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The Russian Federation (the principal successor state to the Soviet Union), together with neighboring Belarus and the former Soviet satellite states in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) and the Transcaucasus (Armenia, Azerbaijan, and Georgia), constitute a vast world region (**Figure 4.1**). The Russian Federation alone stretches across eleven time zones, from St. Petersburg (just across the Gulf of Finland from Helsinki) in the west to Provideniya (just across the Bering Strait from Nome, Alaska) in the east. Altogether the Russian Federation amounts to 17,075,400 square kilometers (6,591,100 square miles)—roughly twice the size of the United States. The region as a whole amounts to a land mass of 21,024,210 square kilometers (8,115,340 square miles). It is the most sparsely settled of the major world regions, with a population of in 2000 of 232 million, 69 percent of whom live in urban areas, 43 of which have populations that exceed 500,000. The region is bounded to the north by the icy seas of the Arctic and to the south by a mountain wall that stretches from the Elburz Mountains of northern Iran through the Pamir Mountains and Tien Shan ("Mountains of Heaven") along the southern borders of the Central Asian countries, to the Altay and Sayan Mountains that separate Siberia from Mongolia, and the Yablonovyy and Khingan ranges that separate southeastern Siberia from northern China. The boundary to the east is the Pacific Ocean, while to the west, as we saw in Chapter 3, the boundary is political rather than physical, the former Soviet republics in the Baltic and the former satellite states of Eastern Europe having returned to their European orientation. The vast area covered by this world region is relatively sparsely settled, mainly because of the harsh climate, poor soils, and difficult terrain that characterize much of the region. The bulk of the population, in fact, is concentrated in the southern parts of European Russia, to the west of the Ural Mountains, which constitutes the heartland of the old Russian empire.

Figure 4.1 about here: map—political boundaries and major cities

ENVIRONMENT AND SOCIETY

A satellite photograph of the territory (**Figure 4.2**) suggests several of the fundamental attributes of this vast world region. First, its sheer size: more than 10,000 kilometers (6,200 miles) east-west and more than 2500 kilometers (1550 miles) north-south at its broadest. It takes a full week to traverse the region by train east-west from Vladivostok in the east to St. Petersburg in the west. Second, its northerliness: Nearly half of the territory of the Russian Federation is north of 60° N, while Moscow is approximately the same latitude as Juneau, Alaska, and Tbilisi, Georgia—one of the southernmost cities of the region—is approximately the same latitude as Chicago (42° N). A third important attribute suggested by Figure 4.2 is how restricted is the region's access to the world's seas. The northerliness of most of the region means that most ports are ice-bound during the long winter. Murmansk, on the Kola Peninsula in the far north, is a major exception. It benefits from its location near the tail end of the warm Gulf Stream and is open year round. Some ports, such as Vladivostok, on the Sea of Japan in the far east, can be kept open by ice-breakers. But at least the Russian Federation has some warm-water ports (including Kaliningrad, a small province on the Baltic between Poland and Lithuania, retained as an exclave by the Russian Federation because of its important naval port). All of the other countries in the region are land-locked, with the exception of Georgia, which has access to international sea lanes by way of its Black Sea ports.

Figure 4.2 about here—satellite photo of the region

The Black Sea itself is an inland sea, connected to the Aegean Sea and the Mediterranean by way of the Bosphorus, a narrow strait, the Sea of Marmara, and then another narrow strait, the Dardanelles. The many rivers that empty into the Black Sea give its surface waters a low salinity, but it is almost tideless and below about 80 fathoms it is stagnant and lifeless. The Caspian Sea is the largest inland sea in the world, at 371,000 square kilometers (143,205 square miles—roughly the size of Germany). With the Black Sea and the Aral Sea, it once formed part of a much greater inland sea. Though perhaps dwarfed by the vastness of the region, there are several inland lakes of significant size, including Lake Balkhash (17,400 square kilometers; 6,715 square miles) and Lake Baikal (30,500 square kilometers; 11,775 square miles), which with a depth of 1615 meters (5300 feet) is the deepest lake in the world.

The northerliness of the region limits the use of its rivers for navigation and for the generation of hydroelectricpower. Many rivers are frozen for much of the year, while the mouths of some remain frozen through the spring, causing backed-up meltwater to flood extensive areas of wetlands. Nevertheless, the sheer size of the territory sustains several rivers of considerable size, all of which were historically important as transport routes, allowing for conquest, colonization, and trade. It takes some of the longest rivers on Earth to drain the huge Siberian landmass.

Rising in the southern mountains of Central Asia, the Lena, Kolyma, Ob, and Yenisey flow north to the Arctic Ocean, while the Amur flows north to the Pacific. In the western part of the Russian Federation, the most important rivers flow south from the Central Region occupied by Moscow and Nizhniy Novgorod. The Dnieper flows south to the Black Sea, the Don to the Sea of Azov (which in turn connects to the Black Sea), and the Volga to the Caspian Sea. In the modern period, the Volga has become particularly important as a navigable waterway and source of hydropower, with huge reservoirs built during the Soviet era to regulate the flow of the river, conserving spring floodwaters for the dry summer months.

Climate

The northerliness and vast size of the region exert strong influences on its climate. The absence of mountainous terrain, except in the far south and east, and the lack of any significant moderating influence of oceans and seas, means that the prevailing climatic pattern is relatively simple. The region is dominated by a severe continental climate, with long, cold winters and relatively short, warm summers. The cold winters become colder eastward, as one moves away from the weak marine influence that carries over from the westerly weather systems that cross Europe from the Atlantic. Pronounced high-pressure systems develop over Siberia in winter, bringing clear skies and calm air. Average January temperature in Verkhoyansk, a mining center in the middle of this high-pressure area, are in the region of -50°C (-58°F). The northerliness of the region, with its long and intense winters, means that the subsoil is permanently frozen—a condition known as **permafrost**—in more than two-thirds of the Russian Federation. In the extreme northeast, winter conditions can last for ten months of the year.

Summer comes quickly over most of Belarus and the Russian Federation, spring being a brief interlude of dirty snow and much mud. Because many rural roads remain unpaved, they are typically impassable for a period in the spring, before the summer heat bakes the mud. As the land mass warms, low-pressure systems develop, drawing in moist air across the western Russian Federation from Atlantic Europe and resulting in moderate summer rains. In late summer, the Chinese **monsoon** brings heavy rains to the southeastern corner of the far east. Across much of Siberia, though, summer rainfall is quite low. The summers become hotter southwards, and drought is a frequent problem in the southwestern and southern parts of the Russian Federation. In Central Asia, aridity is a severe problem, with desert and semidesert covering much of Kazakhstan, Uzbekistan, and Turkmenistan.

In the Transcaucasus, climatic patterns are distinctive, mainly as a result of the presence of massive mountain ranges to the north and south and substantial bodies of water to both east and west. A lot of precipitation

falls on the windward side of the mountains, though the Transcaucasus is also influenced by the warm, dry air masses that originate over the deserts of Central Asia. The most distinctive feature of climatic patterns in the Transcaucasus, however, is the subtropical niche of western Georgia, on the shores of the Black Sea—a unique and striking feature in a region of otherwise severe climatic regimes.

Landforms and Landscapes

The most striking feature of the entire region is the monotony of its plains over thousands and thousands of kilometers. The reason for this monotony lies in the geological structure of the region. Two large and geologically ancient and stable shields of highly resistant crystalline rocks provide platforms for extensive plains of sedimentary material and glacial debris. In the west is the first shield, the Russian Plain, an extension of the Central European Plain that extends from Belarus in the west to the Ural Mountains in the east, and from the Kola Peninsula in the north to the Black Sea in the south (**Figure 4.3**). East of the Urals is a second shield that extends as far as the Lena River. It is so vast that it is conventionally divided into several physiographic subregions: the West Siberian Plain, the Central Siberian Plateau, and the plateaus of Central Asia. The Urals themselves represent a third distinctive physiographic region, and a fourth is the mountain wall that runs along the southern and eastern margins of the two shields.

Figure 4.3—map of physiographic regions/natural landscapes

The Russian Plain (**Figure 4.4**) has a gently rolling topography, the hard crystalline rock shield providing a flat platform that is covered by several meters or more of sedimentary deposits. Much of the Russian Plain is poorly drained, boggy, and marshy, though the major rivers that drain the Russian Plain—the Dneiper, the Don, and the Volga—have eroded the sedimentary layer in places, resulting in more varied and attractive topography. The West Siberian Plain is even flatter and contains still more extensive wetlands and tens of thousands of small lakes. Poorly drained by the slow-moving Ob' and Irtysh rivers (**Figure 4.5**), the West Siberian Plain (**Figure 4.6**) is mostly inhospitable for settlement and agriculture, though it contains significant oil and natural gas reserves. The West Siberian Plain is distinctive for its absolute flatness: across the whole broad expanse—more than 1800 kilometers (1116 miles) in each direction—relief is no more than 400 meters (1312 feet). The monotony of the landscape is captured in this quote from the Russian writer A. Bitov, describing a train journey:

Once I was travelling through the Western Siberian Lowlands. I woke up and glanced out of the window—sparse woods, a swamp, level terrain. A cow standing knee-deep in the swamp and chewing, levelly moving her

jaw. I fell asleep, woke up—sparse woods, a swamp, a cow chewing, knee deep. I woke up the second day—a swamp, a cow . . .”¹

The Yenisey River marks the eastern boundary of this flat condition and the beginning of the Central Siberian Plateau, where the rock shield, having been uplifted by geological movements, averages about 700 meters (2297 feet) in elevation. Stretching between 800 and 1900 kilometers (496 to 1178 miles) west-east, the Central Siberian Plateau (**Figure 4.7**) has been dissected by rivers into a hilly upland topography with occasional deep river gorges.

Figure 4.4—photo of Russian Plain

Figure 4.5—photo of W Siberian Plain

Figure 4.6—photo of River Ob

Figure 4.7—photo of Central Siberian Plateau

The Urals (**Figure 4.8**) consist of a once-great mountain range of ancient rocks that have been worn down over the ages. For the most part only 600 to 700 meters (1969–2297 feet) above sea level, and only in a few places rising above 2000 meters (6562 feet) in elevation, the Urals are penetrated by several broad valleys, and so they do not constitute a major barrier to transport. The Urals stretch for over 3000 kilometers (1864 miles) from the northern frontier of Kazakhstan to the Arctic coast of the Russian Federation, the range reappearing across the Kara Sea in the form of the islands of Novaya Zemlya. The rocks of the Urals are heavily mineralized and contain significant quantities of chromite, copper, gold, graphite, iron ore, nickel, titanium, tungsten, and vanadium. As a result, a number of significant industrial cities, including Chelyabinsk, Magnitogorsk, Perm, Ufa, and Yekaterinburg have developed in the Urals, together forming a major industrial region (see below, p. 000).

Figure 4.8—photo of Urals landscape

The mountain wall that runs along the southern and eastern margins of the two stable shields on either side of the Urals are the product of geological instability. Younger, sedimentary rocks have been pushed up against the older and more stable shields in successive episodes of mountain-building, forming a series of mountain ranges of varying height, composition, and complexity. The highest ranges are those of the Caucasus (where Mt. Elbrus reaches 5462 meters (18,510 feet)) and the Pamirs (**Figure 4.9**) and Tien Shan ranges along the borders with Iran, Afghanistan, and China (where many peaks reach 5000 to 6000 meters and two—Pobedy and Qullai Garmo (formerly Communism Peak) exceed 7400 meters (24,278 feet). In the far east, the ranges of the Kamchatka Peninsula contain numerous active volcanoes, including Mt. Klyuchevskaya (4750 meters; 15,584 feet) and Mt. Kamen (4632 meters;

¹ Bitov, A. *A Captive of the Caucasus*. Cambridge: Cambridge University Press, 1993, p. 50. Quoted in A. Novikov, “Between Space and Race: Rediscovering Russian Cultural Geography,” In M. J. Bradshaw (ed.) *Geography and Transition in the Post-Soviet Republics*. Chichester: Wiley, 1997, p. 45.

15,197 feet). Only in the western part of Central Asia does the mountain wall fall outside the region, running along the southern side of Turkmenistan's border with Iran and Afghanistan. North of this border, extending through Uzbekistan into Kazakhstan and beyond, is a huge geosyncline, a geological depression of sedimentary rocks. This syncline is of special importance as a source of energy resources, with oil reserves equivalent to between 15 and 31 billion barrels—about 2.7 percent of the world's proven reserves-- plus significant deposits of coal and about 7 percent of the world's proven reserves of natural gas.

Figure 4.9—photo of Pamir mountains

Landscapes and Environmental History

The natural landscapes of the Russian Federation, Central Asia, and the Transcaucasus follow a strikingly straightforward pattern of seven long, latitudinal zones that run roughly from west to east. These zones are very closely related to climate, glacial geomorphology, and soil type, and remain easily recognizable to the modern traveler, despite centuries (or, in places, millennia) of human interference and modification. The northernmost zone is that of the tundra, which fringes the entire Arctic Ocean coastline and part of the Pacific (Figure 4.3). The **tundra (Figure 4.10)** is an Arctic wilderness where the climate precludes any agriculture or forestry. Permafrost and very short summers mean that the natural vegetation consists of mosses, lichens, and certain hardy grasses. The tundra is not wholly hostile to life, however. It supports reindeer on its lichen, waterfowl on its many summer swamps and pools, and fish and walrus in its neighboring seas—resources that have been exploited for centuries by indigenous peoples and, more recently, Russians.

Figure 4.10—photo of tundra

South of the tundra is the most extensive zone of all—a belt of coniferous forest known as the taiga. The term **taiga** originally referred to trackless or virgin forest, though it is now used to describe the entire zone of boreal coniferous forest (spruce, fir, and pines, for example) that stretches from the Gulf of Finland to the Kamchatka Peninsula. Spruce is the dominant tree in the west, while larch trees do better on the poorly drained soils of Siberia and the far east (**Figure 4.11**). The indigenous inhabitants of the taiga were hunters and gatherers, not farmers. Where the forest is cleared, some cultivation of hardy crops such as potatoes, beets, and cabbage is possible, but the poor, swampy soils and short growing season make agriculture chancy. More recently the taiga has become commercially important for the fur-bearing animals whose luxuriant pelts are well adapted to the bitter cold, and for the forest itself, whose timber is now methodically exploited and exported.

Figure 4.11—photo of taiga

The next zone is a continuation of the mixed forests of central Europe that extend through Belarus and into the Russian Federation as far as the

Urals, with discontinuous patches in Siberia and the far east. Here, firs, pines, and larches are mixed with stands of birch and oak. It quickly shades into another relatively narrow zone, of wooded steppe. In this zone the grasslands of the steppe are interspersed with less extensive stands of mixed woodland, mostly in valley bottoms. Both the mixed forest and the wooded steppe were cleared and cultivated early in Russian history, providing both an agricultural heartland for the emerging Russian empire and a corridor along which Russian traders and colonists pushed eastwards in the sixteenth and seventeenth centuries—through the middle Volga region to the southern Urals and eventually to the Pacific coast via the mixed forests of the Amur valley.

The wooded steppe, in turn, quickly shades into the steppe proper: flat, treeless, and dominated by tall and luxuriant feather-grass, whose matted roots are able to trap whatever moisture as is available in this rather arid region (**Figure 4.12**). The accumulated and decayed debris of these grasses has produced a rich dark soil, known as black earth, or **chernozem**. These soils, along with related brown and chestnut soils, have high natural fertility, but when they are plowed they are vulnerable to the aridity of the region and can easily degenerate into wind-driven dustbowl conditions.

Figure 4.12—photo of steppe landscape

South of the steppe are zones of semidesert and desert. They are largely a feature of Central Asia, and they continue south of Siberia into Chinese and Mongolian territory. The semidesert is characterized by boulder-strewn wastes and salt-pans (areas where salt has been deposited as water evaporated from short-lived lakes and ponds created by runoff from surrounding hills), and patches of rough vegetation used by nomadic pastoralists. The desert proper is characterized by bare rock and extensive sand dunes, though there are occasional oases and fertile river valleys. Finally, as Figure 4.3 shows, there is a relatively tiny area of subtropical forest in western Georgia, adjoining the Black Sea coast.

RUSSIA, CENTRAL ASIA AND THE TRANSCAUCASUS IN THE WORLD

It should be clear from the previous section that huge tracts of this world region are decidedly marginal. Agriculture and settlement have been greatly restricted by severe climatic conditions, highly acidic soils, poor drainage, and mountainous terrain (**Figure 4.13**). Even in the zone of rich chernozem soils, low and irregular rainfall rendered agriculture and settlement marginal until large-scale irrigation schemes were introduced in the twentieth century. Only in the mixed forest and the wooded steppe west of the Urals were conditions suitable for the emergence of a more prosperous and densely settled population. It was this area, in fact—from Smolensk in the west to Nizhniy Novgorod in the east, and

from Tula in the south to Vologda and Velikiy Ustyug in the north—that was the Russian "homeland" that developed around the principality of Muscovy from late medieval times.

Figure 4.13 about here—map of agricultural regions with settlement superimposed

Muscovy and the Russian Empire

In the mid-fifteenth century, Muscovy was a principality of approximately 5790 square kilometers (2235 square miles) centered on the city of Moscow. Over a 400-year period, the Muscovite state expanded at a rate of about 135 square kilometers (52 square miles) per day so that by 1914, on the eve of the Russian Revolution, the Empire occupied more than 22 million square kilometers (roughly 8.5 million square miles), or one-seventh of the land surface of Earth (**Figure 4.14**). At first, Muscovy formed part of the Mongol-Tatar empire whose armies were known as the Golden Horde, and Russian princes were obliged to pay homage to the Khan, the leader of the Golden Horde. In 1552, under Ivan the Terrible, the Muscovites defeated the Tatars at the battle of Kazan—a victory that prompted the commissioning of the construction of St. Basil's Cathedral in Moscow (see Figure 4.29, p. 000).

Figure 4.14 -- Territorial Growth of the Muscovite/Russian State

Desirous of more forest resources—especially furs—Muscovy expanded into Siberia (see *Geographies of Indulgence, Desire and Addiction: Furs*). Gradually, more and more territory was colonized. By the mid-seventeenth century, the eastern and central parts of Ukraine had been wrested from Poland. The steppe regions, though, remained very much a frontier region of the Russian empire because of the constant threat of attack by nomads. Early in the eighteenth century, Peter the Great (1682-1725) founded St. Petersburg and developed it as the planned capital of Russia. Beyond the wealth and grandeur of a few cities, however, the Russian empire was very much a rural, peasant economy. In the latter part of the eighteenth century, under Catherine the Great (1762-1796), Russia secured the territory of what would eventually become southern Latvia, Lithuania, Belarus, and western Ukraine. Then, with the defeat of the Crimean Tatars in the late eighteenth century, the steppes were opened up to colonization by Russians and by ethnic and religious minorities—including Mennonites and Hutterites—from the Russian heartland. It was during this period that Russia ousted the Ottoman Turks from the Crimean Peninsula and gained the warm-water port city of Odessa on the Black Sea.

Geographies of Indulgence, Desire, and Addiction: Furs

Russia's imperial expansion followed the same impulses as other European empires. The factors behind expansion were the drive for more

territorial resources (especially a warm-water port) and additional subjects. Different for Russia, however, was that vast stretches of adjacent land on the Eurasian continent were annexed, whereas other empires established new territories overseas.

The final phases of expansion of the Russian state occurred in the late eighteenth and nineteenth century. Finland was acquired from Sweden in 1809 and given the status of Grand Duchy. In the Transcaucasus, Georgians and Armenians were "rescued" from the Turks and Persians. In Central Asia, the Moslem Khanates fell one by one under Russian control: the city of Tashkent in 1865, the city of Samarkand in 1868, the Emirate of Bukhara in 1868, and the Khanate of Khiva in 1873. Meanwhile, in the far east, the weakening of the Manchu dynasty, which had ruled China since 1664, prompted the Russian annexation of Chinese territory, where colonization and settlement was aided by the construction of the trans-Siberian railroad in the final years of the nineteenth century. By 1904, when defeat in Manchuria by Japan brought a halt to Russian territorial expansion, the Russian empire contained about 130 million persons, only 56 million of whom were Russian. Of the rest, which included more than 170 distinct ethnic groups, some 23 million were Ukrainian, 6 million were Belorussian, more than 4 million were Kazakh or Kyrgyz, nearly 4 million were Jews, and nearly 3 million were Uzbek.

To meet the challenge of different ethnicities under one state, Russia needed to apply binding policies and practices. Russia's strategies to bind together the 100-plus "nationalities" (non-Russian ethnic peoples) into a unified Russian state were oftentimes punitive and not at all successful. Non-Russian nations were simply expected to conform to Russian cultural norms. Those that did not were more or less persecuted. The result was opposition and, sometimes, rebellion and stubborn refusal to bow to Russian cultural dominance.

Meanwhile, ever since the time of Peter the Great, tsarist Russia had been seeking to modernize. By 1861, when Tsar Alexander II decreed the abolition of serfdom, Russia had built up an internal core with a large bureaucracy, a substantial intelligentsia, and a sizeable group of skilled workers. The abolition of feudal serfdom was designed to accelerate the industrialization of the economy by compelling the peasantry to raise crops on a commercial basis, the idea being that the profits from exporting grain would be used to import foreign technology and machinery. In many ways, the strategy seems to have been successful: grain exports increased fivefold between 1860 and 1900, while manufacturing activity expanded rapidly. Further measures in 1906, known as the Stolypin Agrarian Reform, helped to establish large, consolidated farms in place of some of the many small-scale peasant holdings. But the consequent flood of dispossessed peasants to the cities

created acute problems as housing conditions deteriorated and urban labor markets became flooded.

These problems, to which the tsars remained indifferent despite the petitions of desperate city governments, nourished deep discontent among the population. At the turn of the twentieth century, Russia was in the grip of a severe economic recession. Inflation, with high prices for food and other basic commodities, led to famine and widespread hardship, but there was no real mechanism for legitimately voicing the concerns and aspirations of the majority of the population. Unions were illegal, as were strikes. Nevertheless, riots spread across the countryside and, in 1905, after the embarrassing military defeat by the Japanese in Manchuria the previous year, there was a revolutionary outbreak of strikes and mass demonstrations. A network of grassroots councils of workers—called *soviets*—emerged spontaneously in order not only to coordinate strikes but also to help maintain public order. The unrest was eventually subdued by brute force, and the soviets were abolished. But the discontent continued, intensified if anything by the flood of dispossessed peasants to cities after the Stolypin Agricultural Reform of 1906. The First World War intensified the discontent of the population, as casualties mounted and the government's handling of both the armed forces and the domestic economy led to the socialist revolution of 1917.

The Soviet Empire

From the beginning, the state socialism of the Soviet Union was based on a new kind of social contract between the state and the people. In exchange for people's compliance with the system, their housing, education, and health care were to be provided by state agencies at little or no cost. This new social contract, though, had its roots in the traditional Russian traits of collectivism and authoritarianism. It was not the exploited peasantry or the oppressed industrial proletariat that emerged from the chaos of revolution to take control of this new system. It was the Bolsheviks, a dissatisfied element drawn from the former middle classes, whose orientation from the beginning favored a strategy of economic development in which the intelligentsia and more highly skilled industrial workers would play the key roles.

In the early years of the Soviet Union, the government took control over production, but the ravages of war and the upheavals of revolution made planned economic reorganization of any kind impossible. There were strict state controls on the economy, but these resulted as much from the need for national and political survival as from ideological beliefs. Similarly, it was rampant inflation that led to the virtual abolition of money, not revolutionary purism. By 1920, industrial production was only 20 percent of the prewar level, agricultural production was only 44 percent of the prewar level, and per capita national income stood at less than 40 percent of the prewar level.

In 1921, a New Economic Policy was introduced in an attempt to catch up. Central control of key industries, foreign trade, and banking was codified under *Gosplan*, the central economic planning commission. But in other spheres—and in agriculture in particular—a substantial degree of freedom was restored, with heavy reliance on market mechanisms operated by "bourgeois specialists" from the old intelligentsia. Improvement in national economic performance was immediate and sustained, with the result that recovery to prewar levels of production was reached in 1926 for agriculture and in 1927 for industry.

By the early 1920s, Nikolai Lenin, whose real name was Vladimir Ilich Ulyanov, the revolutionary leader and head of state, was also able to focus attention on the more idealistic aspects of state socialism. The Bolsheviks were internationalists, believing in equal rights for all nations and wanting to break down national barriers and end ethnic rivalries. Lenin's solution was recognition of the many nationalities through the newly formed Union of Soviet Socialist Republics (USSR). Lenin believed that a *federal system*, with *federal units* delimited according to the geographic extent of ethno-national communities, would ensure political equality among at least the major nations in the new state. A **federal state** allocates power to units of local government within the country. Federal states can be contrasted with a **unitary state**, in which power is concentrated in the central government. The Russian state under the tsar had been a unitary state. Federation was also a way of bringing reluctant areas of the former Russian Empire into the Soviet fold. The new federal arrangement recognized the different nationalities and provided them a measure of independence. Each of the ethno-national territories that comprised the Soviet Union had specific rights in a hierarchical political-administrative structure. The 15 Soviet Socialist Republics that stood at the apex of the system had, in theory, all of the rights of independent states. Below them in the hierarchy were 20 Autonomous Soviet Socialist Republics, 8 Autonomous Oblasts (regions), and 10 Autonomous Okrugs (areas) (**Figure 4.15**).

Figure 4.15 – map of Soviet republics etc

Lenin was optimistic that once international inequalities were diminished, and once the many nationalities became united as one Soviet people, the federated state would no longer be needed: Nationalism would be replaced by communism. Lenin's vision was short-lived, and, following his death in 1924, the federal ideal faded. Joseph Stalin, after eliminating several rivals, came to power in 1928 and enforced a new nationality policy, the aim of which was to construct a unified Soviet people whose interests transcended nationality. Although the federal framework remained in place, nations increasingly lost their independence and by the 1930s were punished for displays of nationalism. **Figure 4.16** shows the administrative units and nationalities

that were part of the USSR during Stalin's tenure as premier (1928-1953). Figure 4.16 also shows how, during and immediately after the Second World War, Stalin expanded the power of the Soviet state westward to include Albania, Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania, and Yugoslavia.

Figure 4.16 Soviet State Expansionism, 1940s and 1950s

Meanwhile, Soviet aspirations for an egalitarian society required the reshaping of the country's geography at every scale. Under Lenin, a number of visionary, utopian (and often impractical) architectural and city-planning schemes emerged, together with hundreds of new standards and norms that were designed to ensure an equitable allocation of resources. It was decided, for example, that there were to be 35 cinema seats per 1000 urban inhabitants; that the maximum journey-to-work time should be no more than 40 minutes; and that the optimal size of a city would be between 50,000 and 60,000 persons. Cities were to be planned in such a way as to provide a basic range of services to everyone, while at the same time engendering a sense of neighborliness and collective responsibility. The key organizational unit was to be the **mikrorayon**, a planned development with a radius of 300-400 meters (328-437 yards), accommodating 8000-12,000 people with a representative mix of the city's socioeconomic and ethnic groups, ample green space, perimeter thoroughfares with public transportation, day care, schools, and health services. Within each mikrorayon, the community would be organized into superblocks of 1000-1500 people living in standardized housing, with an allowance of 9 square meters of living space (97 square feet) per person.

While many of the utopian and visionary ideals of the 1920s were left on the drawing boards of Soviet planners, the mikrorayon concept came to inscribe a distinctive stamp on the character of Soviet cities: by the late 1980s, about one half of the Soviet urban population lived in a mikrorayon. The standardization of housing construction also left a very distinctive mark on Soviet urban landscapes. One of the great achievements of the Soviet era was the accommodation of the bulk of the population, formerly immiserated in substandard dwellings, in decent new sanitary housing. Nevertheless, the new prefabricated housing (**Figure 4.17**) was drab, uniform, and cramped, the norm of 9 square meters of living space per person remaining unchanged throughout the Soviet era.

Figure 4.17—photo of pre-fabricated housing

Collectivization and Industrialization

Under Stalin's leadership, there occurred a major shift in power within the Soviet Union. This power shift swept aside both the New Economic Policy and its "bourgeois specialists." They were replaced by a much more centralized allocation of resources: a command economy operated

by a new breed of engineers, managers, and *apparatchiks* (state bureaucrats) drawn from the new intelligentsia that had developed among the membership of the Communist Party. With this shift there came also a more explicit strategy for industrial development. In giving national economic and political independence the highest priority, the Soviet Union chose to withdraw from the capitalist world economy as far as possible, relying on the capacity of its vast territories to produce the raw materials needed for rapid industrialization. The foundation of Stalin's industrialization drive was the collectivization of agriculture. The capital for creating manufacturing capacity and the required infrastructure and educational improvements was to be extracted from the agricultural sector. This involved the compulsory relocation of peasants into state or collective farms, where their labor was expected to produce bigger yields. The state would then purchase the harvest at relatively low prices so that, in effect, the collectivized peasant was to pay for industrialization by "gifts" of labor.

In the event, the Soviet peasantry proved reluctant to make these gifts, and it proved very difficult to organize them. Government requisitioning parties and inspectors were met with violence, passive resistance, and the slaughter of animals. At this juncture Stalin employed police terror to compel the peasantry to comply with the requirements of the Five-Year Plans that provided the framework for his industrialization drive. Severe exploitation required severe repression. Dissidents, along with enemies of the state uncovered by purges of the army, the bureaucracy, and the Communist Party provided convict (*zek*) labor for infrastructure projects. Altogether, some 10 million people were sentenced to serve in the *zek* workforce, to be imprisoned, or to be shot. The barbarization of Soviet society was the price paid for the modernization of the Soviet economy.

The Soviet economy *did* modernize, however. Between 1928 and 1940 the rate of industrial growth increased steadily, reaching levels of over 10 percent per year in the late 1930s: growth rates that had never before been achieved and that have been equaled since only by Japan (in the 1960s) and China (in the 1990s). The annual production of steel had increased from 4.3 million tons to 18.3 million tons; coal production had increased nearly five times; and the annual production of metal-cutting machine tools had increased from 2,000 to 58,400. An industrial revolution in the Western sense had been passed through in one decade. When the Germans attacked the Soviet Union in 1941 they took on an economy that in absolute terms (though not *per capita*) had industrial output figures comparable with their own.

The Second World War cost the Soviet Union 25 million dead, the devastation of 1700 towns and cities and 84,000 villages, and the loss of more than 60 percent of all industrial installations. In the aftermath, the Soviet Union gave first priority to national security. The *cordon sanitaire*

of independent East European nation states that had been set up by the Western nations after the First World War was appropriated as a buffer zone by the Soviet Union. Because this buffer zone happened to be relatively well-developed and populous it also provided the basis of a Soviet empire—the Soviet bloc—as an alternative to the capitalist world economy, thus providing economic as well as military security.

But the Soviet Union felt vulnerable to the growing influence and participation of the United States in world economic and political affairs, and Stalin soon felt compelled, in 1947, to intervene more thoroughly in Eastern Europe. In addition to the installation of the "iron curtain" that severed most remaining economic linkages with the West, this intervention resulted in the complete nationalization of the means of production, the collectivization of agriculture, and the imposition of rigid social and economic controls in all of the East European satellite states. The Communist Council for Mutual Economic Assistance (CMEA, better known as COMECON) was also established to reorganize the Eastern European economies in the Stalinist mold—with individual members, each pursuing independent, centralized plans for economic self-sufficiency. This proved unsuccessful, however, and in 1958 COMECON was reorganized by Stalin's successor, Nikita Khrushchev. The goal of economic self-sufficiency was abandoned, mutual trade among the Soviet bloc was fostered, and some trade with Western Europe was permitted.

Meanwhile, the whole Soviet bloc gave high priority to industrialization. Between 1950 and 1955, output in the Soviet Union grew at nearly 10 percent per year, though it subsequently fell away to more modest levels. In addition to their desire for rapid growth, Soviet economic planners sought to follow three broad criteria in shaping the economic geography of state socialism. First was the idea of technical optimization. Without free markets to provide competitive cost-minimization strategies, Soviet planners had to organize industry in ways that ensured both internal and external economies. Perhaps the most striking result of this was the development of **territorial production complexes**, regional groupings of production facilities based on local resources that were suited to clusters of interdependent industries: petrochemical complexes, for example, or iron-and-steel complexes (see **Figure 4.18**). Second was the idea of fostering industrialization in economically less-developed subregions, such as Central Asia and the Transcaucasus. A third consideration was secrecy and security from external military attack. This criterion led to some military-industrial development in Siberia and to the creation of scores of so-called secret cities—closed cities, where even the inhabitants' contacts with relatives and friends were strictly controlled because of the presence of military research and production facilities.

Figure 4.18 map of industrialized areas

Soviet regional economic planners also sought to ameliorate many of the country's marginal environments through ambitious infrastructure schemes. Stalin insisted that it must be feasible to harness and transform nature through the collective will and effort of the people. As a result, plans were drawn up to reverse the flow of major rivers and divert them to feed irrigation schemes. There were also plans to ameliorate local climatic conditions in steppe regions through vast plantings of trees in shelter-belts. The prohibitive cost of these grandiose schemes kept most of them on the drawing board, but nevertheless the tendency to undertake civil engineering projects of heroic scale lasted through most of the Soviet era, resulting in some dramatic examples of the mismanagement of natural resources (see *Environmental Challenges*, p. 000).

By the 1960s, the Soviet Union had clearly demonstrated its technological capabilities with its manned space program and the production of some of the world's most sophisticated military hardware. These successes were paralleled by the Soviet Union's geopolitical influence. The Soviet Union not only had an extensive nuclear arsenal but also an ideological alternative to the capitalist and imperialist ideology that had created peripheral regions throughout much of the world. Armed with these, the Soviet Union posed a very real threat to U.S. hegemony, waging a Cold War that between 1950 and 1989 provided the principal framework for world affairs. In that period, Soviet influence caused significant tension and a succession of geopolitical crises in many regions of the world, including much of the Middle East, South Asia, East Asia, Southeast Asia, and parts of South America (Chile), Central America (Nicaragua and Panama), and Africa (Angola, Libya, and Egypt).

Yet throughout most of the Soviet Union itself millions of peasants worked with primitive and obsolete equipment as they toiled to meet centrally planned production targets. Most nonmilitary industrial productivity was also constrained by technological backwardness and by cumbersome and bureaucratic management systems. A second, informal or shadow economy of private production, distribution, and sale emerged, and it was largely tolerated by the government—mainly because without it the formal economy would not have been able to function as well as it did. By the 1970s, the Soviet economic system was steadily being enveloped by an era of stagnation.

The Breakup of the Soviet Empire

By the 1980s, the Soviet system was in crisis. In part, the crisis resulted from a failure to deliver consumer goods to a population that had become increasingly well-informed about the consumer societies of their foreign enemies. Persistent regional inequalities also contributed to a loss of confidence in the Soviet system as an alternative mode of economic development. The cynical manipulation of power for personal gain by ruling elites, and the drain on national resources from the arms race with

the United States also undoubtedly played some role in undermining the Soviet model. The critical economic failure, however, was state socialism's inherent inflexibility and its consequent inability to take advantage of the new computerized information technologies that were emerging elsewhere.

Surprising even the most astute observers, the Soviet system unraveled rapidly between 1989 and 1991, leaving 15 independent countries as successors to the former USSR. As we saw in Chapter 3, the former states of Yugoslavia and Czechoslovakia were broken up into smaller entities; East Germany was absorbed into Germany; Hungary, Poland, and the Baltic states (Estonia, Latvia, and Lithuania) were drawn rapidly into the European Union's sphere of influence; and Moldova and Ukraine began to show signs of a westward orientation. Meanwhile, Belarus, the Russian Federation, and the states of Central Asia and the Transcaucasus are now experiencing somewhat chaotic transitions, at different speeds, toward market economies. In the process, all local and regional economies have been disrupted, leaving many people to survive by supplementing their income with informal activities such as street trading and domestic service (see *Day in the Life*: Valeri Novikov).

Day-in-the-Life Feature: Valeri Novikov

New Realities

For the Russian Federation, the principal successor state to the Soviet Union, these changes have greatly weakened its position in the world. Although still a nuclear power with a large standing army and a vast territory containing a rich array of natural resources, the Russian Federation is economically weak and internally disorganized. The latter years of the Soviet system left industry in the Russian Federation with obsolete technology and low-grade product lines, epitomized by its automobiles and civilian aircraft. Similarly, the infrastructure inherited by the Russian Federation's economy is shoddy—and often downright dangerous, as witnessed by the Chernobyl disaster of 1986, when a nuclear power plant in Ukraine exploded, causing a runaway nuclear reaction and widespread radiation pollution (see p. 000). Investment in the development of computers and new information networks was deliberately suppressed by Soviet authorities because, like photocopiers and fax machines, computers were seen as a threat to central control. As a result, the Russian Federation's economy now faces a massive task of modernization before it can approach its full potential. Overall, the economy of the Russian Federation shrank by between 12 and 15 percent each year between 1991 and 1995, and by between 5 and 10 percent each year between 1996 and 2000. Foreign capital has flowed into the Russian Federation, but it has been targeted mainly at the fuel and energy sector, natural resources, and raw materials (which now account for about half of the Russian Federation's total exports) rather than manufacturing industry. By the end of the 1990s, the Russian Federation's economy was

in crisis. About one half of the government's budget revenue was being absorbed by the cost of repaying debts to creditor nations; the rate of inflation had reached 100 percent; and economic output had plunged to about one-half that of 1989.

At the same time, there looms the equally massive task of establishing the institutions of business and democracy after 70 years of state socialism, the Russian Federation has been unable to create some of the essential pillars of a market economy. The institutional framework for the legal enforcement of private contracts and effective competition is still rudimentary. Another major weakness has been public finances. A system of fair and efficient tax collection has yet to be put in place, while the relationship between federal and state taxes and spending has remained obscure. Meanwhile, by allowing itself to fall into arrears on its own debts, the government has contributed to the growth of an arrears culture across all sectors of the economy. Widespread theft of state property and the collapse of constitutional order have undermined respect for the law, and organized crime has flourished amid the factionalism and ideological confusion of the government. Meanwhile, real wages for most people have already fallen to 1950s levels.

In an attempt to counter some of the economic disruption caused by the political disintegration of the Soviet Union, several of the successor states agreed to form a loose association, known as the Commonwealth of Independent States (CIS). The CIS was designed to provide a forum for the discussion of the management of economic and political problems, including defense issues, cooperation in transport and communications, the creation of a regional trade agreements, and environmental protection. The founder members were the Russian Federation, Belarus, and Ukraine, and they were soon joined by the Central Asian and Transcaucasus states. Meanwhile, however, the reorientation of the Baltic and East European states toward Europe and the imminent prospect of European Union and NATO membership for some of these states has not only undercut the economic prospects of the CIS (which has never really blossomed) but has also weakened the geopolitical security of the Russian Federation. In response, the leadership of the Russian Federation has asserted that country's claims to a special sphere of influence in what it calls the **Near Abroad**: the former components of the Soviet Union, particularly those countries that contain a large number of ethnic Russians. The Russian Federation is clearly finding it problematic to adjust to a new role in the world. But although embarrassed by the disintegration of the Soviet Union and bankrupt by the subsequent dislocation to economic development, the Russian Federation is still accorded a great deal of influence in international affairs, and may yet eventually reemerge as a major contender for world power.

THE PEOPLES OF RUSSIA, CENTRAL ASIA, AND THE TRANSCAUCASUS

A distinctive characteristic of this world region as a whole is the relatively low density of its population. With a total population of some 232 million and almost 14 percent of Earth's land surface, the Russian Federation, Central Asia, and the Transcaucasus contains about 3.8 percent of Earth's population at an overall density of only 11 persons per square kilometer, (28 per sq. mile). The highest national densities—123 per square kilometer (km²) in Armenia, 87 per km² in Azerbaijan, and 79 per km² in Georgia—approximate the population densities of Colorado, Kansas, and Maine. Within the Russian Federation there is a core of relatively high population density (between 40 and 60 per km²) that corresponds to the region of mixed forest and the wooded steppe west of the Urals. In contrast, population density in much of the far north, Siberia, and the far east stands at less than 1 person per km², about the same as in the far north of Canada. Levels of urbanization reflect this same broad pattern. Most of the large cities are in the European part of the Russian Federation and in the Urals. These include Moscow, Nizhniy Novgorod, St. Petersburg, Volgograd, and Yekaterinburg (**Table 4.1**). Most of the other cities of the Russian Federation that are of any significant size are found in southern Siberia, on or near the Trans-Siberian Railway. Overall, both Belarus and the Russian Federation are quite highly urbanized, with 72 and 76 percent of their total populations living in cities, according to their respective census counts in the mid-1990s. The populations of the Transcaucasus are moderately urbanized (56 to 69 percent living in cities), while those of Central Asia are more rural (only 30 to 50 percent living in cities).

Table 4.1 Major cities--population

Overall, this is a world region with a relatively slow-growing population. Throughout the twentieth century there was a general decline in both birth and death rates (**Figure 4.19**). In the 1990s, the population began to register a decline as a result of an excess of deaths over births. Viewed in greater detail, it is clear that this is a trend that masks some important regional differences. In Belarus and the Russian Federation, population growth has for a long time been relatively modest, and it is in these countries that recent declines have been most pronounced. In contrast, in Central Asia and the Transcaucasus, birth rates have historically been relatively high, and rates of natural increase remain at a level comparable with those in South Asia and Southeast Asia.

Figure 4.19 graph of 20th century birth/death rates

Both the First World War and the Second World War resulted in huge population losses that are still reflected in the age-sex profile of the Soviet Union (**Figure 4.20**). It was not until the 1960s, however, that rates of natural population increase in the Soviet empire began to decrease

significantly on a long-term basis (Figure 4.18). At the beginning of the 1960s, birth rates fell sharply as a result of a combination of the legalization of abortion, a greater propensity to divorce, planned deferral of marriage among the rapidly expanding urban population, and a growing preference to trade off parenthood for higher levels of material consumption. At about the same time, there began a steady rise in death rates, which increased sharply after the breakup of the Soviet empire. The reasons for this increase in death rates are several. Deteriorating health care systems and the worsening health of mothers have contributed to an escalation of infant mortality rates. Meanwhile, public health standards have generally deteriorated, environmental degradation has intensified, and the rate of industrial accidents and alcohol-related illnesses has increased. By 1999, the average life expectancy of those born in the Russian Federation had slipped from the mid-1980s peak of 70.1 years to 66.5.

Figure 4.20 age-sex pyramid for Soviet Union

The Peoples of the Region

The last census count of the Soviet Union in 1989 acknowledged 92 distinct ethnic groups. Dominant today throughout Belarus and the Russian Federation are Slavic peoples, among whom Russians represent one particular ethnic group. The hearth area of the original Slav tribes was in the Danubian lands of present-day Hungary and Bulgaria. During the middle centuries of the first millennium A.D. these tribes spread outward to occupy a vast swathe of the continent, extending to the Elbe River in Germany, to the Baltic and Adriatic seas, and the Gulf of Corinth, and eastwards into the mixed forest and wooded steppe of present-day Ukraine, Belarus, and the Russian Federation. In the course of these great waves of migration, the Slavs split into three main branches: western (including Czechs, Poles, and Slovaks), southern (including Serbians, Serbo-Croats, and Slovenes), and eastern (the East Slavs, subdividing only in the late Middle Ages into Belarussians, Russians, and Ukrainians).

The Slavs are fundamentally defined by linguistic commonalities rather than territorial, racial, or other attributes. The Slavonic group of languages forms one of the major components of the great Indo-European language family, whose speakers range from north India (Hindi and Urdu) through Iran (Farsi) and parts of Middle Asia (Tajik) to virtually the whole of Europe. Written language came late to the Slavs, and when it did it was the deliberate effort of two missionaries—Constantine (later, as a monk, called Cyril) and Methodius—who were sent by the ninth-century Byzantine emperor Michael III to the Slavic nation of Greater Moravia (which occupied much of present-day Hungary, Germany, Slovakia, and the Czech Republic) in order to spread the Scriptures. The new alphabet that Constantine/Cyril devised in order to accommodate Slavonic speech sounds became known as the Cyrillic alphabet. As **Figure 4.21** shows, Slavonic-speaking peoples correspond to the most densely

settled parts of the region, extending eastwards along the zone of wooded steppe and steppe to the far east.

Figure 4.21 map of languages

A second important language group is that of Turkic languages, which belong to the Altaic family of languages. These are spoken by the peoples of Central Asia and parts of the Transcaucasus, and were spread into Russia itself through the Tatar invasion and period of rule (c. A.D. 1240-1480). Much of northern and eastern Siberia is occupied by peoples who speak other branches of the Altaic language group, while in the far east are peoples whose languages are part of the Paleo-Siberian language family, including Gilyak and Koryak. Finally, there are several smaller areas of Caucasian languages: Abkhaz and Chechen on the northern slopes of the Caucasus, and Georgian and Dagestani languages in the Transcaucasus.

The Russian Diaspora and Migration Streams

The spread of the Russian empire from its hearth in Muscovy took Russian colonists and traders to the Baltic, Finland, Ukraine, most of Siberia, the far east, and parts of Central Asia and the Transcaucasus. In the late nineteenth and early twentieth centuries, many Russians joined the stream of emigrants headed toward North America. Concentrations of Russian immigrants developed in Chicago, New York, and San Francisco. They were joined by others who fled the civil war and Bolshevik revolution of 1917. More recently, in the first 5 years after the breakup of the Soviet Union, the United States resettled nearly 250,000 refugees from the former Soviet Union, mostly from Russia. Over a quarter of these immigrants have settled in New York City, the majority in Brooklyn, where distinctive Russian exclaves, such as the Brighton Beach neighborhood of southern Brooklyn, have emerged as vital nodes in the Russian global diaspora.

With the rise of the Soviet empire, many Russians were directed and encouraged to settle in the Baltic, Ukraine, Siberia, the far east, Central Asia, and the Transcaucasus—partly in order to further the Stalinist ideal of a transcendent Soviet people, and partly to provide the workers needed to run the mines, farms, and factories required by Soviet economic, strategic and regional planners. By the time of the breakup of the Soviet Union, 80 percent or more of the population of Siberia and the far east were Russian, and the Russian diaspora had become very pronounced in most of the Soviet Union's successor states beyond the borders of the Russian Federation.

In 1989, without any sense of ever having emigrated from their homeland, some 25 million Russians suddenly found themselves to be ethnic minorities in newly independent countries (**Table 4.2**). The largest number was in Ukraine, where over 11.3 million Russians made up 22

percent of the population of the new state. In Kazakhstan, Russians represented nearly 38 percent of the population. Overall, the sudden collapse of the Soviet Union created havoc in the lives of many families, who suddenly found themselves living "abroad." During the 1990s, a good number of them decided to migrate back to the Russian Federation. In the Transcaucasus, where the proportion of Russians was generally lower than elsewhere, strongly nationalistic governments of the successor states quickly enacted policies that encouraged Russians to leave: reducing the number of Russian-language schools, for example. In Central Asia too, nationalistic policies were enacted with similar effect. Kyrgyzstan, Turkmenistan, and Uzbekistan dropped the use of the Cyrillic alphabet, deliberately creating institutional barriers for Russian speakers. Civil war in Tajikistan led to the departure of 80 percent of that country's Russian-speaking population within just 3 years of its independence from the Soviet Union. About 17 percent of the Russian population of Kyrgyzstan departed in that same period, mainly because of the withdrawal of the Russian Federation's defense industry enterprises and military installations. Altogether, almost 4 million ethnic Russians migrated to the Russian Federation from the other Soviet successor states between 1989 and 1999.

Table 4.2 Russian population of Soviet successor states

Meanwhile, an even greater number of people emigrated from the Russian Federation and the other successor states to countries elsewhere in the world. The annual loss, at about 100,000 per year, is not particularly significant in terms of raw numbers. What is significant, however, is the fact that the most are well-educated individuals, and some are among the most talented. The countries of the former Soviet Union have thus been suffering something of a "brain drain," with the principal beneficiaries being Germany, Israel, and the United States.

Nationalisms

The prelude to the breakup of the Soviet Union involved not only a massive restructuring of the Soviet economy through radical economic and governmental reforms (*perestroika*) but also the direct democratic participation of the republics in shaping these reforms through open discussions, freer dissemination of information, and independent elections (*glasnost*). Both *perestroika* and *glasnost* were initiated by Mikhail Gorbachev when he became the Soviet leader in 1985. *Glasnost* resulted in the removal of restrictions that had been placed on the legal formation of national identity by Stalin. By 1987, grassroots national movements were already emerging, first in the Baltic republics and later in the Transcaucasus, Ukraine, and Central Asia. In 1989 *perestroika* and *glasnost* together culminated in the breakup of the Soviet Union. The Soviet Union's federated structure enabled the relatively peaceful breakup of the country, but the demise of a strong central government and the exhaustion of state socialism as an ideology opened the way for a

reemergence of nationalist political identities based upon ethnic divisions. At the same time, the end of the Cold War meant that localized territorial disputes between ethnic groups no longer had to be suppressed for fear that they might spark a world war .

Within the Russian Federation, there are approximately 27 million non-Russians. This number encompasses 92 different ethno-national groups (though 25 of these groups include minority peoples of the north, who together number less than 200,000). Although most of the larger ethno-national groups enjoy a fair degree of administrative territorial autonomy within the Russian Federation, secessionist and irredentist claims are numerous (**Figure 4.22**). One of the most troubled regions is the North Caucasus, a complex mosaic of mountain peoples with strong territorial and ethnic identities. Soon after the breakup of the Soviet Union, Ingushetia broke away from the Chechen-Ingush Republic, and Chechnya promptly declared independence from the Russian Federation (see *Geography Matters: Chechnya*, p. 000). The Ingush themselves have irredentist claims to parts of neighboring North Ossetia; while the autonomous oblast of South Ossetia, in Georgia, declared its intent to secede from Georgia and unite with North Ossetia in the Russian Federation—a move that resulted in a brief civil war in 1992. Beyond the North Caucasus, the two most powerful nationalisms are in Tatarstan (where Tartars have irredentist claims on neighboring Bashkortostan) and in the area around Lake Baikal (where ethnic Buryats have called for the reunification of the Ust'-Ordin and Agin Buryat autonomous okrugs with the Republic of Buryatia).

Figure 4.22 map of secessionist/irredentist claims
Geography Matters: 4.1: Chechnya

In the Transcaucasus, the big trouble spot is the region of Nagorno-Karabakh, in Azerbaijan. For many years, this region had been dominated by Armenians. At one time the region's population had been about 90 percent Armenian. By the mid-1980s the population of Nagorno-Karabakh was still more than 75 percent Armenian, and glasnost brought the opportunity for them to formally petition for secession from Azerbaijan. When the petition was refused, pent-up anger was unleashed in both Azerbaijan and Armenia against ethnic minorities from the other state. Riots, pogroms, and forced migrations quickly led to civil war, the outcome of which was that Armenian military forces secured Nagorno-Karabakh and established a militarized corridor as a lifeline to Armenia. Russian Federation armed forces were invited to serve a peacekeeping role in the region, and today a tense standoff prevails. The situation is of broad international interest because Nagorno-Karabakh stands in the path of a planned pipeline to carry oil from U.S. and European companies' oilfields in the Caspian Sea to the Black Sea at Supsa, Georgia.

Glasnost also led to an evanescence of ethno-national movements in Central Asia. Tajikistan has been beset by conflict between Tajik and Uzbek "patriots." A brief civil war was ended in 1993 when the ruling government accepted intervention by the Russian Federation, acting to assert its claims to a special sphere of influence in the Near Abroad. Tajikistan now relies on the Russian Federation army to defend its borders. Since 1993 there have been frequent military skirmishes with a force of some 5000 rebels who are based in Afghanistan with the tacit support of the Afghan government and the active support of Islamic fundamentalists. Elsewhere in Central Asia, one of the most complex regions of ethno-national movements and irredentism is in the Fergana Valley, where Tajik, Kyrgyz, and Uzbek nationalists living in areas outside, but adjacent to, their homeland states have called for the redrawing of international borders.

REGIONAL CHANGE AND INTERDEPENDENCE

The breakup of the Soviet Union has thrust the entire region into an extended period of change and readjustment. Although the apparatus of state socialism was quickly dismantled in the early 1990s, the transition to new forms of economic organization and new ways of life is still very much under way. No society has ever attempted to make this kind of transition before, and contriving the transition to democratic societies based on free markets with society still intact and without severe disruption to social and environmental well-being in certain places and regions is proving very difficult.

The new, post-Soviet states have joined the capitalist world system in semiperipheral roles, and all of them have to find markets for uncompetitive products while at the same time engaging in domestic economic reform. Inevitably, patterns of regional interdependence have been disrupted and destabilized. The transition from state socialism to market economies involves a complex set of processes that revolve around liberalization, stabilization, privatization, and internationalization of the economy. Among the key elements of these processes are the elimination of state-regulated price controls, the convertibility of currency, the withdrawal of state agencies from economic ownership in all except strategic fields, the development of a private entrepreneurial culture, the opening up of foreign trade and investment, and participation in international economic organizations. All of these require radical changes in institutional, organizational and technological structures and processes, along with equally radical changes in political and cultural life and in the behavior and lifestyles of different socioeconomic groups.

The ethno-national movements described in the previous section represent one of the major regional dimensions of the problems involved

in the transition from command economies to market democracies. If democracy is to flourish, the new states must be able to guarantee territorial integrity, physical security, and effective governance. In some regions, secessionist and irredentist tensions are clearly undermining these preconditions for democracy. A second and more widespread problem concerns the vitality of civil society. **Civil society** involves the presence of a network of voluntary organizations, business organizations, pressure groups, and cultural traditions that operate independently of the state and its political institutions. A vibrant civil society is an essential precondition for pluralist democracy. The Soviet state did not tolerate a civil society. During the period of glasnost, autonomous social movements did emerge in some of the coalfield regions and cities of the Soviet Union, and they played a key part in challenging the legitimacy and moral authority of the Soviet state. Since the breakup of the Soviet Union, however, such movements have lost energy and focus, and civil society has begun to flourish only in those parts of the former Soviet empire that have reoriented themselves toward Europe. In the countries covered in this chapter, civil society is emerging only slowly, and in some regions—especially in Central Asia—democratic reform has been so limited that the emergence of civil society has been hard to detect.

Problems of Economic and Social Transformation

One immediate consequence of the breakup of the Soviet Union was that the collective natural resource base was fragmented among the new states. The states of Central Asia and the Transcaucasus were particularly affected, their smaller territories and less varied physiography leaving each of them with a relatively narrow resource base—though the oil and natural gas reserves of Central Asia are a major asset. The Russian Federation still has a huge resource base, but it has lost free access to these oil and gas reserves and to the large uranium reserves of Tajikistan and Uzbekistan. In addition, all sorts of problematic trans-border issues emerged. Take, for example, the case of the small Russian Federation town of Ivan Gorod, located just east of the border with Estonia.

Until the breakup of the Soviet Union, Ivan Gorod (population c. 13,000) was a sister city of Narva, which is located just across the Narva River, which now separates the Russian Federation and Estonia. When Estonia freed itself from the Soviet Union, Ivan Gorod fell within the territory of the Russian Federation. The local waterworks and sewage plant were in Narva, and on independence the Estonians contracted to provide water and treat sewage for Ivan Gorod at an agreed price, until Ivan Gorod could open its own plant. Over the next 8 years the citizens of Ivan Gorod watched as their neighbors in Narva began to prosper, to open factories, and to acquire new German and Swedish automobiles and Finnish clothing. Meanwhile, in Ivan Gorod, factories that had made pipe, cloth bags, and typographical machinery all closed, leaving fully half of the working-age population unemployed. Food was cheaper in Narva, and

the Russians took their meager earnings there to look for bargains. By 1998, Ivan Gorod's economy was in ruins, there was no sign of any new water or sewage plant, and the town had accumulated \$1 million in unpaid bills for water and sewage treatment. In 1999, the Estonians finally cut off the supply of drinking water and stopped treating Ivan Gorod's sewage, with the result that raw waste now pours into the Narva River.

In addition to trans-border problems, a great deal of regional change has been triggered by the transformation from state socialism to market economies. It should be stressed that these changes have been very uneven in their impact, simply because market reform itself has been uneven, both from one economic sector to another and from one state to another. In broad terms, market reforms took place more rapidly, and were more extensive, in the Russian Federation. At the other extreme were the states of the Transcaucasus, where political leadership has been more conservative and less reform-minded. In Central Asia, the pattern is mixed: Kyrgyzstan and Kazakhstan began the post-Soviet period with pro-reform governments, but only Kyrgyzstan has achieved a significant degree of transition toward free markets. Elsewhere in Central Asia, economies remain largely state-run, with many former establishment Communists retaining government posts and continuing to pursue socialist policies.

Among the first components of post-Soviet economic systems to be privatized were retail trade and public catering enterprises. In the Russian Federation the tempo of privatization was left very much to the discretion of local authorities, who were the "owners" of these facilities under the Soviet system. The most rapid privatization took place in the largest cities, especially those in the western part of the federation, including Moscow and St. Petersburg. The privatization of manufacturing industry took longer to organize, mainly because the Russian Federation wanted to avoid making state assets available to foreign investors at firesale prices. Vouchers worth 10,000 rubles (equivalent to about twice the average monthly income) were given to each of the Russian Federation's nearly 150 million citizens, to be saved, sold or invested. The idea was that a new class of property owners would be created, along with an instant stock market.

In practice, the vouchers were promptly devalued as millions of citizens sought to sell their allocation. Banks and a relatively small number of investors accumulated the bulk of the vouchers, and used them to purchase those state enterprises with the greatest profit potential. As a result, the privatization of industry has been very uneven. There remain significant pockets of collectively owned and state-run enterprises, many of them inefficient and under-capitalized. Meanwhile, the growing private sector in retailing and services has been only loosely regulated,

resulting in some rapacious aspects of everyday life (see *Geography Matters: Moscow's Taxis*, p. 000).

Geography Matters: Moscow's Taxis

In the countryside, market reform has meant dismantling the collective and state farms, and in some regions large farms have been de-collectivized and split into a multitude of small holdings of just a few hectares each, leading to significant changes in rural landscapes. A good example is provided by the countryside surrounding the village of Chocti, in Georgia (**Figure 4.23**). In general, however, rural reform has been slow. Most of the land remains under collective ownership, and there have been relatively few progressive changes in farming practice. Shortages of machinery are an obstacle to the modernization of agriculture: It has been estimated that fully half of the tractors, combine harvesters, and plows in the Russian Federation were out of order in 1999. Output of agricultural products has fallen everywhere, as people have turned to semi-subsistence forms of farming as an insurance against the risks of post-Soviet transition. A 1999 report issued by the Russian Federation's ministry of agriculture showed that the extent of farmland shrank by 35.2 million hectares, to 83.5 percent of the 1990 level. Years of out-migration by the young and enterprising have left behind a population that is frequently elderly and conservative, used to the Soviet way of doing things and unwilling or unable to take the risk of establishing private farms. Both politically and socially the countryside remains very conservative and is still dominated by farm managers and officials who derive from the old regime. Meanwhile, decision making in those enterprises that have been privatized tends to occur within a rather vague institutional and legal environment, with limited accountability either to shareholders or to government. As in other sectors of the economy, this has provided enormous scope for crime and corruption (see *Geography Matters : Crime and Corruption*, p. 000).

Figure 4.23 map of de-collectivization

Geography Matters: Crime and corruption

The overall state of affairs, then, is more chaotic than transitional. Price inflation, caused by market reform in conjunction with declining productivity and unsound fiscal policies, has caused real hardship to millions, and resulted in a serious economic crisis for the Russian Federation. A 2-year, \$23 billion international financing package was provided to the Russian Federation by the International Monetary Fund (IMF) in July 1998, but the Russian Federation's gross domestic product plunged by 9 percent in the final quarter of 1998 while inflation soared to 100 percent. The following year, the Russian Federation had to relaunch negotiations with the IMF to help overcome the crisis. Russian Federation currency was devalued, extensive restrictions were imposed on the foreign exchange market, the government deficit was increasingly financed by direct borrowing from the central bank, and exporters were

forced to surrender 75 percent of their export earnings in order to help pay the interest on the IMF loan.

Today, the modest levels of material welfare to which citizens had become accustomed under state socialism are increasingly difficult to sustain (**Figure 4.24**). For most people, real income has fallen significantly, and personal savings have been eroded or disappeared altogether. For many, employment has become a part-time or informal affair. Meanwhile, as we have seen, there has been a deterioration of public health standards, an increase in the rate of industrial accidents and alcohol-related illnesses, a steady rise in death rates, and a rapid escalation of infant mortality rates. The transition to market economies has also intensified two important geographic problems: regional inequality and environmental degradation.

Figure 4.24: Russian family's material possessions

Regional Inequality

Regional inequality was part of the legacy of the Soviet era. Soviet patterns of economic development came to be characterized by regional specialization and by center-periphery contrasts. One reason for this was that principles of scientific rationality and the primacy of national economic growth took precedence over ideological principles of spatial equality. As a result, Soviet planners revised upward the optimal size of cities and applied the logic of agglomeration economies to regional planning, developing territorial production complexes. Another reason was that centralized economic planning was unable to redress the resulting regional inequalities because of conservatism and compartmentalization throughout the Soviet economic system. Regional resource allocations were guided not by principles of equity or efficiency but by *incrementalism*, whereby successive rounds of budgeting were based on previous patterns of funding.

The transformation to market economies has intensified the unevenness of patterns of regional economic development. Market forces have introduced a much greater disparity between the economic well-being of regional winners and losers while at the same time allowing for the more volatile spatial effects of the ebbs and flows of investment capital. After just a decade of transition, many of the regional winners are the same as under state socialism. This is partly because of the natural advantages of certain regions, and partly because of the initial advantage of economic development inherited from Soviet-era regional planning. Four different kinds of region have prospered through the transformation to date: gateway regions, natural resource regions, rich farming regions, and established high-tech manufacturing regions.

Gateway regions are those that are centered on metropolitan areas that have inherited good transportation and communication links not only

within the former Soviet empire but also with Europe and beyond. Moscow and St. Petersburg are the most important, but most of the regions around the metropolitan areas listed in Table 4.1 are also in this category, as are Vladivostok, on the Pacific coast, and Kaliningrad, on the Baltic. Prosperous natural resource regions include the oil-rich geosyncline of Central Asia, Magadan (northeastern Siberia), Sakha (Yakutia), and Tyumen' (Western Siberia). The best-endowed agricultural regions have also prospered, partly because of their natural advantages of better soils and climate, and partly because these attributes have attracted the greatest levels of privatization and capital investment. As we have seen, these regions are mostly in the mixed forest and the wooded steppe west of the Urals, and in the niche of subtropical farming in western Georgia, on the shores of the Black Sea. Finally, the established high-tech manufacturing regions that have prospered most are those with major research institutes and other facilities associated with the Soviet military-industrial complex. Many of these were located in the gateway regions of Moscow, St. Petersburg, and Nizhniy Novgorod, but others include Chelyabinsk, Samara, Saratov, and Voronezh.

In contrast, three different kinds of region have experienced decreasing levels of prosperity through the transformation to date. The first consists of regions of armed territorial conflict (such as North Ossetia, Ingushetia, and Chechnya in the North Caucasus; Nagorno-Karabakh; and Tajikistan). A second consists of resource-poor peripheral regions—mainly in the European north, Siberia, and the far east. The third consists of "smokestack" regions of declining heavy industry. These include many of the core industrial regions of the old command economy, including much of the Central Region --the area that extends about 400 kilometers (248 miles) from Moscow in all directions--Volga-Vyatka, the Volga region, the Urals, and southern Siberia.

Environmental Challenges

The more open discourse that followed glasnost and the creation of democratic societies revealed a legacy of serious environmental challenges that stem from the mismanagement of natural resources and the failure to control pollution during the Soviet era. Soviet central planning placed strong emphasis on industrial output, with very little regard for environmental protection. Stalin had propagated the view that it would be feasible to harness and transform nature through the collective will and effort of the people. Nature, it was asserted, is a dangerous force that needs to be subdued and transformed, and natural resources have no value in a socialist society until people's labor has been applied to them. As a result of this way of thinking, there was a tendency during the Soviet era to squander natural resources and to "take on" and "conquer" nature through ambitious civil engineering projects. Problems of pollution and environmental degradation were seen by the authorities

as an inevitable cost of modernization and industrialization, and the people most affected—the general public—had no political power or means of voicing environmental concerns.

The resulting legacy of environmental problems includes overcutting of forests, widespread overuse of pesticides, heavy pollution of many rivers and lakes, extensive problems of acid rain and soil erosion, and serious levels of air pollution in industrial towns and cities (**Figure 4.25**). Fragile environments at the margins of human settlement and on the peripheries of the Soviet empire have been among the worst affected. Across the far north, for example, air pollution produces a phenomenon known as "Arctic haze," seriously reducing sunlight and so destroying fragile vegetation complexes that underpin fragile ecosystems. In the semi-arid and arid regions of the south, the diversion of rivers for irrigation schemes aimed at boosting agricultural productivity have depleted water resources in some areas and led to widespread soil erosion and desertification.

Figure 4.25—photo of river pollution

Contamination by radioactivity is seen by many to epitomize the consequences of Soviet attitudes toward the environment. Both the large-scale civilian nuclear energy program and the military nuclear capability of the Soviet Union were developed in ways that have resulted in an alarming incidence of radioactive pollution. Up to half a million people are believed to have been exposed to harmful doses of radiation in the southern Urals as a result of a series of events and leakages, the most dramatic of which was the "Kyshtym incident" at a nuclear reprocessing center in 1957. A nuclear waste tank exploded, severely contaminating an area 8 kilometers (4.96 miles) wide and 100 kilometers (62 miles) long, requiring the permanent evacuation of more than 10,000 people and the bulldozing of 23 villages. Other sites associated with serious radioactive pollution include reprocessing and waste storage facilities at Tomsk-7 and Krasnoyarsk-26, nuclear dumps on the island of Novaya Zemlya in the Arctic and the adjacent Kara and Barents seas, Lake Ladoga, and parts of Primorsky Krai in the far east.

It was, though, the disaster at Chernobyl, in the former Soviet republic of Ukraine, that became emblematic of the Soviet nuclear legacy. Geographer Peter Gould, in a small but important book called *Fire in the Rain*, provided a dramatic account of the greatest nuclear disaster the world has ever known.² As he put it:

At 1 hour, 23 minutes, and 43 seconds after midnight on April 26, 1986, Reactor 4 at Chernobyl went into a soaring and uncontrollable chain reaction. Two seconds later the resulting steam explosion to the concrete housing blew the thousand ton "safety" cover off the top of the

² P. Gould, *Fire in the Rain: the Democratic Consequences of Chernobyl*. Cambridge: Polity Press, 1990, p. 2.

reactor, and spewed radioactive materials high into the night sky equal to all the atomic tests ever conducted above ground.

While Gould tells, in gripping detail, the sequence of events that led to the meltdown of Reactor 4, what is more central to our discussion is the impact that this technological accident had on people and the environment in the region immediately surrounding the nuclear facility and in the former Soviet Union more generally. The stories of radiation sickness and eventual ghastly deaths of the facility workers, firefighters, medical personnel, and other volunteers filled the international newspapers for weeks following the meltdown. Less graphic and less well remembered are the invisible and enduring impacts on the population of the area surrounding the power plant as well as the natural environment. Radiation particles entered the soil, the vegetation, the human population, and the rivers, effectively contaminating the entire food chain of the region. Secondary radiation continues to be a problem. In the immediate area surrounding Chernobyl, all the trees were contaminated. As the trees slowly die, and rot, and decay, radioactive material enters the physical system as “hot” nutrients. Over 3000 square kilometers (1161 square miles) of trees were turned brown from radiation immediately following the accident, and it is still not clear how to decontaminate such a large area. The town of Chernobyl itself as well as the surrounding area will not be inhabitable for decades, if then. Fifteen years after the accident, it is clear that the most extensive legacy of pollution is in the newly independent republic of Belarus. Here 25 percent of the land is considered uninhabitable, and thousands of villages have been abandoned. The government of Belarus has spent 15 percent of its gross national product—more than \$235 billion dollars—over the last decade on paying medical bills and resettling tens of thousands of people affected by the disaster.

Yet the Chernobyl event is only one of several major environmental disasters that have left an enduring legacy to the Soviet Union’s successor states. The overexploitation of the Amu Dar’ya and Syr Dar’ya rivers for irrigation schemes to support intensive cotton monoculture in southern Central Asia resulted in a dramatic draw-down of the Aral Sea. The level of the Aral Sea has already dropped by more than 10 meters (33 feet) and the dessication of the former sea bed, now littered with stranded ships (**Figure 4.26**), generates a constant series of dust storms that are thought to be the cause of unusually high levels of respiratory ailments among the people of the region. Another notorious example is provided by the case of Lake Baikal, whose unique ecosystem has been threatened by industrial pollution (see *Geography Matters* : Lake Baikal, p. 000).

Figure 4.26: photo of Aral Sea showing stranded vessels
Geography Matters: Lake Baikal

Today, serious environmental degradation affects all parts of the region (**Figure 4.27**), a legacy of problems that in many ways have been

intensified by the transition to market economies. The ubiquitous corruption that has come to characterize the region during the post-Soviet transition means that environmental regulations are easily ignored or circumvented. In addition, the 1998 economic crisis in the Russian Federation has clearly limited the country's ability to address its environmental problems. In fact, economic stress has led the Russian Federation to agree to become a dumping-ground for other countries' nuclear waste. All over the industrialized world, atomic power plant construction is significantly slowing down because of unresolved safety considerations and the failure to develop a safe, permanent means of disposing of long-lived nuclear waste. In 2000, the Russian Federation volunteered to store 2000 metric tons (about 4.5 million pounds) of highly radioactive nuclear waste from Switzerland over the next 30 years for roughly \$2 billion. Several more countries, including Germany, France, South Korea, Taiwan, and Japan, are likely to take advantage of the relatively low price charged by the Russian Federation for nuclear reprocessing. The risks, though, are appallingly high, given the Russian Federation's industrial inefficiency, corruption, and organized crime.

Figure 4.27: map of environmental degradation

CORE REGIONS AND KEY CITIES

As we have seen, the breakup of the Soviet Union and the transition toward market economies is beginning to modify patterns of regional development. Nevertheless, the core regions and key cities of this world region remain broadly the same, for the moment, as under state socialism and, before that, Imperial Russia. The principal core region is the Central Region that extends for a radius of approximately 400 kilometers (248 miles) around Moscow. Secondary core areas, developed around long-standing industrial sub-regions, exist in the lower Volga region and the Urals. Between them, these core regions contain 11 of the 13 largest Russian Federation cities listed in Table 4.1, and about half of the total population of the Russian Federation.

The Central Region

The Central Region was the hearth of the Muscovite state, the base from which its growing power thrust along the rivers in all directions toward distant seas. Many of the ancient towns have preserved their beautiful medieval kremlins (citadels) and churches, as in Rostov, Suzdal, Yaroslavl' and, of course, Moscow. The industrial roots of the region go back to the 1600s, when various early industries, drawing on local resources of flax, hemp, hides, wool, and bog-iron, developed to serve the needs of the growing capital Moscow. By the 1700s, the region had developed a specialization in textiles; and with the onset of Russia's industrial revolution in the 1800s, the textile industry expanded and was

joined by a broad range of engineering and manufacturing. Although the Central Region has no significant sources of energy (apart from low-grade lignite and peat deposits that can be converted into electricity in power stations), Soviet economic planners regarded the region as pivotal to their industrialization policies. Significant imports of coal, oil, gas, and electricity were used to develop a broad economic base. The region was also key to the Soviet Union's drive for technological supremacy, and a considerable proportion of the country's leading scientific research and development institutes were established as part of the Central Region's massive military-industrial complex.

Today, the Central Region is highly urbanized, with about 85 percent of the population living in towns and cities. Moscow (population 8,400,000) dominates the entire region, but other significant centers include Dzerzhinsk (285,000), Ivanovo (474,000), Nizhniy Novgorod (1,400,000), Ryazan' (536,000), Serpukhov (139,000), Smolensk (355,000), Tula (532,000), Vladimir (339,000), and Yaroslavl' (629,000). The region accounts for about 80 percent of the Russian Federation's textile manufactures. Cotton textiles are most important, and are produced mainly in towns along the Klyazma valley between Moscow and Nizhniy Novgorod, and at Ivonovo. Woolens are manufactured in and around Moscow, synthetic fibers are produced in Kalinin, Serpukhov, and Vladimir, while the ancient linen industry survives at Kostroma. Engineering, automobile and truck manufacture, machine tools, chemicals, electrical equipment, and food processing are also important. Overall the Central Region accounts for about 20 percent of the Russian Federation's industrial production.

In spite of the high degree of urbanization and industrialization, much of the region has a rural flavor (**Figure 4.28**). The rural landscape is varied, the effects of glacial action having produced a complex topography with relatively poor quality soils except to the south, which borders on the fertile zone of chernozem soils. About 25 percent of the Central Region remains forested, and there are numerous lakes and marshy areas. The traditional staple crop of the region was rye, but when the railways made it possible to import cheaper grain the farmers of the region turned to industrial crops such as flax, and to potatoes, sugar beets, fodder crops, dairying, and market gardening. Around rural settlements, there are orchards of apples, cherries, pears, and plums.

Figure 4.28: map of the Central + photos of landscapes of region
a. farmlands; b. rural housing; c. industrial cityscape

Beyond these traditional rural landscapes, the geography of the Central Region is being significantly rewritten by the transition to an open, internationalized market economy. The effects of the transition are very uneven. On the positive side, the gateway situation of the Moscow region, with good transport and communication links to other regions

and countries, is attracting a good deal of foreign direct investment, while the region's high-tech labor force and research institutes have also been attractive to investors. On the negative side, reduced domestic demand and competition from cheap imports have had severe adverse effects on the region's smokestack industries, especially textiles, machine building, and engineering. Among the places worst affected by deindustrialization are the eastern parts of the Moscow region, Bransk, Kostroma, Vladimir, and Yaroslavl'.

Moscow

Moscow is situated at the center of the vast Russian Plain, on the Moskva River, a tributary of the Oka, which in turn leads to the Volga. The city's growth is reflected in its layout by a series of ring roads: the Boulevard Ring, the Garden Ring (both following the line of former fortifications), the Greater Moscow Ring Railway, and the Moscow Circular Beltway. Radial boulevards penetrate these ring roads, converging toward the ancient hub of the city, the Kremlin, built as a fortified palace complex in the fifteenth century and subsequently used as the seat of government for Russia, the Soviet Union, and, now, the Russian Federation. Next to the Kremlin is the famous Red Square, the ceremonial center of the capital that is anchored at its southern end by the Cathedral of St. Basil the Blessed, built in 1554-1560 by Ivan the Terrible to commemorate the defeat of the Tatars (**Figure 4.29**).

Figure 4.29: photos of Moscow:

a. St Basil's—Image Bank; b. Stalinist building

Moscow's inner city differs from large European and North American cities in that it does not contain any significant slums, nor does it contain a modern central business district. Rather, it contains a mixture of buildings representative of every period of the city's development: churches and institutional buildings from the fifteenth through the nineteenth centuries, interspersed with Soviet-era offices, apartment buildings, squares, and boulevards that gradually replaced the city's slums and dilapidated buildings from the 1920s onwards. Beyond the Garden Ring as far as the Ring Railway is a zone of eighteenth- and nineteenth-century development—including the principal railway stations and freight yards, factories, and associated housing—that has been the target of extensive urban renewal projects. Here also are many of the larger institutional buildings of the Soviet era, including most of the distinctive "wedding-cake" skyscrapers of the Stalinist period (Figure 4.29). The outer zones of the city, beyond the Ring Railway, are almost entirely the product of the post-Second World War growth, when the built-up area of the city increased more than tenfold. Immediately beyond the Ring Railway are the mikrorayoni of the 1950s, dominated by 5- to 9-story apartment buildings of yellowish brick. Farther out, larger factories and standardized high-rise apartment blocks of precast concrete

dominate the cityscape, while in the outermost zones are scattered a series of satellite industrial towns amid open land and forest.

The transition to a market economy has already left its mark on Moscow in several ways. The combination of a newly emerging wealthy class together with a current chaotic planning situation has sparked a spate of uncontrolled housing construction. Some of this new housing has taken place within the borders of the city but a good deal of the recent growth has been in the forest protection belt, where speculative developments, mostly funded by foreign companies, have sprung up, providing expensive housing in community-style developments with tight security. New office buildings for transnational companies and new, Western-style stores have begun to appear in the center of the city, consuming many of the green sites created by Soviet planners. Meanwhile, a sharp rise in the number of private automobiles (from approximately 0.5 million vehicles in 1985 to over 1.7 million by 2000) has led to an equally sharp rise in traffic congestion and unprecedented strain on the existing road infrastructure.

The greatest impacts of the transition to a market economy, however, are the social and economic consequences. Formerly a leading industrial center, Moscow had, by 2000, slipped to fourteenth place among the Russian Federation's economic regions in terms of industrial production. The decline of the traditional industrial sector in Moscow has to a large extent been compensated by the rise of new sectors in the economy, particularly in tourism, retailing and banking. Moscow has quickly developed as the Russian Federation's principal center for financial and business services, which in turn has attracted a good deal of foreign investment and many joint ventures. Moscow's new status as a world city has also led to the emergence of new culture and entertainment industries, while the overall climate of change has fostered a proliferation of small, private enterprises. The pace of change, however, has far outstripped the capacity of the city's authorities to regulate and control it, so that the positive aspects of transition have been accompanied by dramatic increases in social polarization and crime, and by a sudden backlog in the provision of an adequate infrastructure for ground and air transportation and telecommunications.

St. Petersburg

St. Petersburg is located some 650 kilometers (403 miles) from Moscow, at the eastern end of the Gulf of Finland. As such, it falls well outside the Central Region proper. Nevertheless, it must be considered as an extension of the Central Region, an industrial, cultural, and administrative metropolis whose communications and fortunes have always been tied to Moscow and the Central Region. Most of the surrounding northwest region forms part of the original Russian homeland, though the area bordering on the Gulf of Finland was long

disputed. When it was finally annexed to Russia by Peter the Great at the beginning of the eighteenth century, Peter decided to build a new capital city—St. Petersburg—on a swampy site at the mouth of the River Neva. Like Venice, Italy, St. Petersburg rests on countless wooden piles to prevent it from subsiding into its marshes. It was built at the cost of thousands of human lives, but the tsar was determined to create an imperial capital to rival those of continental Europe. He also wanted St. Petersburg to be Russia's "window on Europe," exposing Russia to new ideas and technology.

Canal and, later, railway connections to Moscow allowed St. Petersburg to flourish as Russia's chief entrepôt, and the city quickly became an important cultural and intellectual center. But with the Soviet revolution of 1917 Moscow was reinstated as the capital city. Anti-German sentiment, meanwhile, had caused St. Petersburg to be renamed as Petrograd. The city's entrepôt function withered under state socialism's doctrine of national economic self-sufficiency, but Soviet planners quickly developed Petrograd—renamed again as Leningrad in 1924—into a key component of the Soviet military-industrial complex. During the Soviet era the city was above all a manufacturing center, the principal industries being electrical and power machinery, shipbuilding and repair, armaments, electronics, chemicals, and high-quality engineering. The city suffered terribly in the Second World War, an estimated 1 million of its residents dying from hunger or disease while the city was under siege by the German army for 872 days.

Today, the city's imperial past is very visible in the Grand Design of the core area on the south bank of the River Neva—the Palace Square, the Admiralty building with its landmark elegant spire, and the Winter Palace (see *Sense of Place: Imperial St. Petersburg*, p. 000), which now houses the Hermitage Museum, a treasure-house of fine art of worldwide significance that originated in 1764 as the private collection of Empress Catherine II. The Soviet past is visible, as in every other Russian city, in the extensive industrial and residential suburbs of standardized high-rise apartment blocks of precast concrete. Renamed once more as St. Petersburg, the city has faced a tough period of readjustment as its older military-industrial base experienced a sharp decline in fortune. Crime and corruption also emerged as striking features of the post-Soviet city. Nevertheless, St. Petersburg is once again poised to take advantage of its gateway situation, while its imperial legacy make it an attractive international tourist destination. Already, the city handles about 35 percent of the Russian Federation's imports and about 30 percent of its exports. Although the city's infrastructure badly needs upgrading, its history and its European ambience are beginning to prove attractive not only to tourists but also to Western investors.

Sense of Place Feature: Imperial St. Petersburg

The Volga Region

This region (**Figure 4.30**) is known in the Russian Federation as Povolzhe, which means "along the Volga River." It has been the main artery of the Russian heartland for over a thousand years, with Slav and Norse adventurers trading along the Volga en route between the Baltic and Byzantium. In modern times, the lower Volga region has become a core economic region, with a series of industrial cities along the river—from Kazan' in the north to Astrakhan, on the Volga delta as it enters the Caspian Sea—and extensive areas of productive agricultural land. The region has a long tradition of crafts and engineering, good natural resources, and a good strategic location between the industries of the Central Region and the raw materials and natural resources of the Urals. Oil was discovered in the northern part of the Volga Region (part of the Volga-Ural oilfields that extend northeastward to the western foothills of the Urals) in the 1920s, and natural gas was found near Astrakhan. The Volga itself was exploited as a major resource as well as a routeway in the 1930s, when a string of monster hydroelectric projects was installed along the middle reaches of the slow-moving river.

Figure 4.30: map of Volga region

These resources helped to sustain the industries of the Central Region as well as those of the Volga Region. The principal industries of the cities of the Volga Region are chemicals and petrochemicals, engineering, aerospace, and automotive manufacture and assembly. The Volga Automobile Plant at Togliatti produces two-thirds of the Russian Federation's passenger cars, while the Kama Automobile Plant at Naberezhnyye Chelny and the Ul'yanovsk Automobile Plant are also important. The surrounding agricultural lands, meanwhile, are among the Russian Federation's most productive, accounting for almost 20 percent of the country's total arable land.

Volgograd is the largest city in the region (population 1,003,000 in 1998). Formerly called Stalingrad, the city was almost totally destroyed between July 1942 and February 1943 in fighting between the German and Soviet armies. The Soviet victory proved to be a major turning point in the Second World War. Completely rebuilt since 1945, Volgograd became a "hero-city" of the Soviet Union, an important river port and manufacturing center producing iron and steel, machine tools, tractors, oilfield machinery, petrochemicals, railway equipment, footwear, and clothing.

Overall, the Volga Region contains almost 17 million people and remains one of the most prosperous regions within the Russian Federation. Its relative prosperity is, however, threatened by nationalist tensions. Tatarstan, in the northern part of the region, declared its autonomy from the Russian Federation in 1990, though in the end it did not secede. Another shadow on the region's prosperity is the serious pollution that

has been allowed to affect the Volga. Huge amounts of sewage and industrial wastes enter at every town and city on the river, whose flow has become much reduced by the numerous dams and reservoirs. As a result, large stretches of the Volga are stagnant and algae-covered, in danger of becoming dead zones. One notable casualty of this pollution has been the sturgeon fisheries of the lower Volga. The roe, or raw eggs, of the sturgeon are the source of caviar. Production of this highly prized commodity has fallen from 2000 metric tons a year in 1978 to just over 150 metric tons in 1998, partly as a result of pollution, and partly as a result of illegal poaching of immature fish, prompted by the shortages caused in the first place by pollution.

The Urals

The Urals have been economically important to Russia since the early 1700s, when Peter the Great established iron-smelting works in Yekaterinburg and Nizhniy Tagil using local ore and charcoal. In addition to iron ore, the Urals contain a wealth of mineral resources, including asbestos, bauxite, chromium, copper, magnesium and potassium salts, and zinc. The energy resources of the Urals include extensive low-grade bituminous coal and lignite deposits, the Volga-Urals oilfield (which extends southwestward from the western foothills of the Urals to the Saratov area in the Volga Region), and a major natural gas field at the southern end of the mountains, near Orenburg (**Figure 4.31**).

Figure 4.31: map of Urals region

The rise of the Urals as an economic core region can be traced to Stalin's industrialization drive of the late 1920s, when Soviet economic planners established a major industrial complex focused on mining, ferrous and nonferrous metallurgy, and heavy engineering. The discovery of the Volga-Urals oilfield in the 1930s added chemicals and petrochemicals, as well as a new source of energy. At about the same time, Soviet planners decided to bring in high-grade coking coal from the Kuznetsk basin in Central Siberia, 2000 kilometers (1240 miles) to the east, in order to fully exploit the vast reserves of iron ore in the Urals. Trains returning to the Kuznetsk coalfields were loaded with iron ore from the Urals, thus facilitating the creation of an iron and steel complex in the Kuznetsk basin. This arrangement was known as the Urals-Kuznetsk Combine. During the Second World War, a substantial amount of additional industry was moved to the Urals from European Russia in order to be safely out of range of German air attack. After the Second World War, the Urals were further developed as a key region of the Soviet military-industrial complex, and most of the region was closed to foreigners until 1990. Five of the 10 secret cities of the Soviet Union's "nuclear archipelago" for weapons research and production were located in the Urals: Sverdlovsk-44, Sverdlovsk-45, Chelyabinsk-65, Chelyabinsk-70, and Zlatoust-36 (the numbers are their postal codes; Sverdlovsk was the

Soviet name for Yekaterinburg, after Yakov Sverdlov, who arranged the murders of Tsar Nicholas II and his family in the wake of the Soviet revolution).

Today, the Urals Region remains a key component of the Russian Federation's economy. The region is highly urbanized: 75 percent of its 20 million people live in cities, the largest of which is Yekaterinburg (population 1.3 million), an important railway, metallurgical, and heavy engineering center. Perm (population 1 million) has a similar economic profile, while Ufa (1.1 million) is a center of oil refining, chemical manufacture, and heavy engineering. Chelyabinsk (1.1 million), Nizhniy Tagil (409,000), and Magnitogorsk (427,000) are all important iron and steel centers with associated heavy engineering complexes. Many of these industries, however, have fared poorly in the transition from state socialism to a capitalist economy. Nonferrous metallurgy, petrochemicals, and the oil industry have attracted foreign investment and provided an important source of export revenues for the Russian Federation, but the iron and steel and heavy engineering industries, with their obsolescent plants, have been noncompetitive and unattractive. Many of the defense-related industries, meanwhile, have suffered as a result of the inability of the Russian Federation to fund them at a level comparable to that of the Soviet era.

In many communities, the economic hardship resulting from the decline of smokestack industries has been compounded by the legacy of pollution. Take, for example, the small town Karabash (population 15,000 in 2000), about 2 hours south of Yekaterinburg in the foothills of the Urals. The Karabash Copper Smelting Works, established in the 1940s to produce copper for ammunition, went on to produce copper for electrical equipment until 1987, when it was closed by the government because the plant's productivity was too low and its hazardous emissions too high. But the plant was reopened in 1998, when the town's residents had become desperate for jobs, and the government had become desperate for tax revenues from the region's copper. Air pollution has returned, compounding the environmental hazards from the 15-meter (49-foot) heaps of slag that line the main road, encircle the factory, and spill over into back yards. Slag, laced with lead, arsenic, and cadmium, is the waste from the copper smelting furnaces after raw copper is extracted from ore. Two-thirds of the children in Karabash suffer from lead, arsenic, or cadmium poisoning, and a 1995 government study found that they also suffer from at least twice the rates of congenital defects, disorders of the central nervous system, and diseases of the blood, glands, and the immune and metabolic systems compared with children in nearby towns.

DISTINCTIVE REGIONS AND LANDSCAPES

In comparison with other world regions, the distinctive regions and landscapes of the Russian Federation and Central Asia (though not the Transcaucasus) are vast and seemingly endless. Distinctive mid-sized regions comparable to, say, Alpine Europe or the American Midwest, have not emerged, while landscapes run virtually unchanged over thousands of kilometers across the two large and geologically stable shields of highly resistant crystalline rocks that provide platforms for extensive plains of sedimentary material and glacial debris. Nevertheless, there are several broad regions with distinctive natural and cultural landscapes. In the far north there are the zones of tundra and taiga. Farther south, the steppes have always been identified as a distinguishing feature of Russian geography, while in Central Asia it is the deserts that frame the regional identity of the area and provide the settings for distinctive natural and cultural landscapes.

The Tundra

The tundra zone extends along the northern shores of the Russian Federation and includes its Arctic islands (**Figure 4.32**). Altogether, it amounts to 2.16 million square kilometers (833,760 square miles), representing almost 13 percent of the country. Almost all of it was sculpted by one or another of the great ice sheets of the Quaternary ice ages (between 1.7 million and 10,000 years ago). These, wrote geographer W.H. Parker, “scraped, polished, grooved, crushed or sheared the rocks in their advance, and dropped boulders and stones haphazardly on their retreat.”³ Frost action is still the main modifier of the landscape, since running water is almost entirely absent from the tundra zone. For 9 months or more, the landscape is locked up by ice and covered by snow, while during the brief summer, much of the melted snow and ice is trapped in ponds, lakes, boggy depressions, and swamps by permafrost that extends, in places, to a recorded depth of 1450 meters (4757 feet). Water seeps slowly to streams that drain into the slow-moving rivers that cross the tundra to drain into the Arctic.

Figure 4.32: map of tundra

During the winter, the tundra landscape has a uniformity that derives from the snow cover and the somber effect of long nights and weak daylight, the sun remaining low in the sky (**Figure 4.33**). There is little sign of life, apart from herds of reindeer or occasional polar bear or fox. In summer, vegetation bursts into life, and animals, birds, and insects appear. The days are long—in June the sun circles the horizon and there is no night at all. Mosses and tiny flowering plants provide color to the landscape, contrasting with the black peaty soils and the luminous bright skies. Wildfowl—swans, geese, ducks, and snipe—arrive on lakes and wetlands for their breeding season, as do seabirds and seals along the coast. Wolves enter the tundra from the forests to the south in search of prey that includes Alpine hare and lemmings (small, fat rodents that can

³ Parker, W. H. The Soviet Union. Chicago: Aldine, 1969, p. 42.

produce five or six litters annually). Everywhere there are swarms of gnats and mosquitoes. Summer also brings a zonal differentiation to the region, with shrubs—blackberry, crowberry, and cowberry—and dwarf trees—birch, spruce, and willow—becoming more frequent as one moves south toward the taiga.

Figure 4.33: photo of tundra

The indigenous peoples of the region were Lapps in the west, Samoyeds or Nenets in the center, and Chukchi and Inuit in the east. Nomadic peoples who subsisted on reindeer, along with a variety of fish, eggs, and fowl, they probably never amounted to more than 30,000 or 40,000 individuals in total. Between the thirteenth and sixteenth centuries, they were joined by a few Russians who had pushed north in order to trade with them for furs and fish. Eventually, between 15,000 and 30,000 Russians settled in small fortified trading posts along the coasts of the Kola Peninsula and the lower estuaries of the larger rivers, supporting themselves by fishing, trapping, and hunting. Today, tundra landscapes contain very little evidence of either nomadic peoples or frontier settlers. The human imprint on the landscape derives mainly from Soviet-era development.

Soviet interest in the tundra was driven initially by a desire to exploit the natural resources of the region. In addition, Stalin found use for the region as a setting for the "gulag archipelago" of prisons and labor camps that were described so tellingly by novelist Alexander Solzhenitsyn. Then the Cold War gave strategic significance to the region, with the result that a number of important military installations were developed. By 1989, the tundra was, remarkably, home to more than a million people.

The natural resources that attracted Soviet economic planners include coal, natural gas, petroleum, copper, gold, nickel, platinum, and tin. Fish-processing plants and fat-rendering furnaces were established along the Arctic coast, while a fleet of icebreakers was established in order to create a northern sea route that saves over 7000 kilometers (4350 miles) in travel by sea between the far east and the Baltic. These developments have not transformed the landscapes of the region as a whole but have introduced towns and cities that stand in stark contrast to their surroundings. Murmansk (**Figure 4.34**), the largest city and a major naval port, has a population of 407,000; Norilsk, the second-largest, is a mining and smelting center and has a population of 159,000. The population of the entire region, though, is now declining rapidly. The economic crisis that has afflicted the Russian Federation throughout its transition to capitalism has made it increasingly difficult to support the towns and cities strung across the Arctic. Many of the smaller settlements, in particular, have become hopelessly expensive to maintain, and life for their inhabitants is hard. Unable to make a living, many people have

been moving out. The Chukotka region for example, which embraces the Russian Federation's northeastern tip, just across the Bering Strait from Alaska, lost fully half of its population in the 1990s. Twenty-six villages were abandoned, Russians and Ukrainians leaving the huge expanse of tundra to the native Chukchi people, whose traditional way of life had been nearly wiped out by a combination of Soviet policy and alcohol abuse.

Figure 4.34—photo of Murmansk

The Central Siberian Taiga

The boreal (northern) forests of central Siberia cover a vast territory—more than 3.4 million square kilometers (1.3 million square miles)—from the Yenisey River to the Verkhoyansk mountain range beyond the Lena River. The underlying rock shield, having been steadily lifted by geological movements, averages about 700 meters (2296 feet) in elevation and has been dissected by rivers into a hilly upland topography with deep river gorges that are cut 300 meters (984 feet) or more below the general level of the plateau. The steep sides of the valleys are notched by numerous terraces, marking successive stages in the uplift of the ancient crystalline rock plateau. This topography, though, is given a striking uniformity by the distinctive forest cover of the region. The characteristic forest is made up of larches: hardy, flat-rooted trees that can establish themselves above the permafrost. Slow-growing and long-lived, they are able to counter the upward encroachment of moss and peat by putting out fresh roots above the base of the trunk. The dominant larches can grow to 18 meters (59 feet) or more, allowing an undergrowth of dwarf willow, juniper, dog-rose, and whortleberry.

The indigenous peoples of the region were Tungus, who lived by hunting and fishing; and Yakuts, a seminomadic, pastoral people who moved in from the south, creating pastureland of their own by burning down patches of forest. These peoples were largely displaced in the sixteenth century, when Russians, having defeated the Tatars, moved into the region to exploit the bark, timber, pitch, and fur-bearing animals of the forests. Wherever Russians settled, trees were cut down to make forts, stores, churches, and cabins. Logs were also laid on streets and roads in order to make them passable in the muddy season. Over time, more of the region's resources were discovered—fish and hydro power from the rivers, fossil fuels, and minerals in the rocks—but the region has remained one of the most sparsely settled in the world because of its formidable natural difficulties: the coldest winters on Earth, summers that bring plagues of mosquitoes, boggy and infertile soils, vast distances, and topography that makes the building of roads and railways difficult and expensive. The settlements of the region are characteristically small and isolated villages (**Figure 4.35**).

Figure 4.35—photo of Siberian village

The region's physical isolation and remoteness have led to one of its distinctive cultural attributes—as a region of voluntary escape and forced exile. On the one hand, central Siberia became an asylum. Peasants moved to the forests of Siberia to escape the serfdom of European Russia, while some better-off families moved to escape the Orthodox religious doctrine of pre-Revolutionary Russia. On the other hand, both the tsars and the Soviets made central Siberia a place of exile and punishment. Siberia has never been seen as a region to be developed and settled, so much as an obstacle on the way to the far east. The famous Trans-Siberian Railway was not aimed at opening up Siberia but at securing communications between European Russia and the far east. Nevertheless, it was the railway line, running across the southern part of the region, that attracted the most settlement and economic development. To further facilitate the development of Siberia, the Soviets were encouraged to build the 3204-kilometer (1990-mile) Baikal-Amur Mainline (BAM) in the 1980s. The principal cities of the region are strung along the Trans-Siberian Railway. These include Krasnoyarsk (population 869,000 in 1998), Irkutsk (585,000), Novokuznetsk (572,000), and Angarsk (267,000). Bratsk (257,000) is the principal settlement along the BAM.

These cities support a variety of smelting, engineering, metalworking, and food-processing industries, but it is the forest that remains the economic and cultural staple of the region. The cities of the region rely on the forests for woodworking, pulp and paper industries, and wood chemicals. Their citizens rely on the forests not simply for recreation but for a sense of identity (see *Sense of Place: Krasnoyarsk*, p. 000). The central Siberian taiga is one of the richest timber regions in the world. Overall, close to 90 percent of the territory is covered with forest. More than a quarter of the Russian Federation's lumber production comes from the region. Poor forest resource management, however, gives cause for concern. After decades of relentless Soviet exploitation, the taiga, once dense and practically impassable, has been cleared throughout much of the southern parts of the region and around all the larger towns and cities. Loggers are now moving farther and farther north to cut down century-old pines. The post-Soviet transition has intensified concern over forest resource management as privatization has attracted U.S., Korean, and Japanese transnational corporations to invest in "slash-for-cash" logging operations in a loosely regulated and increasingly corrupt business environment. The future of the central Siberian taiga has become an issue of international concern because the taiga accounts for a significant fraction of the world's temperate forests that absorb huge amounts carbon dioxide gas in the process of photosynthesis, thereby removing from the atmosphere a gas that is a main contributor to global warming.

Sense-of-Place Feature: Krasnoyarsk

The Steppes

The steppe belt stretches about 4000 kilometers (2486 miles) from the Carpathians to the Altay Mountains (see Figure 4.3), covering a total area of more than 3.25 million square kilometers (1.25 million square miles). The topography of the region is strikingly flat: yellow loess (a fine-grained, extremely fertile soil), several meters thick, has blanketed the underlying geology, creating a rolling landscape of unbounded horizons, punctuated here and there by incised streams and river valleys. The natural landscape of feather grasses and steppe fescue has generated the characteristic rich chernozem soils of the region. Trees and shrubs are restricted to valleys, where broadleaved woods of oak, ash, elm, and maple have established themselves, with pinewoods and a low scrub of blackthorn, laburnum, dwarf cherry, and Siberian pea-trees in drier locations.

For centuries, the steppe region was the realm of nomadic peoples, including Pechenegs, Kazakhs, Scythians, and Tatars. It was not until the late 1700s, when the Turkish empire's hold on the steppes was broken, that large numbers of colonists began to enter the western steppe. Along with Russians and Ukrainians came Armenians, Bulgarians, French, Germans, Greeks, Montenegrins, Serbs, and Swiss. Wheat-growing rapidly expanded wherever transportation was good enough to get the grain to the expanding world market, but large flocks of sheep dominated most of the colonized steppe until the railway arrived. With the arrival of the railway, German Mennonites began mixed farming on the rich soils; Greeks began tobacco farming, and Armenians specialized in business and commerce. Further east, the flat steppe of northern Kazakhstan remained largely untouched until the nineteenth century, save for Kazakh nomads and their herds, and a few Russian forts and trading posts. During the nineteenth century, settlers came from the west in increasing numbers—a million or more by 1900—displacing the Kazakh nomads, thousands of whom died in famines or in unsuccessful uprisings against the Russians.

The Soviet period brought significant modifications to the region and its landscape (**Figure 4.36**). The colonists' small farms were merged into collectives, linear shelter belts of trees were planted in an attempt to modify climatic conditions, and rivers were dammed to provide hydro power and irrigation for extensive farming of wheat, corn, and cotton. In the 1950s, Nikita Khrushchev announced that the "virgin and idle lands" of the eastern steppe would be plowed up and farmed for wheat. State farms were organized, and large villages of new wooden houses were built to receive an army of 350,000 immigrants from European Russia. The eastern steppe was quickly transformed by modern machinery, fertilizers, and pesticides, producing as much wheat, on average, as the annual wheat harvest of Canada or France. This extensive wheat farming quickly led to dust-bowl conditions, however. In response, dry-farming

techniques and irrigation have been introduced. **Dry-farming** techniques are those that allow the cultivation of crops without irrigation in regions of limited moisture (50 centimeters, or 20 inches, of rain per year). Such techniques include keeping the land free from weeds and leaving stubble in the fields after harvest to trap snow. Together with irrigation schemes, dry-farming techniques now allow for the cultivation not only of wheat, but also millet and sunflowers, together with silage corn and fodder crops to support livestock.

Figure 4.36: photo of steppes—wheat farming

Today, the steppes are an important agricultural region. The North Caucasus, which receives more rainfall than elsewhere in the steppes, is particularly productive. Nevertheless, the North Caucasus has traditionally been one of Russia's least economically developed regions. There are several large cities within or bordering the North Caucasus steppe, including Rostov-on-Don (population 1 million in 1998), Krasnodar (646,000), Grozny (364,000), and Stavropol' (342,000), but their industrial base is tied narrowly to agricultural processing and distribution, while the whole subregion has suffered acutely from the political instability and conflicts of the post-Soviet period. The economic vitality of the eastern steppe of Northern Kazakhstan is similarly clouded. Aqmola (population 302,000 in 2000) is the largest city of the eastern steppe, having become the capital of Krushev's "virgin lands" scheme. In 1994 it replaced Almaty as the capital of Kazakhstan and is enjoying a small boom as a result. Elsewhere, though, the towns of the eastern steppe are bleak and impoverished. The area near Semey was the Soviet Union's chief nuclear-testing ground, the site of over 450 underground nuclear detonations between 1949 and 1989. Most of the towns and cities of the eastern steppe are experiencing significant rates of out-migration, as Russians and other Slavs, seeing little likelihood of local economic development, are emigrating back to European Russia in search of better prospects.

The Central Asian Deserts

The desert and semidesert region of Central Asia covers an extensive area that includes most of Kazakhstan, Turkmenistan, and Uzbekistan (see Figure 4.3). The climate is harsh: Total annual precipitation in the deserts is less than 18 centimeters (7 inches), shade temperatures can reach 50° C (122° F), and ground surfaces can heat up to 80° C (176° F). The scorching heat is aggravated by strong drying winds, called *sukhovoy*, which blow on more than half the days of summer, often causing dust storms. In late summer and fall, the increasing temperature range between the hot days and the longer, cooler nights becomes so extreme that rocks exfoliate, or "peel," leaving the debris to be blown away by the wind. The landscapes of the northern zone of the desert region are arid plateaus with rocky outcrops, hillocks, and shallow depressions that have become crusted with salty deposits as a result of the evaporation of runoff from

surrounding hills. The two principal deserts here are the Ust-Urt and Bek-pak-Dala. Farther south is a zone of sandy deserts: the Kara-Kum (Black Sands) and the Kyzyl-Kum (Red Sands). Here, the landscape is dominated by long ridges of sand in crescent-shaped dunes called *barchans*, and by vast plains of level sand punctuated by patches of sand hills and by isolated remnants of worn-down mountain ranges, called *inselbergs*. Several important rivers—including the Amu Dar'ya, the Syr Dar'ya, and the Zeravshan--drain from the Tien Shan and Pamir mountain ranges across these deserts toward the Aral Sea. Dotted along their valleys are irrigated oases, while *tugay*—impenetrable thickets of hardy trees and thorny bushes—thrives in the rather salty soils of the valley floors.

This unpromising environment supported some of the world's most advanced civilizations and sophisticated cities of the premodern period. Until the eleventh century, sedentary agriculturalists prospered in the fertile oases, buffered from outside intrusion by the surrounding deserts. During this period the region was an important and lucrative link in the **Silk Road** along which east-west trade passed between Europe and China from Roman times until Portuguese navigators found their way around Africa and established the sea-borne trade routes that exist to this day. The Silk Road was a shifting trail of caravan tracks that facilitated the exchange of silk, spices, and porcelain from the east and gold, precious stones, and Venetian glass from the west. The ancient cities of Samarkand, Bukhara, and Khiva stood along the Silk Road (see Figure 9.9, p. 000), places of glory and wealth that astonished Western travelers such as Marco Polo in the thirteenth century. These cities were east-west meeting places for philosophies, knowledge, and religion, and in their prime they were known for their leaders in mathematics, music, architecture, and astronomy: scholars such as Al Khoresm (780-847), Al Biruni (973-1048), and Ibn Sind (980-1037). The cities' prosperity was marked by impressive feats of Islamic architecture (see *Sense of Place: Khiva*). Their civilization was overcome by Mongol Tatar horsemen, who ruled until the fourteenth century. Timur (Tamerlane), one of Genghis Khan's descendants and a convert to Islam, subsequently built up a vast Central Asian empire stretching from northern India to Syria, with its capital in Samarkand. The decline of Timur's empire in the sixteenth century saw the rise of nomadic peoples, who established three khanates, or kingdoms: in Bukhara, Khiva, and Kokand. They prospered as trading posts on the transdesert caravan routes until the late nineteenth century, when the three khanates fell to Russian troops.

Sense-of-Place Feature: Khiva

In the twentieth century, Soviet modernization programs brought large-scale irrigation schemes, such as the Kara-Kum Canal, a 770-kilometer (478-mile) irrigation canal that diverts water from the Amu Dar'ya and waters 1.5 million hectares (3.7 million acres) of arable land and 5 million

hectares (12.4 million acres) of pasture as it trails across southern Turkmenistan. Cotton was the dominant crop in these irrigated lands, and still remains so. In Turkmenistan, for example, over half the arable land is devoted to cotton monoculture. Uzbekistan is the world's fifth-largest producer of raw cotton and third-largest exporter of cotton. In many ways, however, irrigated cotton cultivation has been harmful. Yields remain comparatively low, in spite of irrigation, due to soil exhaustion and salinization. **Salinization** is caused when water evaporates from the surface of the land and leaves behind salts that it has drawn up from the subsoil. An excess of salt in the soil seriously affects the yield of most crops. In addition to salt, residues of the huge doses of defoliants, pesticides, and fertilizers used on the cotton fields have found their way into the drinking water systems of the region. Meanwhile, cotton monoculture has rendered the countries of the region heavily dependent on food imports. The worst consequence of the Soviet program of irrigated cotton cultivation, however, has been the effects of excessive withdrawals of water from the main rivers that drain into the Aral Sea. The Kara-Kum Canal alone took away almost one-quarter of the Aral Sea's annual supply of water. Overall, the Aral Sea has shrunk by more than 40 percent in surface area, and it continues to shrink. As we have seen (Figure 4.26), the result has been the acute dessication of the Aral Sea region, devastating its fishing industry and leaving ports like Aralsk and Moynaq stranded more than 40 kilometers (25 miles) from the retreating lake shore in the midst of a new "White Desert" of former lake bed sands.

Today, much remains of traditional crafts (**Figure 4.37**) and ways of life, though the lifestyles of younger people have departed dramatically from those of their parents and grandparents (see Day in the Life: -----). The Central Asian geosyncline, with its oil, gas, and coal reserves, is one of the region's greatest economic assets. Proven oil reserves around and beneath the Caspian Sea amount to between 15 and 31 billion barrels, but estimates of the potential reserves run between 60 and 140 billion barrels. Only the oilfields of the Persian Gulf states (see Chapter 5) and Siberia are larger. This represents a tremendous economic asset for the Central Asian states. Exploiting these assets is beset with difficulties, however. Most of the states involved are effectively landlocked, which means that expensive pipelines have to be constructed before the oilfields can be fully developed. The problem here is that political tensions and instability in the region, along with the competing claims and interests of consumers and investors from different geographic markets—principally the Russian Federation vis-à-vis Europe and North America—make pipeline construction and routing both risky and contentious. Within the desert region considered here, Kazakhstan has the bulk of the oil reserves, while the natural gas fields are mainly to the south, in Turkmenistan and Uzbekistan.

Figure 4.37: photo of carpets at Sunday market

SUMMARY AND CONCLUSIONS

The Russian Federation, Central Asia, and the Transcaucasus is a world region that is very much in transition. After more than seven decades under the Soviet system, the Russian Federation, Belarus and the Soviet Union's other successor states in Central Asia and the Transcaucasus are now experiencing somewhat disordered transitions to new forms of economic organization and new ways of life. These transitions are taking place at different speeds in different places, and with rather uncertain outcomes. It is clear, though, that the process is having a significant impact on local economies and ways of life throughout the region. The region itself, meanwhile, is still struggling to find its new place in the world economy. Some of the old ties among the countries of the region have been weakened or reorganized, as have the interdependencies with Ukraine, Moldova, and the Baltic states. All of the new, post-Soviet states have joined the capitalist world system in semiperipheral roles, and all of them have to find markets for uncompetitive products while at the same time engaging in domestic economic reform. Inevitably, patterns of regional interdependence have been disrupted and destabilized.

The Russian Federation, as the principal successor state to the Soviet Union, remains a nuclear power with a large standing army, but its future geopolitical standing remains uncertain. The Russian Federation has a formidable arsenal of sophisticated weaponry, a large, talented, and discontented population, a huge wealth of natural resources, and a pivotal strategic location in the center of the Eurasian landmass. Now freed from the economic constraints of state socialism, the Russian Federation stands to benefit a great deal by establishing economic linkages with the expanding world economy. Similarly, the collapse of the Communist Party has removed a major barrier to domestic economic and political development. The Russian Federation also has an ample labor force and a domestic market large enough to form the basis of a formidable economy. At present, the Russian Federation's economy is shrinking as it withdraws from the centrally planned model. Yet, although embarrassed by the disintegration of the Soviet Union and bankrupt by the subsequent dislocation to economic development, the Russian Federation is still accorded a great deal of influence in international affairs. The embarrassment and insolvency may also prove in the long run to be the spur that pushes the Russian Federation once again to contend for great-power status.

Nevertheless, it will be some time before the Russian Federation can once again be a contender for world-power status. The latter years of the Soviet system left the Russian Federation's industry with obsolete

technology, low-grade product lines, and a shoddy infrastructure. The Russian Federation's economy now faces a massive task of modernization before it can approach its full potential. The Russian Federation must also renew civil society and the institutions of business and democracy after 70 years of state socialism. The partial breakdown of constitutional order has undermined respect for the law, and organized crime has flourished amid the factionalism and ideological confusion of the government. These problems could have serious implications for the future world order: A weak Russian Federation invites geopolitical instability.

KEY TERMS

chernozem (p. 000)
civil society (p. 000)
dry farming (p. 000)
federal state (p. 000)
mikrorayon (p. 000)
monsoon (p. 000)
Near Abroad (p. 000)
permafrost (p. 000)
salinization (p. 000)
Silk Road (p. 000)
taiga (p. 000)
territorial production complex (p. 000)
tundra (p. 000)
unitary state (p. 000)

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