

The "Syndrome of the 1950s" in Switzerland

Cheap Energy, Mass Consumption, and the Environment

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THE 1950S: WATERSHED OF GLOBAL SUSTAINABILITY

The human economy is a subsystem of a finite global ecosystem. Population and capital are the driving forces behind exponential growth in the world economy. Its potentials cannot be realized without a constant flow or throughput from the planetary sources of materials and energy, through the economic system, to the planetary sinks where wastes and pollutants end up (see Figure 17.1).¹

The World Bank economist Herman Daly has pointed out that capital and labor are substitutable for each other to a considerable degree, because their qualitative function in production is the same: They are both agents of the transformation of flows of raw materials into finished products. But the qualitative roles of energy and capital are totally different in the physical process of production, as different as transformer and transformed, as different as stock and flow.² Environmental economists consider energy to be an independent third factor of production besides labor and capital.³ There are close relationships among the volume of manufacturing, the use of fossil fuels, and the accumulation of waste and pollutants in the environment. The more fossil fuel that economic activities use (this holds also for consumption), the more emissions they produce.⁴ In the United States, the level of

1 Donella Meadows and Dennis Meadows, *Beyond the Limits: Global Collapse or a Sustainable Future* (London, 1992), 45.

2 Herman A. Daly, "Toward Some Operational Principles of Sustainable Development," *Ecological Economics* 2 (1990): 1—6.

3 Thomas Möller, "Energie im gesamtwirtschaftlichen Produktionsmodell: Ein dritter Produktionsfaktor und sein Einfluss auf die langfristige Entwicklung einer energieabhängigen Wirtschaft," Ph.D. diss., St. Gallen University for Economics, 1986.

4 Reiner Kümmel and Thomas Bruckner, "Energie, Entropie — Ökonomie, Ökologie," in Christian Pfister, ed., *Das 1950er Syndrom: Der Weg in die Konsumgesellschaft* (Bern, 1995), 130.

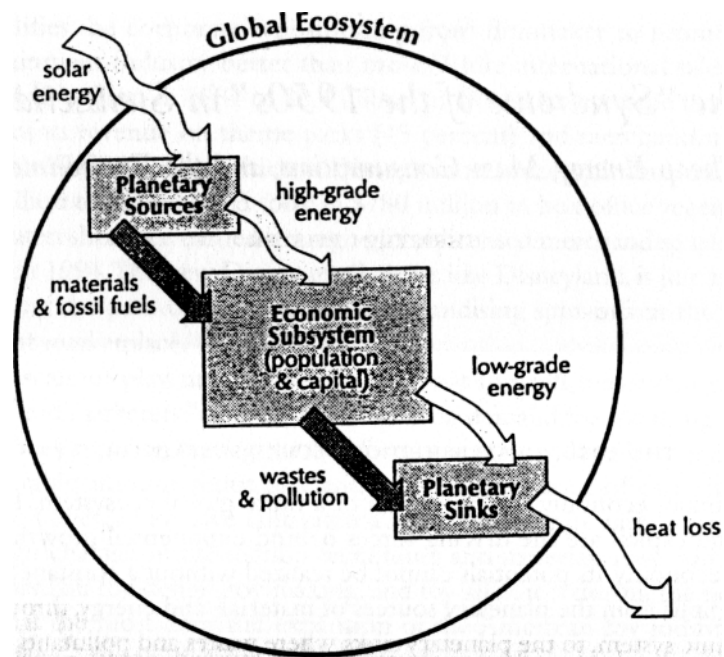


Figure 17.1. Population and capital in the global ecosystem. Population and capital are sustained by flows of fuels and nonrenewable resources, and they produce outflows of heat and waste which contaminate the planet's air, water, and soil. Reprinted by permission of Sterling Lord Literistic, Inc. Copyright © 1991 by Dennis Meadows.

gross national product (GNP) and the use of fossil fuels are correlated at an almost unbelievable level of 0.99 over the period from 1890 to 1980.⁵

The term "sustainable development" was coined in 1988 by a United Nations commission for environment and development headed by Prime Minister Gro Harlem Brundtland of Norway. It points to the fact that the use of a renewable resource - for example, timber or fish - should be equivalent to its natural rate of regeneration in order to maintain its productive potential for future generations. For a nonrenewable resource - fossil fuel, high-grade mineral ore, or fossil groundwater - the sustainable rate of use cannot be greater than the rate at which a renewable resource, used sustainably, can be substituted for it. For example, an oil deposit would be used sustainably if part of the profits from it were systematically invested in solar collectors, so that when the oil was gone an equivalent stream of renewable

energy would still be available.⁶ As a matter of fact, however, global sustainability continues to decline, and the consumption of fossil energy can be taken as a good indicator in this respect, both among nations and over time.

In many textbooks, growth is presented as a kind of natural state of a capitalist economy, as a process that is occasionally interrupted by phases of stagnation and crisis. On the basis of consumption (and real wages), however, the twentieth century clearly falls into two phases of very unequal growth, namely, before and after 1950 (see Figure 17.2).⁷

The increase of global energy consumption since the 1950s can also be seen on the side of the sinks (see Figure 17.3), as greenhouse gases (CO₂, methane, nitrous oxide, and chlorofluorocarbons) in the atmosphere became more rapidly concentrated in the second half of the century.⁸

It is generally admitted that mass consumption in the industrial world, not population growth in the Third World, was the driving force behind this surge in energy use and global pollution. It is true that the take-off of world population also occurred in the 1950s. But we have to bear in mind that the bulk of population increase took place in the Third World, where energy consumption per capita was and is quite low.

It is thought that this transition from a more sustainable form of development to the present situation is closely related to the expansion of "Fordist" consumer societies in the West after World War II. Although this concept is the key to understanding the global environmental situation from a historical perspective, it was not tackled by historians with regard to Western Europe until very recently.⁹ The long economic boom in Western Europe after 1945 did not seem to deserve a particular focus because it was seen as just another period of rapid modernization in the paradigm of industrial society.¹⁰ Only recently was it claimed that the postwar years initiated a significant shift that, over the last decades, affected almost every sphere of human activity as well as the relations between society and its natural environment in a fundamental way.¹¹

6 Daly, "Operational Principles," 6. A more detailed and comprehensive illustration of the term is provided by Meadows and Meadows in *Beyond the Limits*, chap. 7.

7 Source: Meadows and Meadows, *Beyond the Limits*, 67.

8 Source: Meadows and Meadows, *Beyond the Limits*, 94.

9 The most remarkable contributions in the 1980s were made by two sociologists: Burkard Lutz, *Der kurze Traum immerwährender Prosperität* (Frankfurt am Main, 1984), and Volker Bornschier, *Westliche Gesellschaft im Wandel* (Frankfurt am Main, 1988).

10 Gerd Ambrosius and Hartmut Kaelble, "Einleitung," in Gerd Ambrosius and Hartmut Kaelble, eds., *Der Boom 1948-1973: Gesellschaftliche und wirtschaftliche Folgen in der Bundesrepublik Deutschland und in Europa* (Opladen, 1992), B.

11 Franz Ossing et al., "Innere Widersprüche und äussere Grenzen der Lebensweise: Aspekte der ökologischen Entwicklung," in Klaus Voy, Werner Polster, and Clans Thomasberger, ed., *Gesellschaftliche*

5 Charles A. Hall, Cleveland J. Cutler, and Robert Kaufuran, *Energy and Resource Quality: The Ecology of the Economic Process* (New York, 1986), 51.

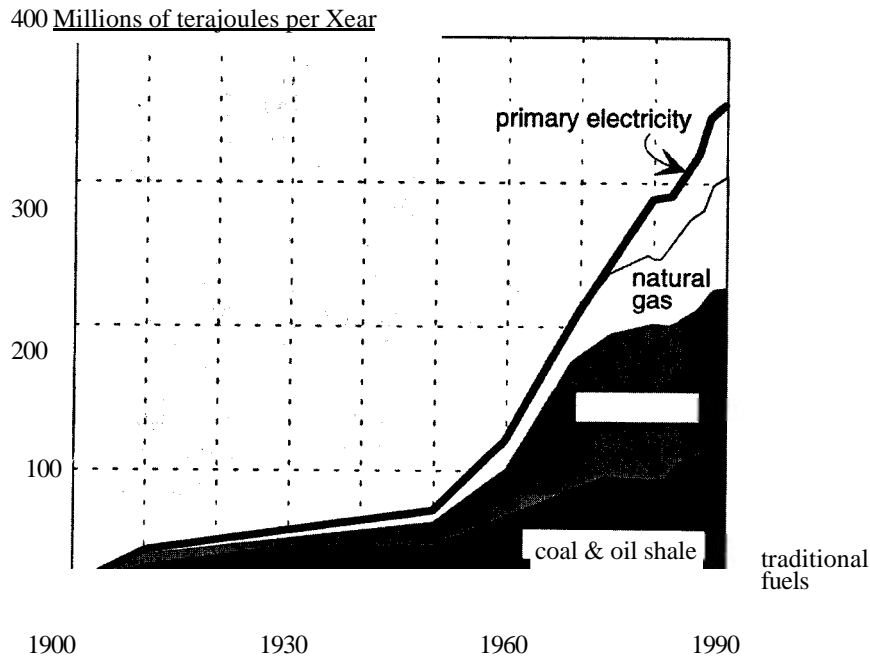


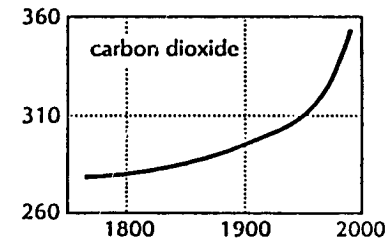
Figure 17.2. World energy use. In the first half of the century, when the global economy was mainly based on coal, the consumption of energy doubled. In the subsequent four decades, when oil and natural gas made up the lion's share, consumption increased fivefold. After Meadows and Meadows 1992. Reprinted by permission of Sterling Lord Literistic, Inc. Copyright © 1991 by Dennis Meadows.

To shed light on the economic and cultural context in which this shift occurred and on its consequences for the Situation of the environment, it is advisable to narrow down the focus from the global to the national or to the local level. Such a degree of detail is needed, as long as a set of comprehensive cross-national studies is lacking, to highlight the fall Set of driving forces and the way in which they interact. This chapter aims to provide some basic arguments from the perspective of environmental history. Most of the examples refer to Switzerland, which is both typical and atypical compared with other Western European societies.¹²

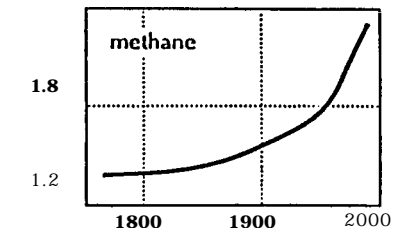
Transformationsprozesse und materielle Lebensweise: Beiträge zur Wirtschafts- und Gesellschaftsgeschichte der Bundesrepublik Deutschland, 1949–1989 (Marburg an der Lahn, 1989), 363.

¹² Christian Pfister, "Das '1950er Syndrom' — die umweltgeschichtliche Epochenschwelle zwischen Industriegesellschaft und Konsumgesellschaft," in Pfister, ed., *Das 1950er Syndrom*. For a comprehensive discussion of the German case, see Voy et al., eds., *Gesellschaftliche Transformationsprozesse*.

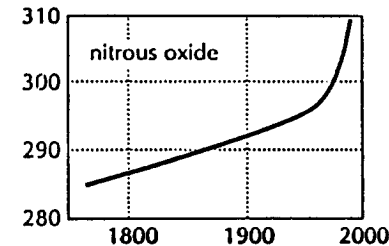
Parts per million



Parts per million



Parts per billion



Parts per billion

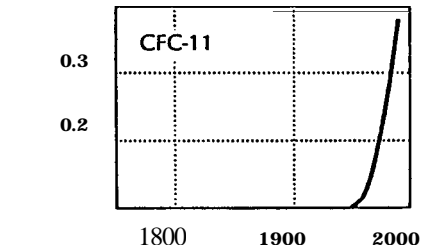


Figure 17.3. Global greenhouse gas concentrations. Reprinted by permission of Sterling Lord Literistic, Inc. Copyright © 1991 by Dennis Meadows.

CONSUMPTION, WORK, AND THE ENVIRONMENT IN 1950

Considering the state of the environment and the level of consumption, in the early 1950s Swiss society still lived quite close to the principles of sustainability. This is summarized as follows:

- (1) Wages covered the basic needs without offering large surpluses for the choice of individual life-styles: Patterns of consumption had not changed much from the mid-nineteenth century. Most of the household budget was spent on food, clothing, shelter, and the raising of children. The tradition of agricultural societies to curb consumption, to avoid wasting energy, and to recycle resources had been reinforced during the war. Food was rationed and manpower was scarce, as the army had to defend the borders against the potential incursion of foreign armies.
- (2) Residential areas were situated within the range of local public transportation: Workers could not afford commuting by train over a long distance. Thus, they had to live in crowded flats within walking, biking, or tramway distance from their place of work. This residential pattern prevented suburban sprawl and exurban development.
- (3) Food was bought in small retail stores within walking distance: Shopping was part of housework. Meeting the needs of a household was an object of rational planning. The stock in the small "Aunt Emma retail stores" was limited.

Fruit and vegetables originated from the surrounding countryside and changed according to season. The goods were wrapped in paper bags or sold without any packaging.

- (4) Agricultural production was close to today's concept of "biodynamic farming": Most of the farmers still worked with horse-drawn machinery. They relied on their own fodder, and most of the manure was produced directly on the farm. Weeds were suppressed mechanically; bugs were picked out by hand.
- (5) Industries were agglomerated around railway crossings: Distributing coal was one of the fundamental functions of the railway. After the first phase of industrialization, which in Switzerland was based on the production of textiles in water-powered mills and watch manufacture, the rail network laid the basis for a second phase of industrialization on the basis of coal: food processing, metalworking, production of chemicals, and so forth. Since the transport of coal on highways was very expensive, factories were built close to the rail network. Because Switzerland had no heavy industry and clean hydroelectricity accounted for a large share of energy production, the quality of the environment was somewhat better than in most other countries in Europe. But Rolf Peter Sieferle has made the point that even in Germany, which was among the leading industrial workshops of the world, severe pollution was restricted to those relatively small areas where coal was found, such as the Ruhr basin. The large agricultural areas outside these centers remained almost unaffected by pollution.¹³

Of course, the quasi sustainability of Europe around 1950 had its price. Both men and women, and to some extent even children, had to perform hard physical work for modest wages. The small amount of leisure and vacation time offered little relief, and individual behavior was socially controlled.

THE ABSORPTION OF THE "TRADITIONAL SECTOR"

The relationship between population and basic environmental parameters has changed profoundly over the past forty years (see Figure 17.4).¹⁴ I have labeled the bundle of changes in the economic, social, and ecological spheres, which underlay this profound shift, the "syndrome of the 1950s."¹⁵ The medical term "syndrome" denotes "a set of characteristics indicating the existence of a condition, problem, etc."¹⁶ This term was deliberately chosen to express the fact that our knowledge of the economic and social causes of the syndrome of the 1950s is still at an early stage. It does not just

13 Rolf Peter Sieferle, "jenseits der Epochenschwelle," *Gaia* 3, no. 2 (1994): 63.

14 Source: Pfister, ed., *Das 1950er Syndrom*. 15 Pfister, "Das 1950er Syndrom:" 58.

16 *New Collins Concise English Dictionary* (London, 1982), 1186.

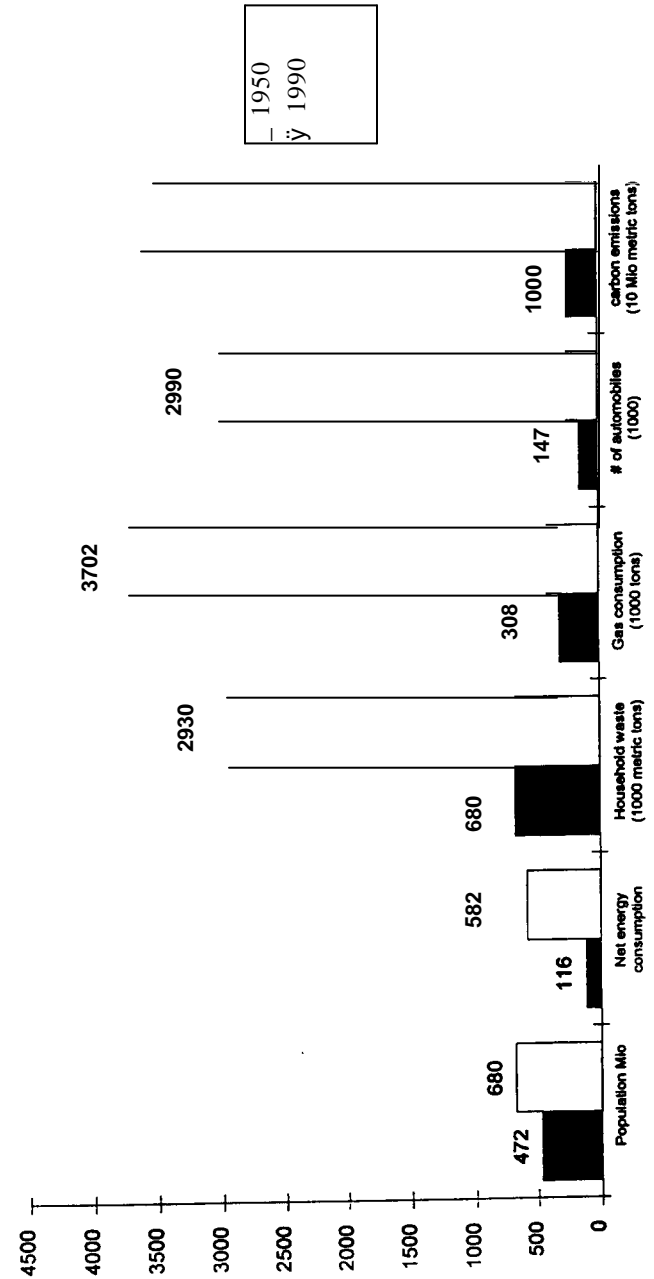


Figure 17.4. Key indicators of environmental change for Switzerland, 1950–90. Over the last forty years the consumption of fossil fuels is 5-fold, gas consumption 11-fold, production of carbon 4.4-fold, and production of household waste 4.3-fold. The number of cars rose 1,900 percent. In contrast, population grew by only 44 percent.

describe the Situation in the 1950s; rather, it is a blanket term for the entirety of changes that have occurred since the 1950s, that is, over the last four decades. For Switzerland, Arne Andersen has described the changes in the 1950s, that is, the initial shift away from sustainability to mass consumption.¹⁷ This analysis need not be repeated here, but some of the reasons are examined.

Economic growth was the most fundamental (but not the only) driving force behind the changing patterns of consumption after 1950. Considering the per capita growth of GNP, the boom between the late 1940s and the "oil crisis" of the early 1970s was by far the most significant in European history — and this fact does not just take into account real wages, which rose by 400 percent in France, 350 percent in Germany, 260 percent in Switzerland,¹⁸ and 250 percent in Italy between 1950 and 1975. Likewise, it is remarkable that the boom covered most countries of Western Europe regardless of their initial level of development. A third extraordinary feature was the rapid decline of the manpower engaged in agriculture and — to a lesser extent — in industry in favor of activities in the service sector of the economy.¹⁹ Because Switzerland had been spared the destruction of the war, it could assist in rebuilding the economies of neighboring countries from the very beginning.

Generating long-lasting prosperity in Western Europe and protecting it from the communist bacillus had been among the primary goals of American foreign policy in the aftermath of World War II. Indeed, the Roosevelt and Truman administrations created an international economic regime that, to a large extent, met this aim: Under the Bretton Woods Agreement (1944) currencies in Western Europe gradually became convertible and exchange rates were made both stable and favorable for European exports overseas. All members of the General Agreement on Tariffs and Trade or GATT (1947) received equal and easier access to the markets of their partners. The European Recovery Program or Marshall Plan (1948) provided the initial injection of dollars needed to restart the economies of the individual countries.²⁰

The domestic strategies of the American government to stimulate consumption, such as the pacification of business—labor relations and govern-

ment spending on highways and home loans, served as a model for most Western European countries, because the United States economy was flourishing in the late 1940s and early 1950s and because these kinds of measures reflected the influential doctrine of John Maynard Keynes.²¹ In most cases this doctrine was not strictly applied but helped to create a powerful public mood that encouraged a Keynesian reorientation of national economic policies.

In Switzerland the new economic regime crystallized around three elements: First and most important, a basic consensus between business and metalworkers was reached in 1937 as a result of the already growing threat from neighboring Nazi Germany. Trade unions and employers agreed to regulate wages and working conditions in a comprehensive settlement (*Gesamtarbeitsvertrag*) that was binding on both sides. After the war, this settlement served as a model for other branches of the economy. Its significance may be compared to that of the 1948 contract between the United Automobile Workers (UAW) and General Motors in the United States. In both countries the result of these settlements was a sustained rise in real wages within the entire economy, which created the basis for the transition to mass consumption. But in Switzerland the boom began about ten years later than in the United States. The competition for workers on the job market stiffened in the late 1950s and continued throughout the 1960s until the recession of 1975.

The second element was the creation of a System of social security in 1947. Earlier attempts to create such a system in the interwar period had failed to pass a public referendum.²² The new system provided a small but regular source of income for the elderly and the handicapped.

The third element concerns the emergence of a political consensus across the entire societal spectrum during and after World War II. In 1943 the Social Democrats, who had been excluded from the federal government before that time, were now entitled to one of the seven cabinet seats. In 1959 they gained an additional one. Since then the so-called magic formula of the government coalition (two Liberals, two Christian Democrats, two Social Democrats, one member of the traditional People's Party) has not been altered.

Undoubtedly, rising real wages as well as social and political stability are important ingredients in the transition from industrial to consumer society. But they do not account for the modifications made within society itself, of

17 See Arne Andersen, "From 'The Taste of Necessity' to the Mentality of Wasting: Ecological Consequences of Consumer Society," paper presented at the conference, The Development of Twentieth-Century Consumer Society, German Historical Institute, Washington, D.C., Oct. 1995.

18 Swiss Federal Institute of Statistics. 19 Ainbrosius and Kaelble, "Einleitung," B.

20 Imanuel Wexler, *The Marshall Plan Revisited: The European Recovery Program in Economic Perspective* (Westport, Conn., 1983).

21 See the chapters by George Lipsitz and Elizabeth Cohen in this book.

22 In Switzerland all amendments to the constitution (as a basis for legislation) have to be approved by referendum.

which the changing patterns of consumption are obvious indicators. The German sociologist Burkart Lutz worked out a historical model based on the theory of economic dualism²³ to highlight the multiple aspects of this fundamental transition.²⁴ In what follows, I briefly summarize this theory.

From the beginning of industrialization through the aftermath of World War II, European economies developed into two main sectors: a modern one and a traditional one. Modern manufacturing and service were part of the international market economy and organized according to the characteristics of competitive capitalist enterprise (production of commodities for wages, profit maximization, and rationalization). In contrast, the traditional sector (agriculture and the trades) was still structured according to the agrarian model of society: Work was organized socially to maintain the subsistence of households under the dominance of a patriarch. Traditional households depended on the ownership of a farm, on a small trade, or on a retail store. Where this basis was not sufficient for the survival of the household, it was complemented with wage labor in the modern sector. Members of traditional households worked for the survival of their family rather than for individual profit. Housewives and children did not receive cash payments, and the wages of servants and apprentices were paid as a yearly lump sum that was unrelated to the number of hours worked.

In times of expanding exports, a part of the labor force in the traditional sector, mostly socially mobile individuals, flowed into the modern sector.²⁵ This inflow of Labor inhibited a substantial rise of wages in this sector, at least at the lower end of the wage scale. Within the traditional sector, the drain of manpower created incentives for mechanized rationalization in some areas. This was paid for by selling a larger amount of traditional goods and services. Yet in periods of export crisis many workers lost their jobs in the modern sector. Those who still had parents or relatives in the traditional sector tried to survive in the family household. Thus, this sector assumed the function of a social buffer, without any compensation from the state.

In the 1950s and 1960s the traditional sector of the economy virtually disappeared. This was the result of interacting push and pull processes that are tightly intertwined.²⁶ First, through mass production of consumer goods,

the modern sector offered functionally adequate services and goods at lower cost because it could profit by economies of scale. Under these circumstances the traditional ways of producing goods and services were no longer competitive. For instance, the small retail stores were virtually brushed aside by self-service stores and, later on, by shopping malls. As a consequence, the number of food stores in Switzerland shrank by 54 percent from 1948 to 1977, and the number of clients per store tripled over the same period. The 1960s and 1970s witnessed most of this concentration in retailing.²⁷ Moreover, as Arne Andersen has shown, the modern sector offered durable consumer goods, such as automobiles, refrigerators, or washing machines, at ever lower prices.²⁸ For those who made their money from selling automobiles, household appliances, or houses in the Suburbs, tapping this large new market created the possibility for limitless growth, at least for the foreseeable future. It should be mentioned, however, that most families in the 1950s lived in apartments, housework was done without technical appliances, and men went to work by bicycle or by train.

Second, the remaining core activities of the traditional sector, such as agriculture and some trades, were absorbed by the modern sector. They had to be reorganized along the lines of industrial rationalization and profit maximization. Farming, for example, became in many respects an industrial activity.

Besides the cost-push, factors three forces of demand-pull are important: (1) The boom led to an almost incredible search for skilled labor. When qualified workers could no longer be found in sufficient numbers, real wages were raised annually, or even monthly in some branches of the economy. Moreover, workers from Mediterranean countries were recruited in growing numbers. Since a system of settlements had been established between trade unions and employers, pay raises in one branch spread to all the other branches of the sector. In addition, the number of weekly working hours was gradually lowered and the amount of annual vacation was increased. It is not surprising that the attractive working conditions in the modern sector became almost irresistible to people in the traditional sector. (2) At the same time, this sector lost its function and its image as a social buffer. The new system of social security was thought to provide better protection and it was believed that times of economic hardship were gone for good. (3) The impact of American industrial culture on Western Europe in

23 This theory was first advanced by J. H. Boeke, *Economics and Economic Policy in Dual Societies* (New York, 1953).

24 Lutz, *Der kurze Traum*. 25 This concerns chiefly the period from 1890 to 1914.

26 Bukart Lutz, "Die Singularität der europäischen Prosperität nach dem Zweiten Weltkrieg," in Ambrosius and Kaelble, eds., *Der Boom 1948-1973*, 50-1.

27 Matthias Nast, "Lebensmittelverpackungen im Zeitalter der Konsumgesellschaft: 1950er Jahre bis heute." Ph.D. diss., Bern University, 1996.

the late 1940s and the 1950s should not be underestimated. In these years, the United States was experiencing one of the most pronounced booms in its history, whereas most parts of Europe had not yet recovered physically from the war. Understandably, the Fordist way of life was effectively publicized by American propaganda in contrast to the perceived scarcity of "real" socialism.²⁹ Indeed, the United States was taken as a model and an unassailable guide to the future. Agreement was so close among the Swiss political parties in this respect that the topic was not even discussed.

Robert Haddow has shown that American administrations, both Democratic and Republican, took an active interest in exposing foreign publics to tangible examples of a prosperous, responsible capitalism, such as a planned city with Superhighways, in the belief that popular support would follow visionary planning.³⁰ To mask their activities, they cooperated with business leaders. This can also be shown in the case of Switzerland, where the planning of expressways was initially sponsored in part by officials of the American oil industry.³¹ Nelson Rockefeller, who was president of the powerful Standard Oil Company and special assistant to the president (Eisenhower) for foreign affairs,³² was probably behind this drive. The industrialists invited the members of the Swiss Planning Commission to the United States for two weeks to familiarize them with the concepts and the technical realization of American expressway planning.³³ The highway network that was eventually built was little more than an ill-advised transfer of American schemes to the Small landscape of Switzerland. The most controversial of them aimed at building expressways into the heart of cities.³⁴ The American oil industrialists were right in their expectation that constructing a dense network of expressways in Switzerland would foster the diffusion of Fordist patterns of consumption. Indeed, over the last forty years, the growing *Auto-bahn* network promoted a road-oriented reallocation of economic activities and residential patterns that doubled the built-up surface area.³⁵ Moreover,

29 For Austria, see Reinhold Wagnleimer, *Coca-Colonization and the Gold War: The Guttural Mission of the United States in Austria After the Second World War* (Chapel Hill, N.C., 1994). A similar study is not available for Switzerland. In her chapter in this book, Ina Merket provides an insider description of East German society at that time.

30 Robert Haddow, "U.S. Policy, Trade Fairs, and Consumer Goods in Europe During the Gold War," paper presented at the conference, *The Development of Twentieth-Century Consumer Society*, German Historical Institute, Washington, D.C., Oct. 1995.

31 Michael Ackermann, *Konzepte und Entscheidungen in der Planung der schweizerischen Nationalstrassen von 1927 bis 1961* (Bern 1992).

32 See Haddow, "U.S. Policy, Trade Fairs, and Consumer Goods."

33 Ackermann, *Konzepte und Entscheidungen*, 151-6.

34 Jean-Daniel Blanc, *Die Stadt — ein Verkehrshindernis? Leitbilder städtischer Verkehrsplanung und Verkehrspolitik in Zürich, 1945-1975* (Zürich, 1993), 94.

35 Hans Flückiger, „Raumplanung im Spannungsfeld zwischen Trend und Steuerung,“ in Pfister, ed., *Das 1950er Syndrom*, 333.

it initiated the construction of large shopping malls on the urban periphery and supported an infrastructure that allowed long-distance mass leisure mobility. All in all, these profound changes in the patterns of urbanization promoted the geographic scattering of where one lived, worked, shopped, or relaxed. This in turn led to structural constraints in a self-perpetuating cycle.³⁶

People raised in the traditional sector had been accustomed to a set of popular customs, values, and skills that were related to the careful management of resources. Housewives, for example, had the skills to store food and repair clothes, and they were familiar with a wide variety of recycling strategies.³⁷ These activities were not motivated by concerns for the environment as we understand that term today. But they resulted in social qualities such as modesty, frugality, solidarity, readiness to work hard, and capacity to improvise solutions for temporary bottlenecks in the supply of vital goods and services. These qualities had played a pivotal role in economic survival under the prevailing conditions of industrial and agrarian society. During the "short dream of everlasting prosperity," they were no longer needed.³⁸ With the arrival of successor generations, these qualities were gradually supplanted by the hedonistic values of the throwaway society.

THE ROLF OF CHEAP ENERGY IN THE LOSS OF SUSTAINABILITY

From the late 1950s to the present, the price of (fossil) fuel has declined in relation to the price of labor, services, and most other commodities (see Figure 17.5).³⁹

In Switzerland 1 liter of gasoline in 1950 was 62 rappen.⁴⁰ This was more than the cost of 1 kilogram of brown bread. A skilled worker's hourly wage was not more than the equivalent of 4.5 liters of gasoline. Forty years later a loaf of bread was four times more expensive than it was in 1950, but a worker's salary was equivalent to more than 20 liters of gasoline. In relation to purchasing power, gasoline has become five times cheaper. If the price of gasoline had risen in proportion to wages since 1950, 1 liter would have cost approximately 5 Swiss francs in 1990. As in many European countries, the price of gasoline in Switzerland is a policy decision. It has always

36 Urs Fuhrer, ed., *Wohnen mit dem Auto: Ursachen und Gestaltung automobilier Freizeit* (Zürich, 1993).

37 Lutz, *Der kurze Traum*.

38 This is an English translation of the title of Lutz's book mentioned previously.

39 Source: Pfister, ed., *Das 1950er Syndrom*.

40 A Swiss franc is equivalent to 100 rappen.

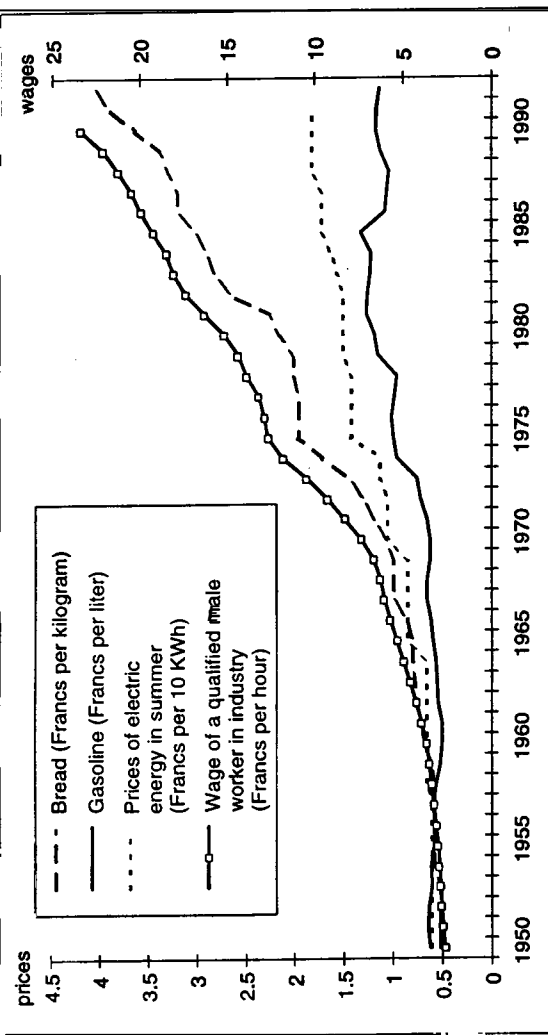


Figure 17.5. Hourly wages of qualified workers in industry compared to prices of brown bread, electric energy, and gasoline in Switzerland, 1950–90. Between 1950 and 1990 the price of gasoline scarcely doubled, whereas nominal hourly wages rose ninefold.

included a tax that since 1950 has fluctuated between 40 and 60 percent of the actual price of gasoline and has to be spent on the construction and maintenance of the *Autobahn* network.⁴¹

The decline of the real world-market prices for crude oil after the Tate *1950s* is connected to the large number of new producers that entered the market at that time, among which the Soviet Union was the most important. Simultaneously, the de facto cartel of the Seven Sisters became ineffective as a great number of new oil companies got a share of the market.⁴² The "oil shock" of 1973 resulted from OPEC's decision to adapt the posted prices to the higher level of market prices that had resulted from a temporary slump in supply. The subsequent price increases in 1979 and 1980 were the backlash of three interrelated events: the Iranian revolution, the Soviet invasion of Afghanistan, and the Iraqi—Iranian war. The setback in 1986 was related to the collapse of the OPEC cartel after the withdrawal of Saudi Arabia.⁴³

It has been argued that the considerable cheapening of fossil fuels after the *1950s* is one of the main reasons for the exorbitant per capita growth in energy consumption in the Western world since the *1950s*.⁴⁴ The abstract physical term "energy" must be related to human needs. It is often overlooked that energy as such is not "consumed." Rather, it provides the means to produce services, such as heating, light, transportation, and mechanical work, and to operate networks of communication. "Production" involves converting natural forms of energy (e.g., crude oil) into a specific form of "energy services" (e.g., driving). In this conversion (which in our case involves distilling the crude in a refinery to obtain gasoline and burning gasoline in the engine of a car) a certain part of the primary energy is always lost.⁴⁵ What matters from the point of view of environmental quality is the consumption of primary energy. What matters from the point of view of human needs is the availability of energy services. The magnitude of the losses depends on both the kind of energy and the technology that is used for the conversion. Saving energy, therefore, does not necessarily mean cutting down the consumption of "energy Services." The same effect can be produced by implementing new kinds of technologies that reduce the losses of conversion from primary energy to energy services.

41 Christoph Maria Merki, "Der Treibstoffzoll aus historischer Sicht: Von der Finanzquelle des Bundes zum Motor des Strassenbaus," in Pfister, ed., *Das 1950er Syndrom*, 311–32.

42 Daniel Yergin, *The Prize: The Epic Quest for Oil, Money and Power* (New York, 1991) 642.

43 *Ibid.*, 851–65. 44 Pfister, "Das '1950er Syndrom,'" 84–5.

45 Daniel Spreng, *Energiebedarf der Informationsgesellschaft* (Baden-Baden, 1988), 14; Georg Erdmann, *Energieökonomik* (Zürich, 1992), 26; Kümmel and Bruckner, "Energie, Entropie – Ökonomie Ökologie," in Pfister, ed., *Das 1950er Syndrom*, 130.

Measures of this kind are likely to improve the sustainability of an economic system.

Considering the consequences of the long-term decline of energy prices for businesses, mass consumption, and the environment, we need to distinguish two issues that are often conflated. What was the role of cheap energy in the level of business activity and mass consumption? How did the declining price of energy affect the diffusion of energy-saving technologies and, therefore, the quality of the global environment?

The decline in the price of fossil energy is not mentioned in the textbooks as one of the driving forces behind the long economic boom after World War II. In assessing the thesis of the Syndrome of the 1950s the influential Swiss economic historian Hansjörg Siegenthaler has argued that cheap energy was not the cause of the boom but rather one of its secondary preconditions. Indeed, the boom put a heavy focus on energy demand, and this demand could be met by an abundant supply at low prices. Moreover, the economic significance of rising oil prices in 1973 should not be overestimated. The term oil shock suggests that the impact was psychological; it was not related to a true shortage. In the Swiss case (and probably in that of the Federal Republic of Germany as well) the end of the Bretton Woods era and the transition to freely floating currencies in 1973 were far more decisive. They led to a strong appreciation of the Swiss franc and higher prices for Swiss exports on the world market.

The study of the relation between the price of coal and the level of economic activity supports this argument. In periods of economic expansion — for example, during the two decades prior to World War I (see Figure 17.6) or in the first decade of the *Wirtschaftswunder* (economic miracle in 1948–57) — the price of coal was raised. In periods of crisis, it was lowered. This is linked to the high labor intensity of underground coal mining. For a long time, mechanization of production was limited to the installation of conveyor belts and electric trains and elevators. The hard work of digging the coal was still done mostly by hand. Hence, wages made up the lions share of the costs of production. In periods of economic boom, additional miners were recruited to meet the demand. When the demand

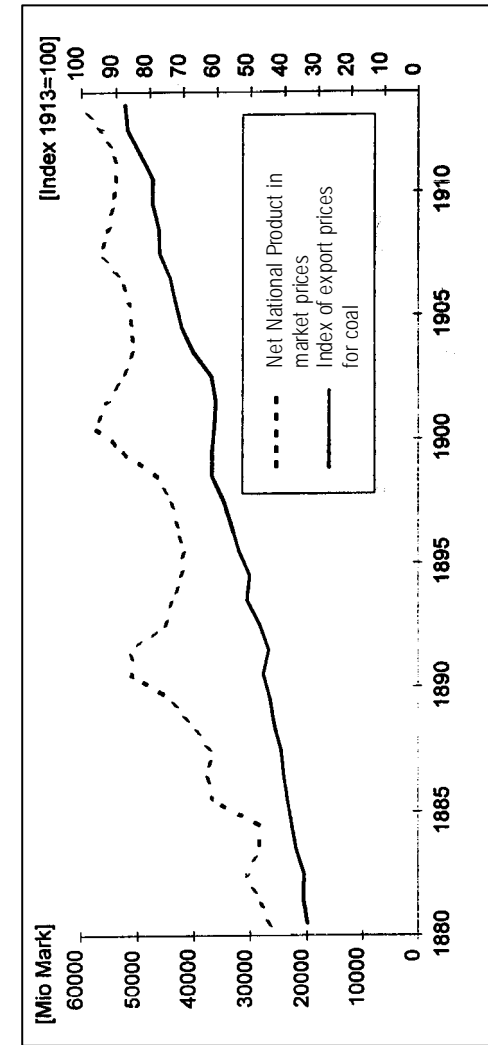


Figure 17.6. Prices of coal and net national product in Germany, 1880–1914. During the long boom prior to World War I, the coal cartel of the Ruhr Valley gradually raised the price of a ton of coal by 100 percent. The rise in coal prices was almost parallel to that of the GNP.

46 See, e.g., the influential work of Walt Whitman Rostow, ed., *The World Economy: History and Prospects* (Austin, Tex., 1978); on Europe, see Ambrosius and Kaelble, eds., *Der Boom 1948–1973*.

47 Hansjörg Siegenthaler, "Zur These des '1950er Syndroms,'" in Pfister, ed., *Das 1950er Syndrom*, 99.

48 Heidi Schelbert, "Schweizerische Wirtschaftsentwicklung seit 1950," in Pfister, ed., *Das 1950er Syndrom* 204. Source: Walther G. Hoffmann, *Das Wachstum der deutschen Wirtschaft seit der Mitte des 19. Jahrhunderts* (Berlin, 1965).

declined, workers were dismissed. In both cases, prices responded to the level of demand.⁴⁹

The impact of the price of energy on the development of technology can be assessed both theoretically and empirically. The assumption that prices of energy and their relative changes affect the evolution of economic systems arises from the principle of substitution. A decline in the relative price of a good increases demand for this good at the expense of others. Efforts to lower the cost of production in a capitalist economy always focus on the factor that is the most expensive in relation to the others. Therefore, a relative decline in the cost of energy in relation to the cost of labor promotes a substitution of energy for Labor in the production function.⁵⁰ This kind of substitution not only underlay most of the measures of rationalization undertaken in the Western economies over the last forty years. It also profoundly affected everyday life because it allowed for the substitution of energy for time to an ever greater extent. This tendency became so deeply rooted in our way of thinking and acting that it is no longer the object of deliberate decisions. It is not yet clear when this tendency began, how closely it is related to the long-term decline of energy prices, and how far cultural factors need to be taken into account. The preferences in the relative allocation of time and energy in different kinds of work in the traditional and the modern sectors of industrial society might be assessed by means of oral history interviews or by an analysis of autobiographical literature. In any case, it is obvious that the diffusion of energy-intensive forms of production, distribution, and consumption from the late 1950s was almost synchronous to the long-term changes in the relative prices of energy and labor.

The theory of substitution also has a bearing on the adoption of new technologies. The success of new energy-saving technology on the market depends on, among other things, the relative cost of capital and energy as well as the cost of Labor. In the midnineteenth century, for example, the relative abundance of cheap labor in Europe was the principal cause of the slower adoption of agricultural machinery when compared to that in the United States. It may be argued that it was profitable to invent and implement new technologies that reduced the losses of conversion from primary

49 Klaus Tenfelde, *Sozialgeschichte der Bergarbeiterschaft an der Ruhr im 19. Jahrhundert* (Bonn, 1981), 292-3; Werner Berg, *Wirtschaft und Gesellschaft in Deutschland und Grossbritannien im Übergang zum „organisierten Kapitalismus“* (Berlin, 1984), 828; Wolfgang Zollitsch, *Arbeiter zwischen Weltwirtschaftskrise und Nationalsozialismus* (Göttingen, 1990), 33.

50 Gunther Stephan, „Das ‚1950er Syndrom‘ und Handlungsspielräume: Eine wirtschaftswissenschaftliche Betrachtung, „ in Pfister, ed., *Das 1950er Syndrom*, 219-32.

energy to energy services as long as the relative price of energy was high. These conditions existed from the beginning of organized human activity to the middle of the twentieth century; many of the technical innovations described as "progress" and "development" contributed to advances in the intensity and efficiency of energy use.⁵¹ As a fringe benefit, they improved the sustainability of the economy. However, with the decline in the relative price of fossil fuels, the incentives to adopt energy-saving technologies slackened — the interlude of the two "energy crises notwithstanding. We may hypothesize that a continual and gradual rise in energy prices beyond the late 1950s would furthermore have promoted the diffusion of energy-saving technologies without affecting economic activity. This might have promoted the emergence of another type of consumer society that would be more sustainable in the long run.

51 Ervin Laszlo, *Evolution: The Grand Synthesis* (Boston, 1987), 96-8.