies at the bottom of Tinnsjøen as a protected cultural monument. The two train ferries D/F "Ammonia" and M/F "Storegut" are also protected.