Plan d'appui à une politique de développement durable

Programme « Leviers d'une politique de développement durable »

Contrat de recherche n° HL/DD/010

S.S.T.C.

The dynamics of a non-sustainable development : Borinage from 1750 to 1990

Paul-Marie Boulanger et André Lambert

ADRASS asbl

Executive summary

July 2001

The dynamics of a non-sustainable development : Borinage from 1750 to 1990

Paul-Marie Boulanger and André Lambert

"*We are interested in territoriality not because of some obscure spatial metaphysics but because people inhabit these spaces, and it is these flesh-and-blood people who suffer the booms and busts of the economy. People are not an abstract category of labor that moves mechanically at the right time and in just the right proportions to wherever economic opportunities arise. They are social, connected beings who live in families, households and communities and who interact with neighbors, kinfolk, friends and familiars. Over time, people inhabiting particular places evolve typical patterns of speech, ritual practices, and social practices with which they are comfortable and feel 'at home'.*[1]*"*

1. Introduction

Although the first region in Belgium and perhaps on the continent to be industrialised[2], Borinage has not been in a position to bring about true sustainable development, to the point that it is possible to describe it as industrialisation without development[3]. Since the crisis of the thirties the region has been regarded as the most underprivileged in the country and if it has benefited from the rise in the standard of living, education and health which has occurred since the war throughout the country it has benefited less than the other regions in the country and continues to display clear privations in all these areas compared with the other regions and the national average.

We are of the opinion that analysis of this failure is an original and possibly beneficial way of improving the problem of sustainable development, not by attempting to define the latter by means of its positive characteristics but by detailing a clearly transient case of development.

For this analysis we chose to concentrate on four sectors : the demographic dynamics, the evolution of the economic structures and activities, training and education and, finally, the occupation of the space.

2. Borinage : geographic position and demographic evolution

Historical Borinage – which interests us here – is a very old industrialised area, located to the west of the town of Mons and to the south of the Mons-Condé canal.

The map below shows the position of the district of Mons in Belgium (in the inset) and, in the enlargement, this district and Borinage within this district. As can be seen, it concerns a very small area. In fact, the surface area of Borinage in the strict sense hardly exceeds 100 km².

The fact that this area does not correspond exactly to any administrative or statistical entity obviously complicates the historical statistical analysis. In fact, analysis of Borinage can only be an approximation; sometimes using the district of Mons, which magnifies the picture, sometimes using the "Couchant de Mons" for facts on the coal industry, sometimes using the distorting picture provided by the new communes.

---

[1] J. Friedmann (1992), *Empowerment : the politics of alternative development,* Oxford : Basil Blackwell, p.40.
[2] E.A.Wrigley (1962), *Industrial Growth and Population Change,* Cambridge.
[3] H.Watelet (1980), *Une industrialisation sans développement. Le bassin de Mons et le charbonnage du Grand-Hornu du milieu du XVIII^e au milieu du XIX^e siècle,* Ottawa : Editions de l'Université d'Ottawa.

In order to show the parallels between the demographic evolution and the economic evolution of Borinage we have had to reconstruct the past dynamics of its population.

Doing this means establishing a demographic prospective of the past starting from a known initial situation and ensuring that the results of the simulation coincide with the observations for the years where the latter are available.

The available statistics therefore act as markers for the reconstruction of the events and make it possible to estimate missing information.[4]

Table no. 1 shows the evolution from 1793 to 1970 of the population volumes of Borinage as defined (16 former communes) and of the entire district to which it belongs minus these sixteen Borinage towns.

From table no. 1 it can be seen that :

- The population of Borinage has broadly increased five-fold while the rest of the district has hardly doubled its number of inhabitants.
- Borinage reached its demographic height in 1930 and then slowly declined while the rest of the district never ceased to grow, albeit it very slowly.

Table no. 1 - The populations of Borinage and the rest of the district from 1793 to 1970

	Borinage					Rest of the district			
Year	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(5)
1793	26 035	100	18	0,400	0,016	65 018	100	51	0,007
1831	47 443	182	32	0,569	0,020	83 342	128	65	0,008
1846	64 371	247	44	0,681	0,018	94 556	145	73	0,004
1856	77 191	296	52	0,784	0,017	98 461	151	77	0,001
1866	91 494	351	62	0,937	0,014	97 674	50	76	0,004
1880	111 148	427	75	1,080	0,008	102 930	158	80	0,004
1890	120 918	464	82	1,131	0,009	106 917	164	83	0,006
1900	132 044	507	89	1,166	0,008	113 200	174	88	0,004
1910	143 181	550	97	1,218	0,000	117 599	181	91	0,002
1920	143 471	551	97	1,250	0,003	114 759	177	89	0,005
1930	147 816	568	100	1,222	-0,003	120 955	186	94	0,001
1947	140 990	542	95	1,191	-0,001	118 406	182	92	0,003
1961	138 142	531	93	1,121	-0,003	123 222	190	96	0,005
1970	134 326	516	91	1,044	0,000	128 699	198	100	0,000

(1)= total population (2)= the population reduced to 100 in 1793. (3)= the population in relation to the maximum reached (4)= the population of Borinage in relation to that of the rest of the district. (5)= the annual demographic growth.

[4] For a detailed presentation of the results of this reconstruction see Lambert, A. (1998), *L'évolution de la population totale des anciennes communes de l'arrondissement de Mons et les nouvelles communes au cours de la période 1831 - 1970*, Ottignies, ADRASS, Rapport de Recherche n° 1, August 1998.

During the 19th century the annual demographic growth rate of Borinage is more than double that of the rest of the district. Consequently, the relative weight of Borinage in relation to the rest of the district went from 40% in 1793 to 125% in 1920. In 1970, Borinage still represents just over half of the population of the district.

Compared with what happened in the two other mining (and industrial) districts of Wallonia, the demographic growth in Mons is both more advanced and weaker. In fact, the maximum population for the entire 1831-1997 period is reached in 1930, with 2.1 times the population at the beginning of the period for the district of Mons. With regard to Charleroi, the maximum is reached in 1961 with 4.8 times the initial population and Liège reaches its demographic height in 1970 with 3.5 times the number of inhabitants in 1831. On the other hand, the demographic decline of Mons and Borinage starts thirty years before that of Charleroi and Liège!

Table no. 2 compares the density reached both in the main Walloon industrial districts in 1831 and in 1970 and in Borinage. The 16 communes which make up the latter scarcely cover a surface area of 100 square kilometres and the demographic **density** rapidly reached a very high level[5].

Table no 2. – The demographic density in a number of industrial districts and in Borinage

Entities	Surface area	Inhabitants in 1831	Density in 1831	Inhabitants in 1970	Density in 1970
Dist. of Charleroi	561 km²	95 983	171	456 690	814
Dist. of Liège	765 km²	177 038	231	618 192	808
Dist. of Mons	616 km²	130 785	212	263 025	427
Borinage	100 km²	47 443	473	134 326	1.338

Sources : Population censuses, INS, calculations ADRASS.

In fact, from the first half of the 19th century certain communes experienced very high densities for the period. This is the case for Pâturages with 2,182 inh/km² in 1846 or Warquignies with 1,391 inh/km². In 1927 the highest densities noted are: Pâturages with 3,561 inh/km², La Bouverie (2,721), Wasmes (2,277), Jemappes (2,217).

Table no. 3 summarises the history of migration in the district of Mons from 1750 to 1930 comparing what would have been the population of this district – and its Borinage component – in 1930 if there had not been any migratory movement since 1750 with what it actually was. It is as if the demographic growth of Borinage was the counterpart of the decrease in population of the non Borinage towns of the district, to within 9,511 units ! The demographic power of attraction of Borinage was, in fact, limited to its immediate hinterland or at least to its equivalent.

[5]Moreover, according to J. Puissant, it is this demographic density that draws attention to Borinage: "It is a geographic whole which, from the demographic point of view, is characterised by a particularly high population density and which, since 1831, clearly distinguishes it from its neighbouring rural towns"; J.Puissant (1982), *L'évolution du mouvement ouvrier socialiste dans le Borinage*, Brussels : Académie Royale de Belgique, p 3, our translation.

Table no. 3. - Impact in 1930 of the migration history in the two parts of the district of Mons since 1750

	Borinage	Rest of the district of Mons	The entire district of Mons.
Population without migration in 1930	74 131	185 129	259 260
Reality of 1930	147 816	120 955	268 771
Difference	+ 73 685	- 64 174	+ 9 511

Source : calculations ADRASS

The demographic growth of the district of Mons, a lot more moderate moreover than that of the districts of Liège or Charleroi, is therefore above all the result of the very strong growth of sixteen former communes making up historical Borinage which contrasts with the very slow rise in population of the rest of the district. It is therefore indeed Borinage which was the driving element of the demographic dynamics of Mons during the industrial revolution and even up to the thirties. It remains to be asked what produced these dynamics and why they abated so rapidly compared with those of other industrial districts of Wallonia. Because, from the point of view of it migrational "attractiveness" - which moreover scarcely exerted itself beyond the immediate neighbouring rural towns – the "glory years" of Borinage are limited to four decades at the beginning of the 19th century from 1820 to 1860. Certainly, substantial migratory movement occurred after 1945 – in particular the immigration organised by the Belgian government to win the "battle of the coal" – but they are almost neutralised. Thus between 1945 and 1959, taking the internal movements and those external to the district into account, 318,393 came in but 317,865 left, being a migration balance of 528 for the period or an average of 35 people a year. The diagnosis of the migrational attractiveness made for 1750-1930 is also confirmed for the period 1930-1970, except that the migrants after the war – mainly Italians – contributed to the demographic rejuvenation of Borinage because of their higher reproductive rate.

3. Evolution of economic structures and activities

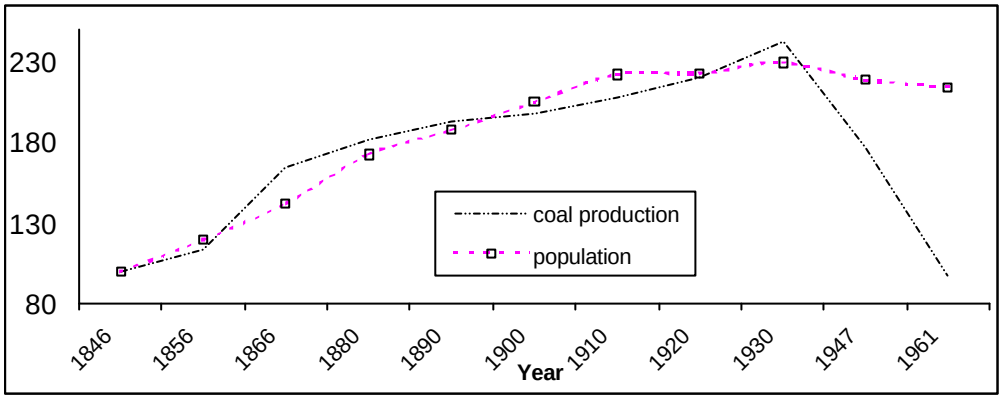
The demographic growth and decline of Borinage are closely related to the fortunes of the coal activity of the region. The latter, traditional in the country since the Middle Ages, experienced considerable expansion from the moment the steam engine appeared on the scene bringing a solution to the problem of pumping out which, until then, had formed the physical barrier to working deeper seams of coal and from when the building of the Mons-Condé canal (1814) opened up the large French market to coal from Borinage. With the introduction of the steam engine first for pumping out, then for extraction the Borinage coalfield entered the industrial era and, at the same time, that of capitalism. In fact, the necessary capital to install these machines was inaccessible to the "pit masters" and other "colliers" who were mining the underground resources of Borinage still largely on the basis of associations. First French capital then "Belgian" capital after the independence of Belgium and the formation of the Société Générale de Belgique, established itself in the region ending the traditional system of mining coal, regrouping little by little – however without ever completely regrouping –the concessions too numerous and too small to make the necessary investments for mining the deep and low yield seams produce a profit.

In order to pay off and ensure the profitability of these investments, the only way was to produce as much as possible because, from the beginning, the competition between collieries in the same coalfield, then between coalfields of the same country and, finally, with the falling of transport costs, between coalfields of competing countries exercised continuous downward pressure on prices. The collieries strived therefore to attract – and the most prudent managers to retain – as large a workforce as possible in order to make maximum use of the production capacities of their concession.

As H. Watelet writes: " ..the lack of workforce appears in the region, if not as a constant at least as a periodic phenomenon.[6]" The immigration into Borinage, undoubtedly spontaneous initially then becomes the result of a deliberate policy of the mine operators to attract the workforce which they greatly need.

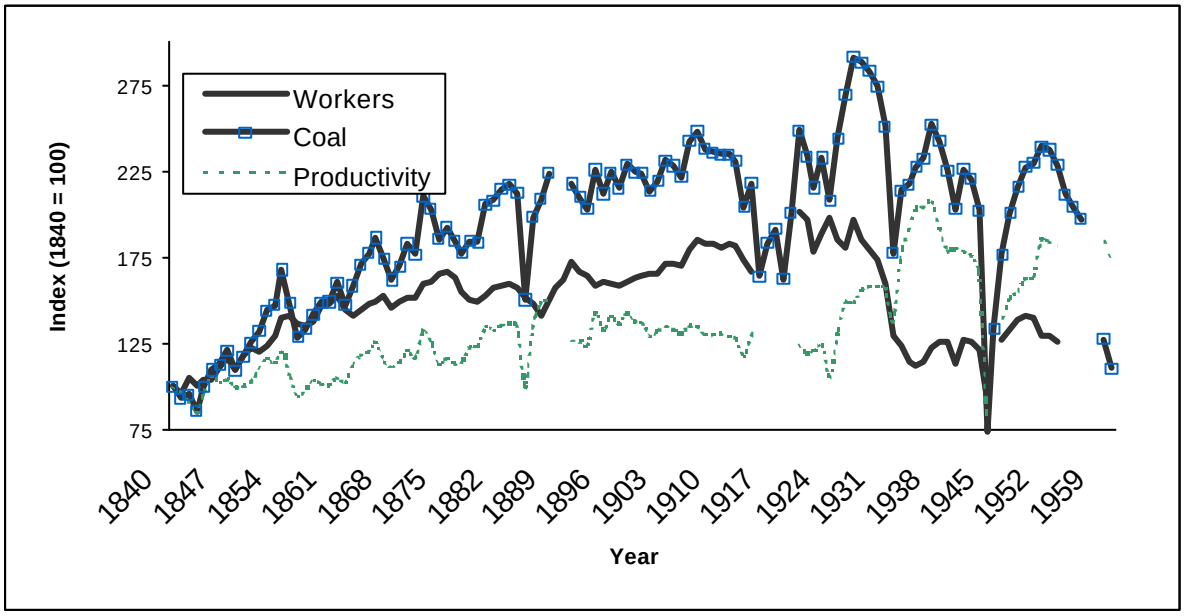
Figure 1 shows the evolutions, standardised at 100 in 1846, of the quantities of coal mined between 1846 and 1961 in Borinage and the total population of the 16 communes. In order to better visualize the convergence of the evolutions the values between those observed for the census years have been interpolated. The parallelism is striking until 1930. From this date coal production collapses and from the first years of the decline in production the population starts to diminish even if the area does not become deserted, unlike in some regions. .

Figure 1. - Evolution of the population and the production of coal between 1846 and 1961



Sources : J. Puissant (1982), Belgian Mine Records (1895-1962) and calculations ADRASS

Figure 2. - Evolution of the production of coal, of the number of miners and of productivity from 1840 to 1960 (1840=100)



Sources : J. Puissant (1982) and Belgian Mine Records. Calculations ADRASS

[6] H.Watelet, op.cit., p 274.

Figure 2 (previous page) shows the evolution in indices of the number of workers employed in the coalfield and of production. It can be seen that the two variables experience numerous fluctuations between 1840 and 1960. The crises follow one after the other: 1856-1858, 1877-1879, 1884-1886, 1914-1918, 1920-1924, then the "great crisis" of 1931 (in fact, production growth rates fall continuously from 1926 onwards, which was the historic peak of production of the coalfield, and fall below 1 from 1927), the 40-45 war then the final decline from 1950 onwards. The number of workers follows the fluctuations in production quite closely but not exactly: the falls in productivity which accompany the crises show this, demonstrating that the number of workers does not decline at the same tempo as production, the adjustment mainly being brought about by falls in wages.

The period which marks the end of the great crisis and the beginning of the war experienced a substantial growth in activity: this is explained by the large investments which occurred at this time in order to no longer be dependent on the manpower available, a dependence characteristic of the coal industry. As an economist of the time says: "The substitution of the human factor by the more plentiful capital factor, has been pursued since the war at a very fast rate which makes it possible to remove the coal industry to some extent from its previous dependence on manpower.[7] »

The period after the war is characterised by a voluntary and quite artificial recovery of production within the framework of what it known as "the battle of the coal" which moreover necessitated the employment of prisoners of war and then of Italian workers literally "imported" into Belgium for this. This recovery was only a flash in the pan: the development of the CECA put an end to this from the mid fifties. At the beginning of the sixties, the Couchant de Mons disappeared from mining statistics in as much as its production became marginal. Not that its seams were geologically exhausted : only a few years before the last collieries closed their gates the reserves of mineable coal of the four main collieries in the region had still been assessed at some 800 million tonnes, ensuring at the extraction tempo of the period (4.7 million tonnes) another 170 years of existence for these enterprises[8]. By comparison, the total production of the coalfield between 1829 and 1961 can be put at approximately 480-500 million tonnes. It is therefore not the exhausting of the deposits which explains the closing of the pits but their lack of competitiveness in the face of, on the one hand, the competition from Belgian (Campine) and foreign coalfields and, on the other hand, the development of a new form of industry based on the car and petrol[9].

The decline and then cessation of coal production in Borinage would not have meant its demographic death sentence if other industries had been able to prosper on the heels of its collieries.
As the first coalfield of the continent – in a chronological sense but also, for a time, in the sense of main producer – Borinage should have been the first centre of growth of the region and attracted businesses – in particular from the iron and steel industry – interested in being closer to this raw material, a source of energy and of carbon, which is expensive to transport. However, throughout the modern history of Borinage the extraction of coal remained the main if not the only industry and, in any case, the only driving force of other enterprises which never succeeded in freeing themselves from it

This is shown by the data, from successive industrial censuses, relating to industrial jobs outside collieries in the region. On analysing them it can be established that the parallel between the evolutions of the total population of the 16 Borinage communes, those of coal production and those of the number of miners is true for the entire workforce. In table 4 it can be seen that the workers who were not miners were never the majority of workers before 1947. And the 52% fall in the number of miners from 1947 to 1961, is repeated among workers who are not miners.

---

7 A. Coppé (1940), *Problèmes d'économie charbonnière*. Bruges : Desclée de Brouwer, p.101.

8 Commission Internationale d'Experts (1954), « Expertise relative à la rentabilité présente et future des charbonnages borains », *Annales des mines de Belgique*, November 1954, 6ème livraison : 684-748.

9 *Cf.* P-M Boulanger (1999), "Technologie, diversité et développement durable: l'expérience boraine" in SSTC, *Modes de consommation et de production durables : le rôle des technologies, de l'aménagement du territoire et du transport*. Workshop du 1er Juin 1999, PADD.

This confirms that the industrial activities which were able to develop alongside the coal industry in Borinage were always of secondary importance to the latter and had to depend closely on it for their opportunities, so that they hardly stood a chance of surviving when the collieries disappeared.

Table no. 4. – Workers, miners and non-miners at Borinage from 1846 to 1961

Year	Total no. workers	Miners	Other workers	Share of the non-miners in the total no. workers (in %)
1846	26 414	20 604	5 810	22
1856	31 068	25 387	5 681	18
1866	35 721	27 574	8 147	23
1880	42 702	28 341	14 361	34
1890	49 076	30 025	19 051	39
1900	55 476	30 466	25 010	45
1910	60 786	33 404	27 382	45
1920	58 856	37 279	21 577	37
1930	56 926	32 316	24 610	43
1947	55 539	24 724	30 815	55
1961	26 567	11 825	14 742	55

Sources : Industrial censuses (INS) and calculations ADRASS

The fact of insufficient industrial diversity in the district of Mons can also be established from a comparison with the two other mining districts of Wallonia which coped better with the disappearance of their coal industry. Table no. 5 shows an industrial diversity index[10] calculated for these three districts from different industrial censuses.

Table 5. – Industrial diversity index of the districts of Mons, Liège and Charleroi from different industrial censuses

Census	Mons	Charleroi	Liège
1846	0,468	0,694	0,730
1880	0,563	0,640	0,747
1896	0,622	0,649	0,747
1910	0,600	0,624	0,730
1930	0,579	0,654	0,747
1937	0,667	0,686	0,763
1947	0,668	0,694	0,752
1961	0,821	0,695	0,722
1970	0,857	0,760	0,704

Sources : Industrial censuses (INS) and calculations : ADRASS

[10] It concerns the index of relative entropy, also known as the « Shannon-Weaver » measurement. For details see P-M Boulanger (1999), op.cit. p 13.

This index has the value zero when all observations are in the same category (maximum homogeneity) and reaches its maximum (1) when all the observations are divided in a uniform way among the various categories (maximum heterogeneity).

It can be seen that from 1836 until 1961, the date when the coal industry more or less disappeared, Borinage had a entropy index[11] which was lower than the other two districts, Liège always displaying the strongest diversity. The closing of most of the collieries in 1961 of course contribute to the increase in the entropy index from the moment only a few small factories and workshops, depending more on arts and crafts than on industry, still exist in the region. It should be noted that this extreme specialisation of Borinage only in the extraction activity occurred right from the beginning of the industrial revolution and was pointed out in a report from 1785 to the ambassador of Belgiojoso[12].

An explanation for the non-sustainable character of the industrial experience of Borinage must be sought in the understanding of this incapacity to attract, retain or favour the growth of dynamic businesses possessing the necessary resources to innovate and adapt to the evolutions in technology and in demand as well as to the pressure of competition.

H.Watelet suggests an interesting explanation for the absence of a centre of the iron and steel industry near the mines of the Couchant de Mons. According to this explanation the coalfield "benefited" very early from an advantageous transport network, unlike at Charleroi and at the Centre, an advantage which would definitely have been to its detriment because it "permitted" it to dispose of what it produced abroad and "a certain routine, a tendency in business circles to export rather that to create opportunities locally may have played a role.[13]" In more polemic terms, it was said that the existence of these transport networks permitted a form of colonial exploitation of Borinage.

This circumstance undoubtedly played a role but is not sufficient, in our opinion, to explain a situation which continued for 200 years in spite of a number of attempts at reconversion and redeployment.

The non-development of Borinage is more probably due to the lack of investments in two forms of capital, the importance of which is underlined by the theory of sustainable development on the one hand and that of endogenic growth on the other: environmental capital and human capital.

4. Human capital

Borinage seems to have suffered a lack of general education of its population. In any case it is this that emerges from the statistics supplied on this subject from the various censuses and which show that the level of education of the population of the district of Mons and even more of that of Borinage, is constantly lower than that of Belgium in general, at least since statistics on this have existed, i.e. since 1866. This does not exclude the possibility of a more favourable situation at the beginning of the industrial revolution.

Table no. 6 shows in the form of indices the discrepancy between the levels of the district of Mons and of Borinage compared with the situation for men and women of the whole of Belgium. The index is calculated from the unweighted rates of the elimination of illiteracy from 1866 to 1947, and

[11] We note that here it concerns the diversity within the single industrial sector. It is more than probable that the conclusions would be even more clear in terms of economic diversity, i.e. taking into account the agriculture and tertiary sectors.

[12] "…If someone says to me it is necessary to extract coal to support lots of people who, without this, would be poverty-stricken, I will reply that if one is forced to extract this precious fossil, one must at least attempt to use it here in factories which will give us as much gold as the coal gives us copper today. I cannot remember without groaning the comparison I made during my journey between the town of Mons and Liège, both equally surrounded by coal. The latter … has a very high population and announces the wealth of its inhabitants from afar, wealth mostly acquired by processing iron by means of which they converted their coalmines into true gold mines. The town of Mons, on the other hand, only announces its solitude … Mons restricts itself to extracting the coal, it sells it and does not use it …" (F.X.Burtin (1785), *De la houille et des houillers. Rapport au Ministre Plénipotentaire Belgiojoso*. Quoted in H. Hasquin (1999), *La Wallonie, son histoire*. Editions Luc Pire, our translation.

[13] Watelet, *op.cit.*, p 296.

afterwards on the basis of those possessing a diploma beyond secondary education. The change in the basis for the calculation results in the gap between the values of the indices between 1947 and 1961.

Table no 6. - Evolution of the indicator of the level of education in the male and female populations of the district of Mons and Borinage from 1866 to 1991.

Year	Belgium		District of Mons		Borinage.	
	Men	Women	Men	Women	Men	Women
1866	100	88	86	76	68	57
1880	100	92	93	83	81	69
1890	100	94	93	83	81	68
1900	100	96	95	88	85	76
1910	100	98	97	91	91	83
1920	100	99	99	95	97	92
1930	100	100	100	97	--	--
1947	100	101	101	101	--	--
1961	100	80	85	83	54	59
1970	100	51	92	53	56	35
1981	100	85	85	76	53	34
1991	100	92	79	75	58	59

Sources : Population censuses, INS, calculations ADRASS

It can be seen that from 1866 and regardless of the period Borinage always shows a deficiency in its level of education. The main cause of this deficiency in education is undoubtedly due essentially to the large presence of young people and even, until in 1914, of children from 12-14, in the mines. It is only from 1889 that a law will forbid children under 12 from working and from 1914 that school will become obligatory until 14.

The migrations can also explain part of this phenomenon: it is as if its qualified, educated population (its industrial and intellectual elite) left Borinage as quickly as possible. Inversely, it is a less educated population from the immediate surrounding countryside, then from Flanders and then from abroad which comprised most of the immigration. The arrival of less qualified people combined with the departure of the most qualified would explain such a low average level. This is why J. Puissant describes this population of miners to us as "left entirely to themselves. Only a minute marginal fraction of small businessmen and publicans form a reduced middle class… There is almost no middle class autochthons, almost no intelligentsia able to train executives and encourage change in the economic and social situation.[14]"

This lack of general education and middle class or working aristocracy is without doubt partly responsible for the lack of innovation in the industries other than mining which developed for a time in the region but which eventually disappeared, such as the engineering industry[15], the shoe industry, glass industry, textile industry, etc.

[14] J. Puissant (1982), *op.cit.*, p.83.

[15] According to M. Bruwier: "If the reputation of manufacturers of fire machines from Borinage extended beyond the region… no technological innovation could be attributed to them. They lived in close contact with the other coalfields, taking advantage of all useful modernisation. » *op.cit.*, p.126, our translation.

5. Environmental capital

Another element which undoubtedly went against sustainable development and which has been too neglected in the studies[16] which we have been able to consult is the **environmental factor**.

The very rapid demographic growth at the beginning of the industrial era and which our demographic analyses give an account of translates, it has been seen, into very high levels of population density in the villages of Borinage. This density has been acquired in a very few years and therefore, of course, without any town planning regulation, in an anarchic fashion with the hurried construction of what has more in common with hovels than real housing[17]. All this leads one to think that Borinage experienced a true "favelisation" due to too rapid growth of its residential area.[18]. The testimonies note moreover that "thousands of large families, thousands of human beings, lower and degrade themselves, wasting away in overpopulated dwellings and in filthy houses.[19] »

At the same time, due to the very high number of concessions, extraction and ventilation pits and spoil tips multiplied and were so dissected, scored by the numerous railway lines taking coal to the Mons-Condé canal, then the miners to the pit heads, that according to a witness from the time: "the population often lives in appalling overcrowding on the remaining land. Along the narrow alleys, often without a garden, the houses are substandard and often the cellar, the ground floor and the first floor are occupied by a different household. Thus in Borinage the dispersion of residential areas and centres of social life is often accompanied by serious overcrowding of the population in poverty-stricken mining villages.[20]"

This lamentable situation hardly improved with time. Here is the description still given in 1950 by M. Crappe, provincial director of the town planning department, of the state of the housing and environment of Borinage : "

a) Shocking combination of industry and housing…
b) Inadequate and decaying housing.
c) Shacks for houses … more than 1000 shacks … in which almost 4500 people are housed
d) Mining villages caused by speculation … construction of sufficient housing to ease an unavoidable atmosphere of despair, boredom and ugliness.
e) Ugliness…
f) Lack of sanitation: lack of drains, water supply; pollution of waterways, lack of greenery, disappearance of forests, subsidence due to mining causing damage to buildings, formation of marshes and permanent or periodic flooding of residential areas.[21]"

In 1980, traces of this overuse of the space were visible in the cadastral statistics: the tips and roads (not registered in the land register) occupy a large share of the space as the table below shows. The development of that not registered in the land register is particularly notable : Quaregnon – which only consists of one village – thus sees 15% of its surface area devoted to transport networks, a share which is certainly less than that in Liège (20.6%) but which is larger than that in Charleroi (12.3), Mons (8.3) or Fleurus (5.8%).

---

16 Only the work already quoted by R. Leboutte, J. Puissant and D. Scuto (1998) devotes a number of sections to the problem of the environment.

17 "In certain centres in Borinage the population poured in throughout the whole of the 19th century. Accommodation was improvised, as it were. Tiny houses were built for often large families and almost always with very limited resources. The landlords and the collieries divided their ground up to the extreme, along narrow roads and down sombre alleys. They only used relatively small amounts of capital in the construction." G.Jaquemyns, op.cit., p.87.

18 See the descriptions of Vincent Van Gogh, quoted in R. Leboutte, J. Puissant and D. Scuto (1998), op.cit. p.43.

19 H. Fauvieau, *op.cit.*, p 67.

20 C. Mertens (1947), *La répartition de la population sur le territoire belge. Etude de démographie sociale*. L'édition universelle. Brussels, p.24.

21 M. Crappe (1950), "Le logement dans le Borinage", *Revue de l'Institut de Sociologie*, (2-3), Brussels : 281-305, pp 282-283.

Table no. 7. – Tips and occupation of the space in Borinage in 1980

Towns	Number of tips	Surface area occupied by tips (ares)	As % of built-up area	Built-up area as % of total	Not registered in the land register as % of total
BOUSSU	53	1123758	30,9	18,1	8,7%
COLFONTAINE	43	515152	16,1	23,4	6,0
FRAMERIES	19	190435	5,1	14,3	5,1
QUAREGNON	52	747471	25,1	27,0	15,8

Sources : Town planning administration, calculations ADRASS.

When we add to that the pollution of the air which corroded the materials (stone, metals, marble) and the coal dust which settled everywhere the result is a countryside bereft of all residential attraction, detrimental to health[22] and therefore possessing little to retain a population which has the means of escape. It is therefore not surprising that the housing in the region is the oldest and most decrepit in Belgium: the tempo of new building there is still lower than that of demographic growth, so that in the years 1920-1930 there was only an average of 82 houses for 100 households.

Unfit for housing, the space was equally unsuitable for welcoming new businesses of any size. It is for this reason that the "coal by-products industry of Tertre", the only example of a business created explicitly with the aim of diversifying the industrial activity in Borinage – we note however that the domain of coal is still not left since it concerns a coking plant for processing Borinage coal – has to be located outside the region in the village of Tertre, according to its manager: "in a village without any direct contact with a railway line of any significance, without even having the advantage of being located on a waterway.[23]". It is because it had been impossible to find "a site of sufficient size free from the dangers of flooding and risks of mining subsidence [24]" near the collieries.

6. Conclusions

The impression obtained from this study may appear excessively sombre and pessimistic with regard to the fate of Borinage and its population. However, this impression should be tempered by recalling that our study is clearly not impartial and that, among other things, omitting the social capital of Borinage – considered by all observers to be very rich and active – contributes to emphasising the negative aspects of the table much more than the positive ones. We remind you above all that the Borinage which we have presented here is often more of a sort of diagram of the real Borinage, intended to show the "exemplary" characteristics of non-sustainable development.

But it was not about instrumentalising, as it were, the region either, placing it at the disposal of the academic scarcely worried about the real Borinage and its inhabitants. This region certainly deserves interest in it for itself and attention paid to its real difficulties. It is also one of our objectives to contribute, however modestly, to drawing attention to the latter by showing everything that Belgian prosperity owes it and the debt that the country has incurred with regard to it. However, we have never claimed to provide a complete diagnosis of the region and even less posed as enlightened reformers in possession of the secret of its rectification. The "life forces" of the region are sufficiently dynamic and lucid not to need us for that. What they perhaps need more, on the other hand, is an institutional framework which places the financial and administrative means of appropriate long-term action at their disposal. Because Borinage as

[22] Even if there are no facts available about the impact of air pollution on the health of the population of Borinage, one can imagine that it hardly differed from that observed in other similar regions, such as Newcastle upon Tyne, for example, where chronic bronchitis was found in 36% of men and 17% of women aged 30 and above. Cf. W. Kapp (1971), *Social Cost of Business Enterprise*, London : Asia Publishing House, p.56.

[23] Mine, M. (1950), "Compte rendu de l'exposé de M.Mine lors de la visite aux usines de la Société Carbochimique et Colorants de Tertre", *Revue de l'Institut de Sociologie*, (2-3), Brussels : 153-159, p 153.

[24] Mine, *op.cit.*, p 155.

real and lively as it is at cultural, sociological, landscape and psychological level does not really exist at institutional level. In one sense, it never existed because it has always been included in larger entities such as the district of Mons and the province of Hainaut. However, before the reorganisation of local governments it corresponded quite closely to sixteen "former" communes which because of this reorganisation have been split up, certain parts of their territory having been incorporated in communes with which they have no sociological or historical affinity. We do not want to imply that the latter do not pay the attention to its Borinage component that it deserves but one can imagine that the interests of Borinage would have been better served if the administrative cutting up had had more regard for the socio-historical realities. The homogenous communes, sharing a past and identical problems, would probably have had greater force and greater effectiveness working together for their future, a bit like within the framework of the "country contracts" which have been invented in France precisely to allow communes which are ecologically, sociologically or economically similar to work together even if they belong to different districts or regions.

What allows us to attempt to draw information of more general significance from the experience of Borinage is that, in the first place, this experience is far from unique. Other regions – mainly mining ones but not only mining ones – in Europe (Great Britain, France, Germany, Russia, etc.) or in America have experienced the same process of rapid growth then decline, followed in the worst cases by abandonment or dereliction. Very close to Borinage, the Nord/Pas-de-Calais coalfield has experienced a fairly similar fate, if G. Chautard and E. Olszack are to be believed: "In terms of sustainability, the fact is undeniable: the coalfield is a perfect example of non-sustainable development. The people and the area are "sustainably" marked by the scars of non-sustainable development and, at times, even irreversibly so.[25] »

This shared experience is not just a thing of the past. What justifies studying its development is that other mining regions in Asia, Africa and Latin America are now experiencing, or soon will experience if care is not taken, an identical fate.

The first lesson is that the tapping of a non-renewable natural resource itself – unless it is extremely rare – does not constitute sufficient requirement for the sustainable development of a region with an open economy; in the first place because of its non-renewable character and its possible disappearance, but also and above all, because sooner or later and generally well before this resource has been exhausted, the region will face competition from other regions, endowed like it and maybe even better than it with the same resource. Moreover this can be generalised to include all local resources liable to loose their rarity or attractiveness. The development of technologies and the internationalisation of economies are necessarily accompanied by changes of location of centres of activity. Thus, before the industrial revolution the power supplied by rivers was an important location factor. The invention of the steam engine meant this was no longer an attraction factor and it was replaced by the presence of large sources of fossil energy (coal). Then electrification made it possible to separate industrial activity from primary sources of energy, causing coal-mining regions in turn to lose their power of attraction. Each time, certain regions have foundered and have been unable to withstand the fact that their main competitive factor became commonplace, but not all. There is nothing inescapable about this decline because other regions, on the other hand, have adapted and have continued to develop despite everything.

With the economic success of a region being linked to the presence within it of local resources which are sufficiently rare or attractive to attract businesses and populations, its eventual decline will result from the disappearance of these local resources (exhaustion of a non-renewable resource, overworking of a renewable resource) or from them losing their attraction, because of what Maskell et al.[26] call *ubiquitification*, a process by means of which, due to the effect of the internationalisation of the economy, the lowering of costs of transport etc. local production factors which until then had been rare become easily accessible from anywhere in the world.

---

[25] G. Chautard, G. et Olszak, E., (2000), "Développement durable et territories en reconversion : l'exemple des zones minières du Nord/Pas-de-Calais", in Zuindeau, B., ed., D*éveloppement durable et territoire*, Lille : Presses Universitaires du Septentrion, 205-237, p.215.

[26] Maskell, P., Eskelinen, H., Hannibalsson, I., Malmberg, A., and Vatne, E., (1998), *Competitiveness, Localised learning and Regional Development*, London : Routledge.

Since local resources which used to be rare become accessible, the main competitiveness factor between regions can only be the cost of labour. This is the reason why current globalisation entails a movement towards a fall in salaries and working costs in general. Borinage experienced something similar when, because of the lowering of the tariff walls and reduction in transport costs, English, German and Campine coal started competing with it, including on its most traditional markets and those geographically the closest. The war of the coalfields was fought on the front of production costs and, above all, wages.

The sustainable development of a region therefore occurs via the creation and maintenance of local resources resistant to ubiquitification. It becomes increasingly clear that the decisive local resource in this respect is the stock of knowledge, of implicit know-how, of skills accumulated in this region, the depository of which is the workforce. The study carried out by Wright[27] into the origins of American industrial successes during the period 1880-1940 clearly shows that the existence of natural resources was only a factor of sustainable development when they were not worked as an element exogenous to society, a "natural" reserve, but as a socially construed endogenous element. It is only then that the use of the resource can become the generator of growing returns – while the activity of extraction alone is subject to falling returns[28] – and of positive feedback. Looked at closer, it is the human and social factors which play the main role in this process, rather than the natural resources. Other analyses, of mining regions in the United States[29], confirm that working the substratum is rarely a good starting point for sustainable development.

Because it is from the human capital that the innovations are born that permit a business or an industry to remain competitive in spite of possibly above-average production costs. These innovations are mainly technological in nature but can also be organisational or relate to marketing, management, etc. Likewise, not all technological innovations are confined to "high technology". Using Danish, Swedish, Norwegian and Finnish examples Maskell et al.(1998) clearly show that traditional industries, with average technology can become centres of innovation and, thanks to the latter, remain competitive in spite of above-average production costs. It is to be noted moreover that tacit, non-formalised, propagated knowledge withstands the phenomenon of *ubiquitification* better than high level scientific and technical know-how which, being more abstract and more formalised, can be passed on and travel more easily.

The growth and preservation of this human capital depend, in turn, on the regional attractiveness, not only in terms of employment, income and quality of work but also at a level of general quality of existence, including residential and social aspects.

The identity of each region and its attractiveness are therefore the result of a particular combination of four forms of capital, forged by the geography and the history: a natural capital (resources and landscape), a social capital (institutions, transport networks, social relationships, culture, traditions), a human capital (know-how, skills, knowledge), a material capital (infrastructures, accommodation, productive tools). Sustainable development assumes the creation and maintenance of positive feedbacks[30] between these four forms of capital.

When examining the history of a region like Borinage, it can be seen at what point the four forms of capital interact and at what point each of them is important in the development : how, in fact, can a qualified workforce and enterprising individuals be retained in a devastated landscape, in decrepit and uncomfortable accommodation ? How can new businesses be attracted to a region known for the violence of its social relationships, the length of its industrial disputes? How can a social climate of cooperation and mutual trust be created when the inequalities and poverty are extreme?

Our study, still incomplete, confirms in full the conclusion of Zuindeau[31] regarding the implications for sustainable development of the adoption of a local, territorial point of view, namely that

---

[27] Wright, G., (1990), The origins of American industrial success, 1879-1940, *American Economic Review*, **80** : 651-668.

[28] Cf. A. Coppé : "The coal industry is, in fact, one where the law of diminishing return stands out most sharply in the long run.", Coppé, A., (1940), *Problèmes d'économie charbonnière*, Bruges : Desclée de Brouwer, p.84, our translation.

[29] Power, T.M., (1996), *Lost Landscapes and Failed Economies. The Search for a Value of Place,* Washington D.C. : Island Press.

[30] Here positive should be understood in the sense of "favourable" and not in the technical sense of the theory of systems as the effect of the reinforcement, the maintenance of a growth or of a decline.

[31] Zuindeau (2000), op.cit.

the number of variables to be taken into account is much higher than for a national or global approach. It also confirms the importance attached by Zuindeau to the landscape in sustainable development at local level:

"…if, at an a-spatial (but also global) level the ecological rules of sustainability only consider two types of variables: natural resources and pollution (…), at territory level other factors may become pertinent. This is particularly so for the landscape. If, clearly, at global level the quality of various landscapes does not affect the sustainability of the entire system, at local, or regional, territory level the quality of the landscape will affect the economic development of the area. For example, areas of reconversion where past industrial growth and its implication through a major structural crisis have led to a substantial environmental liability, among other things characterised by the destruction of the landscape and the formation of industrial waste lands; the whole, in turn, forming an obstacle to new economic activities …"[32]

This could have been written about Borinage …Does that not mean, quite simply, that the landscape forms a genuine natural resource at local level even if it is an organised natural resource?

Another lesson which indisputably emerges from this study and which is obviously not unrelated to that which has just been stated is the importance of **diversity**, economic but also sociological, cultural and of the landscape… A number of authors have shown this and use it to explain the fact that the development of Borinage could not have been sustainable. Our own analyses confirm, in fact, that the region has always shown evidence of less diversity than its neighbours Charleroi and Liège. However, the status of this variable is uncertain: is it a cause of non-sustainability or an indicator? If diversity is a necessary requirement for sustainability, via what channel does it act, what is the principle of its action? It seems to us that more in-depth investigations should make it possible to settle these questions and, therefore, explain to us its exact role in the development, adaptability and resilience of regions[33]. If this role is to be confirmed it would be useful to attempt to show the factors which stimulate diversity and those which inhibit it. This question has more than just theoretical importance: today there are prosperous regions such as Silicon Valley in the Untied States the development of which relies on the domination, almost monopoly of a single industry which at present is flourishing. What will happen to them if, as for Borinage, the moving on to a new technological economic cluster should indicate the decline of this industry? Here even, in Belgium, are there not areas the prosperity of which relies almost exclusively on the petroleum industry and which perhaps risk becoming a disaster area if the price of crude oil passes a certain threshold?

As has been seen, it is not sufficient to commit to the dynamics of sustainable development, to be satisfied with the "think globally, act locally" of the pioneers of environmentalism. It is still also necessary – as the whole history of Borinage shows – to "think locally and act globally.[34]"

[32] Zuindeau, op.cit. p 60.

[33] Jane Jacobs (1969) was the first person to support the theory that diversity is a factor which encourages innovation, thus explaining the economic dynamism of the city. This theory was empirically confirmed for the first time by the study by Gleiser et al (1992). Moreover, biologists and ecologists have always attributed a certain intrinsic value to diversity.

[34] We owe this conclusion to Philippe Van Parijs.

Bibliography

André, A. (1962), *Flénu. Analyse démographique d'une commune boraine*, Dour.

André, A.(1971), « Démographie régionale et fusion de commune - Le cas montois – chronique démographique », *Revue de l'Institut de Sociologie*, XLIV, 1971-1, pp 135-150.

Benko, G. (1998), *La science régionale*, Paris : Presses Universitaires de France.

Bougard, J-P. (1979), « La fécondité au Borinage », *Population et Famille*, 1979-1, pp 109-146.

Boulanger, P-M (1998), « L'éphémère croissance du Borinage : première impressions, premières pistes », SSTC, PADD1, *Leviers d'une politique de développement Durable*, Working Paper n° 7 .

Boulanger, P-M. (1999), *Chronique d'une mort économique annoncée : l'évolution des activités et des structures industrielles du Borinage* », Ottignies, ADRASS, Rapport de Recherche ñ 2, contrat de recherche SSTC HL/DD/010.

Boulanger, P-M (1999a), « Technologie, diversité et développement durable : l'expérience boraine » in SSTC, *Modes de consommation et de production durables : le rôle des technologies, de l'aménagement du territoire et du transport*. Workshop of 1st June 1999, PADD.

Boulanger, P-M et Lambert, A.(2001), « Population et développement au Borinage de 1750 à 1990 », *Espace, Population et Société*, to be published.

Bruhier, M. (1996), *Industrie et Société en Hainaut et en Wallonie du XVIIIe au XXe siècle*, Brussels : Crédit Communal de Belgique.

Chautard, G. and Olszak, E. (2000), « Développement durable et territoires en reconversion : l'exemple des zones minières du Nord/Pas-de-Calais », in B.Zuindeau, ed., *Developpement durable et territoire*, Lille : Presses Universitaires du Septentrion, 205-237, p.215.

Communauté Européenne du Charbon et de l'Acier (1962), *Etude du développement économique des Régions de Charleroi, du Centre et du Borinage*, Luxembourg : collection d'économie et de politique régionale.

Coppé, A. (1940), *Problèmes d'économie charbonnière*, Bruges : Desclée de Brouwer.

Crappe, M.(1950), « Le logement dans le Borinage », *Revue de l'Institut de Sociologie*, (2-3), Brussels : 281-305.

Dehasse, M. (1950), « L'industrie charbonnière », *Revue de l'Institut de Sociologie*, (2-3),Bruxelles :233-244.

Duchêne, J. et Lesthaeghe, R. (1975), « Essai de reconstitution de la population belge sous le régime français », *Population et Famille*, 1975-3.

Fauvieau, H. (1929), *Le Borinage. Monographie politique, économique et sociale*, Frameries.

Friedmann, J. (1992), *Empowerment : the politics of alternative development*, Oxford : Basil Blackwell.

Guellec, D. et Ralle, P. (1997), *Les nouvelles théories de la croissance*, Paris : La Découverte.

Grübler, A. (1999), *Technology and Global Change*, Cambridge : Cambridge University Press.

Hasquin, H. (1999), *La Wallonie, son histoire*, Bruxelles : Editions Luc Pire.

Jacquemyns, G. (1939), *La vie sociale dans le Borinage houiller*, Bruxelles : Editions Falk.

Jevons, W.Stanley (1965), *The Coal Question. An Inquiry Concerning the Progress of Nation and the Probable Exhaustion of our Coal-mines*, New-York:Augustus M.Kelley. 1ère édition chez MacMillan en 1865.

Kapp, W. (1971), *Social Cost of Business Enterprise*, London :Asia Publishing House.

Lambert, A. (1998), *L'évolution de la population totale des anciennes communes de l'arrondissement de Mons au cours de la période 1831 - 1970*, Ottignies, ADRASS, Rapport de Recherche n° 1, contrat de recherche SSTC HL/DD/010.

Lambert, A. (1998a), *Les personnes de nationalité étrangère dans l'arrondissement de Mons de 1856 à 1997 : d'une croissance tardive à l'intégration*, Ottignies, ADRASS, Document de travail n°3, contrat de recherche SSTC HL/DD/010.

Lambert, A. (1999), La population de l'arrondissement de Mons entre 1750 et 1999. Essai de reconstitution dynamique de la population par âge et sexe. ADRASS, Rapport de recherche n°3, contrat de recherche SSTC HL/DD/010.

Leboutte, R., Puissant, R. et Scuto, D. (1998), *Un siècle d'histoire industrielle (1873-1973). Belgique, Luxembourg, Pays-Bas*, SEDES.

Lebrun, P. (1981), «La révolution industrielle », in : *L'industrie en Belgique. Deux siècles d'évolution 1780-1980,* Bruxelles.

Lhote, L. (1950), « La démographie du Borinage », *Revue de l'Institut de Sociologie*, (2-3), Brussels, 81-115.

Maskell, P., Eskelinen, H., Hannibalsson, I., Malmberg, A., and Vatne, E. (1998), *Competitiveness, Localised learning and Regional Development,* London : Routledge.

Mertens, C. (1947), *La répartition de la population sur le territoire belge. Etude de démographie sociale*, Bruxelles : L'Edition Universelle.

Mine, M. (1950), « Compte rendu de l'exposé de M.Mine lors de la visite aux usines de la Société Carbochimique et Colorants de Tertre », *Revue de l'Institut de Sociologie*, (2-3), Brussels : 153-159

Mumford, L. (1950), *Technique et civilisation,* Paris : Editions du Seuil.

Power, T.M. (1996), *Lost Landscapes and Failed Economies. The Search for a Value of Place,* Washington D.C. : Island Press.

Puissant, J. (1982), *L'évolution du mouvement ouvrier socialiste dans le Borinage*, Bruxelles : Académie Royale de Belgique.

Vandermotten, C.(1978), *Ebauche d'une macrogéographie de l'industrie en Belgique. 1846-1970. Thèse de doctorat en sciences géographiques*, Brussels : Université Libre de Bruxelles.

Vandermotten, C. et Marisal, P. (1998), *La production de l'espace économique belge*, Tome 1, Brussels : Editions de l'Université Libre de Bruxelles.

Verley, P. (1997), *L'échelle du monde. Essai sur l'industrialisation du continent,* Paris : Gallimard.

Watelet, H. (1980), *Une industrialisation sans développement. Le bassin de Mons et le charbonnage du Grand-Hornu du milieu du XVIIIè au milieu du XIXè siècle*, Ottawa : Editions de l'Université d'Ottawa.

Wright, G., (1990), "The origins of American industrial success, 1879-1940", American Economic Review, 80 : 651-668

Wrigley, E.A. (1962), *Industrial Growth and Population Change*, Cambridge.