

# Module 10

## Industrialization in the Circumpolar North

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### Learning Objectives/Outcomes

Upon completion of this module you should be able to

1. give a comparative analysis of the various histories of industrialization.
  2. outline some of the elements common to industrial development in the North and remote regions.
  3. discuss the effects of industrialization on indigenous and non-indigenous populations and the environment.
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### Overview

Economic development in the circumpolar North is characterized by resource development and post–Second World War industrialization. While each country and region has experienced complex histories, one can find commonalities in the way resource and industrial development has unfolded in the circumpolar North. Borrowing from Robert M. Bone (2003), we can observe that for all of the Arctic regions we will examine there are three underlying characteristics of economic development:

- (1) a dependence on primary and tertiary activities;
  - (2) small secondary and quaternary economic development; and
  - (3) decisions about social and/or economic affairs made from outside the region of development by both government and entrepreneurs. Within the contexts of this observation, we will delve into the history of industrialization in four major areas of the circumpolar North: Alaska, Canada, the Nordic countries—primarily Norway—and Russia.
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### Lecture

#### Introduction

While the beginnings of the industrial age may be traced back to the industrial and agrarian revolutions in England in the eighteenth and nineteenth centuries, industrialization in the circumpolar regions that we will be examining only began towards the end of the nineteenth century and

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in the beginning of the twentieth century. However, the impetus to industrialize and to develop natural resources for use and for sale in the marketplace underlie the rationale for industrialization in both historical periods and geographic spaces. Industrialization, whether in the late eighteenth century or the late twentieth century, leads to accelerated development because of and through economic and social transformation. These two act in symbiosis to fuel the industrial drive, be it in a capitalist democracy, a social democracy, or communism.

It is difficult to define many regions of the circumpolar North as industrialized in the strictest sense. For the most part, these northern regions are still quite sparsely populated and, in general, with the exception of some parts of the Russian North and Siberia, they do not have densely populated metropolises, factories, assembly lines, and smoke stacks, which we tend to imagine when thinking about industrialization. Taking a broader definition of industrialization, however, one cannot deny that industrialization and industrial development has taken place and exists in the circumpolar North. Indeed, we may argue strongly that the trappings of industry and industrialization have been in the North for well over a hundred years. For this module, then, we define industrial and industrialization in the broader context to include resource development to advance industrialization at the core and the accumulation of capital by governments and industrialists. Moreover, while industrialization is fuelled by resource development occurring in the hinterland, resource-based economies are also a consequence of industrialization. The existence of industrial infrastructures in the North—such as urban centres, railroads, highways, hydroelectric dams, pipelines and oil derricks, airline landing strips, military bases, and mines—are markers of industrialization.

Historians argue that the Industrial Revolution in England that began in 1750 cannot stand as the model or framework for subsequent industrialization histories. For example, with the decline of the landowning peasantry and of the dependence on subsistence agriculture, England, indeed Britain as a whole, was poised for industrial development. On the other hand, in late nineteenth-century industrializing Russia, the opposite was true: the peasantry was still attempting to adjust to emancipation; thus, they were still dependent on former landlords and the state and were still practising subsistence agriculture, yet the Russian imperial state was forging ahead with industrialization. The picture changes even more dramatically as we enter the mid-twentieth century and explore the industrialization drives that occurred in the Nordic countries, the Canadian North, Siberian Russia, and Alaska. As populations increased, as the search for more natural resources and industrial interests expanded to the hinterland, industrialization also transformed the lives and environments of indigenous populations of the circumpolar North. While it may be argued that the character of industrialization was very different in various times in history and in various locales, we may still draw parallels to the kinds of processes that accompanied industrial development and, more importantly, to the

economic and social transformations that resulted.

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## **Defining Economic and Industrial Development in the Circumpolar North**

Let us recall borrowing three of Robert M. Bone's (2003) underlying characteristics of economic activities in the North and discuss them in turn:

- 1. A dependence on primary and tertiary activities.** Dependence on primary activities means a reliance on the extraction or harvesting of natural resources, such as timber harvesting, oil and gas extraction, and mining. We may define tertiary activities as those economic activities that maintain primary economic activities. They revolve around the organization of production, the logistics of distribution and marketing, the maintenance of equipment, and the consumption of goods and services.
- 2. Small secondary and quaternary economic development.** Low-level or small-scale manufacturing and processing activities define the development of small secondary economies in the North. While secondary economic activities have been typically marked by the processing of raw materials into products, in recent years secondary activities have grown to produce intermediate and final products. Quaternary economic development includes economic activities that disseminate, process, and administer information, and is not reliant on resources, the environment, or access to markets.
- 3. Decisions about social and/or economic affairs made from outside by both government and entrepreneurs.** This third point highlights the centre-periphery relationship that typifies economic and industrial development in the North.

Keeping in mind these characteristics of economic activities in the North, there are a few other generalizations that exemplify northern economies:

- The heavy reliance on primary resources makes northern economies and communities vulnerable to boom and bust cycles of economic development.
- While northern economies and communities that engage in primary resource economies may seem "peripheral" to markets at the core, they are sensitive to the world economy and its demands for natural resources. Thus, northern economies and industries are strongly affected by the fluctuations in the world market.
- Because of dependence on primary resources as the foundation of the economy of northern regions, these economies experience "severe economic leakage" (Bone 2003), with much of the profit and benefit from these industries going to developed regions.

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- A large segment of the workforce in resource-based northern industries are employed temporarily, or for short periods of time.
- There is a significant newcomer population.
- There is a rise of regional centres and resource towns.
- There is a remarkable social transformation of both indigenous and non-indigenous populations and the communities in which they live; this has an effect on their natural and social environment.

Much of the industrialization drive in the circumpolar North started in the late nineteenth century but was only accelerated in the years after the Second World War. Some of the common types of industries in the circumpolar North are timber harvesting, mining (for gold, iron ore, diamonds), hydroelectric development, and oil and gas extraction. We will examine just a few of these as case studies in four geographic regions in the North: Alaska, Canada, the Nordic Countries, and Russia. While small-scale industry certainly exists in these regions, the following discussion focuses mostly on the development of industrial megaprojects in the North. We will examine how they have developed and what kinds of effects they have had on populations and the environment.

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### Student Activity

Consider an economic development venture in or near the region in which you live that depends on primary and tertiary activities.

1. Which natural resources does this development extract or harvest from the environment, and for what purposes are the raw materials used in the world?
2. What, if any, intermediate or final products does this development produce?
3. To what parts of the world are the products of this development disseminated? Do you, or anyone you know, use any of these products?

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### Alaska: North Slope–Prudhoe Bay

The United States bought the territory we now know as Alaska from the Russian empire in 1867 for the price of US\$7.2 million, at two cents an acre. Resource development at that time was dominated by a fur industry that catered to markets in the Far East, notably China. For the first 30 years of ownership, the US government neglected Alaska. Only in the ensuing gold rush that began in 1896 between the Canadian Yukon Territory and Alaska did the United States federal government pay any attention to the possible riches that Alaska might harbour. With the gold rush came the influx of some 30,000 people travelling through Alaskan territory to get to the Yukon. Other finds in Nome, Dawson, Ester, and Fairbanks

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would lead to the creation and growth of those cities based on gold mining. Copper and coal would also be found and extracted. Roads and railroads were built so that these commodities could be exported.

The Katalla oil discovery was made in 1902, 177 kilometres southeast of Valdez. As the Alaskan economy developed, the US Congress granted Alaska territorial status on August 24, 1912, giving it a say in the law making in the Alaskan Territory. Gold strikes would be temporary, however, and the oil find near Valdez small, so, by the beginning of the Second World War, many were leaving in search of better economic opportunities. During the Second World War, economic activity grew, along with the number of military personnel in Alaska. The US investment in the war effort based in Alaska brought temporary stability to the economy as well as employment in the form of spinoff jobs. There was a recession in the economy at the end of the Second World War, but it was short-lived; Cold War concerns gave way to population growth and economic development as the US government invested in defence spending. An increase in the non-indigenous populations led to calls for statehood, which were achieved by 1959.

Nevertheless, Alaska was in economic trouble by 1949. Instability in the Middle East led to explorations for possible oil reserves in Alaska; and, indeed, the purchase of leases by oil companies in the billions of acres led to finds in the Kenai Peninsula and Cook Inlet regions, producing 900 barrels a day in 1957. These finds generated on- and off-shore oil and gas development, as well as the attendant infrastructure that went with it: processing, refining, and transportation. With this first successful and commercially viable find, oil and gas exploration continued apace, and by 1968 a massive find in Prudhoe Bay, along the Beaufort Sea, in the North Slope region, was found. This find had a potential to produce 10 billion barrels of oil, and made Alaska a very wealthy state within the year; the oil lease alone earned the state \$900 million US in 1969. Only five years later, the US Congress approved construction of the Trans-Alaska Pipeline System (TAPS), which would transport oil from Prudhoe Bay to Valdez, in Prince William Sound. By June 20, 1977, oil was flowing 1292 kilometres from north to south, transporting as much as two million barrels of oil per day to supply the demand for oil in the lower 48 US states. Approximately ten per cent of crude oil consumed by the US population moves through the Trans-Alaska Pipeline System.

The economic benefit of the Prudhoe Bay oil development has been tremendous. It allowed the State of Alaska to create the Permanent Fund from oil revenues, giving out dividends to Alaska residents beginning in 1982. While Prudhoe Bay itself has an official population of five people, there are many thousands of temporary workers who work and live in the area temporarily. While oil and gas companies boast that the actual drilling for oil and gas only harms two per cent of the territory in the North Slope region of the state, the damage done to the sensitive permafrost wildlife

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habitat is evident: many hundreds of cavities in the ground were left polluted from oil industry waste. At the same time, industrial pollution was evident in the form of natural gas flares from production facilities and in the damage done to caribou pastures by the Trans-Alaska Pipeline System.

Early in the discovery of the enormous oil fields at Prudhoe Bay, students, indigenous peoples, and other concerned citizens protested against the development, calling for the state to consider the social and environmental effects that such a megadevelopment would bring. At the 20th Alaska Science Conference, held at the University of Alaska at Fairbanks in 1969, Alaska Federation of Natives (AFN) vice-president, and the only Aboriginal participant, John Borbridge Jr. forcefully put forth a rhetorical question:

For the most part you have easily gotten used to the Alaska Native, because he had needed your help and your assistance, and a fairly large, complex “industry” has emerged based on his needs. The relationship between one who gives and one who receives when it has been institutionalized is very easy to accept, to adjust to and to forget. As long as the arrangement is accepted or tolerated, there is nothing that is disconcerting in this relationship. But what happens as the Alaska Native assumes his rightful place as an equal partner in the economic, political and other power structures of this state? What happens when instead of coming in and asking for help, he comes in by right and asserts his right to share equally in the opportunities and benefits of economic and social development?

The events that led to the industrial oil and gas development in the North Slope region preceded the signing of the Alaska Native Claims Settlement Act (ANCSA) signed in 1971. This act extinguished Aboriginal claims to Alaska except for one-ninth of the state and \$962.5 million in compensation. It led the way for creating 13 Aboriginal corporations, making Alaska indigenous people shareholders of the land. Since its inception, ANCSA has been controversial and, indeed, as the indigenous people of the North Slope argue, “cleared the way for development of Prudhoe Bay and the Trans-Alaska Pipeline. The act granted land and money to Alaska’s Native people, and in return extinguished their aboriginal claims” (Arctic Slope Regional Corporation 1995).

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## Canada: The Northeast Coal Project–Tumbler Ridge

The building of the town of Tumbler Ridge is an example of a town dependent on one resource industry. In the mid-1970s, spurred on by Japanese demands for coal energy to fire their steel mills, the British Columbia provincial government engaged in the Northeast Coal Project (NECP), a megaproject that aimed to develop coal-mining operations in the northeast interior of British Columbia. In this way, the British Columbia government introduced industrial development to the region, which

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would include not just coal mining, but also the development of the infrastructure needed to transport the coal to a Pacific port. The result was the creation of a new town in 1981—British Columbia’s Tumbler Ridge, located on the eastern foothills of the Rocky Mountains. A Canadian National Railways rail line was upgraded and extended all the way to Prince Rupert. The British Columbia government invested in this megaproject with the hope of coal prices rising to \$100 per tonne by the end of the century. These hopes were dashed, however: by the early 1980s, the global economy was in recession and the demand for steel declined. As a result, the demand for coal declined and so did coal prices.

The NECP included three open-pit mining operations: the Quintette and Gregg River mines owned by Denison Mines, and the Bullmoose mines owned by Teck Corporation. Denison Mines, Teck Corporation, and the British Columbia government made major investments to make the mining of coal a viable project for the northeast interior of British Columbia. By 1983, the first rail shipment of coal was sent to Ridley Island in Prince Rupert. For the most part, both Denison Mines and Teck Corporation were able to negotiate good prices for their coal, with Japanese steel producers willing to pay prices above those set by the world market in order to secure coal supplies. Nevertheless, the contracts signed had some limitations: for example, the Quintette mine signed a 14-year contract with a Japanese firm that required reviews of the negotiated pricing in 1987, 1991, and 1995. By the first review date, the prices promised were too high to be affordable, and the Japanese had to renegotiate the prices they were willing to pay, resulting in arbitrated prices being drawn from 1987 onwards. Prices were low enough that by the early 1990s Denison Mines had to file for bankruptcy, and by 2000 Teck Corporation, which had taken over Quintette, had no choice but to shut down the Quintette mine. As a result, Tumbler Ridge lost its only economic means. In short order, 600 miners, with their families, left Tumbler Ridge: by 2001, the population of Tumbler Ridge had declined from 3,775 in 1976 to 1,851 in 2001.

The impact on the population in Tumbler Ridge and on the workers who earned their living from the mines was profound. At the same time, the environment in which the mines were excavated (usually using open-pit mining as the method of extracting coal) was damaged. In 1999, Teck Corporation was charged with polluting: an investigation by the BC Ministry of Environment, Lands and Parks revealed that waste had entered South Bullmoose Creek, threatening populations of bull trout.

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### Student Activity

1. If possible, talk to someone in the community of the development region you considered in the previous Student Activity who remembers when the development was first established there. In what ways were the local residents informed of the incoming development? What voice did they have at that time in determining any aspect of the

development?

2. Is this economic development venture affected by world market prices? How so?
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### **The Nordic Countries: Norway's Hydroelectric Projects—The Alta-Kautokeino Case**

In the middle of the nineteenth century, Norway's economy was mostly agricultural and, owing to its geography and poor transportation links throughout the country, the economy was mostly localized in farms and villages. Until the First World War, the economic base grew mainly because of the development of tertiary economic activities that concentrated around a service sector and in shipping—for the most part, small-scale industries, such as a small textile sector that developed after 1840; timber harvesting for lumber products until the 1870s; followed by the growth of a pulp and paper industry that grew quickly as the nineteenth century closed.

As Norway developed as a state, and as the economy industrialized, the Norwegian government made great strides in transforming the communications and transportations linkages between villages, towns, and cities. As early as 1854, a railroad had been built from Eidsvoll in central southeast Norway to the capital, Christiania (present-day Oslo), to the south. While railway construction slowed soon afterwards, lines were built between the agricultural and industrial heartlands of the country, as well as between the major cities, eventually playing a major role in the economy by allowing the transport of passengers, tourists, mail, and goods.

At the end of the nineteenth century and after it, Norway's hydroelectric power generation grew significantly, and, with it, the electrochemicals and electrometals industries. By 1905, Sam Eyde, with the help of foreign investors, established Norsk Hydro. Rjukan Waterfall, in the centre of Norway's remote Vestfjord Valley in the Telemark region, was at the centre of hydroelectric generation in the early twentieth century. In 1907, only 50 families lived in the valley; and only ten years later, as many as 10,000 people lived in the region, where they found employment in the hydro industry and the electrochemicals plants that produced fertilizers, which were exported worldwide. In a short period of time, Vestfjord Valley became highly industrialized, with Norsk Hydro providing much of the housing and service infrastructure of the area and, in so doing, creating many successful industry towns in the region.

The rapid development of the hydroelectric industry coincided with Norway's aspirations to gain independence from Swedish control (Norway and Sweden established their union in 1814). Thus, for the state builders and for national interests, hydroelectric development in Norway at the be-

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ginning of the century formed the economic foundation of their state and nation, as well as the nation's wealth until the oil and gas development boom of the 1970s.

In the meantime, concerned about the energy needs of a highly industrialized economy and population that lived, for the most part, in the south of the country, the Norwegian government continued its hydroelectric projects. One such massive project was planned in Norway's northernmost county, in Finnmark—damming the Alta–Kautokeino river system. When it was being planned by the Norwegian Water Resources and Energy Directorate (NVE) in the mid-1950s, it had the potential of flooding most of the Finnmark tundra plateau, threatening salmon fisheries and reindeer herding, and displacing the people who lived there, including indigenous Sami communities. Even in the 1950s, damming the Alta–Kautokeino river system was controversial and, so, plans to build the dam were stalled. The NVE resurrected the plans in the 1970s, but with less ambitious goals. Still, a smaller-scale dam on the Alta River would still have meant flooding the Sami village of Máze (also known as Masi), not to mention the flooding of reindeer pastures. Thus, the “Alta conflict” arose between Sami organizations, the environmentalists, and local salmon fishers on one side and the Norwegian government and the NVE on the other. Protest was successful, and the village of Máze was spared flooding from hydroelectric development.

However, the Norwegian government and the NVE did not give up plans for damming at least a small part of the Alta River. A third round of construction plans came to fruition. The Sami reindeer herders who would be affected by the dam, along with the Norwegian Society for the Conservation of Nature, took the Norwegian government to court in 1979. At the same time, the Sami and environmentalists protested, engaging in civil disobedience and setting up a Sami encampment in front of the Norwegian Parliament. The Sami garnered a great deal of public attention and sympathy during this period, educating the Norwegian public on their status and their political interests as the indigenous people of Norway.

The protests and lawsuits failed, and by the early 1980s a dam with a power station was built on one of the Alta River's canyons. Although the Sami and the environmentalists could not put a halt to the building of the dam and power station, many argue that it acted as a catalyst to the politicization of the Sami and laid the foundation for Sami–state relations in Norway, with the question of land rights being predominant. As a result of negotiations with the Sami, the Norwegian government agreed to the creation of a Sami parliament, and that Sami culture, language, and society be recognized in the Norwegian constitution.

### Student Activity

1. Thinking again about the economic development venture you have been considering in this module, what are the social, economic, political, and environmental effects of this development on the local region?
2. What decision-making power or influence have the local residents had with respect to the development-related issues that have affected them over time?



**Fig. 10.1** Map of northwest Siberia, 1999. **Source:** Map produced by Garnet Terry Whyte. Copyright Aileen A. Espiritu.

## **The Soviet Union/Russia/Siberia: Oil and Gas in West Siberia**

Industrial development in Russia began in the nineteenth century with the building of railroads from European Russia all the way to the Pacific Ocean, traversing across southern Siberia. The Imperial Russian regime was ousted by a Marxist-Leninist regime after the First World War in October 1917, ushering in a new political system and leading to the establishment of a new state in 1922, the Soviet Union. Most of the Soviet Union's population was agrarian and, so, the most significant policies made in the early years of the Soviet Union related to collectivization of agriculture and massive industrialization. In order to do carry out these policies, the Soviet Union required stable sources of energy. Despite the success of the oil and gas industry in the late 1920s and early 1930s, assisted by foreign investments and technology, the Soviet Union's major source of energy fuel at the start of the First Five-Year Plan in 1928 was still firewood, which comprised up to 50 per cent of the fuel used. This dependence on firewood continued until the Second World War and even after it, but dropping, then, to about 10–15 per cent in the 1960s, with other energy sources—such as coal, shale, and peat—supplementing the energy needs of the industrializing Soviet Union. For the most part, the Soviet regime did not rely on the country's depleting reserves of oil and gas in Azerbaijan, the North Caucasus, and European Russia to fuel its industrialization.

At the time of Stalin's death in early 1953, the oil and gas reserves in northwest Siberia (see Fig. 10.1) were yet unknown. The discovery of possible oil reserves was quite by accident when, in September 1953, as barges transporting rigs were delayed on the Ob River near the village of Berezov, a test boring on the banks produced a shot of gas and water. Even then, no one suspected the extent of the oil and gas reserves in the region.

By the early 1960s, the outlook was quite different. It was with great enthusiasm that massive industrialization—namely, oil and gas development—began in northwest Siberia, with the implementation of Soviet policies to exploit lands that had not before been used for industrial development or resource extraction. More-deliberate explorations followed the Berezovskoe gas-field find and, by 1960, oil extraction began in Shaim on the river Konda, directly in the middle of traditional Mansi territory. Subsequently, to accommodate the migration of new settlers as well as the passage of equipment for oil drilling and natural gas extraction, the regime ordered the construction of pipelines and railroads to carry oil to Perm and Tyumen. Specifically, in the Khanty-Mansiisk Autonomous Okrug, the small villages of Samotlor and Surgut “became centres of intensive oil-drilling operations” (Forsyth 1992, 390); and, in the late 1970s, Urengoi and Yamburg, in the Yamalo-Nenetsky Autonomous Okrug, afforded massive gas production. Nikita Khrushchev initiated these prodigious

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industrialization policies to facilitate the Cold War competition between the USSR and the United States, and Leonid Brezhnev enthusiastically continued and intensified them.

Production from oil and natural gas reserves in northwest Siberia fulfilled all expectations, especially in the early years of production. However, like the history of the oil and gas industry in the imperial period, inefficient policies that emphasized increased and increasing production at all costs plagued the industry, often neglecting the need for an infrastructure of pipelines to transport the oil out in the first place. In the 1960s, northwest Siberia itself lacked the refineries and petrochemical plants to process the oil and gas extracted. Economic policy makers often neglected the needs of oil and gas workers who complained of inadequate housing and lack of social services in the most remote regions of northwest Siberia. Today, the major problem the oil and gas industry faces is finding sufficient investment to modernize outdated drilling and extraction methods. Thousands of kilometres of inferior pipelines that cannot withstand harsh weather conditions need to be replaced. Amid these infrastructural problems is the



**Fig. 10.2** Gas Flares on the way to Russinskoe, North of Surgut, in the Khanty-Mansiisk Autonomous Okrug, 2003. **Photo:** Courtesy of Aileen A. Espiritu.

immeasurable damage done to the natural environment and the traditional territories of the indigenous peoples who inhabit northwest Siberia owing to oil spills, gas-field fires, abandoned and rusting equipment littering the tundra and taiga, the irreparably scored permafrost, the damaged lichen fields, and so on (see Fig. 10.2).

The drive to discover more sources of oil and gas in northwest Siberia, however, was also an attempt to meet the growing demand of the Soviet population and industries for energy; to offset the declining oil production in other parts of the Soviet Union; and, especially in the late 1970s and throughout the 1980s to the present, to provide much needed hard currency to the federal government. By the early 1970s, as oil and gas reserves diminished in European Russia, the demand for other sources of oil and gas lay heavily on northwest Siberia, so that by the early 1990s, the region was providing for more than sixty per cent of the oil and gas needs of the Soviet Union. While oil and gas production in northwest Siberia has been fluctuating since the early 1980s, with production falling in 1985, resurging in 1988, and then falling again in 1989 and 1990, the effects of oil and gas

exploration and extraction signified a steady decline in the standards of living and health and the retention of language, culture, and the traditional economies of indigenous peoples. Concurrent with and exacerbating this decline is the degradation of the environment on which these indigenous peoples depend for their economic livelihood, their food, their cultural

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and spiritual activities, and the maintenance of their traditions.

Indeed, by the late 1980s, the northwest Siberian plains—that is, the traditional territories of the Khanty, Mansi, Yamalo-Nenets, and several other indigenous peoples—were in peril. The destruction and environmental pollution in the region are of massive proportions. By the early 1990s, the press in the Soviet Union and then the Russian Republic candidly reported on the pollution that indigenous peoples bitterly complained about. Cities and industrial enterprises dumped huge quantities of heavy metals and sewage into the rivers Ob and Irtysh in northwest Siberia. For example, various fish on which indigenous peoples of the Berezovskii region rely had diminished in numbers from twenty to one hundred times in the period since oil and gas development began in the early 1960s. Intense exploration and wide prospecting for oil and gas reserves have brought massive pollution of rivers, river basins, and lakes, putting into jeopardy fish-processing operations. In addition, the frequent occurrences of catastrophic gas-field fires owing to vehement processing activity destroyed and continue to destroy grazing and pasture lands of reindeer herds and forests inhabited by wild animals.

Reports in the early 1990s suggested much of the pollution came from inferior equipment used in the drilling and extraction of oil as well as its transport through oil pipelines. In 1991, *Pravda*, citing an interview with the Chief Administration for Petroleum Transport and Delivery and Central Dispatching Administration reported that there “were more than 900 accidents involving oil field pipeline in Western Siberia in the first four months of this year.” Moreover, the representative for the administration monitoring pipeline operations suggested that such accidents were on the rise. Long tracts of pipeline in disrepair and requiring replacement lay at the heart of this massive environmental catastrophe. The problem faced by the oil and gas industry with regard to increasing inefficiency and general breakdown is systemic. Other industry sectors failed to deliver 123,000 tons of pipe in the first four months of 1991, leading to the massive oil spills as the oil industry attempted to meet its own deliveries. Exacerbating this situation was the pollution caused by the efforts to clean up the oil spills. Much of northwest Siberia is swampland, making it difficult to clean oil spills, so the solution has been to “burn oil-soaked ground and later reclaim the area,” which results in air pollution. Burning oil in the fields of northwest Siberia is all too common an occurrence, whether by accident or by design, prompting one to observe, “Clouds cry oil.”

Since the collapse of the Soviet Union in 1991, the demand for oil and gas has not abated, but rather has become more acute. Economic collapse followed political collapse in short order. The newly constituted Russian state found itself even more dependent on oil and gas revenues. And so, the exploration, drilling, and extraction of oil and gas intensified throughout the leadership of Boris Yeltsin and, more recently, under the leadership of Vladimir Putin. The political and economic legitimacy of Putin’s leader-

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ship is inextricably bound to the oil and gas revenues that allow Russia to function as a state that is still struggling to re-energize its industrial economy.

While indigenous politicization in the whole of Russia has given Aboriginal people a voice at all levels of government, indigenous populations whose traditional territories are at the centre of resource reserves, such as oil and gas, find their voices diminished in their calls for a say in how industrial development is managed and how their environment is protected, and in their demands for compensation.

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## Northern Industrial Development

Let us review some of the common social, economic, and political effects of industrial development in the North. As we have seen with the example of the Prudhoe Bay oil and gas development in Alaska, United States; the Northeast Coal Project in British Columbia, Canada; Norway's hydroelectric projects; and the oil and gas industries in northwest Siberia, Russia, a heavy reliance on primary resources leads to a vulnerability to boom and bust fluctuations in the economy, domestically and internationally. This is most acutely exemplified in the Prudhoe Bay developments and in the Northeast Coal Project, as world market prices had a great impact on the profitability of the primary resource being extracted and processed. In the Northeast Coal Project, which resulted in the creation of the one-industry town of Tumbler Ridge, the significant decline in the world price of coal led to bankruptcy of the mining companies invested in the project, resulting in half the population of Tumbler Ridge leaving when the major employer went bankrupt.

It is evident from these examples, including the Norwegian and the Russian cases, that the development of primary resources means a dependency on the world market, even if it seems that these industries are located in the remote and hinterland regions. Even the case of damming the Alta-Kautokeino river system in northern Norway seemed economically unsound once it was evident that there was little demand for the hydroelectric power coming from the Alta River; thus the anticipated development of the economies that were supposed to spring from it did not.

Particularly in the oil and gas development cases in Alaska and Siberia, the bulk of the monetary profits earned in the development of these hinterland regions usually went to the oil and gas companies and to the various levels of government. In Russia, in particular, residents who live closest to the oil- and gas-producing regions often complain that they are the last to benefit from the oil and gas profits being taken from their territories. Many indigenous Khanty, Mansi, and Yamalo-Nenets, for example, have low standards of living because of unemployment and under-employment, and yet, all around them, on their traditional territories, are the major sources of the Russian state's revenues. Hampered by the restrictions man-

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dated by the ANCSA, the Inupiat, on whose traditional territory encompasses the Prudhoe Bay oil and gas fields, have little say in the management of profits garnered by oil and gas companies and the State of Alaska. Indeed, these regions experience “severe economic leakage” (Bone 2003) as the natural resources from their territories are extracted and processed.

Resource and industrial development in the North is also characterized by population growth through migration. Many of the workers who are employed in the megaprojects are employed temporarily, especially in the larger construction projects, such as the building of hydroelectric dams. The example of oil and gas extraction in the North Slope illustrates that Prudhoe Bay has a mostly transient and impermanent population that moves in and out of the oil fields on a seasonal basis. While attempts to create more permanent towns, villages, and cities accompany some of these large industrial projects—as we have seen in the Tumbler Ridge case, as well as the Vestfjord Valley in Norway—once the economic reasons of employment fails or is downscaled, people tend to move out in search of better employment possibilities. While there is little impact on indigenous

communities in either of these cases, the social effects on non-indigenous populations are nonetheless significant, as families and workers are uprooted and are displaced, forced to resettle elsewhere in search of viable employment because of a downturn in the economy.

Megaprojects that led to long-term employment situations, such as in the Soviet/Russian and the Norwegian examples, result in a significant newcomer population that generally overwhelms the population numbers that existed prior to industrial development. In the Soviet/Russian case, the imbalance caused by the number of newcomers

compared with the indigenous peoples who live in these resource-rich hinterland regions has led to problems of political representation, as the Slavic European population’s interests supercedes those of the indigenous peoples. The influx of newcomers in the Soviet/Russian North and Siberia has also led to the growth of large cities, such as Surgut, Novy Urengoi (see Fig. 10.3), and Nizhnevartovsk, on what were once traditional territories of the northern Aboriginal peoples of this northwest Siberian region.

Massive industrialization projects in the North tend to have lasting effects on the environment. As we have discussed, the environmental damage done by the oil and gas industries in Alaska and Siberia has enormous consequences on the land, air, and water in the region. Waste from oil and gas exploration still litters the northwest Siberian bog and swamplands.



**Fig. 10.3** Novy Urengoi, Yamalo-Nenetsky Autonomous Okrug, in 1994. **Photo:** Courtesy of Aileen A. Espiritu

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Flooding of sensitive territories with the hydroelectric dams in Norway, most specifically in the Finnmark tundra plateaus of northern Norway can cause permanent environmental damage. With coal mining in the north-east interior of British Columbia, wastes from the open-pit mines polluted the water and has disrupted the environment. All of these environmental concerns have had an impact on both the wildlife habitat and the living spaces of indigenous and non-indigenous populations.

Whether northern industrial megaprojects have an effect on indigenous or non-indigenous populations, on northern and national economies, or on the environment, it is evident that decisions regarding industrial development in these northern and remote regions are made at the centres of power: in Juneau and Washington, D.C., for Alaska; in Victoria for Tumbler Ridge, British Columbia; in Christiania or Oslo for Norway; and in Moscow for Siberia. Economic decisions were—and are—bound up with politics. As each of these cases illustrate, whether based on provincial, territorial, or national interests, massive industrial development is still bound up with interests and concerns of the majority populations, populations who are largely unaffected by the social and environmental effects of these industrialization projects, but who most definitely benefit from the products of resource and industrial development in northern and remote regions.

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### Student Group Activity

This is a role-playing activity involving all course registrants, together. Forming four interest groups, each group is to make arguments for and/or against the industrial development of one of the four northern regions discussed in this module. List, and make arguments for, the demands of each of these groups:

- indigenous peoples
- environmentalists
- government
- industry

Engage your peers in an analytic discussion of the positions of each of these four interest groups. Can you sympathize with the interests of industry, of the government, of environmentalists, and of indigenous peoples?

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### Summary

Remarkably, whether in the modernizing period in the eighteenth century or the highly modern twentieth and twenty-first centuries, rapid and enormous industrialization projects have transformed the social, economic, and political lives of indigenous and non-indigenous populations. The industrialization drives that occurred in the Nordic countries, the Cana-

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dian North, Siberian Russia, and Alaska, especially after the First World War, also had significant effects on the environments in the hinterland. Examining the megaprojects in Prudhoe Bay, Tumbler Ridge region, the Alta–Kautokeino river system, and northwest Siberia, we have seen how they have transformed the social and political relations of populations and the environment in which they live.

While the range of political and economic systems extant in each of these examples vary from each other—democracy, communism, social democracy, capitalism, and mixed economies—the effects on indigenous and non-indigenous populations have been similar in scope and in intensity as populations struggle with problems of boom and bust economies, with environmental degradation, and with lack of decision-making powers in the periphery. Also common among the industrialization drives and megaproject development in the remote North is that, while they are in the peripheries of power, they are often the most affected by global economic shifts and, at times, international politics. Only in recent years have such concerns been addressed at the local, regional, and federal levels of politics as the populations who are most affected by such development voice their concerns to their elected representatives, to environmental groups, to federal politicians, and to international organizations.

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## Study Questions

1. What are the three underlying characteristics of economic activities in the North, according Robert M. Bone?
  2. What are the similarities and differences in the effects of industrial and resource development on the indigenous (Alaska, Norway, and Siberia) and the non-indigenous (Canada, Norway) populations of the North?
  3. What are the social, political, economic, and environmental impacts of industrial and resource development?
  4. What role do indigenous peoples in Alaska, Norway, and Russia play in the decision-making processes of industrial and resource development?
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