Poverty, inequality, and atmospheric colonisation: Pointers for the school history curriculum

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Abstract

There is an interest in having the school history curriculum cover pressing and inter-related social issues: rising inequalities, even where there is a democracy, and the need to reduce poverty and confront climate change. These focus areas align with another interest among many history teachers: using statistics and data better to understand the past. Since around 1980 income inequalities have worsened after a couple of centuries of decline. This is a key reason why the Sustainable Development Goals of the United Nations prioritise greater equality. While measures of inequality warrant attention, quantitative and qualitative knowledge about the more normative concept of poverty is arguably easier for secondary school history students to grasp. Remarkable declines in poverty since the Industrial Revolution should be understood against the enormous environmental cost of industrialisation. Moreover, in terms of the increasingly used concept of "atmospheric colonisation", colonising countries have been inordinately large contributors to changes in the earth's atmosphere, changes that drive climate change and are likely to worsen poverty. Students need to understand these complexities, in part so they can form opinions around a fair sharing of the burdens of emissions reduction and adaptation to a changing climate. Such matters will become increasingly important when voters must choose between parties in national elections. There are clear implications for history curricula, which are only beginning to receive attention. While the article should be of interest to history teachers anywhere, specific content recommendations are made in terms of the South African

secondary school curriculum.

Keywords: Economic history; Secondary schools; Voter education; Inequality; Numeracy across the curriculum; Climate change education.

Introduction[1]

In the current context of rising inequalities, even where democracy thrives, and of climate change, there is a need for evidence-based explanations of daunting social and environmental complexities. The role of history in this regard is vital.

This article rests on the premise, reflected in the United Nations' Sustainable Development Goals (SDGs), that past, present, and future social inequalities and poverty are central human concerns. South Africa's 2018 Ministerial Task Team report on history in schools essentially shares this premise. Yet there is surprisingly little work mapping out an approach for this within South Africa and even beyond. The article attempts to address this gap. This is possible in part because of new research providing a better sense of the history of poverty, useful data initiatives such as those behind the World Inequality Report (WIR), and new ways of understanding the inequality of historical greenhouse gas emissions.

Given the serious impact of climate change on poverty trends expected in the near future but to some extent observable in our recent past, the history of climate change warrants attention. There are two strands to this. First, the history of anthropogenic emissions, what some have called "atmospheric colonisation",[2] should be understood in part because of its importance in current policy debates around the equitable sharing of responsibilities to address climate change. Second, the emergence, since the 1992 Rio Conference, of institutions and protocols to address climate change should be understood.

History in schools has served many purposes. It has been employed to build a sense of nationhood, to laud colonial projects, and to celebrate anti-colonial liberation movements. Much of the post-1945 emphasis has been on empathy towards other nations, with a view to reduce the risk of international conflict. This article argues that one emphasis should be the one espoused by Bailly (1998) and others in a 1998 issue of UNESCO's academic journal *Prospects*: an understanding of history that improves insights into sustainable development and humanity's relationship with the natural environment.

The article is organised into five key sections. First, history in South African secondary schools is introduced as well as the 2018 Task Team report. The WIR, a recently established initiative led by the economist Thomas Piketty and others and considered important in the Task Team report, is discussed. Second, recent advances in understanding the history

1 "The author would like to acknowledge advice and insights from colleagues in the Department of Basic Education, RESEP at Stellenbosch University and ISER at Rhodes University, all of which helped shaped the article."

2 See for instance Borràs (2019).

of poverty, particularly in the field of economics, are summarised. Third, how school history could draw from these advances is examined. Fourth, the concept of atmospheric colonisation and how this could be included in the history curriculum is explained. Fifth, specific proposals are put forward for Grades 8 to 12 on how to incorporate the themes of inequality, poverty, and climate change into existing curriculum topics.

The article is intended to inform curriculum development in South Africa and beyond, and to assist teachers wishing to cover new and relevant themes. However, it is also intended to inform data analysts on what new work could assist history teachers seeking materials to use in the classroom.

School history issues in South Africa and beyond

History is optional in Grades 10 to 12 in South Africa, and flows from the history half of the compulsory subject social sciences, offered up to Grade 9 (the other half being geography). Grade 8, the start of secondary schooling, covers the period from around 1800 to the end of World War I. Grade 9 focuses on the twentieth century, from 1919. In Grade 10, the focus shifts backwards to 1600 and developments over three centuries to around 1900. Grades 11 and 12 revisit the first and second halves of the twentieth century respectively. In each grade both South African and world history are covered.

In 2022, a third of Grade 12 learners took history; this figure has risen continuously from 19% in 2013. Some of history's popularity relates to history being seen as relatively easy: since 2013 history has enjoyed the highest pass rate of all the major non-language subjects, with the examination pass rate being 88% in 2022.[3]

The 2018 Task Team report endorses elements of the existing system: history should remain a distinct discipline in schools, and history teachers should have majored in history at university. However, it also recommended changes: history should be compulsory up to Grade 12; there should be more emphasis on historical enquiry skills relative to learning content; potentially divisive topics in South Africa should be confronted rather than avoided. On this last point, the review refers to the WIR and its accompanying data as a useful tool for understanding South Africa's extreme inequalities (Ndlovu *et al.*, 2018: 56, 68, 130-133). The value of quantitative approaches to understanding history is alluded to in passing in the 2018 report. But the matter receives no substantive focus. This article in part aims to convince the reader that such a focus would have been compatible with, and

3 From official examination reports of the Department of Basic Education.

indeed furthered, the report's aims.

The 2018 report argues for going beyond the predominant focus on political history, by including more social and economic history. How to do this is a contested matter, with tensions between, for instance, proponents of learners' interpretations of primary sources and proponents of more theoretical approaches (Ford, 2015). Moreover, as argued by Kallaway (2012), it is important to consider the level of complexity with which secondary learners can engage.

The WIR series, started in 2018, was prompted by concerns that income and wealth inequality within countries had worsened since around 1980, despite a decline in inequality between 1900 and 1980.[4] It was also prompted by insufficient use of available data to monitor long-range inequality trends. Two WIRs have been released so far, for 2018 and 2022, with the second extending the historical focus back to around 1820. South Africa receives special attention in both WIRs.

Inequality trends in the rest of the world are essentially mirrored in South Africa, with several South African inequality indicators worsening since around 1990, despite the advent of democracy, even if inter-racial inequality has declined (Alvaredo *et al.*, 2017: 145). South Africa exemplifies that political and economic history do not necessarily move in ways one may expect: under certain conditions democracy can be associated with greater inequality. Globally too greater democratisation has been accompanied by greater income inequality.[5]

A worldwide trend, beginning around 2010, towards more quantitative historical research, has been observed. According to Ruggles (2021), this trend represents a third wave of quantitative emphasis in the study of history, with the two earlier waves found at the beginning of the twentieth century and the 1960s to 1980s respectively. Judging from past trends, quantitative approaches in history will continue to attract adherents, in part because of multidisciplinary work where, for instance, demographers and economics delve into history, and consequently influence the work of historians. At the same time, more traditional historians are likely to resist what could be seen as an excess of quantitative analysis. Non-quantitative textual sources may appear pre-eminent for proponents of

4 See Alvaredo *et al.* (2017: 9). The conclusion that within-country inequality has worsened in recent decades is shared by the World Bank (2016: 10). Prominent economists have disagreed with this conclusion, in particular as far as one country, the United States, is concerned. Yet the consensus among economists agrees with the notion of rising within-country inequalities – for instance Gale, Sabelhaus, and Thorpe (2023).

5 This becomes clear if one compares, for the 1970 to 2000 period, global democracy trends in V-Dem Institute (2023: 10) to trends for income inequality, including within-country inequality, in Chancel *et al.* (2022: 13).

local history, given that quantitative data lend themselves most to national or international historical narratives.

A separate impetus for more quantitative approaches in the history class is the "numeracy across the curriculum" movement. This assumes that numeracy skills are too important to be confined to mathematics only. Phillips (2002) argues that history teachers should learn how to select statistics that can deepen an understanding of topics that are already being taught. The South African history curriculum is typical insofar as it reflects no explicit interest in quantitative approaches: none of the eight skills referred to in the curriculum documentation relate to quantitative enquiry, though such enquiry could easily enrich some of the eight skills areas.

While the Task Team report does not discuss climate change specifically, in the last decade UNESCO and other organisations have begun to place a strong emphasis on climate change education. Education International (2021), the world federation of teacher unions, has called for universal climate literacy among youth.

Recent advances in understanding the history of poverty and inequality

The WIR argues that a key reason why rising inequality since around 1980 is concerning is that this makes it more difficult to reduce poverty. In a seminal history of global poverty, the economist Ravallion (2016) explains that poverty reduction has been a growing concern of much economics scholarship during the past approximately three centuries. During the First Poverty Enlightenment, lasting from about 1800 to 1950, new knowledge and policy proposals relating to poverty emerged and poverty rates declined, though not as rapidly as after 1950: between 1800 and 1950 the percentage of the world's population considered poor dropped from around 85% to 55%, or 0.2 percentage points per year. This trend was not evenly distributed across the globe, as will be explained below. In the Second Poverty Enlightenment, from around 1950, political factors such as decolonisation and a stronger push for gender equality, as well as technological changes in agriculture, invigorated and reshaped the focus on reducing poverty. Between 1950 and 2010 the global poverty rate dropped from 55% to around 15%, a decline of 0.7 percentage points per year.

This decline in the poverty rate over two centuries co-existed with a *worsening* of inequality, especially before 1900, as industrialisation, colonisation, and slavery generated new types of inequality. The world is considerably less equal today than it was around 1800 (Chancel *et al*., 2021: 13). That poverty rates can decline while inequalities are rising is a

phenomenon that can easily appear counter-intuitive. It seems important for school history students to understand this complexity.

Producing comparable poverty rates over a longer historical period, characterised by great technological and socio-cultural change, is an immensely complex task which is sensitive to, among other things, philosophical underpinnings. The basic ideas and debates, however, are relatively straightforward. In presenting historical poverty rates, Ravallion elaborates on earlier analysis, using time series data on three things by country, or group of countries: gross domestic product (GDP) per capita; the share of income received by each decile (tenth) of the population, with the top decile being split into two twentieths; and total population.

Ravallion employs, among other measures, one 1985 United States dollar a day of income per household member as a threshold for escaping extreme poverty. This threshold has been widely used. What this means in actual human experience is of obvious importance. The threshold itself is based on estimates endorsed by governments around the world, particularly in poorer countries, of what a basic basket of food, plus some basic non-food items, would cost in monetary terms if the goods were bought (Chen and Ravallion, 2010).

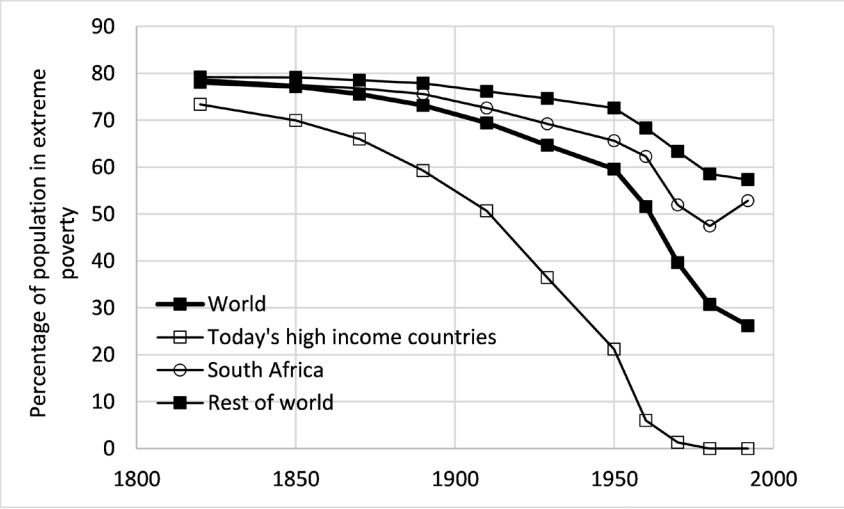
For more recent decades, poverty rates per country or region have been calculated using information on household size and consumption as reflected in sample-based household surveys. The introduction of these surveys can be considered a historical milestone in its own right, one that greatly facilitated the understanding of social history. To illustrate, the establishment of India's National Sample Survey in 1950 was an integral part of the country's decolonisation and democratisation process: it assisted planners in the newly independent state to understand the needs of not just elites but society as a whole.

However, for most of the past 200 years, two vital sources, household surveys and national accounts monitoring GDP, have been virtually non-existent, especially outside Europe and North America. Concerning average GDP per capita, there is an important body of literature estimating this for the past millennium, much of it initiated by Maddison (2001). Given the absence of money in the modern sense in many societies, historical sources, for instance, on food production and consumption levels have been used to produce comparable monetary values. Concerning inequality of income distribution, analysis of historical phenomena with large impacts on inequality, in particular the Industrial Revolution and colonisation, is used to build assumptions on how income distributions are likely to have changed.

Figure 1 below draws from a dataset accompanying Bourguignon and Morrisson

(2002: 788) that breaks the world up into 33 countries or groups of countries, each with statistics for 11 years in the range 1820 to 1992. South Africa is one of the 33 countries. History students could conceivably use this simple dataset to study the history of poverty and develop quantitative skills. For this graph, the threshold for "extreme poverty" is the consumption possible in the United States in 1993 using 1.08 dollars per day and per person.[6] The WIR draws from this data, though the data published with the WIR, known as the World Inequality Database (WID), covers fewer past years, for instance only from 1913 in the case of South Africa.

Figure 1: Extreme poverty in South Africa and elsewhere 1820 to 1992



Source: Own analysis of Bourguignon and Morrisson (2002) dataset found at https://web.archive.org/web/20120217010359/http://www.delta.ens.fr/XIX (in April 2023).

A South Africa-specific analysis by Van der Berg and Louw (2004), using a different approach, arrives at lower poverty rates for South Africa than those seen in Figure 1. This is due to the use of a lower per capita income threshold. This analysis also arrives at an *increase* in poverty towards the end of the twentieth century for South Africa, as in the above graph, though in Van der Berg and Louw (2004) this increase commences around 1990 (in the

6 See also World Bank (2001: 23).

graph it commences in 1980).

A vital distinction for an economic historian would be the relative importance of economic growth, or the increase in the size of the "cake", and declining inequality in the distribution of the "cake" of total income. Either of these two factors can reduce poverty. However, as will be discussed below, in South Africa and the world it was economic growth rather than reductions in income inequality that accounted for almost all poverty reduction in the last 200 years.

Strikingly, school history curricula appear to ignore one of the most significant trends in human history: population growth.[7] The fact that the world population increased five-fold between 1820 and 1992 means that the absolute number of people living in poverty almost doubled over this period, even if poverty rates fell. In South Africa, the number of poor people increased seven-fold between 1820 and 1992. The contrast between rates and raw numbers raises important philosophical questions. In particular, can improvements in rates combined with a deterioration in the number of people in poverty be considered progress?

Ravallion (2016: 17) speculates that colonisation largely explains worsening poverty in certain periods and world regions while arguing that data limitations make it difficult to quantify the phenomenon. Moreover, the monetary poverty lens has some clear drawbacks. In particular, it fails to take into account the psychological trauma of colonisation. This is better captured in Walter Rodney's *How Europe underdeveloped Africa*, first published in 1972 (discussed below), and Iliffe's *The African poor*, of 1987. Measures of holistic well-being that are comparable over time have begun to emerge, for instance in the *World happiness report*,[8] but these measures have a very limited historical span.

Why and how to study poverty in the history class

Focussing on poverty rates is perhaps the simplest way of introducing a stronger quantitative focus on inequality in the history class, and easier than considering a more sophisticated indicator, such as the Gini coefficient. Poverty rates feature strongly in the SDGs, and the South African political discourse (discussed below).

Poverty should be dealt with sensitively in the South African context, where between

7 Curriculum documents from South Africa, Brazil, India and England were found to display no focus on this topic.

8 https://wellbeingintl.org.

21% and 56% of the population have been classified as poor by Statistics South Africa (2017: 14). How poverty statistics vary, depending on definitions, should be underlined to reduce the risk of labelling specific learners in the class. In schools serving exclusively middle-class communities, a deeper examination of the historical causes behind social disadvantage has been demonstrated to reduce common prejudices, such as that people are poor due to their lack of interest in escaping poverty (Mistry *et al*., 2012).

There is value in examining measures of what has come to be known as multidimensional poverty. Statistics South Africa (2020: 48), in employing an internationally used methodology for this, identifies seven non-monetary factors reflecting levels of child poverty in South Africa, the most influential one being sub-standard physical facilities at school.

Indeed, education's role in perpetuating or breaking cycles of poverty in the last two hundred years lends itself well to study in history class. Extracts from international learner test data help explain how international and within-country income inequalities are underpinned by inequalities in what children learn at school. However, these data only span the last twenty years for a substantial number of countries, including South Africa. The historical factors behind South Africa's low point of departure regarding learning levels but also its relatively rapid improvement, achieved through reduced inequalities since around 2002, are important but largely under-studied (Gustafsson and Taylor, 2022). In contrast, statistics on participation in school go back to the creation of South Africa as a country in 1910, thus offering easier integration with periods specified in the curriculum (Fedderke Kadt and Luiz, 2000).

One benefit of a more quantitative focus in the history classroom, be it in terms of poverty or other themes, is opportunities to examine data-generating processes and the uncertainties typically associated with statistics. How to discern differing levels of reliability among statistics is increasingly important for young people in a context where statistics are easily manipulated in the political discourse. A useful discussion of the reliability and comparability of poverty statistics in Africa is provided by Jerven (2019). A sufficient awareness of these uncertainties can prevent reading too much into the available statistics while appreciating that statistics illuminate important historical trends which would be lost in their absence. The latter is important in the context where even sufficiently reliable statistics may be rejected for political purposes, for instance in the pursuit of climate change denialism (discussed further below).

An important resource available to teachers, including history teachers, to raise awareness of uncertainties associated with self-reporting in surveys, and sample-based

statistics, is Statistics South Africa's (2013) "Census @ school" materials, which facilitate simple school-based simulations of household surveys.

Poverty and atmospheric colonisation

The term "atmospheric colonisation", coined recently and used in academic circles (Borràs, 2019) as well as the United Nations (2022), refers to the effect of the Industrial Revolution, in combination with colonisation, on the global climate. The basic concept is that the atmosphere, like land, is a finite resource that has been unjustly utilised since the onset of the Industrial Revolution, especially through the burning of fossil fuels. Since the Industrial Revolution, above all European societies and their offshoots across the globe have significantly raised carbon dioxide levels in the atmosphere beyond what could be considered a fair share of their "carbon budget", with negative repercussions for the welfare of generations of humanity.

Estimates of national carbon budgets are debatable, yet the evidence points strongly to developed nations having used up their budgets: the United States has already used up around twice its budget (Thompson and Montañez, 2023). Developing nations have often not used all of their budget: South Africa had used around 60% of its budget by 1999 (BASIC experts, 2011: 43).[9]

Recent decades have seen evidence of the welfare implications of climate change. As early as 2002, the World Health Organization (2002: 72) published statistics on additional mortality attributed to climate change. Mazo (2010) and others have argued that the post-2003 conflict in the Darfur region of Sudan, partly over scarce natural resources and costing up to half a million lives, can be considered the first conflict of the modern age attributable to climate change.

This type of evidence will unfortunately mount. Jafino *et al.* (2020) estimate that by 2030 some additional 32 million to 132 million people, mostly in Sub-Saharan Africa and South Asia, will be poor due to climate change.

The historian Amanda Power (2020; 2022), in speaking about the school history curriculum to the Royal Historical Society in Britain, underlined two key focus areas. First, students should understand that climate change adds an additional layer to the inequalities resulting from industrialisation and colonisation, a layer which is particularly difficult to undo because it alters the chemistry of the atmosphere. Climate change further

9 In Table 3, 10.55 over 17.80 is around 60%.

problematises the notion of human progress due to questions of ecological sustainability.

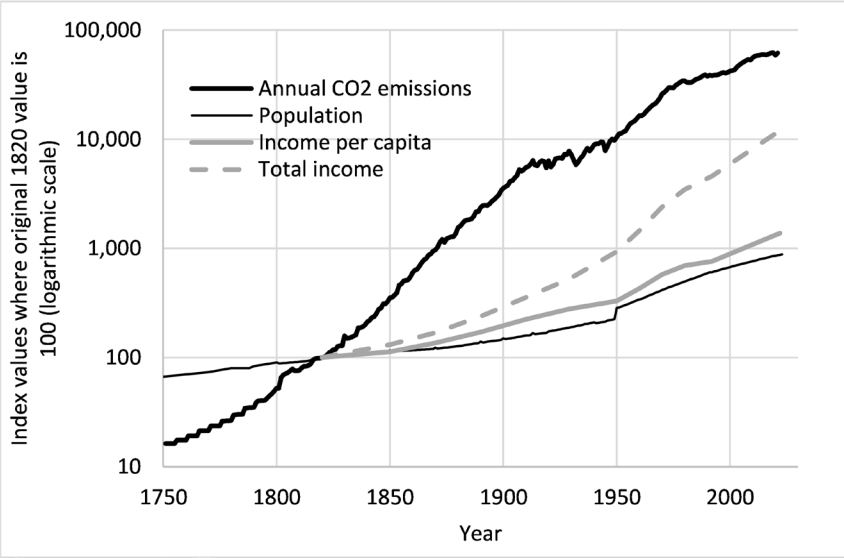
Second, students should understand how knowledge about climate change has evolved. Unlike visible inequalities such as income inequality, unequal utilisation of national carbon budgets is largely invisible. The evidence needed to partition responsibilities across countries to reduce emissions, commonly referred to as mitigation, and to pay for adaptation to a different climate, has emerged fairly recently. Moreover, the responsibility of key emitters to take action increased enormously when the science around climate change matured in the 1980s.

The first of Power's (2020) focus areas involves examining which societies have most exceeded their carbon budgets. The 2022 WIR deals comprehensively with climate change and presents a history of emissions which lends itself to use in the classroom. Europe and North America went from producing by far the most emissions between 1850 to 1950, to around half in the 1970s, and around a third in 2020.[10] The historical legacy is strong, as emissions from two centuries ago continue to influence the climate today.

The WIR 2022 analysis draws from PRIMAP-hist data, a relatively simple dataset used to generate Figure 2 below. The relationship between population growth, increases in average welfare represented here by income, and emissions is vital. Both average income and population increased around tenfold between 1820 and 2021 and thus each contributed more or less equally to increases in total income, which in turn is strongly correlated with emissions. The latter is due to the extent to which consumption, be it of food, housing or leisure, has depended heavily on the burning of fossil fuels since the Industrial Revolution.

10 See Chancel *et al* (2021: 116).

Figure 2: Global income, population and emissions since the Industrial Revolution



Sources: Annual CO2 emissions from analysis of the PRIMAP-hist dataset published by the Potsdam Institute for Climate Impact Research. Global population from ourworldindata.org. Income data from the abovementioned Bourguignon and Morrisson (2002).

The PRIMAP-hist dataset helps situate the historical emissions of South Africa within the Sub-Saharan Africa region. Though South Africa's population has never exceeded 10% of the region's population since 1820, South Africa's contribution to the region's emissions peaked at 36% in 1987, declining after that to 23% today. These trends reflect South Africa's relatively early industrialisation in the region and to an extent the apartheid regime's attempts to evade sanctions through the emissions-intensive Sasol parastatal (discussed below).

South Africa finds itself being part of a developing world calling for rich countries to assume their due responsibility when it comes to climate change, while also a relatively high emitter in per capita terms. These factors, in part paradoxical, are beginning to shape South Africa's foreign policy. Understanding the historical background to this will become increasingly important for South African voters.

The 2022 WIR presents groundbreaking work focussing not just on inequalities in

emissions across countries but across social classes. This allows for a far more informed historical analysis. While in 1990 most of the emissions inequality was *between* countries, by 2019 most of this inequality resided *within* countries when half of all emissions were accounted for by the 10% of the global population emitting most.[11] Within South Africa, the post-1980 worsening of income inequality discussed previously is mirrored by worsening inequality with respect to emissions: the top 10% of emitters in the population contributed to 30% of national emissions in 1990, but 40% in 2020.[12]

Turning to the history of the science and politics of climate change, it is important for students to appreciate that while the climate change challenges for humanity are immense, since the 1980s the foundations have been laid for the necessary political, technological, and social change. Political milestones in this recent history include the 1992 Rio Declaration, the 1997 Kyoto Protocol, the 2009 Copenhagen Accord, and the 2015 Paris Agreement (Skidmore and Farrell, 2022; Clemençon, 2023; Maslin, Lang and Harvey, 2023). The use of moral persuasion and diplomacy to get "atmospheric colonisers" to reach a zero emissions state, while ensuring that countries which had not used up their carbon budgets remained within budget (Bacchetta, 2023), is not dissimilar to processes aimed at ending the Vietnam War and preventing a nuclear catastrophe during the Cold War. Economic isolation of countries not complying with international commitments has not occurred yet, but is considered a possibility (Cirone and Urpelainen, 2013). However, there are also key differences. Climate change is likely to affect societies more gradually than war, even if the ultimate harm is comparable. This reduces public interest in, for instance, mitigation. Arguably, the leverage of less powerful countries in the climate negotiations is even weaker than it would be in a military conflict.

Specific curriculum suggestions

Below, ten of the 25 topics found in the history curriculum for Grades 8 to 12 are identified as presenting opportunities to explore the questions discussed so far. Suggested focus areas within these ten and important academic sources are discussed as are possible uses of statistics. To bring together the quantitative side of the discussion, key statistics relevant to all five grades are presented in one table.

11 See Chancel *et al* (2021: 122, 126).
12 Own analysis of the 2022 World Inequality Database data.

Grade 8: Industrialisation, global inequality, and carbon extraction

The Grade 8 topic "Industrial Revolution in Britain and Southern Africa from 1860" offers opportunities to examine the impact of industrially-driven economic growth on emissions and poverty reduction in Britain, and on inequality and new forms of poverty in what was to become South Africa.

Table 1 is derived in part from the World Inequality Database. The Industrial Revolution saw Britain's per capita emissions increase from 3 to 13 tonnes between 1820 and 1900. The doubling of the population, from 21 to 41 million, implies an eight-fold increase in total emissions. This reflects the rise of non-renewable fossil fuels, largely coal, for heating and mechanical work. In 1600 around 80% of Britain's energy needs came from three traditional sources: food permitting human labour; feed for working domestic animals; and firewood. Coal accounted for some 10% of energy consumption. The share of coal increased to 50% in 1700, 75% in 1800, and 95% by 1900 (Warde, 2007: 74). Coal's rise thus predated the onset of the Industrial Revolution proper.

Table 1: Historical statistics on average income, inequality and emissions

		Population (millions)*	Average adult income (2022 Euros PPP)*	% of total income in top 10%*	% poor*	Literacy rate among adults (%)	Per capita emissions (tonnes CO2-equivalent)
United Kingdom	1820	21	3,329	50	78	53	3
	1900	41	9,590	56	24	85	13
France	1820	32	2,875	60	86	38	1
	1900	39	6,952	50	38	75	6
Russia	1900	70	2,276	47	83	34	3
	1985	143	19,374	23	8	98	22
	2021	146	24,587	51	10	100	19
USA	1900	76	7,430	40	33	97	12
	1985	239	53,281	37	5	100	24
	2021	330	57,734	46	6	100	18
China	1900	402	1,146	50	92	30	1
	1985	1,059	2,969	30	63	65	3
	2021	1,406	18,692	43	16	97	10

		Population (millions)*	Average adult income (2022 Euros PPP)*	% of total income in top 10%*	% poor*	Literacy rate among adults (%)	Per capita emissions (tonnes CO2-equivalent)
South	1820	2	1,327	58	91	10	1
Africa	1900	5	3,141	63	82	26	2
	1985	32	11,376	64	53	76	14
	2021	59	15,182	65	40	95	10
Sub-	1900	87	2,509			3	1
Saharan	1985	447	4,686	58	65	49	3
Africa	2021	1,182	5,795	56	55	67	2

Sources: The four variables marked with * are calculated using the WID dataset. The percentage poor statistic used the WID income distribution values, and set the poverty line to produce 40% poor in South Africa in 2021 (the WID does not select a specific poverty line). An adjustment to the three WID income-related statistics for South Africa in 1985 was applied, using Van der Berg and Louw (2004) and the World Bank's World Development Indicators, given obvious problems with the WID-based statistics. Where possible, literacy rates for 1985 and 2021 are from the World Bank's World Development Indicators, with Van Leeuwen and Van Leeuwen-Li (2014: 94) being the second option for 1900 and beyond. For 1820 (United Kingdom and France) values are those compiled by Roser and Ortiz-Espina for Our World in Data at ourworldindata.org (2018 revision). South Africa's 1820 and 1900 literacy values are drawn from Christopher (2015). Per capita emissions is from the aforementioned PRIMAP-hist dataset.

Between 1820 and 1900 Britain's poverty rate declined dramatically, from 78% to 24%, though inequality worsened insofar as the share of total income of the richest 10% rose from 50% to 56%. The figures in Table 1 illustrate the fact that poverty declined not because inequality declined, but because average per capita income roughly tripled over the period. The "cake" grew.

Descriptive histories of Britain, and even the South African curriculum, emphasise the misery experienced by Britons in crowded cities. Yet, apart from declining poverty, there is evidence that Britons experienced improvements in their diet and health, were able to afford better quality accommodation, and lived longer.[13] A holistic picture clearly requires different sources, including nationally representative statistics. Britain's economic growth

13 This appears to be the recent consensus, though data issues continue to provoke lively debate – see Harris (2004).

relied in part on control over distant colonies and involvement in the slave trade (Wardley-Kershaw and Schenk-Hoppé, 2022). More broadly, the Industrial Revolution facilitated an unprecedented rise in inequality *between* countries.[14]

Political forces within Britain assisted in reducing poverty. Pressure from trade unions, but also elite fears of social revolt, led to better wages and the introduction of compulsory primary schooling in 1880.[15] The history of compulsory schooling should be a topic of interest to learners. While this can deprive poor households of income from child labour, common in nineteenth-century Britain, adult workers are more likely to demand better wages, and literate adults are more productive than illiterate adults, especially in an industrial economy.

In South Africa, the period 1860 to 1900 saw the well-being of a few, particularly whites, improve. Poverty remained high, declining slightly between 1820 and 1900, from 91% to 82%. The share of income of the richest 10% increased from 58% to 63%. How is a poverty rate of, say, 82% in South Africa for 1900 calculated, and how should it be interpreted? This 82%, calculated from the WID, considers the consumption of non-traded goods by households, in particular the household's own agricultural production.[16] But given the methods, there are important uncertainties around such figures. Alternative measures of welfare are more difficult to obtain for South Africa than for Britain, but some exist. Wylie (1989) provides a valuable account of changes in patterns of hunger in the nineteenth century: while income from migrant labour and technological innovations such as the metal plough provided better protection against the problem of drought, worsening land scarcity aggravated hunger.

Grade 9: Economic growth with inequality in twentieth-century South Africa

Here two curriculum topics focus on five turning points in South Africa during the latter half of the twentieth century. In broad terms, in South Africa, the trend seen elsewhere of poverty declines, but with persistent inequalities, prevailed. But South Africa's apartheid system closed many opportunities for escaping poverty which existed elsewhere while

14 See Chancel *et al.* (2021: 66).

15 See Ravallion (2016: 497).

16 Alvaredo and Atkinson (2022) explain that official national accounts data are projected backwards in producing South Africa's WID values and such accounts have included 'vegetables and livestock produced for the market or for own final consumption' (Statistics South Africa, 2002: 10). Importantly, methodological explanations of relevance here are often less detailed than one would want, which compounds the interpretation problem.

contributing to exceptionally high emissions.

The agency of oppressed South Africans is recognised in the curriculum in terms of their political resistance to apartheid. What should arguably also be covered is how some used the few available opportunities to improve their economic situation, even as others saw their lot worsened by apartheid. There could be an early introduction to the South African middle class – the curriculum formally only introduces this in Grade 10. Defining the middle class is even more contentious than defining the poor, yet middle-class growth is closely linked to poverty reduction. Statistics South Africa (2009: 8, 11) argues the middle class was 23% of society in 1998, with just over half of it comprising white South Africans. The historical question is how, despite racial discrimination, a small black middle class was able to emerge. While apartheid's land policies severely curtailed the opportunities of black farmers, largely restricted to the "Bantustans", other avenues offered some opportunities to black South Africans (Lewis, 1984). The realisation of the apartheid government that employers needed a more skilled workforce to sustain economic growth, necessary for sustaining the tax revenue of the state, led to an expansion of state-run segregated schooling for black children, clearly of a much lower quality than that provided to whites. New teaching posts contributed to some growth in the black middle class, even if black teachers were paid considerably less than white teachers. The number of black African teachers rose from 20,000 to 140,000 between 1950 and 1990 (Fedderke, Kadt and Luiz, 2000: 265). Nursing provided another small, yet expanding conduit into the middle class (Southall, 2014). The "Bantustans" provided limited opportunities for publicly employed administrators and black businesspeople (Mabandla, 2012).

As seen in Table 1, in 2021 South Africa displayed per capita emissions on a par with China's, despite being a much poorer country. Two driving forces behind this were the apartheid government's advancement of white Afrikaners and fear of a total oil embargo by the outside world. Coal mines and coal-driven electricity generation were seen as key for advancing Afrikaner capitalist interests, relative to the dominant white English-speaking capitalist class. To maximise this opportunity, state control of investments in coal-related industries and electricity prices was considered important. In 1948, the state-run Escom electricity generation company achieved control over the entire industry with the purchase of the large private Victoria Falls and Transvaal Power Company. The state promoted low electricity prices and high industrial consumption. High consumption was partly driven by restrictions on the movement of labour to cities. This encouraged capital-intensive production modalities and suppressed employment. Though the apartheid plan largely worked, weaknesses in state capacity resulted in electricity demand outstripping supply,

and load shedding, throughout the 1950s (Van Doesburgh, 2022; Sparks, 2012).

Sasol, which focussed on converting coal to liquid petroleum, was established by the state in 1950 in part as a safeguard against an oil embargo. The conversion process was emissions-intensive, with emissions associated with a litre of Sasol's oil being twice that of imported oil (Marano and Ciferno, 2001). Sasol's output accelerated rapidly when the end of the Shah's rule in Iran in 1980 seemed to spell the end of South Africa's only remaining foreign oil supplier. Yet even after 1980, South Africa remained highly reliant on mostly secret supplies from abroad. Sasol's production was at most able to meet just 20% of the country's demand (Kaempfer and Lowenberg, 1988: 23).

Grade 10: Inequalities in 1600 and questioning the French Revolution

The Grade 10 topic "The world around 1600" provides an opportunity to discuss a period characterised by the co-existence of *high* levels of poverty but *low* levels of inequality by today's standards. The vulnerability of a largely agricultural, and largely illiterate, world to climate anomalies warrants attention. The topic "The French Revolution" provides an opportunity to examine how historical patterns of inequality easily persist, even under governments with a rhetoric focussing strongly on change.

Only 5% of humanity was urban in 1600, compared to 54% in 2016.[17] Agricultural technology was rudimentary as were the means to transport agricultural produce to markets. Innovation was made difficult by low levels of literacy. The literacy rate of 3% for Sub-Saharan Africa in 1900, seen in Table 1, would have been the norm worldwide in 1600, including in European countries such as Spain, Ireland, and Sweden, though in England and France, somewhat higher literacy rates of around 16% were achieved at the time (Buringh and Van Zanden, 2009).

Poverty tended to be the result of poor harvests brought about by climate anomalies, mostly local but occasionally with a global reach. The 1600 eruption of the Huaynaputina volcano in Peru has been linked to unusual climate patterns across the world, and widespread famine particularly in Russia (Verosub and Lippman, 2008). Koch *et al*. (2019) find evidence of what is perhaps the only instance of a global disruption of climate patterns by humans in the pre-industrial era. European colonisation of the Americas involved widespread deaths largely due to the introduction of previously unknown pathogens in the local population, which in turn resulted in farmland being abandoned. The effect of this,

17 From 'Urbanization over the past 500 years, 1500 to 2016' in Our World in Data.

the data suggest, was lower carbon dioxide levels in the atmosphere, and hence also slightly lower global temperatures, during the 200 years preceding the Industrial Revolution.

Though no rigorous pre-1820 global poverty rates exist, the evidence suggests that in 1600 global rates were a little above the 80% seen for 1820 in Figure 1 above.[18] Yet levels of inequality were low compared to today. Archaeologists such as Fochesato, Bogaard and Bowles (2019: 866) have estimated the Gini inequality coefficients for wealth in societies with limited written records, using evidence of wealth seen in graves. It is estimated that a thousand years ago societies tended to display a wealth Gini coefficient of 0.40, while today the statistics at the national level range between 0.70 and 0.90 (a higher Gini coefficient points to more inequality).[19]

Turning to the French Revolution, Table 1 provides confirmation that revolutionary rhetoric and the introduction of democracy do not necessarily bring about the kinds of reductions in inequality one may expect. Comparing France and the United Kingdom is instructive. Even though universal male suffrage became entrenched 70 years earlier in France – 1848 compared to 1918 – the trajectory for poverty, inequality, and literacy was similar across the two countries.

Grade 11: Capitalism, communism, brain drains and the environment

The two topics "Communism in Russia 1900 to 1940" and "Capitalism in the USA 1900 to 1940" provide opportunities to compare the effects of very different government systems on poverty, inequality, and the environment.

Poverty and inequality are discussed first. The period 1900 to 1985 of Table 1 is twice the 1900 to 1940 period of the curriculum, yet a longer timespan permits a deeper understanding of the impacts of foundations laid in the early twentieth century. Calculating annual rates of poverty reduction from Table 1 reveals that the fastest downward trends among trends permitted by the table occurred under communist governments. The second-fastest was that of Russia between 1900 and 1985, where poverty declined from 83% to 8%, or by 0.9 percentage points a year. The fastest decline was China's, from 1985 to 2021. Further analysis of Table 1 would reveal that Russia's poverty reduction from 1900 to 1985 appears somewhat more driven by reductions in inequality, while that of the capitalist

18 Ravallion (2016: 16) refers to the period around 1820 as a critical period when poverty rates abruptly began declining.

19 Credit Suisse Research Institute (2022) appears to be the most authoritative source for current measures of wealth inequality.

United States depended more on economic growth.

Also noteworthy is that the fastest annual gain in the literacy rate seen in Table 1 is that of Russia between 1900 to 1985. There is ample evidence pointing to communist systems being particularly effective at achieving high levels of test scores in international tests administered to samples of learners. Cuba's learners display the highest literacy and mathematics scores in Latin America, and Vietnam's remarkably high scores in global testing programmes are commonly cited (McEwan and Marshall, 2004; Dang *et al*., 2020).

Why have communist systems tended to reduce poverty and improve education so successfully? A key factor was a strong centralised focus on reducing inequalities and public control over industries that in capitalist societies would facilitate the concentration of wealth among an elite. However, as discussed above, poverty reduction is largely driven by economic growth, and this applies to communist societies too. The annual increase in Russia's per capita income between 1900 and 1985 was relatively rapid, more rapid than in industrialising Britain in the nineteenth century. The curriculum points to Lenin's New Economic Policy and Stalin's focus on industrialisation as important causal factors. What also warrants attention is the role of curbs on emigration, as this highlights a phenomenon of importance to Africa and South Africa, namely the risk of a brain drain. After years of rapid expansion of its education system, the USSR acquired a vast pool of skilled engineers and other specialists. In 1960, a larger proportion of young people in the country were at university than in capitalist countries such as West Germany and the United Kingdom, though the United States displayed an even higher proportion (World Bank, 1978: 111). The risk of a brain drain in a context where more unequal capitalist countries paid professionals more contributed to the USSR and other communist countries effectively prohibiting emigration.[20]

Both the free-market capitalism of the United States and the communist system of the USSR led to especially high per capita emissions, for rather different reasons.

In 1985, the per capita emissions of the United States, at 24 CO2-equivalent tonnes, were, together with those of Australia, the highest in the world.[21] Factors behind this include a relatively small role for the state in areas such as public transport, resulting in the widespread use of emissions-intensive private transport. Developments in the more climate-aware post-1985 era reflect a strong tendency, going back decades, to protect the

20 Apart from the risk of a brain drain, there were additional national security concerns – see Light (2012).

21 This ignores a few oil-exporting nations with exceptionally high emissions associated with the oil industry.

more immediate interests of businesses, at the cost of long-term social interests. Since 1985, political groups within the United States, often funded by business, became highly successful in convincing large segments of the public that the science of climate change was not reliable and that the crisis was exaggerated (McCright and Dunlap, 2003). The United States has easily been the largest obstacle to progress in international efforts to reduce emissions: the country refused to ratify the Kyoto Protocol and withdrew from the Paris Agreement in 2020 (though it subsequently returned).

In 1985 the average per capita income in the USSR was less than half that of the USA in the same year and roughly equal to that in China in 2021. Yet emissions per capita were about equal to those of the USA in 1985 and twice those of China in 2021. Emissions in Russia were thus high relative to the standard of living. There is a rich literature on how approaches to the environment have differed across capitalist and communist systems (Ziegler, 1980). In theory, a communist system should be better placed to avoid negative environmental effects as economic decisions can be taken in the interests of society as a whole. However, two characteristics of the communist USSR undermined the protection of the environment. First, production targets in state-controlled companies, essentially the communist equivalent of the capital profit motive, focussed on production but seldom on environmental effects. Second, and perhaps more importantly, limits on political opposition meant there was little pressure on the state at the local and national levels to take environmental risks seriously. The USSR experienced environmental crises that were particularly onerous for affected communities. The Chernobyl nuclear disaster of 1986 and the emptying of the Aral Sea, beginning in the 1960s, lend themselves to a cross-curricular study spanning history, geography, and physical sciences.

Grade 12: Worsening inequalities and the geopolitics of the climate

Here the topic "The end of the Cold War and a new global world order 1989 to present" should encompass geopolitical questions related to climate change. For South Africa, the following is relevant: "The coming of democracy in South Africa and coming to terms with the past". How democracy impacted poverty and inequality warrants attention. This is in a context of global trends towards greater inequality, facilitated by changes in tax rules that favoured the wealthy,[22] but also new business opportunities, linked to the internet, which made a few individuals extremely wealthy. Finally, the topic "Independent Africa" provides

22 See Chancel *et al.* (2021: 93).

an opportunity to explore why poverty reduction in the continent has lagged behind that in other world regions.

The geopolitical questions relating to climate change have been briefly discussed above. The international climate agreements are part of a wider phenomenon whereby countries, through the United Nations, have agreed to improve the human condition. Central to this are the 2000 Millennium Development Goals (MDGs) and the 2015 Sustainable Development Goals (SDGs) which called for more action on climate change and poverty reduction.

In considering South Africa's share of the global emissions reduction responsibility, it is important to note that South Africa's emissions are among the most export-driven in the world. This means that much of the country's emissions are associated not with consumption by South Africans, but by people in the rest of the world consuming South African exports, especially raw materials from the mining industry. A consumption-based calculation of South Africa's emissions would result in a considerably lower emissions figure than the 10 tonnes per capita seen in Table 1, which is a production-based statistic. It is often argued that international negotiations would be fairer if consumption-based, as opposed to production-based, statistics were used. The barrier to the wider use of consumption-based statistics is largely the difficulty of calculating them reliably (Chancel *et al*., 2021: 120; Gustafsson, 2021).

In focussing on South Africa's high levels of poverty, the 1994 election manifesto of the African National Congress paid special attention to ending rural poverty but dealt with the broader society through reference to "better incomes" and more jobs. Statistics South Africa (2017) produced three poverty rates for each of 2006, 2009, 2011, and 2015, the three values differing by how strictly poverty was defined. Whichever criteria are chosen, poverty declined slightly over the 2006 to 2015 period if a trendline is used, though the trend is not monotonic because of an increase between 2011 and 2015. For 2015, the three rates are 56%, 40%, and 25% (it was 55% in 2021 in Table 1, which also points to a decline in recent decades). The highest values, for instance, 56% in 2015, are used for the indicator "Poverty headcount ratio at national poverty lines (% of population)" reported by the World Bank, which is responsible for tracking global SDG indicators of poverty. South Africa's monitoring of poverty is relatively effective: among 133 developing countries, 32 have produced national poverty rates more frequently than South Africa in the 2005 to 2020 period.[23]

23 According to the World Development Indicators of the World Bank.

What factors have contributed towards South Africa's poverty decline? Unfortunately, less unemployment is not one of them. Since around 1980 unemployment rates began rising and have remained between 25% and 35% since 1994. Unemployment has remained high while the country has suffered a skills shortfall, meaning that the education system has not succeeded in keeping up with the demand for skills (Terreblanche, 2002: 14; Schoeman and Blaauw, 2009: 94; Kuluvhe *et al*., 2022: 19, 32). Thus, despite some improvements in education, these have not been large enough to alter the unemployment situation substantially. Employment was also negatively affected by the structural legacy of apartheid, including the capital-intensive nature of industry. An important factor that alleviated poverty was the expansion of South Africa's social grant system. Between 1998 and 2017, the number of social grant recipients increased from two million to 17 million (Mtshali, 2018: 22). By around 2013, South Africa had one of the most extensive social protection systems among developing countries (World Bank, 2018: 19-20).

Turning to the African continent, the point is made in the 2018 WIR[24] that income per capita grew especially slowly in Africa – this roughly doubled between 1900 in 2021. In contrast, in China, income per capita increased by a factor of 16 over this period (see Table 1). This severely limited Africa's ability to reduce poverty. Explanations for Africa's relatively weak economic performance and high poverty levels differ in emphasis, often depending on which academic discipline is doing the explaining.

One explanation is captured in the Marxist historian Rodney's 1972 *How Europe underdeveloped Africa*, perhaps the most cited work on Africa's weak economic performance.[25] The book argues that European colonisation removed economic resources from Africa through the extraction of human beings as part of the slave trade and then natural resources such as minerals and timber. Even after independence, foreign ownership of, for instance, mines permitted the impoverishment of Africa to continue. Though places such as India and China also experienced colonialism, this was more severe in Africa. While former colonial powers were key promoters of the exploitative arrangements, elites within Africa who benefitted from the system have helped to perpetuate it. A seminal accounting exercise by Boyce and Ndikumana (2001) concluded that over the 1970 to 1996 period the amount of money relocated abroad, or "capital flight", from 25 poor African countries was remarkably high, and higher than what these countries borrowed during the period. Much of this capital flight was done by local elites.

24 See Alvaredo *et al* (2017: 65).
25 Established through Google Scholar.

A second prominent explanation is reflected in the work of Daron Acemoglu, a widely-cited Turkish-American economist. Acemoglu, like Rodney, has argued that the legacy of colonisation has hindered economic development in post-independent Africa. Guns, often received as payment for slaves, proliferated in much of Africa during the transatlantic slave trade, generating a lasting legacy of conflict and violence. However, where Rodney's emphasis has been on the perpetuation of exploitative international relations, Acemoglu emphasises the way colonialism left Africa with public institutions more oriented towards benefitting a small elite than providing services and promoting the rule of law. A few countries, notably Botswana, escaped the worst effects and thus developed relatively well. In arriving at these conclusions, Acemoglu has drawn extensively from quantitative economic research (Acemoglu and Robinson, 2010).

Conclusion

In a context where the United Nations has been concerned about rising inequalities as a threat to world stability, and has raised the alarm about insufficient action to deal with climate change, it seems difficult for history teachers to ignore these topics. This is especially so given the fundamentally historical nature of inequality and climate change. Globally, income inequality declined somewhat between 1800 and 1980. Why was that trend reversed in the last 45 or so years? This is a question that history teachers and their students should grapple with.

Climate change may at first sight appear to be a matter for the geography or science classroom. Yet this phenomenon is rooted in the Industrial Revolution, a topic familiar to history teachers but often taught without reference to its environmental impacts and how these impacts are beginning to influence international politics and human welfare in profound ways.

Poverty reduction has continued even with worsening inequality since 1980. This has been possible largely because the "cake" of the global economy has grown. Students should understand the often counter-intuitive relationship between inequality, poverty, and democracy. In short, opportunities abound for the history teacher to influence how society understands and deals with these daunting challenges.

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