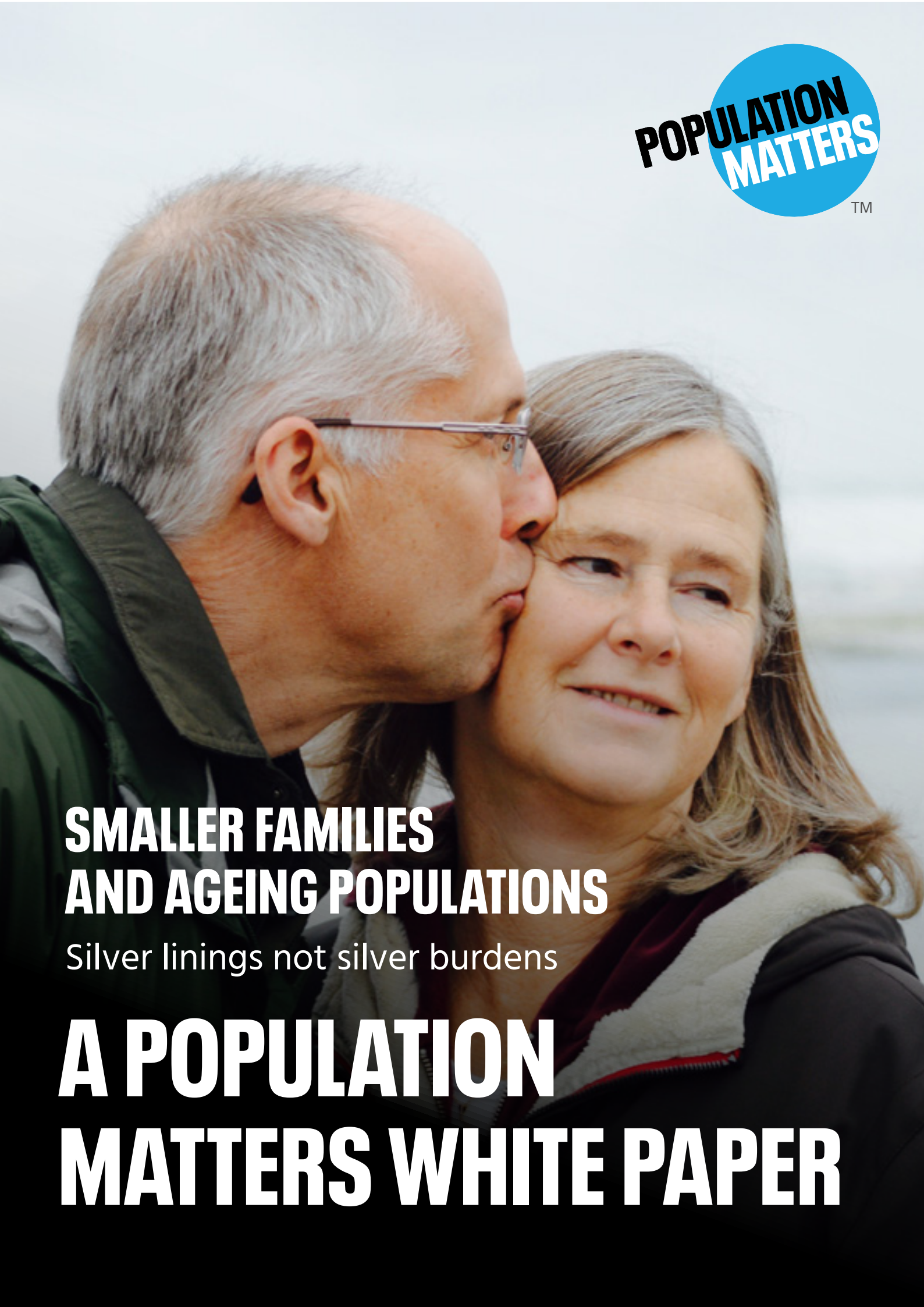


POPULATION MATTERS™

SMALLER FAMILIES AND AGEING POPULATIONS

Silver linings not silver burdens

A POPULATION MATTERS WHITE PAPER

FOREWORD - ADAIR TURNER, LORD TURNER OF ECCHINSWELL

Children born in 1900 in even the most advanced economies would be lucky to live to their 50th birthday. Many born today can expect to live for a century and if we can lift all of humanity to high quality living standards that will become the standard worldwide.

Over the same period, economic progress and the empowerment of women have seen fertility rates plummet in most countries; indeed in every nation which is economically successful and where women are well educated and free to choose, fertility rates have fallen below replacement levels. The world's population is still growing, and will do for many decades, but by the end of the century it could stabilise, with declines before then in more prosperous countries.

Faced with this reality the media is full of doomsday forecasts about the negative impact of stable or declining populations, which supposedly threaten pension system crises and economic stagnation. But in fact the biggest demographic threat to rising prosperity is rapid population growth in poorer countries with still high fertility rates, and population stabilisation or gentle decline will deliver significant benefits to human welfare.

The biggest reason to welcome this demographic shift is that it results from the free choice of empowered people, and in particular women. But ceasing endless population growth will also reduce humanity's future pressure on the natural environment, ease the challenge of adequate housing provision, and make it easier to achieve net zero greenhouse gas emissions while supporting prosperity growth in developing countries.

Like all changes, demographic slowdown creates new policy challenges, and in countries with fertility rates far below replacement levels, those may become severe. But as this White Paper sets out, for countries facing gradual population decline they are completely manageable if governments adopt sensible policies, such as increasing retirement ages in line with rising life expectancy. Meanwhile, warnings that we will be short of workers to support future retirees fail to recognise the huge potential for automation and the benefit that workers will receive in higher wages in a world with less surplus labour supply.

Human welfare is best served in societies where women are empowered, smaller families are the norm, and populations are stable or gently declining. And if governments design a sensible policy response, our changing demographics pose no threat to sustained and enhanced prosperity.

Adair Turner, Lord Turner of Ecchinswell, former Chairman of the United Kingdom's Financial Services Authority, is a member of the UK's Financial Policy Committee and the House of Lords.

EXECUTIVE SUMMARY

INTRODUCTION

- Demographic changes, especially affecting developed economies, have given rise to widespread concern that a declining birth rate and growing number of old people will lead to significant economic problems.
- Policies to encourage a higher birth rate in developed economies have been proposed to address this.

THE BENEFITS OF REDUCING POPULATION

- Population growth is, however, a driver of critical environmental and resource challenges, and is incompatible with planetary health and long term sustainability. As economic activity promoting human wellbeing can only take place within environmental limits, pronatal policies are counterproductive.

THE WIDER CONTEXT

- While there are undoubted challenges arising from ageing, they are not as severe as is often claimed, and multiple practical and viable solutions are available.
- A transition to economic principles which are based on securing human wellbeing and environmental sustainability will provide the best framework in which to meet these challenges. However, the policy solutions identified in this report can be implemented before any such change occurs.

ADDRESSING THE LABOUR SHORTAGE

- The gap between supply and demand for labour in developed economies is likely to be lower than anticipated, due to continued population growth, enhanced productivity, and automation replacing existing jobs.
- It can be met through measures such as increasing labour force participation, judicious immigration policies, and increasing retirement age.

MANAGING THE FISCAL BURDEN

- Additional and significant costs to governments are inevitable, but may be less in some cases than anticipated, and will occur at a relatively slow pace, providing the opportunity to implement solutions.
- The old age dependency ratio is unfit for purpose as a guide to policy as it fails to take into account the considerable economic contribution of people over 65, or the reduction in overall dependency when birth rates fall and there are fewer children.
- Delayed retirement and enhancing the economic productivity of older workers will put more money into pension schemes and the exchequer. Pension reform can significantly reduce the fiscal burden. It has already begun in most high income countries, but must continue, reflecting the particular challenges each faces.
- Immigration is not a magic bullet but can play a role in reducing the dependency ratio and increasing government revenue.
- The overall impact of ageing alone on health budgets is relatively low and will take place gradually. The impact on overall expenditure as a proportion of GDP is marginal within the timescale.
- Investment in preventative health is currently too low, but if properly financed can both reduce associated health care costs and boost productivity of older workers significantly.
- Tax rises to meet additional cost are viable policy

options, likely to be accepted by the public if managed appropriately.

CONCLUSION

- Embracing and promoting lower birth rates and fertility is essential to planetary health and thus long term economic sustainability. The consequent challenges of ageing populations can be met through positive policy solutions, and pose no threat to long term economic sustainability.

SELECTED FINDINGS

- Global population will continue to grow until at least the second half of this century.
- Half the world's population is under 30.
- In 2018, the labour force participation rate for men globally was 75% – for women, just 49%.
- In 2017, the jobs of approximately 1.5 million people in the UK were assessed as being at "high risk" of being replaced by robots or other automated systems.
- The number of over-65s in work in the UK increased by 188 percent between 1999 and 2019.
- An average man aged 70 in the UK will have as many years of life left as a man of 65 did in 1997.
- In the United Kingdom, the economic contribution of people over 65 was estimated in 2016/17 to be £160bn. It is likely that in 2021 the total contribution exceeds the UK government's pension bill.
- Economic dependency has declined in the UK since 1992, despite the ageing of the population.
- Changes in population age structure alone are expected to add no more than one additional percentage point to the average annual per person health care expenditure growth rates in OECD countries over the next 40 years.
- In the EU, it is estimated that the average increase in pension expenditure as a percentage of GDP over the next 40 years will be less than 0.2% per year.

INTRODUCTION

The world's population is getting old. Almost everywhere, people are living longer, choosing to have fewer children, and waiting longer to have their first child.

Across the globe, improved life expectancy and falling birth rates are causing populations to age quickly. There are around 727 million people aged 65 or older alive today. While their share is now about nine percent of the total population, it will increase to some 16 percent in the next 30 years, meaning one in six people will be aged 65 years or older by 2050[1].

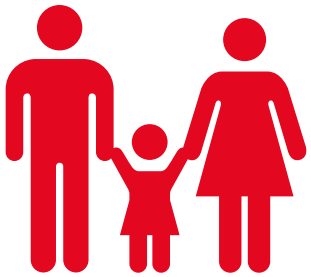
The prevailing narrative emerging from this demographic fact of life is that a lower birth rate and an ageing population is a looming crisis. Headlines speak of a "grey tsunami", a "jaw-dropping crash" in births and ageing hitting the economy "like a ton of bricks". Is such doom-saying justified?

The argument is made that ageing populations and smaller families mean that fewer people work and contribute to economic growth, and more people collect pensions and demand health care. The only effective solution to this crisis, it is proposed, is to increase the birth rate[2], a prescription that has been embodied in measures such as increasing parental leave and financial incentives, and sometimes through the back-door coercion of restricting reproductive rights. In fact, few such policies have yet to have a significant effect – fortunately, because solving the challenges of ageing through boosting birth rates is slow, wrong-headed, and only makes sense in a paradigm that ignores the environmental context of our actions.

This White Paper will expose the silver tsunami narrative as false. It will provide the critical context of the threat posed by population growth in line with current projections, and examine the benefits associated with declining populations – including, in its appendix, an example of how those could manifest directly in high income countries. It will focus, however, on what governments the world over can and should do to manage any unintended socio-economic consequences of smaller families and ageing populations. These are solutions that can be implemented today, such as changing retirement provision, making pensions fit for purpose, unlocking the productivity of older workers and investing in preventative health.

Changing age structures are a demographic challenge, but there is no crisis, and nor will there be one. Above all, this paper outlines a positive, optimistic vision for the future. Across the world, societies and individuals are enjoying the transformational benefits smaller families can bring. Implementing the practical, common-sense policies this report identifies will ensure population decline not only helps protect our planet, but promotes human flourishing and an economy that serves the interests of people everywhere.

1 WHY FEWER BIRTHS ARE NEEDED



"The economy is a wholly-owned subsidiary of the environment, not the reverse."

Herman Daly, former World Bank economist

To ask whether declining birth rates and slowing population growth is a threat to the economy is to ask the wrong question. The question is which of our possible population trajectories is consistent with a planet healthy enough to sustain an economy. No solution, to any problem, that exacerbates our environmental crisis will lead in the long-term to a functioning economy or human wellbeing.

The impacts of population on the interlinked environmental crises of biodiversity loss and climate change are profound. Biodiversity loss globally has been accelerating and the extinction rate is now so high that scientists have identified it as the Earth's sixth mass extinction, and the first driven by human activity. The link between population and climate change is self-evident – each additional person on the planet adds their own carbon footprint – and our growing numbers have contributed to the current climate crisis.

Population has a direct, though non-linear, impact on multiple key variables that drive biodiversity loss and climate change. These include urbanisation, resource use, water loss and habitat destruction, in particular through increased demand for agricultural products. (The examples provided here can only touch on the scale and nature of the environmental threats posed by population growth. For fully referenced briefings on these issues, see populationmatters.org[3].)

The 2019 World Scientists' Warning of a Climate Emergency, which has now been signed by almost 14,000 scientists globally, cited population growth as one of the key drivers of climate change; its six policy solutions included a call for the global population to be stabilised "and, ideally, gradually reduced – within a framework that ensures social integrity.[4]" This stance was reiterated in the updated Warning in July 2021.

In 2019, the Global Assessment by the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES), identified the key direct and indirect drivers of biodiversity loss, itemising population growth as one of the latter. In its prescription for urgent action, the IPBES stated, "changes to the direct drivers of nature deterioration cannot be achieved without transformative change that simultaneously addresses the indirect drivers"[5].

Agriculture is a leading cause of environmental degradation[6]. All other factors being equal, more people necessitate the production of more food. A 2018 report by the World Resources Institute concluded that 56 percent more food would be needed in 2050 than in 2010, with population growth driving "the majority of demand.[6]" This extra demand must be met while productive agricultural land is shrinking - in addition to the multiple threats posed by climate change, 500 million people now live on land that has desertified since the 1980s[7]. In addition, agriculture accounts for 70 percent of global water use, but water scarcity is growing[8].

Furthermore, the food system as a whole – including refrigeration, food processing, packaging, and transport – accounts for around one-quarter of greenhouse gas emissions[9]. If emissions from food production were to continue as they are currently, they would rise to a cumulative 1,356Gt by the end of the century, enough to miss the 1.5°C target of the 2015 Paris Agreement[10].

The demand for energy and raw materials for infrastructure construction, manufacturing and domestic use also impacts heavily on the climate and biodiversity. Energy use constitutes 73.2 percent of global emissions[11], with global energy demand expected to increase by 50 percent over the next 30 years as a result of both population growth and economic development[12].

Both renewable and non-renewable resources are being unsustainably depleted. For example, the OECD forecasts that in the next four decades, construction demand for sand and gravel will almost double to cater for the world's growing population and rising living standards – reaching 50 billion tonnes per year. The UN Environment Programme has described the scale of sand and gravel extraction as, "one of the major sustainability challenges of the 21st century.[13]"

Far from representing a looming crisis, declining birth rates represent one of our best hopes for avoiding that crisis. It is necessary and urgent that we do all we can to bring them down further, especially where the consumption and environmental impact is already high – in other words, in the very economies where fear of the silver tsunami is currently most acute.

2 WHAT SHOULD BE DONE?

The profound environmental and socio-economic benefits of smaller families and contracting populations are clear. However, for decades, economists have queued up to issue dire warnings about the effect of this kind of demographic change on living standards.

This narrative has now assumed the status of a truism, rehearsed all too often with little perceived need to address its underlying assumptions, and characterised all too often as an intractable problem that can only be addressed at source by reversing population "decline". Importantly, this speculative narrative also obscures the economic reality that in low-income, high population growth countries, reducing the birth rate is critical to economic progress and quality of life. Indeed, almost none of the Sustainable Development Goals can be achieved unless we do.

Challenges and opportunities in the Global South are largely outside the scope of this report (but are examined elsewhere at populationmatters.org)[14]. This section of the White Paper will therefore address the concerns as articulated and applicable to developed economies.

WHAT SORT OF ECONOMY DO WE WANT?

We cannot address the economic questions posed by ageing without questioning some of the assumptions on which many concerns arising from it are based. The proper purpose of an economy isn't simply and crudely to make money, but to enhance human wellbeing. In that context, if potential consequences of fewer births and more old people include decreases in GDP growth, higher taxes, reduced productivity or lower levels of capital investment, it's important to ask whether those matter as much as proponents of the narrative assume.

The prevailing economic paradigm, within which most of the silver tsunami narrative arises, is, broadly, that economic growth, defined by Gross Domestic Product (GDP), is the measure of a successful economy, and that increased consumption and production are de facto desirable ends in themselves. As the introduction noted, however, increased production and consumption are the primary driver of our current environmental crisis. Global Footprint data shows the human enterprise, operating within the existing economic paradigm, to be using 74% more renewable resources than our planet can provide: we would need 1.7 Earths to meet our demands sustainably[15].

While the Earth's natural capital provides a generous and perpetual interest rate in the form of newly grown timber, air scrubbed of carbon dioxide, fresh water and so much more, we are not living off the interest, but off the capital. Each year, we make greater demands on a smaller stock of resources: we are eating into that capital, and if we do not stop, we will have none left. To put it another way, future generations are subsidising our lifestyles and economic activity: what we use to pay for it, is theirs.

GDP - the total monetary value of all the finished goods and services produced in a defined period of time - is simply blind to that fundamental problem. Its primary limitation is what it measures, and what it doesn't. In the words of Indian economists Kapoor and Debroy:

"GDP takes a positive count of the cars we produce but does not account for the emissions they generate; it adds the value of the sugar-laced beverages we sell but fails to subtract the health problems they cause; it includes the value of building new cities but does not discount for the vital forests they replace. As Robert Kennedy put it in his famous election speech in 1968, 'it [GDP] measures everything in short, except that which makes life worthwhile.'[16]"

Some optimists – often within the 'green growth' camp – claim that population and economic growth can continue indefinitely because technological progress will enable production to be 'decoupled' from its environmental effects. In other words, technology will become greener and more efficient, resulting in fewer emissions and other environmental externalities. While decoupling does occur on a limited scale, however, there is as yet no evidence that it can happen on an absolute level, which is necessary for true sustainability[17].

Tim Jackson points out that between 1990 and 2007, technology-enabled carbon intensity (in this case how much carbon dioxide is emitted during fuel combustion) fell from 860 to 760gCO2/$. However, because population and consumption continued to rise, carbon dioxide emissions during that same time period still rose by a hugely harmful 39 percent[18].

Adherents of the prevailing economic model place faith in its power to adapt to environmental challenges and generate solutions. Such faith has proven unfounded so far. Despite all we know in 2021, the system has not self-corrected: prices do not reflect potentially catastrophic environmental externalities; resource use has not declined with increased efficiency; technological innovation has not made energy supply, food production, transportation or construction carbon neutral, pollution-free or otherwise environmentally sustainable; and, critically, policy change within the paradigm has not come close to arresting our headlong flight to collapse.

This critique does not mean the concept of GDP has no value (indeed, this report will refer to it in a number of places) or that all growth is bad, but emphasises that its centrality in political discourse and as a metric of success is profoundly dangerous in the context of our environmental crisis, and that pursuit of total GDP growth as an economic goal is antithetical to human wellbeing.

SECULAR STAGNATION?

As we shall examine below, some of ageing's economic challenges will persist under any economic system. One more specific to our current system is "secular stagnation" - a long-term, rather than cyclical, period of low or no economic growth. Such periods may arise when people save more and spend less, leading to a fall in demand for goods and services, and consequently a lack of investment by businesses[19]. Population ageing is one of the reasons why savings may increase, since elderly people tend to spend less. Additionally, a declining population may mean there are fewer incentives to invest in new infrastructure, houses, and goods.

However, some economists attribute savings-investment imbalance to a number of other factors, such as declining productivity, financial crisis, high debt, technology, and inequality, and others don't accept the secular stagnation hypothesis at all. Those who do, like Larry Summers and Paul Krugman, advocate for solutions such as expansionary fiscal policy – not population growth[20].

In the words of Adair Turner:

> *"If aging populations lead to secular stagnation, the cause will be deficient policies. By contrast, the problems created by excessively rapid population growth are rooted in real and unavoidable constraints.[21]"*

A DIFFERENT APPROACH

There are other options to the prevailing approach. A holistic view of the economy which places wellbeing at its centre, not only re-orientates policy to ensure the wellbeing of our grandchildren, but addresses the major sources of life dissatisfaction today. The prescription for an economic system operating within planetary boundaries to produce equity and human wellbeing is outside the scope of this report, but certain principles have been identified by the Wellbeing Economy Alliance[22]:

- A Wellbeing Economy would deliver good lives for people the first time around, and thus avoid having to deliver expensive down-stream interventions to fix the societal and environmental damage caused by growth-focused economies.
- It would deliver an equitable distribution of wealth, health and wellbeing, while protecting the planet's resources for future generations and other species.
- In a true Wellbeing Economy approach, business, politics and economic activity would exist solely to deliver collective wellbeing. All strands of society – government, businesses and communities would be working collaboratively to deliver on this goal.
- In a Wellbeing Economy, we would only pursue growth in those areas of the economy that contribute to collective wellbeing and shrink those areas of the economy that damage it[23].

The Wellbeing Economy is no longer a fringe idea. For instance, Katrin Jakobsdottir, Iceland's Prime Minister, is pressing ahead with a wellbeing budget, which includes 39 wellbeing indicators that include economic, environmental and social factors[24].

Jakobsdottir maintains that GDP as a measure of progress has resulted in a cycle of wasteful consumption, creating the need to produce in order to get by and to consume for the sake of production[25]. In fact, Iceland is currently working in conjunction with Scotland and New Zealand on a wellbeing government economy project to develop a new economic model, which is centred on prioritising people's health and wellbeing above economic growth rather than on production and consumption.

APPROACHING THE PROBLEM

The challenges of ageing, and in particular paying for the care of those suffering ill-health and/or unable to look after themselves, persist under any economic system, but one which prioritises quality of human life instead of fetishising the transfer of money offers a context in which caring for us when we are old is recognised as a value, not a burden. Similarly, while increasing taxation or payments into national insurance schemes are anathema to some political and economic doctrines, a wellbeing economy judges them by the full scope of their benefits, not the narrowly defined cost.

In particular, it evaluates any economic policy within the context of achieving true sustainability – something which continued population growth, with all its concomitant effects on our planet, acts only to block.

MEETING THE ECONOMIC CHALLENGES CREATED BY SMALLER FAMILIES AND AGEING POPULATIONS

Priorities and biases generated by the prevailing economic model may, and do, distort perceptions of the problem of ageing, and certainly strongly influence considerations of its solutions. Within a crude GDP paradigm, for instance, pronatal policies which increase the number of producers and consumers make absolute sense: in the context of protecting our planet and ensuring long term human wellbeing, they make none at all. That does not, however, mean that practical, effective and sustainable solutions cannot be implemented within the system as it stands, nor that changing the economic system would make the existing challenges go away. Broader questions about our society and economy are outside the scope of this report – what we aim to show is that there are no excuses for failing to tackle this problem now.

THE CHALLENGES

The economic challenges surrounding populations that are contracting or in which growth is slowing can be broadly categorised into two overarching themes.

1. Labour shortages due to a larger number of retired people and a smaller number of new workers; and
2. Unsustainable public and private costs linked to the increasing health, social care and state pension burden arising from a growing cohort of elderly people.

We must also, again, be conscious of the assumptions underlying such concerns. As we have outlined, GDP growth is not necessarily synonymous with improvements in wellbeing and a lower level of consumption also brings potentially critical environmental benefits. While, clearly, there are risks associated with economic slowdowns, to the extent that ageing contributes we have time to make adjustments which fully exploit the benefits. Long-term slowdowns in growth are not something that merit panic in wealthy countries.

CHALLENGE 1: FILLING THE VACANCIES

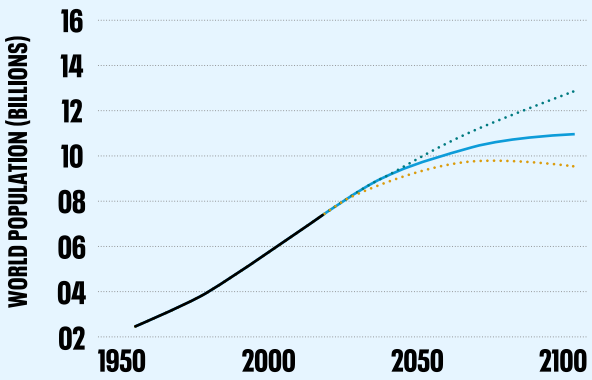
- Questioning the worker shortage: unemployment and automation
- Migration
- Delayed retirement
- Enhancing productivity: the role of automation

FEAST OR FAMINE?

The framing of this problem begs a question of its own: will we be short of workers? Despite the alarmist headlines, one thing the Earth is not short of is people, and won't be any time soon. All authoritative projections agree that the global population will continue to grow until at least the second half of this century, adding at least a billion people.

In fact, the United Nations projects that there is only a one-in-four chance of population peaking before the end of the century, with a total of 10.9bn by then –3bn more than today[26]. We currently add 80 million people – the current population of Germany – to the world each year.

GLOBAL POPULATION GROWTH



median projection (United Nations, 2019)

While we add to our numbers, the existing supply of workers is far from used up. Prior to the coronavirus pandemic, nearly 70 million people were unemployed in OECD countries[27]. 205 million people are expected to be unemployed across all counties in 2022 (with many more eking out a precarious living on the margins of economic productivity and subsistence)[28].

Unemployment figures do not tell the whole story on wasted human potential and sources of workers. Labour force participation is defined as when someone is employed or actively looking for employment. In 2018, the labour force participation rate for men was 75% – for women, just 49%[29]. With one-in-four girls out of secondary school, one-in-five married before the age of 18 and more than 270 million women having an unmet need for modern contraception[30], we have urgent basics to attend to before this enormous potential can be realised[31].

Achieving gender equality both improves individual lives and yields economic opportunity, whereas pro-natal policies which effectively push women from

employment into the home serve to discourage female labour participation, reducing productivity and increasing gender inequity – all in order to produce a cohort of workers that won't be using their laptops or lathes for another generation.

Unfilled vacancies are also a consequence of a mismatch between skills and needs. The economy of the future, as we outline in the next section, will seek a cohort of skilled and educated workers. Education and training offer both a more effective and a more just way of boosting the cohort of the employable than making more babies. Indeed, fewer babies makes that more achievable. The European Central Bank has noted:

> *"Low fertility rates may, for example, allow for stronger investment in human capital per child. Furthermore, the scarcity of labour could increase the return to investment in human capital and thus incentivise training in the course of a person's working life (i.e. "lifelong learning"), particularly when accompanied by increases in the retirement age[32]"*

WE ARE THE ROBOTS

Work changes. Where once farriers were the lynchpin of our entire transportation system, today they are artisan professionals servicing a marginal corner of the leisure industry. And where, more recently, the London Cabbie trained for two years to learn 'The Knowledge' (the routes from anywhere in London to anywhere else in London), today Google Maps does the job in a second.

Entire communities are laid waste by the closure of a steelworks and it takes fewer people to service a windfarm than mine coal. Jobs, of course, do not only disappear, but change or move. Steel is still made (at a heavy environmental cost), but in places where labour is cheaper – commonly where there are more workers competing for jobs. Population growth favours the race to the bottom. Labour shortages are often sectional and specific, rather than absolute. Today, we are desperate for lorry drivers – in as little as a decade, that job may no longer exist. One estimate of the impact of driverless vehicles in the UK puts 1.2 million jobs at a more than 50% risk of being replaced by driverless vehicles[33].

Adair Turner argues that, "we are entering an environment where we just don't need a lot of workers because we can automate most functions within our economies. This idea that we need workers to do the work is just not true"[34].

A 2018 PWC report concluded that up to 30% of jobs could be "at risk" of automation by 2030, affecting 44% of workers with low levels of education[35]. Any projections based on predictions of future technological developments and efficiency are inevitably uncertain, but there is no longer any doubt that automation will not simply change jobs, but make them redundant. In 2021, US accountants McKinsey estimated that 14.9 million jobs would be lost to automation in the US by 2030[36]. In 2019, the Office for National Statistics indicated that in England alone, the jobs of approximately 1.5 million people were at "high risk" of being replaced by robots or other automated systems. This represents some 7.4 percent of the total jobs market. Younger workers between the ages of 20 and 24 were deemed to be most at risk of having their jobs replaced by automated systems[37]. PWC's report recommended a number of steps to address the impact of automation on jobs, including greater investment in education, active job creation schemes and, in its careful phrase[38],

> *"There could also be a case for spending more on stronger social safety nets for those not able to easily adapt to new automation technologies."*

Having fewer humans seeking work is surely a better option than planning for human obsolescence.

AUTOMATION AND CARE

One area in which demand for labour is projected to grow is the health and social care sector. Here too, automation has a role to play. In December 2020, the Bank of England indicated that automation is set to replace those jobs

requiring "physical and manual skills" and "basic thinking and reasoning skills." However, the Bank was clear that over the next decade those workers replaced by automated systems could be successfully reassigned to jobs requiring "social and emotional skills[39]." The care of the elderly is an example of a vocation requiring this skillset.

Automation (and indeed, a squeeze on the available labour force) may also make this job more attractive. Adair Turner says: "At present, in many developed economies, social workers are poorly paid and undervalued, and may well continue to be if work forces grow while automation reduces employment in other sectors of the economy. But if the total workforce declines, we will simply have to pay workers more to attract them into these vital jobs[40]." This has been borne out during the Covid-19 outbreak.

Current pay structures are an example of the perversities of the current economic system, which places little value on this vocation, and benefits from a supply of workers willing (or unable to refuse) being paid, according to 2021 research, up to £7,000 less per year than equivalent roles elsewhere in publicly financed sector[41].

Shouldn't we value caring for our elderly relatives (and ourselves, when the time comes) more than this? In a wellbeing economy, we would.

Automation also has a role to play in delivering care - from tablets for care clients allowing Finnish nurses to carry out 24,000 remote care visits a month[42] to washable radio-frequency tags in hospital bed sheets in Japanese care homes[43], detecting when they need to be changed. Recent research found that 'culturally competent' robots deployed in care homes to perform basic tasks could have a small but positive impact on loneliness severity among users."

Of course, human contact is and always will be essential to the care and wellbeing of older people – indeed of everyone. In this case, the role of such automation must be to free people to provide meaningful care, not treat patients and clients as cost centres ripe for expenditure savings. As this report demonstrates, we can and will have money and people enough to treat the elderly with the respect they deserve.

MOVING THE PIECES

Not only is the Earth not short of people, it is certainly not short of young people. Currently, 130 million new potential workers are born every year. Roughly half the world's population today is under 30: in Africa, half the population is under 18[44]. The geographical redistribution of a number of those young people clearly has a role to play in addressing national and regional age imbalances. According to a 2018 Gallup poll, around 750 million people would migrate to another country permanently if they could (a number likely to grow substantially as the effects of climate change increase migration pressures across the world)[45].

There are clearly benefits of migration in addressing skill and worker shortages. More than one-in-ten workers in the UK is not a UK national[46], while one-in-seven of the NHS's staff are foreign-born, and an estimated one-in-six jobs in adult social care were held by people with non-UK nationality[47]. As the UK is currently learning (autumn 2021) a shortage of lorry drivers has economic

consequences beyond their industry. Any future lorry drivers being born today won't be pulling in to loading bays for another twenty years – if indeed, and as we address above, the job of lorry driver still exists.

As we address in Section Two, economically active migrants also contribute far more than their labour to a nation's economy, while many boost the economies of their source countries through remittances and investments back home. Remittances also invest in human capital: according to UNESCO, remittances "increased education spending by 35% in 18 countries in sub-Saharan Africa and Central, Southern and South-eastern Asia and by 53% in 7 countries in Latin America on average[48]". Before the impact of the COVID 19 crisis, remittances contributed more to the economies of poorer countries than all overseas aid[49].

Expressed solely in terms of its benefits, migration looks like a magic bullet. However, it is naïve to picture migration as a balance in which high fertility countries top up the cohort of younger workers in low-fertility ones. Africa may offer a deep pool of labour, but does not at present offer a similarly deep pool of transferrable and in-demand skills in the places where the working-age population is set to shrink. Migration has negative impacts as well as positive, on host and source countries. Critically, it can add to population pressure in destination countries and lead to rapid and unmanageable depopulation in source countries.

Migrants are human beings, not units of production to be shoved around like pawns on a chessboard to wherever macroeconomics wants them to be. A world in which the young move where the current economic system has the greatest demand for them is not necessarily a better one. It is partially the reason that countries like Romania and Poland find their populations ageing rapidly. A supply of workers educated and trained at another country's expense is a good deal for any country, while a cohort willing to work for lower wages than domestic workers is tempting for the bottom line.

Migration is a solution that makes sense in the current economic system, partly because it pays little heed to the externalities, be those increased emissions in wealthy countries, the hollowing out of a workforce in poorer countries, or the interests of future generations who will need to pay the pensions of those workers once they become old. As examined later in this report, migration is a complex phenomenon which does not offer a panacea. It is clear, nevertheless, that it has potentially significant value as a mechanism for addressing labour shortages in the short to medium term.

MOVING WITH THE TIMES: A PHASED RETIREMENT

In 1889, Germany became the first country in the world to adopt a state-administered pensions system. Chancellor Otto von Bismarck announced the scheme in a bid to ensure the people of Prussia could live comfortably in their retirement. The world's first old age pension proved considerably less expensive than Finance Minister Helmuth von Maltzahn initially feared. Bismarck set the retirement age at 70 and it remained there until it was lowered to 65 in 1916. The scheme proved so inexpensive because virtually no Prussians lived to be old enough to draw a pension. Indeed, in the late 19th century few of them lived beyond their 45th birthday[50].

Despite the life expectancy revolutions of the 20th and 21st century, statutory retirement ages have barely moved for more than 125 years. As Sacha Nauta put it in *The Economist* in 2017, many "older people today are not in fact 'old' in the sense of being worn out, sick and inactive. Today's 65-year-olds are in much better shape than their grandparents were at the same age.[51]" In most countries across the EU, healthy life expectancy from the age of 50 is increasing much quicker than life expectancy itself. In the UK today, for instance, an average man aged 70 will have as many years of life left as a man of 65 did in 1997[52].

More importantly, levels of ill health have dropped markedly. In 1981, 38% of women in the UK reported having a limiting longstanding illness at the age of 64 – by 2017, a similar proportion (38%) was not reached until women were 70. In men, the difference is even more marked: in 1981, almost a third of men reported a limiting longstanding illness at age just 57. In 2017, a third of men didn't report that level of illness until they were 70[53]. This in turn indicates the period of ill-health in which people cannot work due to old age is increasingly being compressed. Crucially, this means the population may be ageing but its citizens are showing an increasing propensity to remain economically active for longer.

Indeed, a growing body of evidence shows people aged 65 and over are becoming major drivers of economic growth across the developed world (as we explore further below). According to the Office for National Statistics, more than half of all UK employment growth over the next 10 years will be accounted for by workers over 65, and almost two-thirds of employment growth by 2060[54]. This is not to say that their participation can be taken for granted. As they age, employers should recognise that their wellbeing and productivity are likely to be enhanced by a flexible and tailored approach to their needs, such as providing options for reduced or flexible hours and home-working.

Delayed retirement is not without its challenges or problems, however. In particular, those engaged in physical labour may be disadvantaged, and as they are most often among the low paid, a universal and mandatory shift upward in retirement age could increase inequality. Nor, of course, is delayed retirement a popular option. To incentivise older workers to remain economically active for another five years, workers could be given an increase in their personal tax-free allowance or equivalent in this final five-year period.

THE LESSER OF TWO EVILS?

Two labour scenarios can plausibly be plotted for our future. In the first, a growing working age population has too few jobs. Today, there are 205 million unemployed[55] – with no change in the unemployment rate, by 2050, using current UN population projections, that would be increased by around 45 million. In those circumstances, poverty increases, social cohesion is threatened and hundreds of millions are a financial burden on the state. The power of employers over their employees and aspiring employees is enhanced.

In the second scenario, there are fewer workers than jobs. Innovation, automation and increased productivity are incentivised; wages increase; and the bargaining power of workers is enhanced.

Which scenario suggests an improved quality of life for people?

CHALLENGE TWO: SHOULDERING THE BURDEN - THE FISCAL CHALLENGE

- Old age dependency – a measure not fit for purpose
- The hidden benefits of retirement
- Pensions fit for purpose
- Empowering old age productivity
- Migration
- Taxation

The silver tsunami narrative creates and perpetuates an image of old people as an anchor weighing down economic progress: sickly, inert and reliant on the state. Indeed, the very notion of a "dependency ratio" defined solely by the proportion of people above a certain age embodies that principle. Crucially, the narrative fails to account for their significant hidden contribution to our economy. Its dominance also places the focus on the problem, instead of the practical and achievable solutions.

DEPENDENCY RATIOS – AN ACCURATE MEASURE OF AGEING?

Accurate data is key to understanding the true extent of the demographic change taking place in ageing societies. This information is vital in ensuring societies are well-equipped to mount an effective macroeconomic response to the challenge of ageing. But it is about more than plotting out the proportion of working-age people to elderly people. To accurately measure the true burden of ageing, societies must resist the urge to understate both the economic contribution of elderly people and the savings accrued when fewer children require schooling. This must transcend the studying of crude ratios.

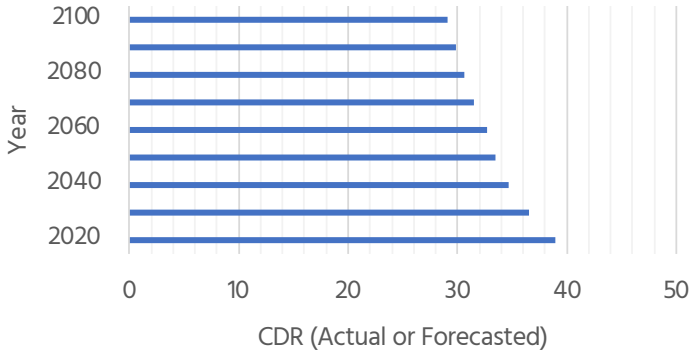
Measures often cited by economists include[56]:

1. **Old-Age Dependency Ratio (OADR)**
   The United Nations defines the OADR as the ratio of population aged 65+ per 100 population of people aged 15-64[57].
2. **Child-Dependency Ratio (CDR)**
   The United Nations refers to the CDR as the ratio of population aged 0-14 per 100 population of people aged 15-64[58].
3. **Dependency Ratio (DR)**
   The United Nations defines the DR as the ratio of population aged 0-14 and 65+ per 100 population of people aged 15-64[59].

All of the above ratios can misrepresent and falsely assume the challenge of ageing, but the OADR is perhaps the most misleading measure. Alarmist economic rhetoric on societies with declining birth rates and ageing population often points to an increasing OADR. But the OADR fails to take into account the falling proportion of economically dependent children and young people within these societies. As a result the overall dependency ratio offers a more comprehensive picture of the macroeconomic policy challenges facing these societies.

The United Nations Conference on Trade and Development is clear that while the overall dependency ratio is set to rise in most regions of the world going forward, the rise in the OADR will largely be offset by a marked reduction in the CDR[60].

In 2020 the world's CDR stood at 39. The UN forecasts this will drop markedly over the next 80 years as outlined below:



The marked reduction in the CDR across the world is likely to lead to significant cost savings as finance ministries can successfully re-assign funds to provide good quality health and social care services for people aged 65 and below.

This process is already underway in the UK. The Office for National Statistics (ONS) reports a simple fact, obscured by the population panic narrative: "Over the period 1992 to 2017, economic dependency has shown an overall improvement, despite the population becoming older.[61]"

Looking to the future, ONS figures show some 11.91 million children in the UK in 2018 aged 0-14. It forecasts there will be 11.33 million children of that age in the UK in 2030. This represents a reduction of almost 5% (4.87%)[62]. The UK spends some £78.3 billion on pre-primary, primary and secondary education annually. A 4.87% reduction of this spend represents a saving of some £3.8 billion – equivalent to the annual salaries of some 114,000 nurses[63].

A range of other factors also highlight the problematic nature of the OADR metric as an accurate measure of the burden of ageing on a society. The OADR measure treats all people aged 65 and above as non-contributors. In 21st century Britain and indeed around the world this is a flawed assumption.

In the UK, the ONS reports that while the proportion of older people in work declines with age, 1 in 10 people aged 65 years and over are still working.[64]" The number

of over-65s in work in the UK increased by some 188% between 1999 and 2019[65].

When discussing dependency ratios, it's also important to differentiate between the effects of population ageing on government budgets from effects on household budgets. Lee and Mason distinguish between the fiscal support ratio, which is the ratio of taxpayers to beneficiaries, and the support ratio, or the ratio of earners to consumers[66]. Using National Transfer Accounts data for forty countries, Lee and Mason showed that in wealthy countries, government budgets tend to benefit more from higher fertility rates than do households[66]. That's because governments in those countries tend to shoulder much of the burden when it comes to supporting elderly people, while parents tend to cover most of the costs of raising children. So, when household budgets are also included (as reflected in the support ratio), the overall economic cost of an ageing society is lower than simple dependency ratios suggest.

OADR is thus a problematic measure of ageing and its alleged burden on society. Instead it's crucial that all in public policy drill down into the realities of ageing in the 21st century. This report sets out what policy makers must do to meet the positive challenges created by an ageing population. These actions will only be effective however if governments resist the temptation to use OADR as a means of overstating the scale of the challenge ahead.

THE HIDDEN BENEFITS

A person does not have to draw a salary to contribute to our economy and collective wellbeing. While classical economic theory may not recognise it, very many people are quite happy to give something for nothing. For many of them, retirement offers the opportunity to contribute in new ways – ways that provide both immeasurable and measurable benefits to society.

Turning to the measurable, the financial contribution of people over 65 to the UK economy in 2016/17 was calculated by Age UK to be £160bn[67]. To put this in perspective, the total pensions budget for the UK in 2021/22 is £169bn – allowing for inflation over the last five years, it is likely that the economic contribution of older people exceeds their cost in pensions[68].

A critical contribution is childcare, in which an estimated five million grandparents free the middle generation to work by looking after grandchildren during working hours. Age UK estimated the value of this service by over-65s at £7.7bn [69]. In a study of ten European countries, 58% of grandmothers and 49% of the grandfathers looked after at least one of their grandchildren under the age of 16 in the preceding year in the absence of their parents. In the US one in four children under the age of 5 has been cared for by grandparents in the previous month[70]. The value of such relationships clearly extends far beyond its economic benefit, at its best enhancing the experiences and wellbeing of all three generations.

Anyone who has visited a National Trust property knows that older people contribute much to our society through volunteering, which Age UK estimated to be worth £2.7bn to the economy in 2016/17. That does little to show its true value, however. Not only does it provide opportunities for others to enrich their own lives, the contribution of older volunteers is not always as genteel as watching over some Regency furniture. Most campaigning and community groups (including Population Matters) know that the retired can be among their most dedicated and reliable activists.

Research suggests that retired and senior volunteering could be highly beneficial for societies with an ageing population; participating in voluntary activities can empower older people, mitigating the difficulties of

retirement, physical decline, and inactivity. Older adult volunteering can also prevent social isolation. If we make the changes which help ensure a healthy cohort of retirees, that cohort can make an even greater contribution to our economy and wellbeing.

UNLEASHING THE POTENTIAL: PRODUCTIVITY AND THE OLDER WORKER

As we have seen, the age dependency ratio grotesquely misrepresents the economic status of older people. The economic contribution of those in employment over the age of 65 in the UK was calculated at £54bn (for 2016/17)[71]. It will be significantly higher now – and can be higher still.

Delayed retirement does not simply fill vacancies, but delays the onset of pension payments, and has people paying into both the exchequer and pension funds for longer. According to the OECD Secretariat, "if labour participation of older workers would increase by 10 percentage points between 2000 and 2050, relative to the base-case scenario, total old-age pensions (as a% of GDP) could be reduced (on average) by 0.6 percentage points [72]."

Age is also no barrier to productivity. For example, take Masako Wakamiya[73]. She is an 83-year-old Japanese woman who designs iPhone games apps to keep the elderly stimulated. Wakamiya is living proof that there are benefits to be had when over 65. In 2016, the retired banker decided to learn programming and created her gaming app for seniors. In a media interview with Agence France-Presse, she describes how learning new skills in old age has been motivating. Wakamiya says her ultimate goal is to come up with "other apps that can entertain older people and help transmit to young people the culture and traditions we old people possess.[74]" She demonstrates that satisfaction with life can increase as people get older and that continuing to contribute to society is part of the reason.

Conventional wisdom asserts that "active youthful societies" must be more innovative, and many business executives and economists assume that capitalism will flourish best if markets for consumer products and services grow rapidly. But the assumption that younger people are more inventive or innovative, whether in business, the arts, design or scientific enquiry – is at very least overstated. Usually it is asserted without evidence and several researchers who have looked at the evidence have found little support .

Older workers, in many cases, are able to work more productively. A study by Duke University researcher Vivek Wadhwa, looked at more than 500 individuals who had made high-value, marketable contributions to technology-based industries in the US. Wadhwa discovered that older entrepreneurs' success rates are higher than their younger counterparts. This is because they bring more experience to the table, as well as a broad and deep network of relationships and a comprehensive knowledge of their field, the researchers found[75].

Analysis by the Kauffman Foundation, a US-based group that studies and encourages entrepreneurship, found that people older than 55 were almost twice as likely to found successful companies as people in their twenties and early thirties. The evidence presented exposes as an ageist myth the idea that smaller, ageing populations can't be as innovative as bigger, youthful ones[76].

At its most extreme, the innovation myth claims that we must increase the number of people on the planet through pronatal policies, to foster innovation, and indeed supply the geniuses whose innovations will fix our world. The suggestion that eight billion human brains aren't enough is not simply bizarre, but a classic example of the "more, not better" mind-set. In 2019, just two in three children attended secondary school, and only half of all children attended either upper secondary school or higher education. If we want a more innovative and creative world, we should invest in the brains and untapped human potential we already have.

A PARADIGM SHIFT TOWARDS AUTOMATION

Automation, as we have seen, will reduce the number of jobs for people to fill. It also offers the opportunity to increase productivity. PWC's 2018 report concluded it could add $15 trillion dollars of value to the economy[77].

Demographic change is already one of the drivers of this change. China, Japan and Korea have all been stimulated to invest in robots and automation to help them to deal with the shortage of workers they face. For instance, to prepare for a future in which an ageing population will further limit the labour supply, Midea, a home appliance giant based in southern China, has embarked on a three-year plan to incorporate more robotics into its 34 factories[78]. For two factories that have already integrated such tech, efficiency has increased by nearly 30%[79].

The shining potential of automation and artificial intelligence to tackle key macroeconomic issues within ageing societies is often vastly underestimated. A wealth of evidence points to the miraculous things ageing societies can achieve when Governments prioritise investment in robotics. In the early 2000s, Chancellor Gerhard Schröder issued a dire warning about Germany's long-term demographic trajectory[80]. It had become clear that German families were not reproducing at rates necessary to provide a labour force large enough to sustain solid economic growth well into the 21st century. Yet with minimal fuss Germany turned to automation to fill the vacancy gap. Today Germany is home to 38% of Europe's industrial robots – far more than any other country. "With a workforce of almost 53 thousand people, Germany's robotics sector boasts a robot density level of 309 industrial robots per 10 thousand employees[81]." This gives the country the highest density level in Europe and puts it third globally.

The effect of this is tangible. In the time it takes a German worker to generate £100 of output, a British worker has produced less than £85, while a Canadian has produced just £78[82]. As a result, Germany has managed to sustain strong economic growth, outperforming virtually every other major economy during both the 2008 financial crisis and 2020 coronavirus pandemic. This is not to say that economic growth is in itself a good thing – but in a transition to a wellbeing economy, these results show that productivity can be maintained or enhanced, despite ageing demographics.

PENSIONS FIT FOR PURPOSE

In 2019 the OECD published a position paper that summed up the fiscal challenges facing governments today and in the decades ahead. "Government pension plans, most of which collect contributions from current workers to pay the pensions of current retirees, likely face a funding squeeze in many OECD countries as the size of the working age population shrinks and the size of the retired population grows.[83]" The EU reports that "demographic effects alone are projected to raise pension expenditure by an average of 7.6% of GDP in the euro area over the period up to 2060.[84]" The absolute cost of such an increase is mind-boggling, but the pace is not: far from

a "shock", the pensions challenge offers us time to adjust, and to get it right.

A 20th century pension system is unsuitable for the challenges of the 21st. But this is well understood, and significant pension reform is already underway across the world. Ageing is the dominant, but not sole factor driving these changes, and there is no single template that can be used for every country – the OECD has identified ten different approaches, used in various combinations, across its member states[85].

These changes are working. Again, despite the narrative of decline, the amount of assets in pension funds "soared", to use the OECD's word, in 2019, growing by 13.9% in the OECD area and by 11.3% in other regions that its reporting covers[86]. In 2019, on average, people older than 65 in the OECD had a disposable income equal to 87% of the total population[87]. This figure masks huge and disturbing inequalities – one-in-seven people over 65 live in poverty in the OECD, and more women than men – but in 20 out of 36 OECD countries, the old-age income poverty rate is lower than for the population as a whole[88]. (The impact, especially long-term, of the COVID-19 pandemic has yet to be determined.)

There is no room for complacency, however – and prior to the pandemic, concerns were being expressed that the pace of pension reform was slowing. Changes frequently put a higher burden on individuals and employers, and the switch from defined benefit to defined contribution schemes is a bitter pill for employees to take. As with delayed retirement, political acceptability can act as a deterrent to reform.

Many people are not amassing enough personal savings over their working lives to reduce their dependency on state schemes. In the US a survey by the Federal Reserve revealed some 37% of Americans would not be able to cover a $400 emergency expense in cash if required[89]. In the UK the Financial Conduct Authority revealed that the average Briton has amassed some £61,000 in private pensions, cash savings, and investments after a lifetime of work. At current annuity rates, this would give the retiree an annual income of just £3,000 over and above the state pension[90].

However, demographic changes, with the right policy encouragement, also offer hope of improvement. As a European Central bank paper noted[91]:

> *As life expectancy increases, households may save more during their working lives, anticipating that those savings will have to see them through a longer period in retirement. … Low fertility rates may also have a positive effect on the savings of the working-age population by reducing consumption needs relating to the raising of children.*

Across the world financial literacy remains extremely low. A 2021 study by financial services provider Free Trade revealed some 91% of Britons lack confidence in the basic principles of investing. Respondents aged 18-24 performed worst in the test with a 52% fail rate, whereas only 38% of respondents aged 55+ failed[92]. Key to delivering such a result is ensuring workers enter the workforce at 18-21 with retirement in mind. This can only be achieved when financial literacy is hardwired into national curriculums for children before they reach secondary school age[93].

By ensuring citizens get to retirement age with a significant nest egg, governments can enable the burden of health and social care to be shouldered by asset-rich pensioners, not cash-poor young people.

THE ROLE OF MIGRATION

Economically productive migrants do not just plug holes in the labour market. Estimates of the financial benefits to destination countries of migrants vary considerably, and are obviously dependent on the extent and level of their engagement in the labour market, but the average lifetime fiscal contribution to the United States of an immigrant who arrived in the last 10 years has been calculated at $173,000[94].

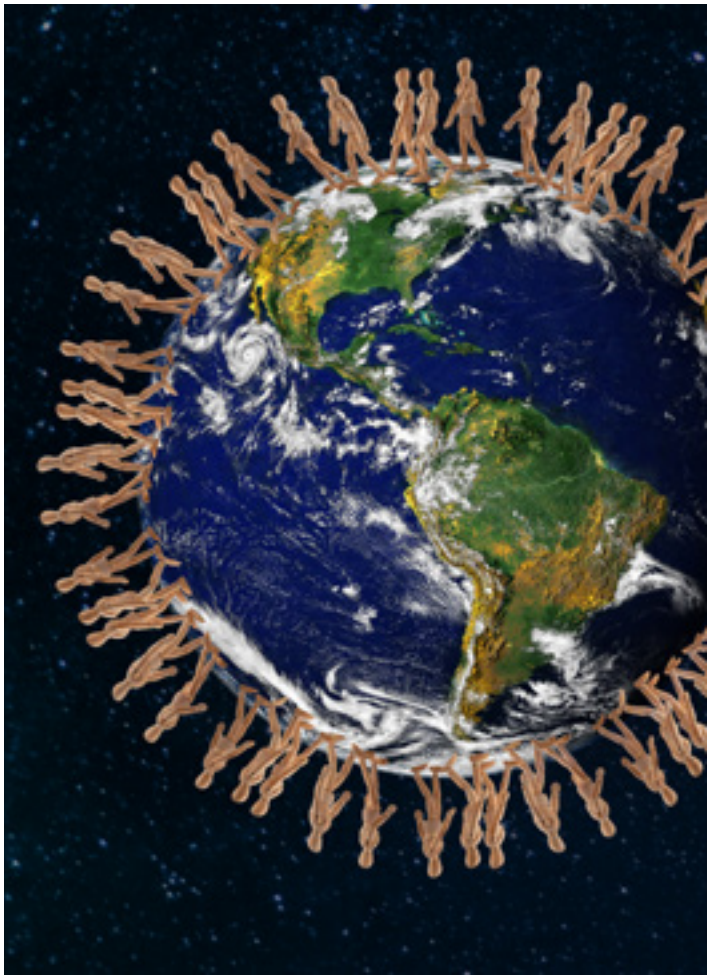
Immigrants increase economic activity – and they pay tax, national insurance and pension contributions. In 2019 projections, the UK's Office for National Statistics found that the economic impact of immigration could tangibly offset the economic impact of ageing. In comparing the effect on age dependency ratio of different scenarios of assumed future migration levels, it concluded:

"The projected age-dependency ratio would increase twice as quickly under zero than under high migration [assumed at 245,000 people per year]. Non-zero migration scenarios dampen the increases in the ADR resulting from an ageing population, and the higher the migration the greater the effect.[95]"

The impact should not be overstated, however. As with pronatal policies, migration has a fundamental flaw as a sustainable solution to ageing: migrants themselves become old – topping up the number of young people today, simply kicks the can down the road. According to the ONS' calculations, under the high migration scenario (245,000 per annum), the ADR would be only a modest 11.6% lower by 2067 than it would be under a zero migration scenario. ONS' conclusion was that the level of the ADR was more impacted by projected increases in economic activity rates at older ages than by the migration scenarios they examined[96].

While, clearly, numbers could be increased above this threshold, population growth of 2.5m per decade already brings significant problems. Immigration clearly has a role to play in addressing the challenges of ageing, but increasing economic activity among older age groups effectively comes without a downside.

Judiciously and equitably managed migration, sensitive to the impacts on host and destination countries, therefore offers a short-to-medium term economic fix in a number of scenarios, potentially able to bridge gaps between demand and supply, reducing the dependency ratio by a modest but worthwhile amount, and offering other corollary benefits, especially in the short-term. Perhaps more importantly, such migration also offers one way to help bridge the gap between the tangible needs of our current unsustainable economic system, and the establishment of one which serves the needs of people and respects planetary boundaries.



INVESTING IN HEALTH AND WELFARE

Older people contribute and support society in many ways – whether it be within their family, to their local community or to society more broadly. Yet, as a 2015 World Health Organization report suggested, the extent of these human and social resources, and the opportunities available to each of us as the world ages, "will be heavily dependent on one key characteristic: our health"[97]. If people are experiencing these extra years in good health, their ability to do the things they value will have few limits. If these added years are dominated by declines in physical and mental capacities, the implications for older people and for society may be much more negative.

Estimates of how an ageing population will impact healthcare expenditures vary considerably. As this report has already shown, the "young old" – people in the decade or so following current retirement age) are healthier (and more productive) than ever, but as longevity increases, the health burden on individuals increases, as do associated costs – in the UK, average health care costs for 85-year olds are roughly double those for 75-year-olds[98].

As health care costs aren't evenly distributed across old age, several studies have pointed out that proximity to death, particularly the final year of life, is a stronger driver of healthcare expenditures than age per se, so that living longer is not necessarily a burden on the health system[99]. Howard et al. argue that traditional predictions on ageing and healthcare expenditure have failed to take into account potential changes in the health profile of populations over time. As individuals live healthier, longer lives they can delay the onset of morbidity later and therefore reduce the burden on healthcare costs[100].

That is not to deny that health care costs will almost certainly increase, driven by the diseases of the "old old". To look at a single disease, assuming no treatment significantly altering the effects of the disease emerges, the total cost of dementia care in the UK is projected to increase by 172%, from £34.7 billion in 2019 to £94.1 billion in 2040, at constant 2015 prices[101]. Aside from the human tragedy the growth in this devastating disease represents, such figures are bound to grab the attention. It is important to see them in context, however. Health spending overall, is all measured in astronomical sums and the impact of the diseases of old age is only one component. In fact, according to the European Observatory on Health [102]:

> *Changes in population age structure alone are expected to add no more than one additional percentage point to the average annual per person health care expenditure growth rates between 2010 and 2060 in the countries reviewed in this report. Population ageing is simply too gradual a process to rapidly accelerate health care expenditure growth.*

In regard to long-term care, most OECD countries spend less than 2% of GDP on it [103] – the sums may be huge, but the economic impact of even very significant increases in care costs is far lower than the silver tsunami narrative implies. Similarly, spending on health care and long-term care as a percentage of GDP is projected to rise by an average of "just" 0.7 and 1.3 percentage points respectively over the period 2013-60[104].

Prof Sarah Harper of the Oxford Institute of Population Ageing sums up the research[105]:

> *Although a number of cross-national studies have considered the determinants of health care costs, only one has found that the age structure of the population, determined by the proportion of population aged 65 and over, is the explanatory factor. Rather, it is the wider effects of income, lifestyle characteristics, and new technology alongside the effects of environmental factors which are driving up the demand for new advanced medical applications. Analysis of OECD data reveals that in the advanced economies at least, per capita health care costs for those aged 65 years and over have increased at the same rate as for those aged less than 65 years. Furthermore, per capita spending on health care is reduced after age 85.*

There are other variables to consider. While population ageing can be projected with considerable accuracy, the associated future morbidity is far from inevitable. First, new treatments may significantly reduce the morbidity and associated economic impact of any illness. Projections of impact and expenditure cannot quantify, and so sensibly do not factor in, such developments, but that, clearly, does not mean they will not happen – indeed, they can be expected to, though their actual impact (and financial cost) is impossible to predict.

Second, investment in prevention – still the neglected orphan of health care expenditure – will reduce future expenditure. Recent OECD figures show only 3% of EU health budgets spent on collective services, such as prevention and public health[106]. Partly, this reflects the astronomical cost of treatment and care, but also a failure to invest in the future. Recent research has evaluated the level of spending on preventative health required, in order to minimise the impacts of ageing demographics. It concluded that the optimal figure is 1.175% of GDP. The current prevention share is 0.237%[107].

The benefit of that investment is not simply confined to reducing health costs - increasing preventative health spending by 0.1 percentage points has been associated with a 9% increase in annual consumption by people over 60[108]. As with so many of the policy solutions identified in this report, virtuous circles apply.

There is no doubting that the cost of health care is a challenge as our societies age. This report has shown, however, that it is a challenge that can be met. The costs, though significant, represent a gradual change that will profoundly affect health budgets, but not cripple our economies. They can be offset through positive measures to improve health and – equitably and appropriately - maximise income from older people themselves. And most of all, the challenge looks very different if we shift our perceptions of caring for those who need it from being a crippling burden to a welcome responsibility.

PAYING FOR IT

If we value our older people, and if – as it is - an ageing society is coming, shouldn't we be prepared and willing, to pay for it? We certainly can. Sales of the latest iterations of iPhones worldwide generated $65bn in just the first quarter of 2021[109]. The "personal luxury goods" sector was worth €281bn worldwide in 2019 – according to *Vogue Business*, the retail trade in animal fur claimed $22bn of that[110]. The societies most affected by ageing are not poor. We just have our priorities wrong.

At the time of writing, the UK Government has recently broken a manifesto promise not to pay for health and social care by increasing taxation[111]. While the specifics of their approach - increasing national insurance contributions – has been met with a mixed reaction due to potential inequities, the evidence is that in principle, people are willing to accept a greater tax burden in order to achieve that goal – one which often affects their own relatives, and which they know will affect them as they age.

The finding has been consistent in UK polls over a number of years – polls in 2019 (asking slightly different questions) found three-quarters and two-thirds of people agreeing with tax rises to pay for health and social care (2019), while in August 2021, two-thirds backed a national insurance hike[112]. The most recent sample of public opinion was a snap poll immediately following the government's announcement and the accompanying coverage, much of it critical (*The Sun*, for instance, referred to the change as a "tax bomb"). It found 44% in favour and 43% opposed to the specific approach[113]. Interestingly, though perhaps unsurprisingly, it found that older people are substantially more supportive, with 68% of those aged 65 and above supporting the reform, compared to only 26% of 18 to 24 year olds[114]. (A divergence that emphasises again the importance of younger people being given a greater understanding of the necessity to consider future planning.)

The evidence nevertheless shows that public opinion is generally favourable on this issue, with widespread support in principle but, unsurprisingly, greater scepticism when it happens. Public acceptance of higher taxation is deeply dependent on perceptions of its fairness – it appears clear though that the public will accept shouldering costs arising from our ageing society, if the distribution of those costs is equitable, and if we re-orientate the narrative from "burden" to wellbeing. Arguably, Prime Minister Boris Johnson's error wasn't breaking a manifesto pledge not to raise taxes, but stigmatising the principle of raising taxes by making the pledge in the first place.

Questions about how we tackle the challenge of ageing come back to the single question we asked at the start of Chapter Two: what sort of economy do we want?

CONCLUSION

"All our environmental problems become easier to solve with fewer people, and harder - and ultimately impossible - to solve with ever more people."

Sir David Attenborough, Population Matters patron

Ending human population growth as soon as possible is a necessary, though not sufficient, condition, if we are to ensure planetary health. We are on a path to disaster unless we radically change our behaviour, policies and systems. We must take less from our planet (certainly those of us in the rich, developed, high-consuming countries). Green growth may be possible, but we should not be betting our collective human future on it.

In these circumstances, the downward trajectory of average fertility and birth rates is in our interests and must be maintained and accelerated until we reach a genuinely sustainable population level. Fortunately, the path to that is positive: tackling poverty and inequity; promoting women's empowerment; education; ensuring everyone is able to access and freely use modern contraception; and ensuring people understand that small families are the best bet for protecting our children's future.

Realistically, fertility rate decline is here and will not stabilise for many years yet – pro-natal policies have scarcely made a dent in it, and short of severely restricting women's reproductive rights, are unlikely to alter the curve significantly. At its worst, then, the silver tsunami narrative is not a wake-up call, but a redundant alarm bell, ringing in our ears and preventing us from concentrating on solving a problem we already understand.

As this report has shown, it is not as grave a problem as the headlines would have us believe, and it is certainly solvable. We already have all the tools we need, and we can use them under any economic system, including the current one. A reorientation of economic priorities towards wellbeing and sustainability would, nevertheless, help us to recognise the true human value of this enterprise. Getting old in health and security is a privilege, and one we hope we and our children and grandchildren will all get to do on a healthy planet.

RECOMMENDATIONS

The ageing challenge cannot be effectively addressed unless all stakeholders - governments, policymakers, economists, civil society groups and the media – abandon uncritical acceptance of the silver tsunami narrative. Indeed, the trajectory of declining fertility and birth rates is one of the few macro trends to provide cause for optimism in the face of our multiple, and far greater, environmental challenges.

This report serves to place the ageing challenge in its proper context, and to indicate where viable solutions are available. Population Matters seeks to contribute further to the development and implementation of solutions through dedicated research, but we call upon government and other better resourced and more expert bodies than ourselves to address and develop the detailed policy solutions, that will allow us all to reap the benefits of a smaller, sustainable human population for people and planet over the long-term.

THE POLICY CONTEXT

- Averting environmental disaster and mitigating our environmental crisis must be the highest priority for all policymakers. All policies should be evaluated in this context.
- Economic policy must prioritise human wellbeing and environmental sustainability.
- Pro-natal policies are counterproductive and ineffective. While positive measures such as generous and equitable parental leave are justified in their own right, policymakers should not introduce any measures specifically intended to increase the birth rate.

THE LABOUR MARKET

- Projections about future labour needs must be robust and take into account all evidence.
- The distortions which create unemployment must be addressed, and investment in human capital maximised to ensure the full utilisation of available workforce.
- Migration presents the opportunity to both increase government revenue and partially meet demands for labour. Consequently, levels of immigration should be evidence-based, not politically motivated. Migration should be equitable, environmentally sustainable, and conducted with due regard to the impacts on source countries.
- Governments must devise and deliver a national industrial strategy for increasing the use of automation, both to minimise demand for jobs, and improve productivity.
- Governments in ageing societies should incentivise people to enter into a formalised 'phased retirement' up to their 70th birthday. This could see them undertake part time work or lighter duties as they prepare to retire.
- Governments should provide support to employers to support older workers as they participate in a phased retirement up to the age of 70.

FISCAL CHALLENGES

- The Old Age Dependency Ratio should be abandoned as a metric on which to base policy. The economic contribution of older people must be properly understood and factored into policy decisions.
- Measures to enhance and maximise the productivity of older workers should be put in place.
- The pace of pension reform must be maintained, appropriate to the needs of individual countries and their economies.
- Financial literacy must be added to national school curriculums in countries, where this hasn't already been implemented.
- Investment in preventative health must be increased substantially, on the basis of rigorous analysis regarding levels and direction of investment.
- Equitable and progressive increases in taxation, where appropriate, can be used to address funding shortfalls. Such increases should be accompanied by publicity and messaging that emphasises their value, rather than their cost.

APPENDIX

WHAT COULD THE UK ACHIEVE IF IT HAD A SIMILAR POPULATION TRAJECTORY TO JAPAN?

Japan is perhaps the most noteworthy example of an ageing society, one which has demonstrated the benefits of smaller families for decades. In Japan, more couples are having smaller families than ever before. Japanese women will give birth to an average 1.36 children in their lifetime - down from 2.1 in 1974. The current total fertility rate in England and Wales is 1.65[115].

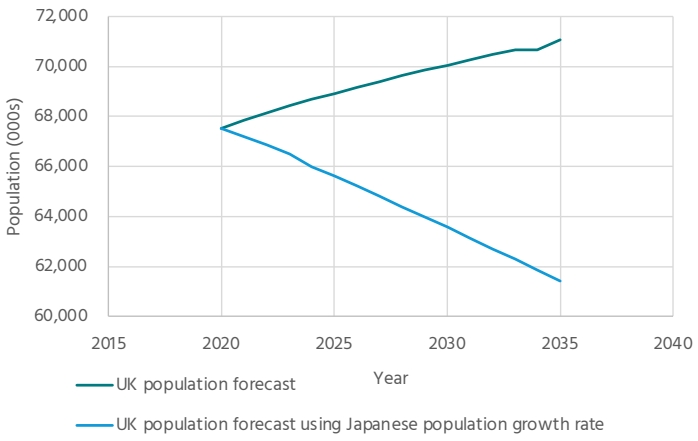
Over the course of the next 15 years up to 2035, the Japanese population is set to decrease from 125 million to 113.1 million - a reduction of some 9.6 percent. In the same period the UK population is predicted to increase from 67.5 million to 71.1 million - an increase of 5.2 percent. This is outlined in more detail in Figure 1.

Figure 1 - Forecasted population of the UK and Japan - 2020 and 2035

Year	JAPAN POPULATION (000s)	UK POPULATION (000s)
2020	125,016	67,531
2021	124,417	67,844
2022	123,770	68,138
2023	123,085	68,414
2024	122,367	68,671
2025	121,623	68,921
2026	120,856	69,163
2027	120,069	69,397
2028	119,264	69,624
2029	118,441	69,844
2030	117,600	70,057
2031	116,742	70,265
2032	115,866	70,468
2033	114,975	70,668
2034	114,068	70,668
2035	113,145	71,059

If the UK followed Japan's projected population trajectory up to 2035, the UK population would – instead of increasing to 71.1 million – decline to 61.4 million, a reduction of some 9.7 million over the period. This is outlined in more detail in Figure 2.

Figure 2 - ONS UK population forecast v UK population forecast using Japanese population growth rate



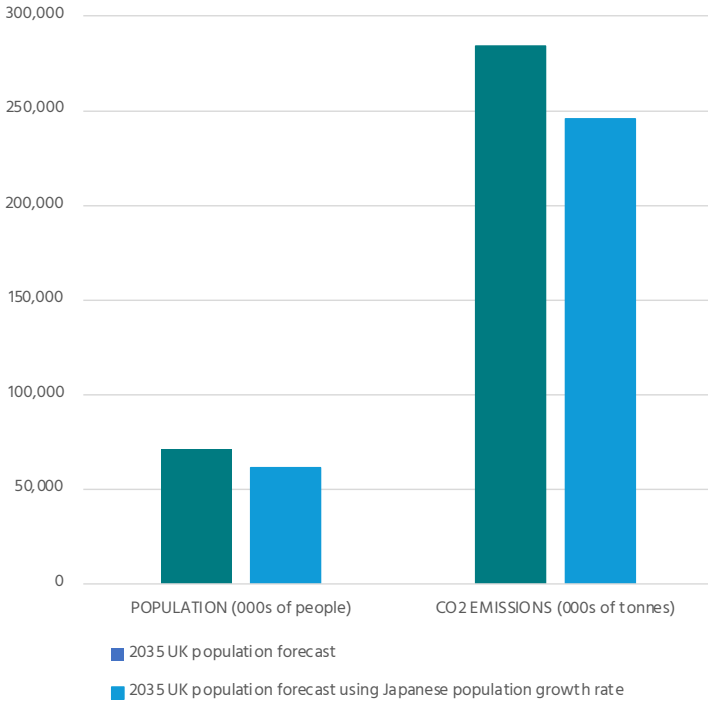
Notwithstanding its status a poster child for a senescent society, Japan is set to benefit in many ways from its reduced numbers. The following figures illustrate what could happen if the UK's population was to change in the same way. Of course, there are multiple factors and variables affecting all such outcomes, but these simple calculations help to put flesh on the bones of what can sometimes seem very abstract gains.

A SMOOTHER ROUTE TO NET ZERO - TAKING ALMOST 19 MILLION CARS OFF THE ROAD

According to the Committee on Climate Change, the UK is set to record per capita CO2 emissions of four tonnes by 2035[116]. A UK population in 2035 of 71.1 million would create approximate total CO2 emissions of 284.2 million tonnes annually. All other things being equal, a UK population of 61.4 million would generate emissions of around 245.6 million tonnes. This represents a differential of approximately 38.6 million tonnes of CO2. This equates to the annual CO2 emissions arising from 57 percent of the UK's 33 million passenger cars.

Addressing population alone cannot enable us to meet our targets, but action to drive this means that in 2035 if the UK followed the population trajectory of Japan over the same period it would have removed CO2 out of the atmosphere equivalent to taking 18.8 million cars off the road. Fewer people would multiply all the benefits arising from other mitigation measures, and speed up considerably the UK's journey to Net Zero CO2 emissions.

Figure 3 - CO2 emissions across two 2035 population scenarios



TACKLING THE HOUSING CRISIS - 4 MILLION FEWER HOMES NEEDED BY 2035

The UK is currently in the midst of the worst housing crisis for generations. Some 8.4 million people lack secure and stable housing in England alone[117]. According to the National Housing Federation, England needs to build some 340,000 new homes each year by 2031 to keep up with housing demand[118]. This remains extremely unlikely given that Whitehall has not overseen anywhere

near this rate of housebuilding since the mid-1960s, when a considerable supply of brownfield land was available and subsidies enabled widespread slum clearances [119]. In 2012-13 just 130,000 new homes were built, rising to 247,000 in 2018-19 - some 100,000 fewer than the National Housing Federation believes should be built annually [120].

The average number of people in a household in the UK is 2.4 people. If the UK's rate of population growth continues at its current rate, the UK will have 9.7 million more people in 2035 than if its population followed the trajectory of Japan over the same period. This is equivalent to some 4 million homes. A change in Britain's demographic trend would therefore mark an important first step in tackling Britain's chronic housing shortage.

It is important to acknowledge that during this period the UK is likely to see a rise in single-person occupancy which will put increasing pressure on housing stock. Slowing the rise in population is a key measure to help mitigate the negative effects of this change over the next 15 years.

The number of extra people living in the UK in 2035 than if its population followed the trajectory of Japan over the same period.

The number of homes 9.7 million people would require to live in.

The amount of land 4 million homes would take up.

REVERSING THE DECLINE - AN EXTRA 435,000 ACRES FOR NATURE

The UK is one of the most nature-depleted countries in the world, with more than one in seven species at risk of extinction and more than half in decline. The first Red List of UK mammals shows that a quarter of native mammal species now face "imminent" extinction due to relentless pressure from habitat destruction[121].

The UK currently has some 29 million homes. The UK's housing stock takes up some 12,700 km2 of the UK's total landmass. Should the UK's population rise as forecast to 71.1 million this will require four million more homes than if it matched Japan's trajectory. This in turn would account for an extra 1,761 km2 or 435,000 acres.

THE OPPORTUNITIES

The potential benefits outlined here are just a snapshot of those that countries can reap if they embrace population decline, instead of fearing it.

REFERENCES

1 UN DESA (2020), World Population Ageing 2020 Highlights, https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Sep/un_pop_2020_pf_ageing_10_key_messages.pdf

2 Social Market Foundation (2021), Baby bust and baby boom: examining the liberal case for pronatalism, https://www.smf.co.uk/publications/baby-bust-and-baby-boom/

3 Population Matters (2021), The climate crisis: why population matters, https://populationmatters.org/resources/climate-crisis-why-population-matters; and The biodiversity crisis: why population matters, https://populationmatters.org/resources/biodiversity-crisis-why-population-matters

4 IPBES (2019), Global Assessment Report on Biodiversity and Ecosystem Services, https://ipbes.net/global-assessment

5 Ibid

6 World Resources Institute (2018), Creating a sustainable food future

7 IPCC (2019), Climate Change and Land, https://www.ipcc.ch/site/assets/uploads/2019/08/4.-SPM_Approved_Microsite_FINAL.pdf

8 Ibid

9 Our World in Data (2019), https://ourworldindata.org/food-ghg-emissions

10 Clark et al. (2020), Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets, Science, https://science.sciencemag.org/content/370/6517/705

11 Our World in Data (2020), https://ourworldindata.org/ghg-emissions-by-sector

12 U.S. Energy Information Administration (2020), International Energy Outlook 2020, https://www.eia.gov/outlooks/ieo/

13 UNEP (2019), https://www.unep.org/news-and-stories/press-release/rising-demand-sand-calls-resource-governance

14 More information at: populationmatters.org.

15 Global Footprint Network, https://www.footprintnetwork.org/

16 Kapoor & Debroy (2021), Harvard Business Review. https://hbr.org/2019/10/gdp-is-not-a-measure-of-human-well-being

17 Jackson, T. (2009). Prosperity without Growth: Economics for a Finite Planet. Earthscan.

18 Ibid

19 Acemoglu, D., & Restrepo, P. (2017). Secular Stagnation? The Effect of Aging on Economic growth in the Age of Automation. American Economic Review, 107(5), 174–179. https://doi.org/10.1257/aer.p20171101

20 Weldon, D. (2015, April 2). 'Why 'Secular Stagnation' Matters'. BBC News. https://www.bbc.co.uk/news/business-32163541

21 Turner (2014), World Economic Forum, https://www.weforum.org/agenda/2014/08/ageing-populations-good-news-economy/

22 Wellbeing Economy Alliance, https://weall.org/faq#what-would-a-wellbeing-economy-do [Accessed 20 September 2021]

23 Ibid

24 Jakobsdottir, K. (2020), In Iceland, wellbeing is the measure of our success, Standard.co.uk, https://www.standard.co.uk/comment/comment/iceland-wellbeing-measure-success-katrin-jakobsdottir-a4324791.html

25 Ibid

26 United Nations Population Division (2019), World Population Prospects 2019, https://population.un.org/wpp/

27 OECD (2021), https://www.oecd.org/newsroom/unemployment-rates-oecd-update-june-2021.htm

28 International Labour Organization (2021), https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_794834/lang--en/index.htm

29 International Labor Organisation (2018), https://www.ilo.org/infostories/en-GB/Stories/Employment/barriers-women#global-gap

30 Kantarova et al. (2020), Estimating progress towards meeting women's contraceptive needs in 185 countries: A Bayesian hierarchical modelling study, PLOS Medicine. https://doi.org/10.1371/journal.pmed.1003026

31 UNFPA (2020), State of the World Population 2020, https://www.unfpa.org/swop-2020

32 European Central Bank (2018), https://www.ecb.europa.eu/pub/pdf/other/ebart201802_02.en.pdf

33 Moneysupermarket.com (2018), How automation may affect your job https://www.moneysupermarket.com/car-insurance/driverless/jobs/

34 Ibid

35 PWC (2018), Will robots really steal our jobs?, https://www.pwc.co.uk/services/economics/insights/the-impact-of-automation-on-jobs.html

36 Slate.com (2021), https://slate.com/technology/2021/03/job-loss-automation-robots-predictions.html

37 Office for National Statistics (2019), https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationsareathighestriskofbeingautomated/2019-03-25

38 PWC (2018), Will robots really steal our jobs?, https://www.pwc.co.uk/services/economics/insights/the-impact-of-automation-on-jobs.html

39 Bank of England (2020), https://www.bankofengland.co.uk/knowledgebank/will-a-robot-takeover-my-job

40 Turner, A (2022), Capitalism in the Age of Robots

41 Carehome.uk (2021), https://www.carehome.co.uk/news/article.cfm/id/1653050/care-workers-underpaid-7k-per-annum

42 The Guardian (2019), Virtual visits: how Finland is coping with an ageing population | Sarah Johnson, https://www.theguardian.com/society/2019/jun/26/virtual-visits-finland-remote-care-ageing-population

43 Contributor, J. (2018). Japan BrandVoice: How Japan Is Harnessing IoT Technology To Support Its Aging Population, Forbes, https://www.forbes.com/sites/japan/2018/12/04/how-japan-is-harnessing-iot-technology-to-support-its-aging-population/

44 World Population Review, https://worldpopulationreview.com/country-rankings/median-age [Accessed 13 September 2021]

45 Gallup (2018), https://news.gallup.com/poll/245255/750-million-worldwide-migrate.aspx

46 Office for National Statistics (2020), https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/ukandnonukpeopleinthelabourmarket/february2020#employment

47 Royal College of Nursin (2021), https://www.nurses.co.uk/blog/a-quick-overview-of-nurses--salaries-in-the-uk-in-2021/

48 UNESCO (2019), Global Education Monitoring Report, https://en.unesco.org/gem-report/report/2019/migration

49 United Nations Department of Economic and Social Affairs (2019), https://www.un.org/development/desa/en/news/population/remittances-matter.html

50 SSA (2020), https://www.ssa.gov/history/ottob.html

51 The Economist (2017), Getting to grips with longevity, https://www.economist.com/special-report/2017/07/06/getting-to-grips-with-longevity

52 Office for National Statistics (2019), https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/livinglongerisage70thenewage65/2019-11-19

53 Ibid

54 Ons.gov.uk (2021), A05 SA: Employment, unemployment and economic inactivity by age group (seasonally adjusted) - Office for National Statistics, https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentunemploymentandeconomicinactivitybyagegroupseasonallyadjusteda05sa

55 United Nations (2021), https://news.un.org/en/story/2021/06/1093182

56 United Nations Population Division (2019), World Population Prospects 2019, https://population.un.org/wpp/

57 Ibid

58 Ibid

59 Ibid

60 Ibid

61 Office for National Statistics (2019), Living longer and old age dependency: what does the future hold?, https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/livinglongerandoldagedependencywhatdoesthefuturehold/2019-06-24

62 Office for National Statistics (2018), https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/tablea21principalprojectionukpopulationinagegroups>[Accessed 20 September 2021]

63 Royal College of Nursing (2021), https://www.nurses.co.uk/blog/a-quick-overview-of-nurses--salaries-in-the-uk-in-2021/

64 Office for National Statistics (2019), https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/livinglongerisage70thenewage65/2019-11-19

65 Lee, R., & Mason, A. (2014). Is Low Fertility Really a Problem? Population Aging, Dependency, and Consumption. Science, 346(6206), 229–234. https://doi.org/10.1126/science.1250542

66 Ibid

67 Age UK (2017), The economic contribution of older people; update to 2017, https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/active-communities/the_economic_contribution_of_older_-people_-update_-to_-2017.pdf

68 UK Public Spending, https://www.ukpublicspending.co.uk/current_spending [Accessed 17 September 2021]

69 Age UK (2017), The economic contribution of older people; update to 2017, https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/active-communities/the_economic_contribution_of_older_-people_-update_-to_-2017.pdf

70 L. Laughlin, Current Population Reports, U.S. Census Bureau, Washington, DC (2013), pp. 70-135

71 Age UK (2017), The economic contribution of older people; update to 2017, https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/active-communities/the_economic_contribution_of_older_-people_-update_-to_-2017.pdf

72 OECD Economic Outlook, Volume 2002 Issue 2, p.138

73 Nikkei Asia (2018), https://asia.nikkei.com/Business/Technology/Meet-the-84-year-old-Japanese-app-developer-who-inspired-Tim-Cook2

74 Ibid

75 PBS (2013), https://www.pbs.org/newshour/economy/why-older-entrepreneurs-are-cr-1

76 Kauffman Foundation (2020), https://www.kauffman.org/currents/entrepreneurs-of-a-certain-age-uncertain-time/

77 PWC (2018), Will robots really steal our jobs? https://www.pwc.co.uk/services/economics/insights/the-impact-of-automation-on-jobs.html

78 CNBC (2021), China's factories automate as worker shortage looms, https://www.cnbc.com/2021/04/09/chinas-factories-automate-as-worker-shortage-looms.html

79 Ibid

80 Nature (2000), https://www.nature.com/articles/35014685

81 International Federation of Robotics (2021), https://ifr.org/ifr-press-releases/news/robot-race-the-worlds-top-10-automated-countries

82 House of Commons Library research briefing (2021), https://researchbriefings.files.parliament.uk/documents/SN02791/SN02791.pdf

83 Oecd.org (2021), Ageing Societies and the Looming Pension Crisis - OECD, https://www.oecd.org/general/ageingsocietiesandtheloomingpensioncrisis.htm

84 European Comission (2018), The 2018 Ageing Report, https://ec.europa.eu/info/sites/default/files/economy-finance/ip079_en.pdf

85 OECD (2019), Recent pension reforms, https://www.oecd-ilibrary.org/sites/451d8676-en/index.html?itemId=/content/component/451d8676-en

86 OECD (2020) Pension funds in figures https://www.oecd.org/pensions/Pension-Funds-in-Figures-2020.pdf

87 Ibid

88 OECD (2019), Old age income poverty, https://www.oecd-ilibrary.org/sites/fb958d50-en/index.html?itemId=/content/component/fb958d50-en

89 US Federal Reserve (2020), https://www.federalreserve.gov/publications/2020-economic-well-being-of-us-households-in-2019-dealing-with-unexpected-expenses.htm

90 UK Financial Conduct Authority (2018/19), https://www.fca.org.uk/data/retirement-income-market-data-2018-19

91 European Central Bank (2018), https://www.ecb.europa.eu/pub/pdf/other/ebart201802_02.en.pdf

92 FreeTrade (2021), https://freetrade.io/news/uk-financial-literacy-test

93 Money and Pensions Service (2021), Financial Education in Schools, https://moneyandpensionsservice.org.uk/financial-education-in-schools/

94 Perri (2020), https://www.imf.org/external/pubs/ft/fandd/2020/03/can-immigration-solve-the-demographic-dilemma-peri.htm

95 Office for National Statistics (2019), Living longer and old-age dependency – what does the future hold?, https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/livinglongerandoldagedependencywhatdoesthefuturehold/2019-06-24

96 Ibid

97 WHO (2021), World Report On Ageing and Health, https://apps.who.int/iris/bitstream/handle/10665/186463/9789240694811_eng.pdf;jsessionid=62D8D10C9BD816D95F9434977D4FECCF?sequence=1

98 UK Government (2019), Ageing and health expenditure, https://publichealthmatters.blog.gov.uk/2019/01/29/ageing-and-health-expenditure/

99 Howdon D, Rice N (2018), Health care expenditures, age, proximity to death and morbidity: Implications for an ageing population. J Health Econ. 57:60-74. doi: 10.1016/j.jhealeco.2017.11.001

100 Ibid

101 LSE (2019), Projections of older people with dementia and costs of dementia care in the United Kingdom, 2019–2040, https://www.alzheimers.org.uk/sites/default/files/2019-11/cpec_report_november_2019.pdf

102 European Observatory on Health System Policies (2019), Will population ageing spell the end of the welfare state?, https://pubmed.ncbi.nlm.nih.gov/31820887/

103 OECD (2020), Spending on long term care, https://www.oecd.org/health/health-systems/Spending-on-long-term-care-Brief-November-2020.pdfibid

104 Ibid

105 Harper, Sarah (2016). How Population Change Will Transform Our World (pp. 84-85). OUP Oxford. Kindle Edition.

106 Wang, F., Wang, JD (2021). Investing preventive care and economic development in ageing societies: empirical evidences from OECD countries. Health Econ Rev 11, 18.

107 Ibid

108 Barclays (2021), Maximising the demographic dividend, https://www.investmentbank.barclays.com/our-insights/Active-Ageing-Maximising-the-demographic-dividend.html

109 Don'tdisappointme.com (2021), https://dontdisappoint.me.uk/resources/electronics/iphone-sales-statistics-uk/

110 Vogue Business (2019), https://www.voguebusiness.com/sustainability/materials-fur-industry-faux-vegan-prada-chanel-yoox-net-a-porter-burberry

111 House of Lords library (2021). https://lordslibrary.parliament.uk/social-care-funding-a-rise-in-national-insurance/

112 See GMB (August 2019), https://www.gmb.org.uk/news/three-quarters-public-support-tax-rises-social-care-poll; The Health Foundation (December 2019) https://www.health.org.uk/news-and-comment/news/two-thirds-of-people-want-tax-increase-to-pay-for-health-and-social-care; IPSOS-Mori (August 2021) https://www.ipsos.com/ipsos-mori/en-uk/two-three-support-increasing-national-insurance-social-care-reform-or-reduce-nhs-backlog

113 The Sun (2021), https://www.thesun.co.uk/news/16047400/boris-johnson-tax-social-revolt/

114 YouGov (2021), https://yougov.co.uk/topics/politics/articles-reports/2021/09/07/snap-poll-national-insurance-social-care

115 Office for National Statistics (2020), Births in England and Wales: 2019 https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/birthsummarytablesenglandandwales/2019#number-of-births-and-fertility-rates

116 Theccc.org.uk (2019), https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming

117 National Housing Federation (2019), 1 in 7 people in England directly hit by the housing crisis, https://www.housing.org.uk/news-and-blogs/news/1-in-7-people-in-england-directly-hit-by-the-housing-crisis/

118 House of Commons Library (2021), Tackling the Undersupply of Housing in England, 14 January 2021, p. 21

119 Ibid

120 Gov.uk (2020), https://www.gov.uk/government/collections/net-supply-of-housing (Accessed 2 July 2021)

121 The State of Nature partnership (2019), The State of Nature 2019, https://nbn.org.uk/stateofnature2019/reports

ABOUT POPULATION MATTERS

Population Matters is a UK-based charity which campaigns to achieve a sustainable human population, to protect the natural world and improve people's lives. We promote positive, practical, ethical solutions – encouraging smaller families, inspiring people to consume sustainably, and helping us all to live within our planet's natural limits. We believe everyone should have the freedom and ability to choose a smaller family. We are committed to human rights, women's empowerment and global justice.

Prepared in collaboration with Higginson Strategy.

populationmatters.org

PopulationMatters
@PopnMatters
@popnmatters

Population Matters
135-137 Station Rd, London, E4 6AG
Charity 1114109, Company 3019081

POPULATION MATTERS™

Every choice counts