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The Coming Economic, Social, and Political Apocalypse?

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Abstract

The predictions of the adverse effects of global warming on climate change are now accepted by scientists and decision-makers. Less attention has been given to the economic, social, and political consequences. The economic consequences have been examined but the social and political consequences have not been sufficiently analysed or even contemplated. The three interact: the economic consequences of climate change will have social and political effects, which in turn will have dramatic implications for economies and economic well-being. The possible, and uncertain, economic consequences are summarised, drawing for instance on the Stern Review, and their possible, and even less certain, social and political consequences are analysed.

The greatest losses and costs will be suffered by poor countries because their economies rely more on nature and weather. There is a risk that they will be driven down economically, so challenging the capacity of their governments to address the new poverty and maintain public services, and some will become fragile or even failed states. Coping with internal migration is likely to become a central policy issue. However, international migration to neighbouring and to richer countries is likely to become dominant, as income gaps widen and migrant flows are assisted by diasporas in the destination countries. The defensive policy responses of the rich countries can be predicted. Democratic politics will centre on the tensions and divisions coming from economic damage and rapid social change. The calamity will drag countries into both cooperation and conflict with each other. The effects of competition on sending countries, contiguous countries, and destination countries are examined. Three case studies are sketched to suggest how climate damage might play out: of southern Africa as a poor drought-prone region, Germany as a rich, host country, and Turkey as a neighbouring host and transit country. This paper is entirely predictive but the scenario has been presented in the fervent hope that it will not happen.

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1. Introduction

The predictions of the adverse effects of global warming on climate change are now accepted in general terms by scientists and decision-makers (Intergovernmental Panel on Climate Change [IPCC], 2021a, 2021b). Less attention has yet been given to the economic, social, and political consequences of that threat. This is partly because the potential effects are not at all clear and partly because experts are skilled at forecasting marginal change but have difficulty foreseeing the consequences of systemic change. The best that can be done is to set out scenarios to which uncertain but positive probabilities can be attached. This peer into the future offers one such scenario.

The global temperature has risen to 1.2°C above the pre-industrial level. For what it is worth, the full implementation of the promises that the international community as a whole has made in 2021 are expected to keep the rise down to 1.8°C by 2100; however, the full implementation of the formal commitments implies an expected rise to 2.1°C or even 2.4 °C (for instance, Climate Action Tracker, 2021). The effect of a rise of 1.8° or of 2.1/2.4°C on the economic losses caused by droughts, heat, fires, floods, land loss, and rising seas, are uncertain but the harmful consequences over the next few decades could be drastic, even cataclysmic.

Beyond the political froth, governments are concerned to maintain power. This implies short term policies, to win elections in democracies and to maintain 'social stability' in autocracies. The world will continue to heat despite national and international efforts. There is so much still to be done. Currently, more than 85% of primary energy production in the world is generated from fossil fuels. The best mitigation will come from three sources. One is the adaptation of people's lives to climate damage. Another

is endogenous scientific research and development to replace carbon-based energy, in three main forms: renewables, nuclear fission, and the possibility that limitless nuclear fusion will ultimately transform the energy sector (Ongena and Ogawa, 2016). The third source is a growing realisation by people of the impending cataclysm as the damage from climate change becomes more shocking. It is nevertheless likely that the well-being of most people of the world, especially the developing world, will have peaked within a few decades.

2. Consequences for Humanity

Consider the economic, social, and political consequences of global warming. They must be taken together because they will interact. The social and political consequences that ensue from the economic consequences will in turn have dramatic consequences for economies and for economic well-being.

2.1 Economic Consequences

The most immediate effects will be rising incidence of climatic damage, the likely economic consequences of which were examined in detail in the Stern Review (2006). A summary of the economic consequences is provided in order to establish the context for the ensuing social and political analysis. It should be noted that the Review is careful to qualify statements about the economic consequences, often using words like 'may' or 'is likely to' rather than 'will'.

The effects of climate change will be felt unevenly across the globe. Most countries will suffer economic loss. For some of the poorer countries there is a risk of being pushed into a downward spiral of vulnerability and poverty. The more temperate zones will benefit from modest rises in temperature but even these will lose as temperature rises further. Beyond a certain point,

global economic growth will slow down and might come to an end as resources are diverted to repair the environment and uncertainty deters investment. The Stern Review warns that up to 200 million people are liable to be permanently displaced by climate damage.

With more frequent droughts and floods, there will be threats to water, food, health, land use and the environment. Melting glaciers – affecting the Himalayas and the Andes – will produce floods in the wet season and reduce water in the dry season. Both droughts and floods make plants vulnerable to attack from insects, fungi and bacteria. The drier parts of Africa, Latin America and the Middle East will suffer more severe droughts and falling crop yields. An additional Horseman rides in Africa: it is now only in that continent that the rate of population growth, at 2.5% per annum, is high. With the population of Africa set to double by 2050, this growth poses a serious threat in Africa's drier regions.

Mortality among the poor will rise owing to malnutrition and heat stress. The melting or collapse of ice sheets will threaten shore-line cities and land availability in the rich countries and elsewhere. Some low-lying countries like Bangladesh (with a population of 165 million, many of whom live on the coastal plain) are at great risk from both floods and rising sea levels. The acidification of the oceans due to rising carbon dioxide in the seawater could disrupt marine ecosystems and fish stocks. Sudden shifts in weather patterns, for instance changes in monsoons and in *El Nino*, might have drastic consequences for water availability or flooding and hence for economic production. It is likely that climate change will require costly relocation of economic activities, and the associated rebuilding of infrastructure. Some changes due to past and future greenhouse gas emissions will be irreversible.

There is a risk of harmful 'positive feedbacks', for instance the release of carbon dioxide from soils and methane from permafrost. There can be non-linear changes and 'threshold effects' as the temperature rises, so accelerating economic losses. For instance, the melting of the Greenland ice sheet, which might halt the Gulf Stream, or the loss of the Amazon forest, could be disastrous. Hurricane damage increases as a cube of wind speed, which itself scales closely with sea temperature.

The timing between rising temperature and economic harm is very uncertain. Estimation of future economic cost is further complicated by the value judgement implicit in any assumed rate of social time discounting. However, there is already some apparent increase in damaging extreme weather events. The number of recorded weather disasters increased by 71% between the twenty years before and the twenty years after the millennium (Oxford Martin School, 2020). Flooding is the predominant disaster, accounting for 47% of cases. Predictions of the Stern Review (2006) suggest that, at an increase of 2°C, the drier parts of the world will suffer droughts and decreased crop yields, the incidence of malaria, malnutrition and other diseases will increase, especially in Africa, and there will be some coastal flooding. These things will get worse and, at an increase of 3°C - late in the century or beyond it - many species will become extinct, there will be an increasing risk of both sea currents and air currents abruptly changing in damaging ways, and coastal flooding - accelerated by the collapse of ice sheets - will affect many millions of people around the world.

Carleton and Hsiang (2016) examined 16 case studies involving national and international data sets to explore statistical relationships between climatic and economic or social conditions. They extrapolated results on variation in temperature and precipitation to claim that predicted future climate change would cause measurable damage to agriculture, income, mortality, or civil

conflict. Nevertheless, such quantitative predictions are inherently imprecise.

2.2 Social Consequences

The social and political consequences of predicted economic damage have not yet been adequately analysed or even contemplated. Consider the social consequences. It is the people of poor countries who will suffer the most, being most dependent on nature and on weather. Eventually a huge number of them will lose their livelihoods, some temporarily but many permanently. This will reduce the national incomes of their economies and challenge the capacity of their governments to address the new poverty and to maintain public services.

Coping with internal migration is likely to become a central policy issue over the coming decades. For instance, as droughts gradually become more persistent in a region, beyond immediate disaster relief central and local governments will have to choose among policies promoting new economic activities in the region, promoting the transfer of people and resources, and leaving such adjustments to market forces. This last is likely to involve large unplanned and uncontrolled flows of people into the cities. A great and excessive expansion of cities and their slums in countries with much displacement of people will contribute to civil unrest, crime, and social divisions. Internal competition and conflict provides scope for civil war in some badly affected poor countries.

There is empirical evidence to support these arguments. Carleton et al (2016) reviewed 29 recent panel data studies examining the effect of climate damage on violent conflict and social instability. High temperature and irregular rainfall were causally linked to a range of conflict outcomes. The

authors' extrapolations, although carefully qualified, indicated that conflicts would grow worse as climate damage increased.

Internal migration on a sufficient scale is likely to be unattractive, particularly in heavily populated countries. The weakness of governments, international organisations, and aid agencies will limit successful internal resettlement. For most people it is international migration, both within their region and to the rich countries, that will beckon.

The UN Refugee Agency (2021) reports that, in 2020, there were 83 million forcibly displaced persons worldwide, of whom 48 million were internally displaced, 31 million were refugees to other countries, and 4 million were asylum-seekers. The flow of refugees abroad is mainly into developing countries (85%) and neighbouring countries (73%), especially in the Middle East, the exception being the entry of a million refugees into Germany - with its unique politics and circumstances - in 2015-6. Much of the exodus comes from failed or failing states, in which government functions are impaired and governance is marred by insecurity, corruption, and lawlessness, and most of it is unrelated to climate change. Nevertheless, there is a danger that climate shocks will generate more cases of state fragility or even of state failure, and consequently of many more people whose remaining aspirations are to start their family lives elsewhere.

It is likely that the numbers of refugees streaming to rich countries - still quite trivial and manageable in relation to rich country populations and the economic and social losses that the migrants pose - will increase enormously within a few decades. Three factors will govern this growth (Collier, 2014: 38). First, it is the income gap between the sending and the receiving countries that will provide the incentive to migrate. Climate damage is likely to widen the gap and so to strengthen the incentive. Second,

migration is an investment: the level of income in the sending countries will determine the ability to fund migration. A fall in their income will further impede international movement. It is unlikely that the poorest and starving of the suffering regions will aim for the rich countries because they lack the funds for long journeys; it is mainly the better-off in poor countries who will be attracted to the rich world. There is likely to be a disproportionate representation of young people with smartphones, relatively well educated in their countries, sent as outriders and role models by their kin. The success of the few will be the spur of the many. Nevertheless, climate damage is likely to restrict the ability to fund travel abroad.

Third, the costs of migration will be eased by the diaspora from the country of origin who are resident in the country of destination – providing information and support for the migrants. The greater the size of the diaspora, the better the support networks, and the higher the migration rate. The supportive diaspora might wither over time if immigrants are easily absorbed into the national society. In the case of migrants who came from poor countries, however, absorption is likely to be held back by differences in culture as well as in language, by their relatively poor education for the host country, and by the preference of immigrants to settle in their own communities.

Climate damage in poor countries will encourage migration by increasing the income gap but discourage it by reducing the funds available for travel abroad. Nevertheless, with the support of the diasporas already in the host countries, it is entirely plausible that international migration will become a flood unless it can be dammed.

Kaczan and Orgel-Meyer (2020) provide a review of 17 recent empirical case studies which have examined the effect of climate damage on migration in

developing countries. They confirm that climate-induced migration depends on both the severity of the shock and the ability of the household to migrate. Four patterns are found: the need for funding means that migration is not more prevalent among poorer households; long-distance domestic migration is more common than local or international migration; both by being a better guide to future climate and by enabling preparation, slow-onset climate change is more likely than rapid-onset change to induce migration; the severity of climate shocks can affect migration in different ways according to whether, in the circumstances, the need to fund or the need to escape will dominate decisions. A qualification is necessary: the future will involve weather damage well beyond that described in these case studies.

A case study illustrates how climate damage might play out in one of the world's poorer regions. Southern Africa is prone to drought because its wet summer season is sometimes at risk from *El Nino* events. The reliance on agriculture, mainly cereal crops and livestock, makes it vulnerable to food insecurity. Climate change has increased the variability of both temperature and rainfall: extreme weather conditions – causing both droughts and floods – are becoming more common. There is a particular threat to water resources, on which some agriculture depends. However, climate change has not so far led to notable permanent displacement of people.

By contrast, political instability, violence and civil war in countries south of the equator had produced 6.5 million internally displaced persons and 1.1 million refugees and asylum seekers by 2020. The only upper-middle income country of this poor region, South Africa, was one magnet, drawing refugees mainly from Zimbabwe, in some ways a failed state. Unlike most other African countries, South Africa's policy and law applying to refugees and asylum seekers is largely progressive, for instance, providing rights and

permitting freedom of internal movement. However, in practice, the migrants find it difficult to access their rights, being up against some public resistance and an unsympathetic and overwhelmed bureaucracy. Should climate damage generate a flood of refugees in future decades, it is very likely that, as well other countries in the region, South Africa, with its huge unemployment, will be unable to cope. The quality of governance will suffer from climate damage itself and the consequent uncontrolled migration flows, more so for those countries in which political instability is already endemic. Support from beyond the region is the best hope for the displaced people of southern Africa.

Migration will in time be perceived to threaten economic wellbeing and social cohesion on a scale great enough to generate hostility in the rich countries. It is not only the economic costs but also the social costs that will motivate voters. Cultural differences can create divisions. For instance, a lack of trust and of cooperative behaviour beyond the social network in burgeoning immigrant communities – traits brought from their countries of origin - might be perceived to alter the norms of society for the worse. The indigenous people will resent the weakening of their national identity in a rapidly diversifying society.

Arriving migrants will have their plight at home in mind but gradually their reference groups will be transferred to their new country. Many, realising their lowly economic and social status, will grow to feel relative deprivation. Some may react to expressions of anti-migrant hostility, so contributing to social tension.

2.3 Political Consequences

The natural human tendency to sympathise with other people, especially when their plight is understood and felt, will be challenged by the natural

human tendency to protect oneself and one's people against new adversity. There is a danger that, in self-defence, societal attitudes in the rich countries will become less high-minded, for example, towards responsibility for others, survival of the fittest, and rights of asylum, and doing no more than 'one's bit'. The social upheavals will change peoples' minds, which will lead to political responses.

The responses in rich countries are therefore likely to be a mixture of humanitarian absorption and assistance on the one hand, and hostile opposition and rejection on the other, with the latter gaining ground over time as the costs become larger and clearer. As the flood of migrants increases, two main state responses can be predicted. One is the erection of powerful barriers at land and sea borders, with enforcement of exclusion policies. The other is the drastic restriction of the current rights of migrants to claim asylum status. Given these changes, there will be an accumulation of humanitarian crises at or near the borders of rich countries. More and more refugees will be turned or sent back.

There is yet another murky forecast which, as it plays out, is likely to influence the acceptable size of migration from poor to rich countries. It may well alter the attitudes of people and governments in ageing societies. These include the countries of Europe and some Asian countries, like Japan, China and Russia. It can be illustrated by reference to Europe.

According to Eurostat (2021), the EU-27 had a population in 2020 of 497 million, of which 291 million, or 65%, were of working age (15-64). With the population expected to age rapidly, the rate of natural increase in population (births minus deaths) is projected to be negative, and to fall to 333 million by the year 2100, of which the working age population will constitute 183 million, or 55%. Assume that migrants, all of working age, are permitted to

enter the EU so as to restore the working age proportion to 65%. This would involve a migrant influx of 37 million over the 80 years.

In 2020 the dependency ratio, defined as the number of dependents per worker, was 0.54. Without migration into the EU-27, in 2100 it is expected to reach 0.69. This will represent a rising financial and resource burden on households, tax-payers and governments. The economic advantages of migration in those circumstance will be weighed up against the social and political disadvantages in the evolution of policy on migration into rich countries.

Those governments that are receptive to the acceptance of refugees for humanitarian reasons or because of their rising dependency ratios can look for support to the experience of Germany. In 2014, 7% of the German population were foreign nationals; in 2019, the figure was 10%. Germany has been the most welcoming country in the European Union in its policies towards refugees, and the greatest magnet for them. After the great migrant flood of 2015-16, the German government has pursued strong policies for integration, which in the main have been successful.

The degree of expressed social discontent has been low. In the national elections of 2021 refugees were a major issue; each political party set out its policies for migrants. The incoming ruling coalition of three parties proposed new policies that would be more generous towards migrants and refugees. They would make it easier for families to reunite, for foreign nationals eventually to acquire citizenship, and through incentive payments for unsuccessful asylum applicants – 60% in 2021 – to return home voluntarily without deportation. The national election and ruling coalition would probably have turned out differently had public opinion been more against a welcoming policy on migrants. Good integration policies offer

scope for accepting more refugees without evoking the resistance or refusal of the indigenous population.

There are large underpopulated parts of the world, for instance in central Asia, for which – being above the 40th parallel - climate damage is likely to be delayed. These might also have a growing economic demand for migrants, which is recognised by their governments. However, the arduous distances involved in travel from further south and the political obstacles associated with ethnicity, religion, culture and terrorist threat might restrict such migration.

The social distress and instability that results from these developments is sure to change national and international politics. In the rich world, there is likely to be a growing sense of group identity and of country nationalism, both aimed against the perceived threat posed by migrants. Hostility will be strongest from selfish nationalists and from the indigenous poor, who most fear the competition of migrants for jobs, housing, and facilities. Identity politics is likely to intensify as people seek safety in numbers from the new insecurities and threats. The increasing social tensions can generate divisions that lead to violence.

The feeling will grow that the state should become more active in providing protection and security for its citizens. In those countries without sufficiently entrenched democratic institutions, there will be pressures for the state to acquire more authoritarian powers and instruments in order to safeguard society. Whereas some rich countries threatened by climate damage and by refugees will become less democratic, some poor countries with stricken economies will become more fragile states or even failed states, and more rudderless. Military takeovers of poor countries might

clamp down on lawlessness and violence but they are liable to weaken policy-making against the other effects of climate damage.

Nations can be expected to turn inwards to deal with internal protests and social instability. For instance, faced with endemic floods or persistently rising sea levels, governments will encounter pressures coming from those who suffer directly, pressures arising from a national sense of unfairness at the sharp relative changes in well-being and in wealth, but also backlashes from tax-payers.

The calamity will also drag countries into both cooperation and conflict with each other. Cooperation will take the form of amelioration of global warming via the COP institutions and relief of the new poverties via aid agencies, both national and international. The financial and operational inadequacy of the international organizations will become more apparent, and they will require reform.

Ill-feeling is most likely to arise between countries with competing interests - target countries, transit countries and sending countries. The competition will be greatest between sending countries and their neighbours, and between target countries and contiguous transit countries. Competition will intensify among countries that share major rivers if their water flows diminish. Some nations might actually choose to promote migration to the West, not only in their own defence but also in acts of hostility towards those nations. Conflicts of these sorts might easily spark armed aggressions.

We provide a brief case study of refugees and refugee policy in Turkey because that is the best country with which to illustrate the refugee problems to come. Turkey has the largest population of refugees in the world. In 2021 it hosted 4 million refugees, of whom 3.6 million were 'Syrians under temporary protection'. The flood is of course political and not

climate-driven. Turkey adopted an open door policy towards Syrian migrants in 2011, at the start of the Syrian civil war. It was viewed as temporary support which would disappear as the civil war ended and people returned to their homes in Syria. Turkey supported the refugees financially with health care, education, and housing. Only a small proportion were held in refugee camps; most were spread throughout the country, many in cities.

As the civil war continued, many migrants wanted to settle in Turkey or migrate to Europe. In fear of a flood, in 2016 Europe signed an agreement with Turkey to prevent migrants from leaving the country towards Europe in exchange for economic aid; Turkey would accept the return of migrants from Greece and do more to control its borders. As the numbers increased and social tensions grew, there were anti-migrant riots and violent protests against Syrians; local people felt greater competition, e.g. for jobs and for housing. The general feeling grew that Turkey had reached absorptive capacity. The government has three permanent solutions in mind: integration into society, assisted voluntary return (including settlement in a buffer zone along the border), and resettlement in other countries.

Turkish policy is to be understood in terms of the initial perception that the refugees would be temporary and the fact that most refugees share ethnic, religious, and cultural links across the border. Despite the likely differences in speed of change and in affinity with migrants, some of the same experiences, pressures, and policies may well be found in future climate-driven flows of refugees into neighbouring countries. The case studies of Turkey and of Germany above suggest how rich countries will try to provide funds and resources to refugees, to sending countries and to transit countries, in order to manage international migrant flows. Political interventions of that sort will mitigate the harm caused by climate change.

3. Conclusion

The apocalyptic scenario that has been outlined envisages a world sometime in the future that is economically more distressed and worse off, socially more disturbed and insecure, and politically more unstable and competitive. It involves two causal relationships: the effects of global warming on climate change and of climate change on humanity. Both require forecasts not only of severity but also of timing. Climate damage will build gradually and sometimes imperceptibly. We know the direction of change but we do not know how great the harm to humanity will be after one decade, three decades, or eight decades. The technical reviews, summarised above, of case studies examining the effects of climate change on economy and society (Carleton and Hsiang, 2016), on migration (Kaczan and Orgen-Meyer, 2020), and on conflict (Carleton et al., 2016) yield generalisations about the recent past but cannot be at all precise about the future.

I have painted a bleak scenario based on the best scientific and economic evidence available. However, there are many known unknowns and also unknown unknowns. The likely interactions among economy, society and politics will worsen not only the uncertainty but also the prospects for humanity. Optimistic scenarios can be found (for instance, Koonin, 2021; Lomborg, 2020) but both these books have been critically reviewed (for instance, by Yohe, 2021, Stiglitz, 2020 respectively) and such authors have not attracted a strong scientific following.

Nevertheless, this bleak scenario need not come to pass. That might be because climate change, with its great uncertainties, and economic loss, with its still greater uncertainties, will turn out to be less damaging or will provide more time for response. Alternatively, predictions might prove to have been deliberately pessimistic in order to protect against the downside risk of

extinction. Yet again, it is possible that induced technological progress will forestall the scenario, or that the world's policy response will avoid it. Maybe the Apocalypse can yet be averted.

My account is entirely predictive but it has been presented in the fervent hope that it will not happen. People have to be persuaded that present pain is justified to avoid worse future pain, despite the incentive for personal and national 'free-riding'. Each country's own incentive not to free-ride - because climate change will create domestic economic losses and costs - is inadequate without global collective action. Governments, in turn supported by international agreements, need to lead their people. Increasingly powerful fiscal incentives must ease human suffering, achieve carbon neutrality, and advance new technologies. Perhaps that process will be helped along by a series of blockbuster novels and films (maybe *Come High Water and Hell*, or *Dust and Exodus*) which depict the scenario in human terms – ones which do not have happy endings.

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