The Rhine (Romansh: Rein, German: Rhein, French: le Rhin, Dutch: Rijn) is a European river that begins in the Swiss canton of Graubünden in the southeastern Swiss Alps, forms part of the Swiss-Austrian, Swiss-Liechtenstein border, Swiss-German and then the Franco-German border, then flows through the Rhineland and eventually empties into the North Sea in the Netherlands. The biggest city on the river Rhine is Cologne, Germany with a population of more than 1,050,000 people. It is the second-longest river in Central and Western Europe (after the Danube), at about 1,230 km (760 mi),[note 2][note 1] with an average discharge of about 2,900 m3/s (100,000 cu ft/s).

The variant forms of the name of the Rhine in modern languages are all derived from the Gaulish name R■nos, which was adapted in Roman-era geography (1st century BC) as Greek ■■νος (Rh■nos), Latin Rhenus.[note 3] The spelling with Rh- in English Rhine as well as in German Rhein and French Rhin is due to the influence of Greek orthography, while the vocalisation -i- is due to the Proto-Germanic adoption of the Gaulish name as *R■naz, via Old Frankish giving Old English Rín, Old High German R■n, Dutch Rijn (formerly also spelled Rhijn)). The diphthong in modern German Rhein (also adopted in Romansh Rein, Rain) is a Central German development of the early modern period, the Alemannic name R■(n) retaining the older vocalism,[note 4] as does Ripuarian Rhing, while Palatine has diphthongized Rhei, Rhoi. Spanish is with French in adopting the Germanic vocalism Rin-, while Italian, Occitan and Portuguese retain the Latin Ren-.

The length of the Rhine is conventionally measured in "Rhine-kilometers" (Rheinkilometer), a scale introduced in 1939 which runs from the Old Rhine Bridge at Constance (0 km) to Hoek van Holland (1036.20 km). The river length is significantly shortened from the river's natural course due to number of canalisation projects completed in the 19th and 20th century.[note 7] The "total length of the Rhine", to the inclusion of Lake Constance and the Alpine Rhine is more difficult to measure objectively; it was cited as 1,232 kilometres (766 miles) by the Dutch Rijkswaterstaat in 2010.[note 1]

Near Tamins-Reichenau the Anterior Rhine and the Posterior Rhine join and form the Rhine. The river makes a distinctive turn to the north near Chur. This section is nearly 86 km long, and descends from a height of 599 m to 396 m. It flows through a wide glacial alpine valley known as the Rhine Valley (German: Rheintal). Near Sargans a natural dam, only a few metres high, prevents it from flowing into the open Seeztal valley and then through Lake Walen and Lake Zurich into the river Aare. The Alpine Rhine begins in the most western part of the Swiss canton of Graubünden, and later forms the border between Switzerland to the West and Liechtenstein and later Austria to the East.

The mouth of the Rhine into Lake Constance forms an inland delta. The delta is delimited in the West by the Alter Rhein ("Old Rhine") and in the East by a modern canalized section. Most of the delta is a nature reserve and bird sanctuary. It includes the Austrian towns of Gaißau, Höchst and Fußach. The natural Rhine originally branched into at least two arms and formed small islands by precipitating sediments. In the local Alemannic dialect, the singular is pronounced "Isel" and this is also the local pronunciation of Esel ("Donkey"). Many local fields have an official name containing this element.

A regulation of the Rhine was called for, with an upper canal near Diepoldsau and a lower canal at Fußach, in order to counteract the constant flooding and strong sedimentation in the western Rhine Delta. The Dornbirner Ach had to be diverted, too, and it now flows parallel to the canalized Rhine into the lake. Its water has a darker color than the Rhine; the latter's lighter suspended load comes from higher up the mountains. It is expected that the continuous input of sediment into the lake will silt up the lake. This has already happened to the former Lake Tuggenersee.

Lake Constance consists of three bodies of water: the Obersee ("upper lake"), the Untersee ("lower lake"), and a connecting stretch of the Rhine, called the Seerhein ("Lake Rhine"). The lake is situated in Germany, Switzerland and Austria near the Alps. Specifically, its shorelines lie in the German states of Bavaria and Baden-Württemberg, the Austrian state of Vorarlberg, and the Swiss cantons of Thurgau and St. Gallen. The Rhine flows into it from the south following the Swiss-Austrian border. It is located

at approximately 47°39′N 9°19′E■ / ■47.650°N 9.317°E■ / 47.650; 9.317.

The flow of cold, gray mountain water continues for some distance into the lake. The cold water flows near the surface and at first doesn't mix with the warmer, green waters of Upper Lake. But then, at the so-called Rheinbrech, the Rhine water abruptly falls into the depths because of the greater density of cold water. The flow reappears on the surface at the northern (German) shore of the lake, off the island of Lindau. The water then follows the northern shore until Hagnau am Bodensee. A small fraction of the flow is diverted off the island of Mainau into Lake Überlingen. Most of the water flows via the Constance hopper into the Rheinrinne ("Rhine Gutter") and Seerhein. Depending on the water level, this flow of the Rhine water is clearly visible along the entire length of the lake.

The Rhine emerges from Lake Constance, flows generally westward, as the Hochrhein, passes the Rhine Falls, and is joined by its major tributary, the river Aare. The Aare more than doubles the Rhine's water discharge, to an average of nearly 1,000 m3/s (35,000 cu ft/s), and provides more than a fifth of the discharge at the Dutch border. The Aare also contains the waters from the 4,274 m (14,022 ft) summit of Finsteraarhorn, the highest point of the Rhine basin. The Rhine roughly forms the German-Swiss border from Lake Constance with the exceptions of the canton of Schaffhausen and parts of the cantons of Zürich and Basel-Stadt, until it turns north at the so-called Rhine knee at Basel, leaving Switzerland.

In the centre of Basel, the first major city in the course of the stream, is located the "Rhine knee"; this is a major bend, where the overall direction of the Rhine changes from West to North. Here the High Rhine ends. Legally, the Central Bridge is the boundary between High and Upper Rhine. The river now flows North as Upper Rhine through the Upper Rhine Plain, which is about 300 km long and up to 40 km wide. The most important tributaries in this area are the Ill below of Strasbourg, the Neckar in Mannheim and the Main across from Mainz. In Mainz, the Rhine leaves the Upper Rhine Valley and flows through the Mainz Basin.

The Upper Rhine region was changed significantly by a Rhine straightening program in the 19th Century. The rate of flow was increased and the ground water level fell significantly. Dead branches dried up and the amount of forests on the flood plains decreased sharply. On the French side, the Grand Canal d'Alsace was dug, which carries a significant part of the river water, and all of the traffic. In some places, there are large compensation pools, for example the huge Bassin de compensation de Plobsheim in Alsace.

The Rhine is the longest river in Germany. It is here that the Rhine encounters some more of its main tributaries, such as the Neckar, the Main and, later, the Moselle, which contributes an average discharge of more than 300 m3/s (11,000 cu ft/s). Northeastern France drains to the Rhine via the Moselle; smaller rivers drain the Vosges and Jura Mountains uplands. Most of Luxembourg and a very small part of Belgium also drain to the Rhine via the Moselle. As it approaches the Dutch border, the Rhine has an annual mean discharge of 2,290 m3/s (81,000 cu ft/s) and an average width of 400 m (1,300 ft).

Between Bingen and Bonn, the Middle Rhine flows through the Rhine Gorge, a formation which was created by erosion. The rate of erosion equaled the uplift in the region, such that the river was left at about its original level while the surrounding lands raised. The gorge is quite deep and is the stretch of the river which is known for its many castles and vineyards. It is a UNESCO World Heritage Site (2002) and known as "the Romantic Rhine", with more than 40 castles and fortresses from the Middle Ages and many quaint and lovely country villages.

Until the early 1980s, industry was a major source of water pollution. Although many plants and factories can be found along the Rhine up into Switzerland, it is along the Lower Rhine that the bulk of them are concentrated, as the river passes the major cities of Cologne, Düsseldorf and Duisburg.

Duisburg is the home of Europe's largest inland port and functions as a hub to the sea ports of Rotterdam, Antwerp and Amsterdam. The Ruhr, which joins the Rhine in Duisburg, is nowadays a clean river, thanks to a combination of stricter environmental controls, a transition from heavy industry to light industry and cleanup measures, such as the reforestation of Slag and brownfields. The Ruhr currently provides the region with drinking water. It contributes 70 m3/s (2,500 cu ft/s) to the Rhine. Other rivers in the Ruhr Area, above all, the Emscher, still carry a considerable degree of pollution.

The dominant economic sectors in the Middle Rhine area are viniculture and tourism. The Rhine Gorge between Rüdesheim am Rhein and Koblenz is listed as a UNESCO World Heritage Site. Near Sankt Goarshausen, the Rhine flows around the famous rock Lorelei. With its outstanding architectural monuments, the slopes full of vines, settlements crowded on the narrow river banks and scores of castles lined up along the top of the steep slopes, the Middle Rhine Valley can be considered the epitome of the Rhine romanticism.

The Lower Rhine flows through North Rhine-Westphalia. Its banks are usually heavily populated and industrialized, in particular the agglomerations Cologne, Düsseldorf and Ruhr area. Here the Rhine flows through the largest conurbation in Germany, the Rhine-Ruhr region. One of the most important cities in this region is Duisburg with the largest river port in Europe (Duisport). The region downstream of Duisburg is more agricultural. In Wesel, 30 km downstream of Duisburg, is located the western end of the second east-west shipping route, the Wesel-Datteln Canal, which runs parallel to the Lippe. Between Emmerich and Cleves the Emmerich Rhine Bridge, the longest suspension bridge in Germany, crosses the 400 m wide river. Near Krefeld, the river crosses the Uerdingen line, the line which separates the areas where Low German and High German are spoken.

From here, the situation becomes more complicated, as the Dutch name Rijn no longer coincides with the main flow of water. Two thirds of the water flow volume of the Rhine flows farther west, through the Waal and then, via the Merwede and Nieuwe Merwede (De Biesbosch), merging with the Meuse, through the Hollands Diep and Haringvliet estuaries, into the North Sea. The Beneden Merwede branches off, near Hardinxveld-Giessendam and continues as the Noord, to join the Lek, near the village of Kinderdijk, to form the Nieuwe Maas; then flows past Rotterdam and continues via Het Scheur and the Nieuwe Waterweg, to the North Sea. The Oude Maas branches off, near Dordrecht, farther down rejoining the Nieuwe Maas to form Het Scheur.

The other third of the water flows through the Pannerdens Kanaal and redistributes in the IJssel and Nederrijn. The IJssel branch carries one ninth of the water flow of the Rhine north into the IJsselmeer (a former bay), while the Nederrijn carries approximately two ninths of the flow west along a route parallel to the Waal. However, at Wijk bij Duurstede, the Nederrijn changes its name and becomes the Lek. It flows farther west, to rejoin the Noord River into the Nieuwe Maas and to the North Sea.

The name Rijn, from here on, is used only for smaller streams farther to the north, which together formed the main river Rhine in Roman times. Though they retained the name, these streams no longer carry water from the Rhine, but are used for draining the surrounding land and polders. From Wijk bij Duurstede, the old north branch of the Rhine is called Kromme Rijn ("Bent Rhine") past Utrecht, first Leidse Rijn ("Rhine of Leiden") and then, Oude Rijn ("Old Rhine"). The latter flows west into a sluice at Katwijk, where its waters can be discharged into the North Sea. This branch once formed the line along which the Limes Germanicus were built. During periods of lower sea levels within the various ice ages, the Rhine took a left turn, creating the Channel River, the course of which now lies below the English Channel.

The Rhine-Meuse Delta, the most important natural region of the Netherlands begins near Millingen aan de Rijn, close to the Dutch-German border with the division of the Rhine into Waal and Nederrijn. Since the Rhine contributes most of the water, the shorter term Rhine Delta is commonly used. However, this name is also used for the river delta where the Rhine flows into Lake Constance, so it is

clearer to call the larger one Rhine-Meuse delta, or even Rhine–Meuse–Scheldt delta, as the Scheldt ends in the same delta.

The shape of the Rhine delta is determined by two bifurcations: first, at Millingen aan de Rijn, the Rhine splits into Waal and Pannerdens Kanaal, which changes its name to Nederrijn at Angeren, and second near Arnhem, the IJssel branches off from the Nederrijn. This creates three main flows, two of which change names rather often. The largest and southern main branch begins as Waal and continues as Boven Merwede ("Upper Merwede"), Beneden Merwede ("Lower Merwede"), Noord River ("North River"), Nieuwe Maas ("New Meuse"), Het Scheur ("the Rip") and Nieuwe Waterweg ("New Waterway"). The middle flow begins as Nederrijn, then changes into Lek, then joins the Noord, thereby forming Nieuwe Maas. The northern flow keeps the name IJssel until it flows into Lake IJsselmeer. Three more flows carry significant amounts of water: the Nieuwe Merwede ("New Merwede"), which branches off from the southern branch where it changes from Boven to Beneden Merwede; the Oude Maas ("Old Meuse"), which branches off from the southern branch where it changes from Beneden Merwede into Noord, and Dordtse Kil, which branches off from Oude Maas.

Before the St. Elizabeth's flood (1421), the Meuse flowed just south of today's line Merwede-Oude Maas to the North Sea and formed an archipelago-like estuary with Waal and Lek. This system of numerous bays, estuary-like extended rivers, many islands and constant changes of the coastline, is hard to imagine today. From 1421 to 1904, the Meuse and Waal merged further upstream at Gorinchem to form Merwede. For flood protection reasons, the Meuse was separated from the Waal through a lock and diverted into a new outlet called "Bergse Maas", then Amer and then flows into the former bay Hollands Diep.

The hydrography of the current delta is characterized by the delta's main arms, disconnected arms (Hollandse IJssel, Linge, Vecht, etc.) and smaller rivers and streams. Many rivers have been closed ("dammed") and now serve as drainage channels for the numerous polders. The construction of Delta Works changed the Delta in the second half of the 20th Century fundamentally. Currently Rhine water runs into the sea, or into former marine bays now separated from the sea, in five places, namely at the mouths of the Nieuwe Merwede, Nieuwe Waterway (Nieuwe Maas), Dordtse Kil, Spui and IJssel.

The Rhine-Meuse Delta is a tidal delta, shaped not only by the sedimentation of the rivers, but also by tidal currents. This meant that high tide formed a serious risk because strong tidal currents could tear huge areas of land into the sea. Before the construction of the Delta Works, tidal influence was palpable up to Nijmegen, and even today, after the regulatory action of the Delta Works, the tide acts far inland. At the Waal, for example, the most landward tidal influence can be detected between Brakel and Zaltbommel.

In southern Europe, the stage was set in the Triassic Period of the Mesozoic Era, with the opening of the Tethys Ocean, between the Eurasian and African tectonic plates, between about 240 MBP and 220 MBP (million years before present). The present Mediterranean Sea descends from this somewhat larger Tethys sea. At about 180 MBP, in the Jurassic Period, the two plates reversed direction and began to compress the Tethys floor, causing it to be subducted under Eurasia and pushing up the edge of the latter plate in the Alpine Orogeny of the Oligocene and Miocene Periods. Several microplates were caught in the squeeze and rotated or were pushed laterally, generating the individual features of Mediterranean geography: Iberia pushed up the Pyrenees; Italy, the Alps, and Anatolia, moving west, the mountains of Greece and the islands. The compression and orogeny continue today, as shown by the ongoing raising of the mountains a small amount each year and the active volcanoes.

From the Eocene onwards, the ongoing Alpine orogeny caused a N–S rift system to develop in this zone. The main elements of this rift are the Upper Rhine Graben, in southwest Germany and eastern France and the Lower Rhine Embayment, in northwest Germany and the southeastern Netherlands. By the time of the Miocene, a river system had developed in the Upper Rhine Graben, that continued

northward and is considered the first Rhine river. At that time, it did not yet carry discharge from the Alps; instead, the watersheds of the Rhone and Danube drained the northern flanks of the Alps.

Through stream capture, the Rhine extended its watershed southward. By the Pliocene period, the Rhine had captured streams down to the Vosges Mountains, including the Mosel, the Main and the Neckar. The northern Alps were then drained by the Rhone. By the early Pleistocene period, the Rhine had captured most of its current Alpine watershed from the Rhône, including the Aar. Since that time, the Rhine has added the watershed above Lake Constance (Vorderrhein, Hinterrhein, Alpenrhein; captured from the Rhône), the upper reaches of the Main, beyond Schweinfurt and the Vosges Mountains, captured from the Meuse, to its watershed.

Around 2.5 million years ago (ending 11,600 years ago) was the geological period of the Ice Ages. Since approximately 600,000 years ago, six major Ice Ages have occurred, in which sea level dropped 120 m (390 ft) and much of the continental margins became exposed. In the Early Pleistocene, the Rhine followed a course to the northwest, through the present North Sea. During the so-called Anglian glaciation (~450,000 yr BP, marine oxygen isotope stage 12), the northern part of the present North Sea was blocked by the ice and a large lake developed, that overflowed through the English Channel. This caused the Rhine's course to be diverted through the English Channel. Since then, during glacial times, the river mouth was located offshore of Brest, France and rivers, like the Thames and the Seine, became tributaries to the Rhine. During interglacials, when sea level rose to approximately the present level, the Rhine built deltas, in what is now the Netherlands.

The last glacial ran from ~74,000 (BP = Before Present), until the end of the Pleistocene (~11,600 BP). In northwest Europe, it saw two very cold phases, peaking around 70,000 BP and around 29,000–24,000 BP. The last phase slightly predates the global last ice age maximum (Last Glacial Maximum). During this time, the lower Rhine flowed roughly west through the Netherlands and extended to the southwest, through the English Channel and finally, to the Atlantic Ocean. The English Channel, the Irish Channel and most of the North Sea were dry land, mainly because sea level was approximately 120 m (390 ft) lower than today.

Most of the Rhine's current course was not under the ice during the last Ice Age; although, its source must still have been a glacier. A tundra, with Ice Age flora and fauna, stretched across middle Europe, from Asia to the Atlantic Ocean. Such was the case during the Last Glacial Maximum, ca. 22,000–14,000 yr BP, when ice-sheets covered Scandinavia, the Baltics, Scotland and the Alps, but left the space between as open tundra. The loess or wind-blown dust over that tundra, settled in and around the Rhine Valley, contributing to its current agricultural usefulness.

As northwest Europe slowly began to warm up from 22,000 years ago onward, frozen subsoil and expanded alpine glaciers began to thaw and fall-winter snow covers melted in spring. Much of the discharge was routed to the Rhine and its downstream extension. Rapid warming and changes of vegetation, to open forest, began about 13,000 BP. By 9000 BP, Europe was fully forested. With globally shrinking ice-cover, ocean water levels rose and the English Channel and North Sea re-inundated. Meltwater, adding to the ocean and land subsidence, drowned the former coasts of Europe transgressionally.

Since 7500 yr ago, a situation with tides and currents, very similar to present has existed. Rates of sea-level rise had dropped so far, that natural sedimentation by the Rhine and coastal processes together, could compensate the transgression by the sea; in the last 7000 years, the coast line was roughly at the same location. In the southern North Sea, due to ongoing tectonic subsidence, the sea level is still rising, at the rate of about 1–3 cm (0.39–1.18 in) per century (1 metre or 39 inches in last 3000 years).

At the begin of the Holocene (~11,700 years ago), the Rhine occupied its Late-Glacial valley. As a meandering river, it reworked its ice-age braidplain. As sea-level continued to rise in the Netherlands, the formation of the Holocene Rhine-Meuse delta began (~8,000 years ago). Coeval absolute sea-level rise and tectonic subsidence have strongly influenced delta evolution. Other factors of importance to the shape of the delta are the local tectonic activities of the Peel Boundary Fault, the substrate and geomorphology, as inherited from the Last Glacial and the coastal-marine dynamics, such as barrier and tidal inlet formations.

Since ~3000 yr BP (= years Before Present), human impact is seen in the delta. As a result of increasing land clearance (Bronze Age agriculture), in the upland areas (central Germany), the sediment load of the Rhine has strongly increased and delta growth has sped up. This caused increased flooding and sedimentation, ending peat formation in the delta. The shifting of river channels to new locations, on the floodplain (termed avulsion), was the main process distributing sediment across the subrecent delta. Over the past 6000 years, approximately 80 avulsions have occurred. Direct human impact in the delta started with peat mining, for salt and fuel, from Roman times onward. This was followed by embankment, of the major distributaries and damming of minor distributaries, which took place in the 11–13th century AD. Thereafter, canals were dug, bends were short cut and groynes were built, to prevent the river's channels from migrating or silting up.

At present, the branches Waal and Nederrijn-Lek discharge to the North Sea, through the former Meuse estuary, near Rotterdam. The river IJssel branch flows to the north and enters the IJsselmeer, formerly the Zuider Zee brackish lagoon; however, since 1932, a freshwater lake. The discharge of the Rhine is divided among three branches: the River Waal (6/9 of total discharge), the River Nederrijn – Lek (2/9 of total discharge) and the River IJssel (1/9 of total discharge). This discharge distribution has been maintained since 1709, by river engineering works, including the digging of the Pannerdens canal and since the 20th century, with the help of weirs in the Nederrijn river.

The Rhine was not known to Herodotus and first enters the historical period in the 1st century BC in Roman-era geography. At that time, it formed the boundary between Gaul and Germania. The Upper Rhine had been part of the areal of the late Hallstatt culture since the 6th century BC, and by the 1st century BC, the areal of the La Tène culture covered almost its entire length, forming a contact zone with the Jastorf culture, i.e. the locus of early Celtic-Germanic cultural contact. In Roman geography, the Rhine formed the boundary between Gallia and Germania by definition; e.g. Maurus Servius Honoratus, Commentary on the Aeneid of Vergil (8.727) (Rhenus) fluvius Galliae, qui Germanos a Gallia dividit "(The Rhine is a) river of Gaul, which divides the Germanic people from Gaul."

From the death of Augustus in AD 14 until after AD 70, Rome accepted as her Germanic frontier the water-boundary of the Rhine and upper Danube. Beyond these rivers she held only the fertile plain of Frankfurt, opposite the Roman border fortress of Moguntiacum (Mainz), the southernmost slopes of the Black Forest and a few scattered bridge-heads. The northern section of this frontier, where the Rhine is deep and broad, remained the Roman boundary until the empire fell. The southern part was different. The upper Rhine and upper Danube are easily crossed. The frontier which they form is inconveniently long, enclosing an acute-angled wedge of foreign territory between the modern Baden and Württemberg. The Germanic populations of these lands seem in Roman times to have been scanty, and Roman subjects from the modern Alsace-Lorraine had drifted across the river eastwards.

The Romans kept eight legions in five bases along the Rhine. The actual number of legions present at any base or in all, depended on whether a state or threat of war existed. Between about AD 14 and 180, the assignment of legions was as follows: for the army of Germania Inferior, two legions at Vetera (Xanten), I Germanica and XX Valeria (Pannonian troops); two legions at oppidum Ubiorum ("town of the Ubii"), which was renamed to Colonia Agrippina, descending to Cologne, V Alaudae, a Celtic legion recruited from Gallia Narbonensis and XXI, possibly a Galatian legion from the other side of the empire.

Germanic tribes crossed the Rhine in the Migration period, by the 5th century establishing the kingdoms of Francia on the Lower Rhine, Burgundy on the Upper Rhine and Alemannia on the High Rhine. This "Germanic Heroic Age" is reflected in medieval legend, such as the Nibelungenlied which tells of the hero Siegfried killing a dragon on the Drachenfels (Siebengebirge) ("dragons rock"), near Bonn at the Rhine and of the Burgundians and their court at Worms, at the Rhine and Kriemhild's golden treasure, which was thrown into the Rhine by Hagen.

By the 6th century, the Rhine was within the borders of Francia. In the 9th, it formed part of the border between Middle and Western Francia, but in the 10th century, it was fully within the Holy Roman Empire, flowing through Swabia, Franconia and Lower Lorraine. The mouths of the Rhine, in the county of Holland, fell to the Burgundian Netherlands in the 15th century; Holland remained contentious territory throughout the European wars of religion and the eventual collapse of the Holy Roman Empire, when the length of the Rhine fell to the First French Empire and its client states. The Alsace on the left banks of the Upper Rhine was sold to Burgundy by Archduke Sigismund of Austria in 1469 and eventually fell to France in the Thirty Years' War. The numerous historic castles in Rhineland-Palatinate attest to the importance of the river as a commercial route.

Since the Peace of Westphalia, the Upper Rhine formed a contentious border between France and Germany. Establishing "natural borders" on the Rhine was a long-term goal of French foreign policy, since the Middle Ages, though the language border was – and is – far more to the west. French leaders, such as Louis XIV and Napoleon Bonaparte, tried with varying degrees of success to annex lands west of the Rhine. The Confederation of the Rhine was established by Napoleon, as a French client state, in 1806 and lasted until 1814, during which time it served as a significant source of resources and military manpower for the First French Empire. In 1840, the Rhine crisis, prompted by French prime minister Adolphe Thiers's desire to reinstate the Rhine as a natural border, led to a diplomatic crisis and a wave of nationalism in Germany.

At the end of World War I, the Rhineland was subject to the Treaty of Versailles. This decreed that it would be occupied by the allies, until 1935 and after that, it would be a demilitarised zone, with the German army forbidden to enter. The Treaty of Versailles and this particular provision, in general, caused much resentment in Germany and is often cited as helping Adolf Hitler's rise to power. The allies left the Rhineland, in 1930 and the German army re-occupied it in 1936, which was enormously popular in Germany. Although the allies could probably have prevented the re-occupation, Britain and France were not inclined to do so, a feature of their policy of appeasement to Hitler.

In World War II, it was recognised that the Rhine would present a formidable natural obstacle to the invasion of Germany, by the Western Allies. The Rhine bridge at Arnhem, immortalized in the book, A Bridge Too Far and the film, was a central focus of the battle for Arnhem, during the failed Operation Market Garden of September 1944. The bridges at Nijmegen, over the Waal distributary of the Rhine, were also an objective of Operation Market Garden. In a separate operation, the Ludendorff Bridge, crossing the Rhine at Remagen, became famous, when U.S. forces were able to capture it intact – much to their own surprise – after the Germans failed to demolish it. This also became the subject of a film, The Bridge at Remagen. Seven Days to the River Rhine was a Warsaw Pact war plan for an invasion of Western Europe during the Cold War.

Until 1932 the generally accepted length of the Rhine was 1,230 kilometres (764 miles). In 1932 the German encyclopedia Knaurs Lexikon stated the length as 1,320 kilometres (820 miles), presumably a typographical error. After this number was placed into the authoritative Brockhaus Enzyklopädie, it became generally accepted and found its way into numerous textbooks and official publications. The error was discovered in 2010, and the Dutch Rijkswaterstaat confirms the length at 1,232 kilometres (766 miles).[note 1]