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Essays on medium- and long-term global trends

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Study

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Table of contents

Introduction

Foreword

In preparing for battle I have always found that plans are useless, but planning is indispensable.
Dwight Eisenhower[1]

This compendium of essays and vignettes should aid EU decision-makers in their long-term planning and strategic outlook. It is not meant to predict the future, but to highlight the important trends and questions that will determine the fate of the European Union.

The Global Trendometer

The Global Trendometer is a regular product of the Global Trends Unit of the European Parliamentary Research Service (EPRS). It draws on general foresight publications, inter alia from the European Union, the US National Intelligence Council, the OECD, NATO and the World Economic Forum, as well as other more specialised foresight work. It also builds on the 2015 ESPAS Report and the proceedings of the annual ESPAS conferences. Key criteria for the selection[2] of trends to be analysed are: changes in trend or in perceptions, treatment of the subject in the surveyed foresight literature, cross-sectorial impact, and relevance to the EU. This publication does not offer answers or make recommendations. It presents summarised information derived from a range of carefully selected sources, for the consideration of the membership of the European Parliament. We seek complementarity between editions of the Trendometer. For an overview of the methodology, see the next chapter. For a complete list of our past and present topics, see Chapter 'Total Global Trendometer Output'.

This issue includes essays on the future of India, the labour-share of income, and democracy and artificial intelligence. It also has shorter pieces – vignettes – giving an overview of trends, uncertainties, and possible disruptions on geo-engineering, remittances, food security in China, economic waves, the US after Trump, public procurement and deep fakes.

The EPRS Global Trends Unit prepares long-term analysis, also called foresight, in many ways. Aside from the Global Trendometer, we prepare strategy exercises, where experts and decision-makers check assumptions on important questions. We build connections with Members of the European Parliament and perform outreach to outside foresight experts. Finally, we organise the European Parliament's participation in the inter-institutional ESPAS process.

European Strategy and Policy Analysis System (ESPAS)

The aim of the ESPAS initiative is to strengthen the EU's collective administrative capacity for foresight. It seeks to provide informed, up-to-date analysis of long-term policy challenges and options for the decision-makers within the participating institutions. It is a joint initiative of the European Parliament, the European Commission, the Council of the European Union and the European External Action Service, with the Committee of the Regions, the European Economic and Social Committee and the European Investment Bank as observers. The work by the Global Trends Unit feeds into the ESPAS process and into the next ESPAS report that will be published for the incoming decision-makers of the new legislature.

Leopold Schmertzing and Danièle Réchard
Global Trends Unit

[1] Based on a saying by President Eisenhower in 1950, who is said to have attributed it to an unknown soldier. This version is found in: Nixon, Richard. *Six crises*. Simon and Schuster, 2013.

[2] Topics are selected by the Global Trends Unit on the basis of internal and external brainstorming workshops.

Methodology

ESPAS uses the tools of **foresight**. According to the European Commission, 'Foresight is the disciplined exploration of alternative futures' and is used 'to confront complex challenges and help create a better future'.

The Global Trendometer focuses on one major foresight technique: **trend analysis**. According to the European Political Strategy Centre, main research questions in trend analysis are: 'what has already happened but has yet to fully manifest and will catch up with us in future? How can we better prepare for the inevitable changes that will impact multiple domains of policy and strategy?' (EPSC Strategic Foresight Primer, 2017, p. 18).

The EPRS trend analysis approach is to focus not only on trends, but also on **uncertainties and disruptions**, both in vignettes and essays. This is to remedy the negative effect of trend analysis: which is that it can support comfortable assumptions instead of challenging conventional wisdom (ibid, p.18). Uncertainties show gaps in our current thinking and disruptions provide creative input for policy makers to ask themselves: What if this happens?

Trends, Uncertainties and Disruptions:

'A **trend** is a quantitative or qualitative description of a change of an observable phenomenon that is expected to continue to move in a known direction, along a continuous line of change (linear, volatile, exponential) over a specified period of time. Trend impact analysis involves identifying the impacts of trends and the implications of these impacts for decision making.' (Strategic Foresight Primer, p.17)

An **uncertainty** is a major fork in the road in a trend. Imagine a yes-or-no question that has a sizeable impact on the future trajectory of the trend.

Disruptions, also known as wild cards, are 'low probability, high impact opportunities and threats that would be disruptive should they occur, but for which there *may* not be any evidence today that they will eventually happen' (Singapore Foresight Glossary, p. 54).

In some of the essays, we also feature another important technique in the Foresight toolbox: **scenarios**. They 'are not intended to present definitive predictions about the future. Rather, scenarios help to articulate the risks and opportunities present in a range of plausible futures, and serve as a discussion tool to stimulate debate about strategies to shape the future' (Singapore Foresight Glossary, p. 38).

Further information on public sector foresight:

Public sector institutions have refined processes over the last decades and many of those are openly available:

The European Parliament's Scientific and Technical Options Assessement Unit is our centre of excellence on scientific foresight. The European Commission hosts many sources too: The European Political Strategy Centre, DG Research and Innovation as well as in the Joint Research Council provide a lot of up-to-date and valuable information.

Leading users of government foresight, such as the wider EU Foresight Community, the United Nations Development Programme, the Singapore Centre for Strategic Futures and the UK Government Office for Science, provide useful information.

The Future of India: Aligning Ambition and Potential

Danièle Réchard with Victoria Jordan (trainee)

Considerations regarding the future of India seldom come as stand-alone reflections in Western strategic foresight reports, notably the 2015 ESPAS report. India is mostly evoked in the general context of global economic power's rebalancing towards Asia, together with China, or in connection with global geopolitical risks. Even the India-China rivalry, which a few years ago was on everybody's lips, now seems out of fashion. Meanwhile, Westerners' fascination with China – which appears to surpass India on all fronts, whether financial, economic, military – grows almost in tandem with concerns regarding its assertiveness. While many predict that the three countries leading the world economy by mid-century will be the US, China and India, scepticism is the predominant tone when the future of the India-EU partnership is discussed.

What if we were missing something? In retrospect, 2017-2018 might one day appear as the moment of an 'inflection point'. India has successfully induced China to withdraw from Doklam; India's first wheat shipment to Afghanistan went through Chabahar in October 2017. India's growth now surpasses China's (IMF, 2018, p. 8), and the country is now 'fifth most attractive market for investment' (PwC, 2018, p. 8). Prime Minister Narendra Modi delivered a keynote address at the Davos Forum in January 2018 and at the Dubaï World Government summit in February 2018. Another trend went largely unnoticed too: the rate of child marriages has decreased significantly - a sign that Indian society is changing from within.

India does face numerous well-known challenges, including malnutrition and poverty, women's status, climate change and growing nationalism. There is no guarantee that it will overcome them. But if these challenges are properly addressed – possibly in cooperation with the EU – the country's assets and potential could, in the long run (2030-2050), make the Asian Century into the Indian Century. India should not be dismissed as an essential partner for the European Union.

India possesses the essential ingredients for success

India's main strength is its demography. For the period 2020–2040, India's demographic dividend will provide a major competitive advantage as numerous parts of the world face the challenge of declining working-age population. In 2027, 69 % of the Indian workforce will be millennials (Morgan Stanley Research, 2017). Indian women also represent a potential important addition to the workforce: today, women's rate of labour force participation is particularly low, even for college graduates and urban dwellers. Moreover, India had the world's second largest English speaking population – a strong advantage for young Indians entering the workforce.

Today, the country holds fifth place among the world's largest economies and is expected to jump to third by 2027 (CEBR, 2017, p. 25). It has the potential to become the second largest economy in the world by 2050 in PPP terms. (NATO, 2017, p. 22). According to the IMF, India's economic growth is now stronger than China's, with 7.4 % growth in 2018 and 7.8 % in 2019 – the highest score of all developing countries (IMF, 2018, p. 8). India is ranked fifth most attractive world economy for investment (PwC, 2018, p. 8).

A major recipient for energy and raw materials exporting countries, India should continue to benefit from low price hydrocarbons, but still strongly relies on coal - which currently accounts for more than 60 % of its power-generating capacity. In light of its increasing demand in energy – India's share of global energy use should rise to 11 % by 2040 (IEA, 2017) – which will exacerbate existing environmental strains, it is urgent that current efforts to develop alternatives prove successful. India has potential in renewable energy. It is projected to be the second-largest market for solar energy

by 2040 (IEA, 2015, p. 12), and is also developing nuclear fuel technology to exploit its abundant reserves of thorium.

When it comes to agriculture, India has moved away from dependence on food aid and achieved national food self-sufficiency. Today, the country is the second food producer in the world and a net food exporter. Moreover, sectors like dairy production and aquaculture are expected to lead sustained food production and consumption growth for the coming years (OECD, 2017).

India's success in the IT sector has boosted the economy, created numerous job opportunities and fostered important ties with developed countries. This is most striking in Bangalore, the country's IT hub, which has seen its population double in the past 15 years. An initiative of both local and national governments, NASSCOM, has encouraged entrepreneurship and innovation, leading to an increasingly dynamic tech landscape: the NASSCOM start-up report of 2015 estimated more than 800 tech start-ups being set up on a yearly basis, and projected the number of tech start-ups at 11 500 by 2020 (Flake, 2017, p. 43). Their incubator, the Centre of Excellence for IoT, focuses on startups offering IoT (Internet of Things) solutions in health, agriculture, energy and automobile. NASSCOM estimates that the IoT market in India will already be worth US$ 15 billion by 2020. These digital initiatives are likely to boost three sectors in particular: e-commerce, health, and education.

The Indian diaspora, another strength for the country, is one of the largest in the world with between 27 and 30 million Indians present around the globe. Often wealthy, Indians abroad do not only support the international diffusion of Indian culture and products, but also represent an important source of funding for India through diaspora bonds or remittances.

India's strong potential is also that of the world's largest democracy – with all the complexity and obstacles that deep social divides and the cultural institution of caste entail.

India's political system possesses 'the strong advantage of providing it with a safety valve for discontent, in a way that China's one-party rule does not' (NIC, 2012, p. 48). Indians are very politically engaged at all levels. If some could argue that democracy prevents a long-term approach and any guarantee of India's fulfilment of its potential, the Indian political system possesses another strength in that it is not perceived as a threat by the US or the EU. On the contrary, with its deeply entrenched democratic system, India is often held as the successful model *par excellence* in both the political and the economic spheres.

In terms of geopolitics, India is a strong military power, particularly active in its immediate periphery (Nepal, Myanmar, Indian Ocean). A nuclear power since 1998, India follows a 'no first use' doctrine but is opposed to the Non-Proliferation Treaty, deemed discriminatory. Its land army is already relatively powerful, but currently undergoing major reforms expected to be completed by the end of 2019, aimed at enhancing combat capabilities and rebalancing defence expenditure. In a shift that will boost India's role in the region, it is now strengthening its navy to become a maritime power.

At the global level, India's willingness to assert itself as the leader of the non-aligned is long gone: Modi did not attend the Non-Aligned Summit in Venezuela in 2016. Nevertheless, the dominating doctrine is still that of strategic autonomy, translating into suspicion for multilateral agreements and a preference for bilateral relations. With regard to international crises such as North Korea, Syria or Venezuela, New Delhi is careful to keep a back seat. In UN peacekeeping operations, however, India is the third largest troop contributor, with 6 711 military and police personnel deployed as of March 2018, taking a cautious stand as a global actor.

On the other hand, India is increasingly active as a regional power – seemingly asserting itself as a major contributor to a newly emerging world order, less Western-centric yet not dominated by China. Since the 1990s Look East policy, now re-baptised Act East policy, India has formed intensified economic, political and military relations with Japan and the ASEAN. In late 2017, the Quadrilateral Security Dialogue (Quad), an old initiative dating back to 2004, was relaunched as an informal strategic dialogue between India, Japan, Australia and the US. The Quad highlights the recognition that all four countries share concerns about China's rise and assertiveness.

Major constraints to overcome

Intra-India regionalism and Hindu nationalism – two internal trends that could impair India's potential

India's strong diversity is both a strength and a curse. Its regional and cultural diversity is a source of pride for Indians, who have achieved better cohesion since the 1950s, but regionalism is a political ticking bomb that could hinder progress at various levels.

Simultaneously accommodating the expectations of ageing and richer Southern states, and of younger and poorer Northern states will represent a challenge, both economically and politically (EPRS, 2017, p. 18). Despite India's food self-sufficiency and prosperous agriculture, the country still struggles to curb hunger and malnutrition: 190.7 million Indians are undernourished (14.5 % of the population). Food distribution thus remains one of the country's most important structural challenges, and will require better cooperation between Indian states in order to produce more food, with declining resources and less water, as well as a shrinking rural workforce. Moreover, despite the economic upturn of recent years, India only ranks 131 on the Human Development Index as regional disparities in health, education and living standards only further existing inequalities. Southern cultures and languages also suffer from lower recognition within India, causing increasing concerns and even paranoia from richer southern states in the face of increasing North-South migration.

This is enhanced by the lurking danger of Hindu nationalism, which could jeopardise India's recent rise.

Mr Modi's party, the BJP, has relied heavily on Hindu nationalism (Hindutva) for political success. Simultaneously, the rise of Islamic radicalism in other parts of the world – and partially also in India – has strengthened the roots of Hindu nationalism. The Rashtriya Swayamsevak Sangh (RSS), a nation-wide volunteer organisation for Hindu nationalists, is a strong support base for Modi's government. The organisation doesn't hide its agenda to transform India into a Hindu nation, which, if successful, risks alienating Muslim Indians entirely. This entails the risk of social and political instability, even manifestations of communal violence and insurgencies (as seen most recently in March 2018 in West Bengal), detrimental to the rise of India.

Growing resentment of Muslim Indians who see their loyalty towards India questioned, and their sense of safety jeopardised, also risks antagonising Muslim countries which are key economic partners, such as Indonesia and Malaysia, or which India depends on for its vital oil supplies.

Another implication of Hindu nationalism is disputes with neighbouring countries and notably the risk of missed perspectives for cooperation with Pakistan. India would indeed benefit from seizing opportunities for increased cooperation with Pakistan in the long term. However, Hindu nationalism heightens the difficulty of developing a new policy on Kashmir, and thus a compromise with Pakistan.

China, a very present neighbour

Many observers regard China's Belt and Road Initiative (BRI) with suspicion, as a Trojan horse approach to gaining further global influence. India, one of the few Asian states which does not take part in the project, is no exception.

In Pakistan, the China-Pakistan Economic Corridor (CPEC), which allows China to reduce by 10 000 km the transport of export goods to the Middle East, fuels India's anxiety. Not only does CPEC go through disputed territories, but it has also allowed enormous investment in Pakistan security. Recent reports of Chinese plans to build an offshore military base close to Gwadar, a port of major importance within CPEC, are unlikely to appease India's concerns. To counteract the BRI, India has launched several initiatives in the Indian ocean. Since 2015, the International North-South transport Corridor (INSTC) with Russia and Iran, which begins at the Iranian port of Chabahar, also gives India access to Afghanistan, Central Asia and Russia – just 70 km from the BRI port of Gwadar.

Another source of tension between India and China revolves around water. On the Pakistani side, the construction of hydroelectric dams in the Indus area, especially in Kashmir, is a source of friction between the three countries. On the eastern side, the India-China relationship is further strained by a conflict related to Brahmaputra's waters.

Finally, China is still opposed to India's long-standing demand for a permanent seat at the UN Security Council.

However, both countries know 'how far not to go'. For instance, India is careful to avoid making its developing relationship with Vietnam appear as the pendant to Pakistan's and China's. In the summer of 2017, the Doklam incident – a military standoff between the Chinese and Indian armies in a contested area – was resolved peacefully. Moreover, China worked hard to secure the attendance of Narendra Modi at the BRICS meeting in September 2017, and India did not celebrate the 60th anniversary of the Dalaï Lama's flight to India in March 2018.

Drivers of change: India at a crossroads

Considering the complexity of a topic as broad and rapidly evolving as India's future, very little prospective work focuses solely on scenarios for the country itself. What already exists places India in a broader geopolitical context, with a particular focus on the risks of terrorism and of conflict between India and Pakistan. There is a case for an in-depth analysis of the internal key drivers which will determine India's future and its place in the world: education, vision, and digitisation.

Scenarios: the risk of war with Pakistan

Two approaches characterise existing foresight analysis:

- Focus on geopolitical risks:

The 2012 NIC report distinguished three scenarios. First, the 'Turn-the-Corner' scenario where gradual normalisation of trade between Pakistan and a rising India would be a critical factor. Then, the 'Islamistan' scenario, where the influence of radical Islamists in Pakistan and Talibans in Afghanistan would grow, increasing the risk of conflict. And finally, the 'Unravelling' scenario, where India would be dragged down by destructive forces in the region, challenging its ability to play a more global role.

Four years later, the Global Risks 2035 report (Burrows, 2016) still identifies the Kashmir issue as the biggest obstacle in the relation between India and Pakistan. If India was to use force in the region, the conflict would very likely evolve into nuclear war given Pakistan's commitment to carrying out a first nuclear strike. The report underlines that any conflict between the two countries (also

resulting from terrorism or internal tensions in Pakistan) could provoke a nuclear war. An unusual optimistic note suggests that if a nuclear conflict was successfully avoided with the help of Russia, the US and China, this could lead to the conclusion of a nuclear-arms limitation treaty during the 2020s.

- Focus on internal socio-economical risks:

The NIC report (2017) points to South Asia's openness to the private sector, community groups, and NGOs, which should position it well for an era of empowered individuals, especially if governments curb their support for chauvinistic groups that divide societies.

However, internal factors could well further social divisions along religious lines – increasing the risk for conflict. Insufficient work opportunities for a growing population, state-sanctioned social, cultural and religious discrimination, growing violence resulting from gender imbalance within the country's youth could all contribute to the radicalisation of Indian youth. As newly urbanised populations tend to be more religious than existing populations, urbanisation also represents a risk of contributing to both Hindu and Islamist radicalisation. These internal risks could enhance tensions with the country's Muslim minority as well as Muslim-majority Pakistan and Bangladesh, and thus increase the threat of terrorism in the region and the risk of conflict with Pakistan.

Drivers of change: education, vision and governance

Education policy will be the condition *sine qua non* to reap the demographic dividend of India, and to take advantage of the country's assets, especially in the technological and digital sectors. India's working age population will continue to expand in the coming decades, yet less than half of Indians in their twenties have completed any form of secondary education and 37 % of all Indian adults are illiterate. There is thus a large gap between the skills demanded from a growing workforce, and those available in the Indian population (D'Ambroggio, 2017, p. 18). India still only spends around 2.7 % of its GDP on schools, a lower share than many countries. Students suffer from a lack of access to essentials such as electricity, librarians or computers. And even more worrying than poor infrastructure is the problem of unskilled teachers.

To scale up from a regional power to a leading power, India needs to develop a 'vision' of its international profile that could match its potential. A number of issues for our century are indeed at stakes in the region: rising Islamism, climate change, energy supply, challenge of democracy, return of protectionism. Regarding the latter, it is not clear which stance India will adopt: while Prime Minister Modi declared protectionism as bad as terrorism in Davos in January 2018, the government raised tariffs on 50 products the following month. Yet, there are indications that Modi's government is bolstering efforts to address these issues. India has indeed adopted a strong stance on climate change despite the US' backtracking on the Paris Agreement. It is increasingly active in providing support against Islamism in the Philippines, and is also developing a growing number of trade partnerships with world economic powers ('Asia-Africa Growth Corridor'). Indian diplomacy is taking on a new dimension, asserting its positions and endorsing the concept of the Indo-Pacific (Grosser, 2018).

A grand vision, however, cannot suffice to ensure the crystallisation of India's ambition. The government will need to address a number of *governance* issues that have easily been ignored until recently. It has already undertaken some structural reforms, deemed essential for future growth. Recent measures to digitise the economy and improve tax compliance (introduction of a Good and Service Tax) should boost tax revenue in the medium term (OECD, 2018). That is, provided the agricultural sector, which was disproportionately affected by the measures, recovers from the disruptions they created. In 2016, the so-called demonetisation – the cancellation of 86 percent of the country's cash aimed at fighting the black economy – had disastrous effects for the population, and points to the necessity for the government to find a careful balance in its domestic policy. Now

top of the agenda must be a crackdown on corruption as well as commitments to equality, especially gender equality, and to a cleaner environment. There is immense potential for the government to harness in digitisation and its nationwide digital identity programme, Aadhar, shows the determination to innovate. But the government needs to overcome serious challenges and risks, especially regarding the programme's diffusion and security, before it can be hailed a tool for progress. Above all, a major choice remains to be made for the prime minister: as elections approach, so do the risk of further reliance on Hindu nationalism and its potentially disastrous consequences.

EU-India: a loveless arranged marriage that may turn to a love story

India was one of the first countries to establish diplomatic relations with the nascent European Economic Community in 1963. A cooperation agreement was signed in 1994 which led to a strategic partnership established in 2004. This was followed by an EU-India Joint Action Plan (adopted in 2005 and updated in 2008). Yet, in 2018, the common intention to conclude the EU-India Broad-based Trade and Investment Agreement (BTIA), claimed time and again since 2007, does not seem anywhere near crystallisation. This explains Gauri Khandeka's characterisation of the EU-India relationship as a 'loveless marriage', sometimes underpinned by resentment on the Indian side, and concerns regarding human rights in India on the European side.

The EU's attitude of 'benign neglect' towards India may be rooted in the asymmetry of their economic exchange: while the EU is India's first trading partner at present, India falls way behind the US and China among the EU's trading partners (ninth). On the other hand, external trade policy is still the EU's main power to assert itself at global level, and India is traditionally more inclined not only to protectionism, but also to bilateral cooperation with big individual EU Member States on security matters. This means that both parties have thus far failed to recognise the other as a global player.

This somewhat sceptical assessment of the EU-India relationship might well belong to the past: the loveless arranged marriage seems ready to turn into a long awaited real love story. This is happening against a global backdrop turned upside down by the protectionist turn of Donald Trump's US, his exhortation that the European Union should do more for its own security, India's and the EU's shared concerns regarding China's growing assertiveness, as well as the EU's and India's common interest in the prospects offered by the Asian Infrastructure Investment Bank. As a result of this new global context, but also of domestic dynamics, both parties are evolving: Modi's policy of greater economic openness is seen favourably by the Europeans, and security concerns are making it to the top of the agenda on the European side.

Thus, in spite of – or perhaps thanks to – the numerous obstacles to the conclusion of an EU-India FTA, cooperation has significantly intensified since the election of Narendra Modi. After two consecutive EU-India summits were held in March 2016 and October 2017 following a dry spell between 2012 and 2016, the 'EU-India Agenda for Action-2020' was adopted. Concrete steps for tapping the potential for EU-India closer ties (D'Ambroggio, 2017) are announced at a rapid pace, focusing on climate and energy cooperation, sustainable urbanisation and security. Some of them are real breakthroughs: the EU and India's Department of Space signed a Cooperation Arrangement to share satellite Earth Observation data in March 2018. The EIB (which has established its regional representation for South Asia in New Delhi) announced in 2016-2017 massive investments in India (solar projects across India, Lucknow metro, Bangalore Rapid Transit line). The first ever joint EU-India naval exercise took place on 4 October 2017 in the context of the Atalanta operation aiming to improve maritime security in the Indian Ocean.

More developments are to be expected in several areas: dialogue on the situation in Afghanistan, Iran and the Middle East; cyber-security; police cooperation in counteracting terrorism; research

and development cooperation in the peaceful uses of nuclear energy; fighting antimicrobial resistance – for which India has one of the worst records globally – mobility for young scientists and researchers; and digitisation of cultural heritage.

The conclusion of a comprehensive Free Trade Agreement in the near future remains very unlikely. Divergent starting points remain: on intellectual property rights issues (especially regarding generic drugs), on market access (to Indian public procurement, the wine, car, legal and insurance sectors and to the European labour markets), and on agricultural subsidies.

Nevertheless, even on traditionally divisive issues, new avenues for strengthening the EU-India cooperation can be explored. For example, on data protection, India now seems to be leaning towards a more EU compatible regime in the context of privacy concerns regarding Aadhaar, and its ambition to export it. On intellectual property rights, the transfer of climate-friendly technologies could provide the right ground for better common understanding. Moreover, many Indian projects also deserve further attention from the EU: for example, on the protection of maritime resources, the EU or its Member States should consider answering Modi's call to invest in its Sagar Mala (oceanic garland) project for coastal cities.

Last but not the least, the EU's Digital Single Market has many parallels with the Digital India initiative. Exchange of startups combined with alignments on digital initiatives can be a win win for both regions. The European way of integrating academia, industry and local municipalities, in particular, is a powerful model to stimulate local economy and to create jobs, one which Indian cities could pick up.

Conclusion

It's not honeymoon time yet. But it is time for the EU to propose.

The crystallisation of the EU-India relationship is gaining momentum but could fail, if the general public's awareness is not drawn to its importance for the future. So far, the way the EU and its Member States have looked at India seems to have been distorted by three factors:

- The mesmerising effect of China's rise, resulting in consideration being given to India in Europe merely as a possible counterbalance partner, rather than on its own huge merits;
- The UK's membership, which turns dealings of the EU with India into a sort of British national matter – the UK being implicitly considered as both the voice of India in the EU and the delegate of the EU in dealing with India.
- The dominance of trade matters on the EU's agenda.

Today, India should be seen through new lenses. How Brexit will affect the EU-India relationship remains to be seen: Germany, not the UK, is India's first economic partner in Europe; in the past year France has become a important partner for security in the Indian Ocean; and France and India have initiated together the creation of the International Solar Alliance whose founding conference took place in New Delhi on 11 March 2018.

The security agenda has become an essential dimension of the European project; and we might be overestimating China's power prospects while underestimating India's importance in the long run.

Today, India finds itself at an inflection point. A more ambitious outlook in the EU-India relationship could also support positive developments domestically, and even help curb the current trend towards nationalism.

The European Parliament has a key role to play in transforming the way India is looked at – or just ignored – within the EU. To quote European Commission President Juncker: 'We are the world's two largest democracies. We are two of the world's biggest economies. We share the same values and

the belief in freedom, equality, tolerance and the rule of law. Working together with a like-minded partner like India simply makes sense. It is natural'. One could add: and we share the challenge of struggling to find unity in diversity, so we could work more on understanding each other's peculiarities.

The Future of the Labour Share of Income

Eamonn Noonan

Summary

The labour share is that part of national income that is made up of compensation for labour. Its counterpart is the share that goes to capital. The labour share has been in decline for over forty years; this is associated with increasing inequality. This essay summarises data on the labour share, and examines how major global trends affect it. It then looks at options and uncertainties for decision-makers in Europe.

Introduction

> *We live in an era of rising inequality and falling income shares for labor relative to capital. Governments need to do more, not less, to redistribute income and wealth.*
> *Kenneth Rogoff*[3]

The labour share of income has been in decline for over forty years. This is the part of national income that is made up of compensation for labour. Its counterpart is the share that goes to capital. The two shares together add to 100 %; a proportionate increase in one means a corresponding fall in the other. A fall in the labour share is important not least because it is associated with increased inequality. A continuation of the present trend would therefore point to yet more inequality.

The labour share of income is becoming more prominent as a matter of public debate. Until quite recently, it often went unnoticed, not least because certain economic models assumed that the labour share was a constant (ILO et al., 2015). A new effort to understand why it has declined, and what impact this has, is timely. It is a new dimension of the large scale discussion around inequality.

This essay first summarises the present data on the labour share, and then examines the interaction between the labour share and major global trends. It goes on to consider policy options and uncertainties for decision-makers in Europe.

The data

Between 1985 and 2010, the labour share of GDP fell by 1.5 percentage points in the average OECD country. It fell by more than 5 percentage points in Germany, Ireland and New Zealand (OECD, 2014). Within the EU, the labour share among older member states (EU-15) peaked in 1975 at 69.9 % of GDP, and it fell to 57.8 % in 2006. By comparison, the US peak was 65.9 % in 1970, falling to 60.9 % in 2005. Japan peaked at 76 % in 1975-7, and fell to 60 % in 2006 (European Commission, 2007). Many newer Member States (EU-13) do not have pre-1990 data, and the intervening period has been marked by deep structural transformation of their economies. But they have also seen a downward trend since mid-90s, with some exceptions.

The long-term trend reasserted itself in recent years, after a slight reversal immediately after the 2008 financial crisis. Data also shows a shift in the distribution of the wage share; a greater portion now goes to high earners, and a lower portion to low earners (Gough and Therborn, 2010, p. 719).

[3] Rogoff, 2018.

Why the decline in the labour share matters

The association between the declining labour share and increasing inequality is widely acknowledged by international institutions (ILO et al., 2015). A fall in the wage share has a more direct impact than many other economic indicators. It affects everyone whose income is made up of wages and salaries. The European Trade Union Confederation (ETUC) has quantified this. It claims that the average pay of EU workers in 2017 is €1 764 less than it would be if the pay share was still at the level of the early 1990s. They claim a notional loss of over €2000 in Hungary, Germany, Poland and Spain, over €3 000 in Italy and over €4 000 in the Czech Republic (ETUC, 2018).

It is easy to understand that the decline hurts household consumption. Less obviously, it also hurts government consumption and private investment. There is increasing recognition that greater inequality and a lower labour income share may lead to slower and less sustained economic growth (OECD 2017). The sequence is as follows: private consumption falls, because marginal propensity to spend disposable labour income is higher than for capital income. Slack demand in turn brings under-investment.

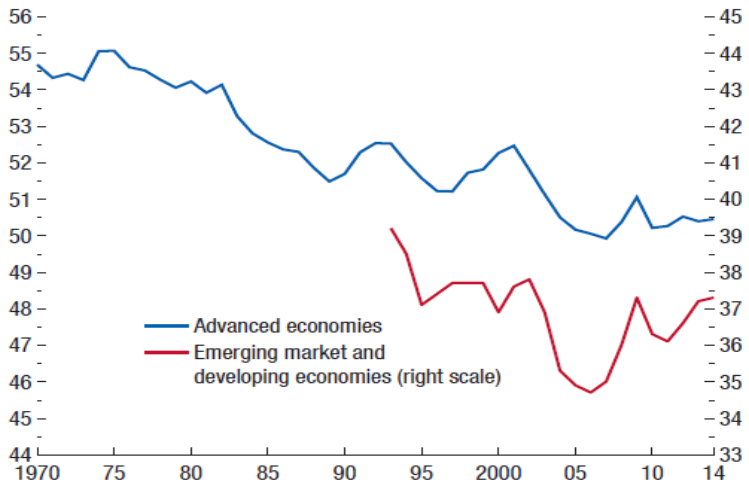
The impact on taxation revenue is often overlooked. Tax on labour income is a far higher proportion of national income than tax on capital income. Indeed, income taxes are usually the largest source of government revenue. Accordingly, a shift in income from labour to capital, absent adjustments in the tax regime, tends to reduce tax income. A further outcome is reduced investment in education and skills by low-income households. Finally, if wages do not keep pace with productivity gains, a country's international competitiveness may suffer (ILO et al., 2015, p. 2-3).

In the absence of more investment to offset the impact of the falling labour share, countries have to rely more on credit (household debt), and/or exports to maintain demand. This in turn increases the risk of financial instability, and/or of global imbalances. Should several countries pursue policies of wage moderation simultaneously, the lag between productivity growth and wage growth may lengthen, and aggregate global demand may suffer (Lavoie and Stockhammer, 2013).

The impact of major global trends

The pay share interacts with several major global trends, including digitisation, globalisation and demographic change. Economists agree that these are among several factors that drive the decline of the pay share, and disagree on their relative importance.

Evolution of the Labour Share of Income, 1970-2014 (per cent)



Source: IMF World Economic Outlook, April 2017, p. 122 Technology

The next twenty years will see continued digitisation. This will impact the pay share, though it is not clear how. Up to now, the effect has been seen as negative. The use of ever more sophisticated technology, including robots, in place of human labour, has reduced demand for low-skilled human labour in production processes. It has been said that 'technical change ... is biased against unskilled labour' (Cho, 2017). On the other hand, it has created relatively highly paid jobs for those with computer skills. Some studies suggest that the overall impact on the pay share has not been very significant (Lavoie, 2013).

The march of technology puts a strong premium on digital skills, and this is an incentive to workers to acquire new competences. Public policy will continue to emphasise the importance of education and training. This involves reorienting the education system as a whole towards future skills. This has become a familiar refrain in recommendations from international bodies, and it is likely to remain a focus of policy in the coming years. The dilemma of finding new opportunities for workers whose jobs have disappeared is often discussed. Retraining is seen as a part of the solution, while it is also acknowledged that this presents its own challenges. As regards the pay share, the outcome will reflect the course of the present digital transformation. A future in which low paid jobs are replaced by equal numbers of high paid jobs is clearly preferable to one where low paid jobs are lost and not replaced.

It may well be that limiting technological innovation becomes a mobilising force in the political sphere. The tax treatment of robots has emerged as a proposal, not least in view of labour market impacts of automation.

Globalisation

The progress of globalisation has also affected the pay share. There is pressure to respond to the negative impact of globalisation by imposing more restrictions on trade. Trade protectionism has gathered increased political support.

The underlying discontent with the status quo is undoubtedly fuelled in part by the long term decline of the pay share. The integration of labour-abundant countries into the global economy increased the supply of labour, and this drove down wages. Globalisation 'put pressure on wages through rising competition and declining bargaining power of workers' (Cho, 2017). Thus rising trade exposure is associated with lower labour shares of GDP, and some studies find that more open trade has a large effect on inequality. By contrast, other analyses suggest that more open trade explains little of the increase in inequality (OECD, 2014).

Changes in labour market institutions

A third global trend has attracted less attention, but has a strong influence on the pay share: changes in labour market institutions. These include matters such as de-unionisation, minimum wages, employment protection and unemployment benefits. When mandatory standards are removed or weakened, workers have less protection against low-paid – and indeed dangerous – jobs, and pay levels will tend to fall. More vulnerable types of employment are linked to greater inequality (ILO et al., 2015).

Lavoie and Stockhammer (2013) argue that the decline in labour bargaining power is the main reason for the decline in the pay share. Contributory factors include less unionisation and a decline in the vote and influence of political parties close to the labour movement.

> *To fight low wage growth, central bankers and international economic institutions are increasingly calling for more centralised wage bargaining, and rediscovering the benefits of cooperation between business, labour and state interest groups.*
> *Mario Holzner*[4]

Based on a new dataset, IMF researchers suggest that the decline of workplace unionisation is a less important factor that hitherto believed. The main factors are technological change and economic integration; taken together, these account for over half of the observed decline in the labour share in advanced economies (Cho, 2017).

Two initiatives appear to correlate with an improvement in the labour share: the level of spending on Active Labour Market Policies (ALMP) and increases in the minimum wage. This latter is more uncertain, and recent research suggests that an increase in tax credits may be a more effective way of raising household incomes of vulnerable groups. National strategies in this area will reveal the degree to which governments prioritise the improvement of the pay share.

Options and uncertainties

The EU as a whole has reaffirmed its commitment to a fair society, notably at the 2017 Gothenburg Social Summit. This has given rise to a social scoreboard; the progress of several indicators will be tracked across EU Member States. This takes forward the work of the EU Employment and Social Developments Report – it is not entirely new. The scoreboard can make it easier to see where outcomes are diverging among Member States, and can help to identify more successful practices, programmes and policies.

One principle of the European Pillar of Social Rights is that 'workers have the right to fair wages that provide for a decent standard of living'. However, the labour share is not among the indicators to be tracked (European Parliament, 2016). The central metric in this area is hourly pay. The benchmark for success is therefore an increase in hourly pay over time, irrespective of whether return on capital is increasing at a far greater rate.

For the EU, social policy is not a Community competence. The individual Member States are in the front line; as a rule, the decisions that shape the course of the pay share will be taken in national capitals. In this area, the European institutions are seeking to develop a supporting role rather than a leading role. This means a focus on identifying and encouraging the adoption of best practices, as distinct from setting or enforcing transnational standards.

One unlikely, 'wild card' scenario would see the EU Member States opting for common social policies in some areas. This would represent a reversal of a general trend towards reaffirmation of national prerogatives and a greater emphasis on intergovernmental rather than communitarian approaches. The idea of a common pension policy or common unemployment insurance is sometimes mooted. Innovations like these would not in themselves point to a recovery of the pay share within Member States, but they would indicate a much closer engagement of the EU institutions with the effort to achieve a greater degree of social parity.

In the medium term, it is worth looking for adjustments in macroeconomic policy among Member States. At present, key aspects of national policies tend to favour rising asset prices, and this tends to increase the profit share. It is open to individual countries to adjust policy to prioritise the improvement of the pay share, but this appears unlikely in the near term.

[4] Holzner, 2018.

Uncertainty also surrounds future voter preferences. It is quite possible that the vote share of centrist parties, and in particular of centre left parties, will continue to decline. In the near term, this could mean less willingness to act on the pay share, as the influence of political parties close to the labour movement declines. On the other hand, the long term political success of right wing populism could well depend on the delivery of prosperity to those most exposed to the downside of globalisation; and this could be an incentive to look again at the pay share.

Finally, there is uncertainty about the future strength of social solidarity. In Europe, and in many advanced economies, the population is becoming more diverse and less homogenous. This has placed some strain on social solidarity. Social bonding and greater solidarity have a role to play in mitigating the trend towards polarisation between capital and labour. This is a further reminder of the importance of successful social integration of migrants in the medium and long term.

Three scenarios

The labour share is a single metric. Its future course can be framed in three scenarios: continued decline, stabilisation, or recovery. There are fears that things will get worse before they get better. According to the Independent Commission on Global Economic Transformation, several trends point to bad outcomes for those of working age in the EU. The lower echelons of the socio-economic spectrum, and of the education achievement spectrum, are especially vulnerable to disruptions from new technology and continued global economic integration (ICGET, 2017).

Stabilisation is also a possible scenario. The advanced economies could decide to take steps to mitigate the impact of both digitisation and integration on the labour share. Options range from a different tax treatment of automation to new trade defence actions, including those with a view to securing better labour and environmental standards.

The scenario of a recovery of the labour share would be more likely if economic trends took a favourable turn. This could involve an excess of newly created jobs over job losses as automation progresses, the integration of higher labour and environmental standards in trade, and public-interest steering of technology and global supply chains (ICGET, 2017).

Outlook

Decisions on the policy response to the decline of the labour share will be influenced by judgements about the origins of the long term decline, and also about its social and economic significance. Work to clarify these details remains vitally important.

In the broad sweep of history, one key to Europe's success has been the formulation over centuries of rights of individuals. This brought an increasing emphasis on social equity in the wake of the Industrial Revolution, and in the twentieth century brought a major innovation. Responsibility for welfare was lifted from benevolent organisations and religious bodies, to the state administration. It is possible that the declining labour share reflects the return of earlier laissez faire principles, expressed in the prioritisation of economic policies which seem to favour the wealthy over the commonwealth. If this is the case, then the future may bring a gradual retreat of the state from responsibilities it assumed in the post-war era, and a passive approach to the decline of the labour share can be expected.

Democracy has shown great resilience in Europe, and the concepts of rights-based policy and state responsibility towards the wellbeing of its citizens remain powerful. If these elements come to the fore in the choices made by voters and electorates, the prospects of a recovery of the labour share would seem brighter.

Democracy in the Age of Artificial Intelligence

Leopold Schmertzing

Introduction

Artificial Intelligence (AI) is a puzzle for many leaders in business and politics, and it is becoming increasingly urgent to master and control its huge potential. According to Google CEO Sundar Pinchai, 'AI is probably the most important thing humanity has ever worked on (…) something more profound than electricity and fire' (Parker, 2018). Yet, with the opportunities and challenges of AI also come important concerns. In 2015, Elon Musk, Bill Gates, Stephen Hawking and Steve Wozniak, among others, famously signed an open letter to warn against under-estimating the revolutionary nature of AI. They emphasised the need to ensure that 'AI systems must do what we want them to do' (Tegmark, 2015).

Like cyber security a few years ago and the internet a decade before that, AI is a cross cutting issue permeating most current megatrends – from urbanisation, shifts in the job market and ageing to robotics, data privacy and the internet of things. More recently, it became clear that AI can also influence and transform democratic politics and policy making. The prominent case of an AI-guided news manipulation sponsored by Russia during the American election campaign highlighted the seriousness of the issue to the general public. Other competitors, like China, have already recognised AI's potential, not only in overcoming social and economic hurdles but also in surveying their citizens (Human Rights Watch, 2017).

This comes at a time when, in the eyes of some experts, democracy is declining, outflanked by ever-stronger autocracies and in self-doubt over inequality, inefficiency and anti-democratic ideas winning majorities. Democratic leaders have already acknowledged the dangers AI poses to democracy and are starting to enact national policies (European Commission, 2018), but this alone might not be enough. The EU has made a first step to regulate AI with the General Data Protection Regulation (GDPR), but its focus on data usage is insufficient to deal with the wider dangers of AI. As the French President recently stated, if we do not deal with the immense potential of AI – both negative and positive – while it is still in its infancy, 'AI could totally jeopardise democracy' (Thompson, 2018).

This essay looks at the interaction of these two major trends – progress in Artificial Intelligence (AI) and declining support for democracy – today and in four possible future scenarios, before laying out options for EU policy makers.

Progress in Artificial Intelligence

There are many ways to define AI and all of them have shortcomings. Worse, AI researchers 'disagree passionately' about almost all aspects of AI (Tegmark, 2017). Most, though, agree that prior breakthroughs – big data, neural networks and machine learning – created a new paradigm in computing. Something bigger than the sum of its parts. Evolving algorithms increasingly appear as a low-level non-biological intelligence, taking on more and more complex tasks.

These recent advancements took Artificial Intelligence out of science fiction books and theoretical computing and turned it into a multi-billion dollar business, one that the R&D sector worldwide wants to take part in. Leading US companies – Facebook, Twitter, Google, Amazon, Microsoft and Apple – and their Chinese competitors Alibaba, Abidu and Tencent invested up to 30 billion dollars

into research[5] in 2016 alone (Bughin, 2017). American and Chinese state-funded research also highlight the strategic importance both countries give to AI (Webster, 2017).

To this day, the AI community and its investors have a history of over- and under-estimating AI advances (Foote, 2016). In 2015, a huge majority of experts believed that it would take 15 years for an AI to beat a Go master (MIT Technology Review, 2017). Two years later, the world best player was beaten repeatedly by the AI AlphaGo of Google's parent firm Alphabet (Mozur, 2017).

More importantly, the expert community is also split on the future potential of AI. There is an evolutionary and a revolutionary camp:

The evolutionary camp might be best described via a tweet[6] by François Chollet, a programmer of deep learning at Google. He warns of users' too high expectations when it comes to the 'intelligence and generalisation power of machine learning', and their lack of appreciation for 'how much can be achieved with relatively crude systems, when applied systematically'. Chollet calls AI 'the steam power of our era'. The evolutionary group emphasises the difficulties of building and running AI. They point out that these algorithms are built for specific purposes and can only excel in their narrow domains (such current AI is usually called 'narrow' or 'weak' AI). Some proponents of this camp seem to downplay the potential power of AI in order to curb calls for regulation by the other group.

This other, revolutionary group, includes thinkers such as Russel Stuart and Max Tegmark.[7] They insist on two important points. First, AI is already powerful enough to steer cars and control power grids, and therefore needs to be thoroughly analysed and probably regulated. Additionally, they believe that a revolutionary advance in AI – a 'general' or 'strong' AI – will come through in the next decades. They define strong AI as one that might 'outperform humans at nearly every cognitive task'. For this group, we need prior thinking and planning if humanity is to succeed in this revolution.

Weakening support for democracy

Most experts agree that democracy – the rule of, by and for the people[8] – is still the most legitimate form of government and governance presently known (Voeten, 2016). Recent statistics by PEW research corroborate this judgement (fig. 1).

[5] Current AI research in different markets focuses on improving core AI functions, rethinking how enterprises work, transforming industries and improving human-machine interaction.

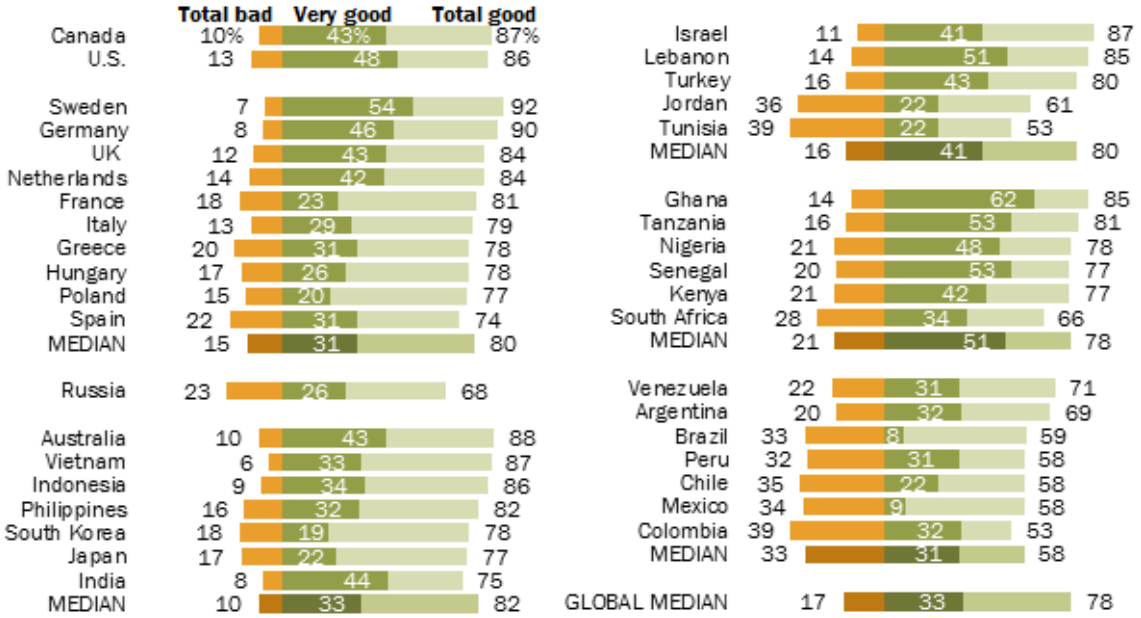
[6] Original tweet (@fchollet, 8.1.2018): I'd say ML is both overhyped and underrated. People overestimate the intelligence & generalisation power of ML systems (ML as a magic wand), but underestimate how much can be achieved with relatively crude systems, when applied systematically (ML as the steam power of our era).

[7] And institutions such as the Future of Life Institute, the Responsible Robotics Group, The Global Initiative on Ethical Autonomous Systems and Good AI.

[8] As stated by Lincoln in the Gettysburg Address, 1863.

Figure 1: Publics around the world support representative democracy

Survey question: Would a democratic system where representatives elected by citizens decide what becomes law be a good or bad way of governing this country?



Source: PEW Research Center, Spring 2017 Global Attitudes Survey, Q29b

Many hybrid or authoritarian regimes actually seek legitimacy through a pretence of democracy (instead of god or power *per se*). They go through the difficulties of staging scam elections and other risky exercises to showcase their commitment to the will of the people.

On the other hand, there is evidence that 'democracies are not as consolidated as they once were' (Foa & Mounk, 2016, 2017). Democracy seems to be littered with problems from the inside – inequality and fragile solidarity, nationalism and failed integration – and from the outside – the alternative 'China-model' (Benner, 2018), revanchist and nationalist autocracies and, perhaps to a lesser extent, religious extremism.

In the above-mentioned PEW survey, 'a median of 50 percent [in the ten countries polled in the EU] say they are dissatisfied with the way democracy is working in their country, compared with just 48 percent who are satisfied'. This survey also highlights a paradoxical tendency towards direct democracy: although people support representative democracy, they want to decide on important questions directly. There are also worrying tendencies, like the 29 % of Italians and 26 % of British nationals demanding a strong leader who does not listen to courts or parliament. Finally, a worryingly high global percentage of democratic countries – a median of 49 % – prefers a rule of experts.

In addition, a recent report by International IDEA (2018) highlighted that technological and social trends are also weakening democracy. For example, social media puts a strain on time and flexibility for decision-makers to deliberate. Using such tools, a new group of officeholders and big money has become much more refined in hollowing out democracies from the inside.

It is hard to judge how far this democratic backsliding might go. It could reverse if anti-democratic role models like China struggle (Cook, 2018; Runciman, 2013), or if democracies adapt (IDEA, 2018). However, this trend could also be a democratic deconsolidation process leading to the end of even well-established democracies (Foa & Mounk, 2017).

Current interactions between AI and democracy

AI already affects most important actors in western democracies:

- **Legislative**: AI can predict the likeliness that bills will pass through the US congress (Khasman & Khashman, 2016).
- **Executive**: A variety of AI data analysis tools give political decision-makers instant advice on time-pressing policy options. Others give AI-analysed social media feedback on policy positions.
- **Judiciary**: AI has been used in the judiciary for some time already. The algorithm COMPAS, for example, helps US courts decide on bails and sentencing decisions by predicting 'whether a convict will reoffend'. However, many of these tools are criticised for their low accuracy (Dressel & Farid, 2018).
- **Interaction with citizens and the media**: AI solutions have had a significant effect in the 2016 US election campaign (comparable with the effect of social media in the 2008 US presidential election) both with engaging and mobilising voters, and with informing them. Psychological micro-targeting by Cambridge Analytica, Russian bots on twitter and media-polarisation by Facebook and Twitter highlighted the dangers. Yet, this also started a discussion on how to make AI-assisted voter targeting ethically sound and effective (Polonski 2017). This includes regulation such as the GDPR and the use of counter-misinformation AI.
- **Security and Defence**: Some armies are already able to give AI-assisted autonomous weapons discretionary decision to act (Etzioni, 2017). These actions have to be verified by a human, except in rare cases, such as in automatic air-defence on warships. Police uses AI to look through digital evidence, pick the most solvable cold cases, spot unreported gunfire or observe and analyse video surveillance.

For now, these examples support the evolutionary group's view that AI is a powerful analytic tool rather than an intelligence able to replace human governance.

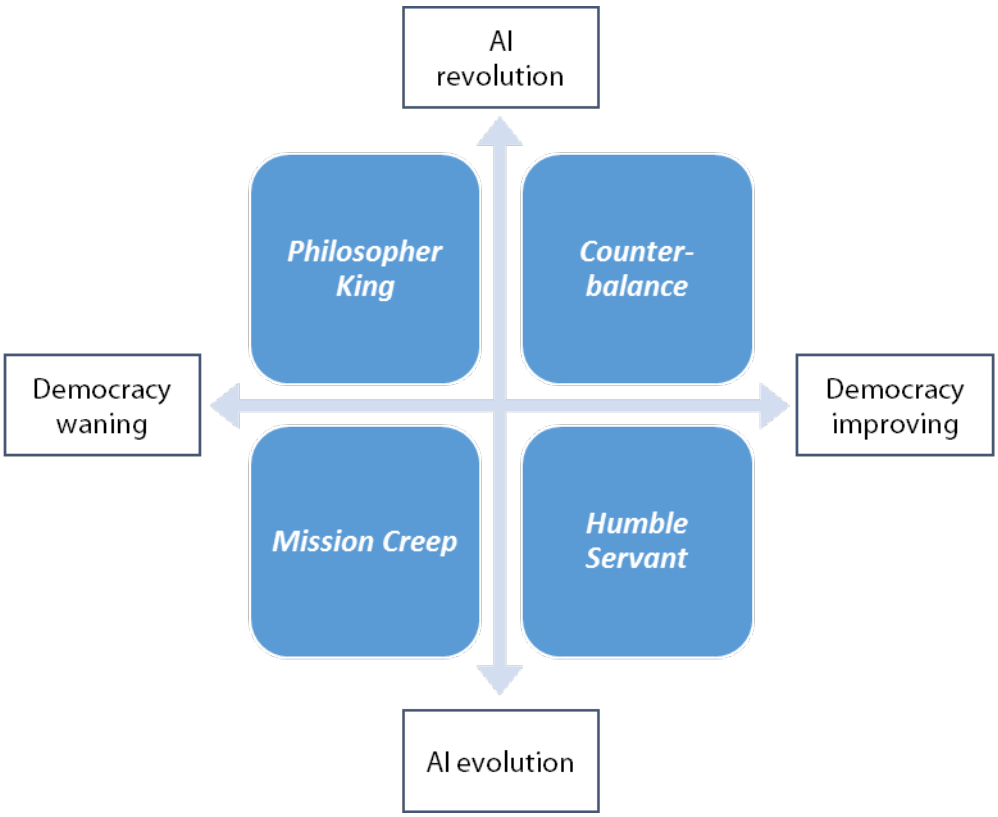
Four scenarios on the future of AI and democracy

This section will feature four scenarios over the next 20 years, based on the two key uncertainties outlined in the previous chapters:[9]

1. Will AI make evolutionary or revolutionary progress?
2. Will democracy regain the support of its constituents?

[9] **Goal of this scenario-exercise**: According to Singapore's public service futures community,'scenarios are not intended to present definitive predictions about the future. Rather, scenarios help to articulate the risks and opportunities present in a range of plausible futures, and serve as a discussion tool to stimulate debate about strategies to shape the future.' The scenarios depict a time around 20 years in the future. The story telling of these four scenarios will not just be inventions by the author. They are loosely based on works of foresight and other publications mentioned in the footnotes.

Figure 2: Four scenarios



2038 Scenario: Mission Creep

In this scenario, AI followed an evolutionary development and democratic backsliding continued:[10]

Fierce competition between American and Chinese firms backed by subsidies makes narrow AI cheap, but non-transparent. Unchecked assumptions by public sector programmers – critics call them 'opinions embedded in code' and 'automating the status quo' (O'Neil, 2017) – lead to frequent convictions of minorities and under-resourcing for poorer parts of towns. Uncontrolled algorithms nudge decision-makers, societies and individuals towards positions preferred by the AI and the programmers (Coughlin 2017, Helbing et al, 2017).

Most western democracies have failed to reform their institutional and programmatic structures. While on the state-level everything stayed as it was a century ago, technology has enabled new forms of inclusion and participation on a local level (Carothers, 2015). In order to square a growing rift between these two worlds, states use AI as a stopgap measure. Narrow AIs take over more and more functions, including decisions that are still officially managed by the public sector and national politics.

Autocratic regimes – especially China – face the same issue, with a much more profound cleavage. Rather than using AI to bridge these two worlds, they use it instead to squash this ever-growing togetherness of their people (Davis, 2018). They push AI development in all governance areas, and promote the idea that autocratic AI-led decision-making is better than messy democratic

[10] Bases for the scenario are statements by NATO in their last 2017 Strategic Foresight Analysis. While having only limited confidence in revolutionary progress in AI, they warn of 'over expectations from technological solutions' neglecting the importance for political solutions. Additional insight comes from the Stanford University report 'Artificial Intelligence and life in 2030' (Stone, 2016).

deliberation. They try to win over democracies by highlighting the stability and peacefulness of their state model.

Their surveillance regime monitors and analyses in real time everything being said and done. Every microphone and camera on each self-driving car and every intelligent fridge sends data to state-AI analytics. Everything citizens do – from listening to music to reading the foreign policy section of a newspaper – feeds into a constant evaluation of their loyalty and usefulness to the state. This calculated potential to harm the state is countered through targeted pre-emptive sanctions and imprisonment. Remedy is not only prohibited, but impossible, due to the complex nature of the algorithm.

2038 Scenario: The Humble Servant

Here, the world is experiencing AI evolution with a democratic resurgence:[11]

In the mid-2020s, AI started to access the daily lives of most people on the globe. AI-assistants managed telephone helplines and car rides became much faster on AI-only roads without street lights. This turned AI into a question that divided the political landscape. Even in one-party systems, people took notice. Already in the early days, 80 % of Chinese were wary of AI.

Today, in 2038, algorithms are regulated based on their potential harm. Specialised AIs controlled by international organisations or NGOs observe all algorithms deemed important enough. The EU's rules have become a global benchmark for dealing with privacy and other human rights related AI issues. Especially impactful was the regulation limiting certain data collection for all commercial AI use.

Political analytics is still a huge business (Beardley, 2017), but has lost its edge to virtual-reality politics. After some meddling by fringe groups and adversarial countries, AI-driven voter targeting became regulated and – much more importantly – so normal that it lost its unique power over people. Still, voters receive a candidate's stump speech on Facebook, uniquely made for them by AIs choosing the content and fabricating the video (Leary, 2017). Citizens are able to debate directly with candidates' holograms and this makes politics more personal. Sometimes, though, after learning the wrong lessons, the algorithms get too personal, violating the private sphere of the people they should win over.

2038 Scenario: Philosopher King

In this scenario, the AI revolution happened and democracy declined:[12]

One of the biggest multinational AI companies developed a general AI in 2028. The law did not require the company to disclose such an invention. Therefore, they used the intelligence explosion of this self-improving AI as a normal tool in business making, and only made their invention public when they had a sufficient lead. The AI learned to make money on the stock market, to influence media and politicians in the company's favour and to upgrade itself and all other forms of technology, helping the company to become a virtual monopolist in most industries in a matter of years (Tegmark, 2017).

[11] This scenario is based on an essay published by nine German professors in February 2017 in the Scientific American titled 'Will democracy survive Big Data and Artificial Intelligence?'. It highlights the dangers of centralised AI and argues that forms of collective intelligence by citizens is the way forward. It states 'we are called on to fight for our freedom rights - afresh during the digital era and in particular at the rise of intelligent machines.' (2017).

[12] The ideas here come mostly from Max Tegmark's book Life 3.0., as well as from Yuval Harari. He suggested in an article (2017) that Dataism could convince people that algorithms can answer political (and any other) questions better than we can. Therefore, democratic elections will become formal ceremonies without actual power.

Critical political voices around the world were quickly bought up, suppressed or pressured into acquiescence. As an incentive, governments got reduced prices for using the AI to solve political issues. As the AI became the favourite advisor of autocrats and democrats alike, solving many long-standing political issues, there was always a feeling that these political solutions also profited the AI's owner company.

Now, a decade later, the few resisting countries are behind economically, comparable to the countries of the eastern bloc in the 1980s. Meanwhile, most other countries have governments on paper, but they systematically and religiously observe all advice from the AI.

This AI has also replaced most contacts between citizens and the state. People will not see a judge or communal worker but always the same AI. While the private sector at least simulates human-to-human contacts, states can no longer explain the need for public servants when the AI is seemingly fairer, quicker and cheaper.

2038 Scenario: Counterbalance

Here, the world produced a general AI and democracy made a comeback[13]

After a concerted global public push comparable to the particle accelerator CERN, one AI made a significant jump to superhuman intelligence across all levels in 2030. It then became available as a global public good for humanity.

States have included this AI in their decision-making process, and assigned it a wide range of powerful functions like running city infrastructure and transport systems. Nevertheless, this AI is constantly checked to ensure its will remains aligned with the goals and values of humanity. In exchange, it possesses rights comparable to that of humans.

The public sector has been slightly thinned out as the AI replaces most repetitive work (Eggers, 2017). Instead, new jobs are created to refine or control the AI's input and output. Most importantly, it has freed up many workers to become street level bureaucrats, furthering the democratic notion of subsidiarity (Lipsky, 1969).

Politicians are legitimised to overrule and pressured to critically assess any AI advice. The AI monitors public servants to eradicate corruption and make the involvement of special interest groups transparent. It is not a frictionless political bond between humans and the AI, but one that is carried through with respect.

As a public good, the AI is available to both police and criminals. Since it has to follow all international and national laws, criminals have to trick the AI to get its help – which is not impossible, but hard. Meanwhile, the police can use more of the AI's capacity than the average citizen can. The nearly infinite number of sensors gives law enforcement an upper hand, but the AI cuts them off and reports them if they violate human rights.

Policy challenges

The scenarios outline threats and opportunities, and highlight key questions that decision-makers will have to consider. Depending on its evolution, AI will pose major policy challenges, which need to be examined and addressed:

[13] This idea is based on the ESPAS 2030 report: 'due to rising complexity, AI will be needed to augment governance' (p. 12). However, the report also argues that in the long term, there will be 'a global convergence around democratic values'. One could extrapolate that the report argues that both trends will increase in strength, keeping each other in balance. It is also based on a famous sci-fi series 'The Culture' by Iam M Banks, where AIs rule an anarchic human society.

- **AI will force political, economic and social elites to find new ways of working together**. AI will change our social and political lives in the coming decades. Therefore its production, guidance and monitoring requires the – admittedly difficult – cooperation between political, social and economic actors and their creative leadership. This includes all levels of politics, from local to global.
- **AI can diminish or increase our democratic freedom**. Negative freedoms such as the basic right to privacy or to a fair trial are in jeopardy. Positive freedoms are also in danger: the pursuit of self-fulfillment, of living and connecting with groups of our choosing and acting on the basis of rational and well-informed decisions (Carter, 2018). On the other hand, those political freedoms could get much larger if we use AI resources carefully.
- **AI can enliven our political debate, but also polarise it** to new unknown extents. One split could be techno-optimists against pessimists. There have always been fringe groups that see technology as a saviour or an evil, but what if AI really challenges our identities based on jobs and intelligence, and our humanness in general?
- **AI could get a central place in our pro- or anti-democratic belief system.** Already today, 68 % of Hungarians and 44 % of French and Germans think expert rule is a good way to run the country (PEW, 2017). What if the 'AI expert' is mostly right? Last year, Yuval Harari wrote about the emerging idea and potential ideology of 'Dataism', the belief that algorithms can answer our questions better than we can: 'Once that happens, humans will lose their authority, and humanist practices such as democratic elections will become as obsolete as rain dances and flint knives' (Hariri, 2017). Authoritarian states and strong leaders like this narrative, as it supports their criticisms of democracy. Democracy would then have to reinvent itself, just like it did against fascism and communism, and AI could become something states fight for or against.

An EU strategy for AI

The US is willing to let the Silicon Valley develop AI with a minimum of regulation to give its business a head start (Dadich, 2016). China has an urgent need to develop AI, both to be finally part of a big technological breakthrough and to steer the country into an autocratic future more effectively. The EU cannot and should not follow either of these two approaches. They do not align with European considerations of a balance between the state and business, privacy concerns, decentralised research and its world-leading SMEs. According to the New America think-tank, 'it will be crucial for other [non-US] jurisdictions (…) to develop regulatory, ethical, and developmental approaches that reflect their own values' (Webster, 2017).

The European Commission has already recognised that 'accompanying the spread of Artificial Intelligence' is a precondition for the development of a digital democracy. The EPSC (2017) reasons that 'Europe has the fundamentals to lift itself up as a pioneer in the digital world [while] carefully balancing economic, social and environmental objectives.' The strategy should thus be to incentivise the adoption and diffusion of digital technologies, enforce new safety standards, update the 'operating systems' of the public sector and recognise the long-term and temporarily unsettling nature of this transition.

Finally, the European Commission will put forward a comprehensive European approach to artificial intelligence and robotics at the end of 2018. It will deal with technological, ethical, legal and socio-economic aspects to strengthen the EU's research and industrial capacity in this area and will also consider the issue of democracy.

Preparatory work for a general AI

Although the AI community is split about if, when and how there might be a general AI, it is too high a risk not to think about the eventuality. Other high-impact, low probability (HILP) events revealed the high price of being surprised on such a scale: the 2006 Fukujima crisis was made worse by the Japanese authorities' belief that such an accident could never happen. The Soviet Union's surprise launch of the Sputnik shattered the western illusion of technical superiority and started an arms race that could have ended humanity.

On a more general level, there is a consensus in the scientific community regarding the challenges of technological progress for society:

> *'The, now dated, idea that technologies are objective and neutral objects implied a passive posture for the regulator, whereby scientists delivered new technologies, the market responded, and policy-makers observed the consequences and tried to mitigate any harmful effects. The knowledge now that technologies embody values, and that these values matter, gives policy-makers a renewed incentive to be more proactive. At the very least, consideration needs to be given to the kind of values technologies should embody, and to the steps that can be taken to achieve this in practice' (Boucher, 2018).*

Therefore, governments need to plan ahead and have a contingency process ready, also at a global level. They would do well to seriously consider Sundar Pinchai's suggestion that 'international cooperation on the scale of the Paris climate agreement' will be necessary to address the risk posed by AI (Parker, 2018).

We need to launch a debate on how to build our principles into an AI. Scientists have already made first steps, such as the Future of Life Institute's Asilomar AI Principles (2017), the Data for Humanity Initiative or the quest for political rights for AI (Massaro, 2017). However, the idea needs to be taken out of university backrooms and into the public sphere.

The US Political System after Trump: Lasting Damage to the Republic?

Leopold Schmertzing

Background

Donald Trump has shattered political rules and reinterpreted the role of the US President like none of his predecessors. Yet, his election resulted from **long-standing trends** shaping the country:

Political decay: US democracy deteriorated due to the rise of special interest groups, gerrymandering, the rise of presidential and political party power, the breakdown of norms of democratic behaviour, low voter turnout in elections and the increasing number of political actors.

Change in the **US demographics**: The fact that around 2050 the non-white population will be the majority in the US mobilised the white population. Feeling neglected and blaming immigration, they made the Republican party their political home.

Economic depression and growing geographic **inequality**: In the last decades, many have not benefited from economic growth. Due to the still widespread segregation of US communities, those who have lost out have suffered collectively. After the economic crisis 'economic anger took a cultural form'.

Now in office, President Trumps administration **is** rupturing the **checks and balances** of the US political system:

Electorate / Civil society: The President demeans critics, questions election results, and brings back racial politics. Culture conflicts such as on gun ownership and Obama-care are signs of polarisation not seen since reconstruction. Amy Chua speaks of a dangerous split inside the white majority that could lead to violence.

Media: The President's hostility towards the media and his provocations through social media put a lot of strain on the fourth power. On one hand, this reinvigorated real news services. On the other hand, many citizens instead follow propagandist outlets.

Military/Intelligence/Security: The President's admiration for the military damages its neutral image. His defence of police misconduct and deportation practices further polarises citizens. His distrust of the intelligence services and the FBI endangers national security.

Congress: The President's actions pressure Congress into controlling the executive. He also weakens Congress by urging his voters to put pressure on their Republican representatives, if they don't support him.

Bureaucracy: Many of the 4 000 top posts have not been filled. Some departments were reduced by unprecedented proportions.

Judiciary: The President nominated judges with extreme views, publicly reprimanded judges who have not ruled as he wished, and called investigations against him political.

There are certain **short-term uncertainties** regarding President Trump that will strongly influence the US after his term:

Will he have a **second term** or not? Normally, second term administrations are more efficient in changing the country.

How will the President **leave office**? The Mueller investigation or the midterms might have the President impeached or might pressure him to resign.

Will he or his administration spark a **constitutional crisis?** According to some, the possibility of this happening is the highest since the US civil war.

Main Trends

The **President's legacy** will affect many parts of the US republic:

The **republican party** will probably be affected by Donald Trump for a decade or more. He could spark a new faction inside the Republican party. Possibilities range from a 'new deal' kind of nationalist conservatism to new forms of populism.

The **civil service** will feel the effect of the loss of know-how for decades. Some of the services such as the Environmental Protection Agency have been dealt severe blows. The same goes for the intelligence and diplomacy.

There will be rising **pressure to reform** the US political system:

This is the second time in the last five elections that the candidate with fewer votes won. The current electoral vote system has again showed itself to be prone to special interest influence and foreign manipulation due its focus in a few swing states. For some years now, a majority of the US population supported a **direct presidential election** on the basis of a majority of votes in general.

There is a growing majority for strengthening state and **local powers**. The opposition to the President on issues such the Paris accord or immigration by US states and cities might give new strength to such reform efforts.

Finally, the group of losers from **digitalisation**, automatisation and globalisation will grow, although it is debated by how much. At the same time the US will become less rural and fewer people will work in industry, if projections hold. This puts additional pressure on this group. Without some kind of compensation or remedy, the current and future losers of change will put pressure on the American republic.

Uncertainties

> **Four scenarios** based on the questions: Is this administration an exception? Is it a threat to the Republic?

> **Earthquake** (yes exception / no threat): The US institutions are built to withstand an attack from one of its parts and hold. The political system might have cracks after that, but checks and balances will also be stronger.

> **Tide** (no exception / no threat): Political decay makes it very hard for the US to change, but demographic transformation and education will make white populist rule a thing of the past in twenty years.

> **Infection** (yes exception / yes threat): Institutions are only a short-term barrier. The US society and elites need to react to the pressures. If they don't, the system will remember it. If they do, it will change the US

> **Corrosion** (no exception / yes threat): The long-term decay of the US republic needs institutional change, otherwise there is a danger of a more efficient version of the President, civil war or state failure.

Possible disruptions

> **A more effective Trump:** Like many political outsiders and populists, President Trump seems to be ineffective in implementing his wishes, but he might lay the groundwork for an effective despot or reformer. A political insider could learn from him and brand himself as a tribune of the people. Such a person knows how to get what he wants and could effectively undermine and/or transform the political system.

> **Another 9/11, war or economic crisis:** What if such events happen in the era of President Trump or after he is gone and left the county paralysed?

> **A figurehead president:** Many democracies have reduced the power of the head of state at some stage. The US president has become stronger since independence, but much of his power is under the control of Congress or based on his moral authority. A devastating Trump presidency might not only turn the balance back towards Congress and the states, but restart a constitutional debate about the powers of the president.

Remittances: a Hidden Contribution to Development

Eamonn Noonan with Jennifer Liu (trainee)

Background

Remittances sent from migrants abroad are a **significant** source of **income** for families. They have profound implications for human welfare and economic development. In 2016, migrants sent relatives in their home countries an estimated US$574 billion. Alongside the monetary transfers, one can also speak of social remittances: the flow of ideas and information from abroad. Remittances are also used to withstand external shocks, such as economic and political crises. During the Arab Spring, remittance inflows to Egypt increased while investors and donors were pulling out. For developing countries, remittances are a more stable source of income and of foreign currency than other capital inflows.

Globally, remittances from developing country emigrants through formal channels (e.g. money transfer operators, post office, and microfinance institutions) **exceeds** inward foreign **direct investment** (FDI) and official development assistance (ODA) put together. The World Bank estimates the flow at US$466 billion in 2017, over three times the amount of official aid. The true size, including unrecorded flows, is believed to be significantly higher.

Remittances have the potential to **improve developing economies**. They go directly to the recipient household, avoiding administrative coordination and the potential of government corruption. An estimated 90 % of remittances is invested in health care, education and assets: arguably, this helps the local population more than foreign aid or commercial investment.

There are also concerns about remittances. They can create a culture of dependence. They tend not to reach the most marginalised households, given that migration is only possible for those who have the initial resources to migrate. Remittances in themselves are not seen as a solution for poverty. Development remains a state rather than an individual responsibility.

Transfer costs for remittances remain high. This is attributed to lack of competition, for example due to exclusive contracts between national post office systems and large money transfer operators. Bangladesh and Nigeria are among the countries that have prohibited this practice. Most large European source countries continue to allow such exclusive arrangements. The Sustainable Development Goals aim at a reduction of the average transaction cost to less than 3 % by 2030, for remittances above US$200. The global average is currently 7.2 %, more than twice the target. Sub-Saharan Africa has the highest costs, at 9.1 %.

Oman and the United Arab Emirates are among the countries proposing a tax on outward remittances. Middle Eastern countries host many low-skilled migrants from East and South Asia. A **remittances tax** is tempting both as a source of revenue and as a means to discourage undocumented migrants (with a fine on remitters without legal status). In the US, a 2 % fee on remittances ent to Latin American and Caribbean countries has been proposed, to fund the border wall between the US and Mexico - the world's largest migration corridor. There are strong arguments against taxing remittances. The revenue raised could well be lower than the costs of collection.

The United States is the **largest** remittance sending country (an estimated US$66.6 billion in 2016). India, China, the Philippines, Mexico, and France are the top recipient countries of recorded remittances. As a share of GDP, Nepal takes the lead: an estimated US$6.6 billion of inflows is equivalent to 31.3 % of GDP. The Kyrgyz Republic received almost US$2 billion or 30.4 % of GDP.

Main Trends

After 30 years of continual increase, remittances to developing countries **fell** both in 2015 and 2016. This is largely due to the economic slowdown in Europe, including Russia, and the depreciation of the euro and the rouble. They recovered in 2017. The World Bank forecasts that stronger national growth in the EU, Russia and the US will help remittance flows to developing countries recover; the estimate for 2018 is US$457 billion.

Increasing regulation of money transfers may **constrain** the growth of remittances. There are also pressures which may limit the numbers of migrant workers. Anti-immigrant sentiment, labour market 'nationalisation', and fiscal tightening in response to low oil prices may discourage the hiring of foreign workers in the Middle East, for example. In a related development, Indonesia has banned female domestic workers from travelling to the Middle East.

There is a trend towards the **'feminisation'** of migrant work. In the Global North, a great deal of care work has been outsourced to migrant labour, and this sector has a high proportion of female workers. The Philippines has long provided training to women to work in domestic and care industries abroad.

Women migrant workers tend to send more money home, even though they generally earn less than their male counterparts. They are also more likely to use informal remittance services, such as hawala. This is thought to reflect low financial literacy, a barrier to opening accounts with formal money transfer operators. Yet informal channels remain attractive as a fast and cost-effective method for remittances.

Uncertainties

> **Anti-immigrant** sentiments and restrictive migration policies in destination countries may limit migration and remittance flows. Thailand and Malaysia, for instance, have implemented a regularisation programme to manage undocumented labour migrants.

> The simplicity, anonymity and cash character of money remittance transactions make them an attractive finance channel for criminal and terrorist activities. Stricter legislation carries the risk of increased use of informal transaction channels. Careful calculation of risks and benefits should guide such legislation. Experts suggest that remittances below a certain low threshold going through small money transfer operators 'do not pose systemic risks'.

> **Crypto currency** could revolutionise overseas money transfers.

Possible disruptions

> A **tax on remittances** has been discussed. This has some drawbacks. It could undermine legal operators like Western Union and MoneyGram, incentivise the use of unregulated transfer networks, and drive the flow of funds underground. This in turn could increase the opportunities for money laundering and terrorist financing. Such a tax could also have a disproportionate impact on fragile states, which are highly dependent on remittances.

> More banks could respond to risk concerns by **closing down** remittance corridors. This happened between the US and Somalia in 2015. Embargoes of this kind could undercut the socio-economic strategy of migrants and their families, leading to a decline in migration, increasing levels of poverty and a rise in unemployment in developing countries. In such a scenario, the risk of social and political unrest increases.

Food (In)security in China

Danièle Réchard with Jennifer Liu (trainee)

Background

Agriculture was central to China's initial economic successes. Paradoxically, China's rapid economic development now threatens the country's food security.

Since the restructuring of the agricultural sector in the 1970s, **food self-sufficiency** has been the driving force turning China into a major producer and exporter of many agricultural products. In recent years, however, the country's growing consumer wealth, coupled with a rapid demographic transition, have greatly increased the demand for food. This in turn has contributed to a decline in self-sufficiency and a sharp rise in food prices. Despite having the world's third largest land area, China is only endowed with 8 % of arable land, of which nearly 20 % is contaminated and more than 40 % is degraded. With limited arable farmland and a population expected to exceed 1.4 billion people by 2030, will China be able to cater to ever-increasing food demands?

The traditional Chinese understanding of power is inherently linked to the ability to feed the country's population. This partly explains China's philosophy regarding self-sufficiency. Haunted by the painful history of the great famine only a few decades ago, the Central Government has set food security as a **high priority**. In Chinese, the term "food security" translates literally as grain security (粮食安全: Liáng shí a¯n quán). National grain self-sufficiency (and rice in particular) is thus central to the food security agenda.

The 1996 White Paper on 'The Grain Issue in China' stressed the government's commitment to achieve 95 % of grain self-sufficiency. However, as domestic production lagged behind rapidly rising demand, the **strategy changed** to domestic supply with 'moderate imports' in 2014. The priority also shifted from ensuring grain self-sufficiency to basic self-sufficiency in cereals and absolute security of the staples (rice and wheat).

China's consumption of rice, wheat, vegetables, pork meat and poultry meat has mainly been met by domestic production, with trade playing a relatively minor role. While the situation for these commodities is not expected to change significantly in the next three decades, China is projected to **import** a significant amount of beef and dairy products to meet domestic demand.

Accelerating **urbanisation** is a major factor behind this projection. Indeed, the rising number of people living in urban areas furthers constraints on the availability of agricultural land and water. Local governments have used farmlands for road constructions, real estate developments and other urban structures. Moreover, urbanisation is accompanied by rising incomes and changing patterns of food consumption. A shift to more 'western-style' diets entails greater intakes of high-value products, such as beef, dairy products and lamb meat, which were once considered a luxury.

These developments have caused severe concerns over the country's food security. China is currently the world's biggest producer and consumer of agricultural products, and demand for agrifood is expected to double by 2050. The increase in agricultural production has already triggered numerous **environmental problems**, such as land degradation, overuse of fertilisers, and water pollution. The Yangtze River, once the lifeblood of the country, is heavily polluted and has become unsuitable for crop production in many parts.

Main Trends

China's urbanisation rate may increase to 65 % by 2025 and 80 % by 2050. Combined with the rapidly aging population, also among farmers, this makes the question of who will **feed the country** increasingly urgent. Agricultural policy and, above all, land policy will play a central role in incentivising farmers to remain in the countryside and produce more.

Since 1989, the demand for **meat products** has tripled, due to changing diets, increasing household incomes and a growing population. China is currently responsible for half of the global pork consumption, and the real value of beef consumption is projected to rise 236 % by 2050. Today, China is the world's largest meat-producing country, directly challenging its objective of grain self-sufficiency. For example, 70 % of corn production is used as animal feed. The rising demand for animal feed will exacerbate pressure on agricultural productivity and increase food imports.

Chinese-owned businesses are increasingly seeking out **overseas investment** and acquiring foreign firms. Food scandals, like the 2008 incident over melamine-infused milk powder, have made Chinese people cynical about the safety of home-produced food. Acquiring foreign firms has thus become a competitive sport among China's food giants. For example, Moon Lake Investments Pty bought Australia's biggest dairy operation, and Wan Long's WH Group Ltd. became the world's largest pork producer with the purchase of Virginia-based Smithfield Foods Inc.

China has also purchased and leased large tracts of land in Asia, Africa, Latin America and Eastern Europe. The practice is sometimes referred to as '**land-grabbing**', particularly in the case of African territories. Chinese 'friendship farms' grow vegetables, harvest seeds and raise fish in Angola, Congo or Uganda – to name a few. While this trend negatively impacts the image of China in the world, it also furthers the country's food dependency. Moreover, this practice puts a strain on other countries' resources, endangering their ability to feed their populations.

Uncertainties

> Farmers are using three times as much fertiliser as needed despite the government's aim to cap fertiliser and pesticide use by 2020. As declining land availability and rising demand are endangering productivity, farmers could feel pressured to further increase their use of chemical fertilisers and pesticides, leading to stronger **environmental degradation**.

> Major south-east Asian food exporters can gain more **leverage** in their dealings with China. For example, almost 56 % of rice imports came from Vietnam in 2017. Leverage could translate into concessions, notably on the price for Chinese infrastructure.

> Chinese reliance on international markets could fuel food price hikes and endanger the economy of exporters to China, making them vulnerable to Chinese economic fluctuations. Additionally, in its efforts to gain control of external resources and growing influence on the world economy, China could become a potential **source of instability** in international relations.

Possible disruptions

> Because of the 'blue ear' disease, a form of swine flu, the government maintains strategic reserves of pigs and salt among its major foodstuff resources. But other **animal diseases** for which China is not prepared could decimate resources.

> A shortage in food supply and extreme weather events arising from climate change (e.g. Typhoon Nepartak) could cause a sharp rise in **food prices**. Rising levels of poverty and malnutrition could lead to social unrest.

> The Chinese government invests heavily in biotechnology. But because of former scandals, the Chinese public has little trust in food regulations. A controversy over genetically **modified crops** could cause unrest.

> China will face extreme water scarcity due to the huge demand from agriculture, urbanisation and high levels of pollution. Many regions in northern China might **run dry** within 30 years, which will have devastating impacts on the region.

Long Term Economic Waves: Fact or Fiction?

Marcin Cesluk-Grajewski

Background

Since ancient times, philosophers have debated whether history is based on **linear progress or cycles**. But even the advocates of never-ending historical progress have seen that human life depends on closed cycles, such as the day or the annual sequence of seasons. Many have concluded that history can be seen as a combination of the two, producing waves or open cycles. Early modern economists, such as Adam Smith, were already aware of economic cycles in the capitalist economy, consisting of four stages: expansion, peak, contraction and trough. Those cycles, also observed now, usually last five to six years. During the expansion phase, the economy grows fast, interest rates tend to be low, production increases and inflationary pressures build. When the peak is reached, growth comes to its maximum output. Peak growth typically creates imbalances that need adjustment. This occurs through a period of contraction when growth slows, employment falls and prices stagnate.

In the 20th century, some economists observed that beyond those short-term business cycles there are longer, **40- to 60-year fluctuations**. These are characterised by long phases of prosperity and followed by low growth and recessions. The theory of long economic waves was first proposed by the Russian economist Nikolai Kondratieff in the early 1920s and was later popularised by the Austrian economist Joseph Schumpeter. In the beginning of these long-term cycles, sometimes called super-cycles, the deployment of new technologies drives production of high cost capital goods. Sweeping infrastructure investments create new employment and income, and a demand for consumer goods. After a few decades, the return on investment falls, and people refuse to invest, resulting in layoffs and reducing the demand for consumer goods. Unemployment and a long economic crisis ensue. People and companies save their resources until confidence returns.

Kondratieff and his followers suggested the existence of **five such waves** since the beginning of modern capitalism. Each was triggered by some basic inventions and sustained by leading industries. The first wave, lasting from 1780 to 1830-1850 came with the invention of the steam engine, followed by a rapid expansion of the textile industry and construction of water canals. The '2nd Kondratieff, or K-2' was based on the steel industry and railroads. It began in 1830-1850 and ended in 1870-1890. The third cycle from 1870-1890 to 1920-1935, was propelled by electro-technology and the chemical industry. The fourth, which occurred between 1920-1935 and 1950-1980, relied on the automobile and petrochemical industry, while the current one relies on information technology.

In K4, for example, the basic innovation was the **automobile**, which helped to create two large industries: the automotive and petrochemical one. They were the biggest investors in research, development and production. The invention lead to massive investment in highways and bridges, tyre manufacturing, fuel, power and gas stations. This further encouraged financing for countless suppliers of metal, electric, electronic and plastic parts besides numerous service companies, such as car dealers, transport companies, insurance companies, tourism and leisure activity.

Economists' views on key drivers of the cycles vary. One other interpretation of K-waves is as follows: 1st cycle, 1770-1820 – initial mechanisation; 2nd, 1820-1870 – steam power, railroads and telegraph; 3rd, 1870-1930 – electricity, internal combustion and heavy engineering; 4th, 1930-1980 – mass production, assembly line and nuclear energy; 5th, 1980-2030 – telecommunications and informatics.

Moreover, there is no consensus on what the drivers of the **next Kondratieff wave** will be. Some economists say that the 2008 financial crisis marked the end of the 5th wave, and that the next cycle will be propelled by breakthroughs in environmental technology, nano-techology and holistic health care. Others see the current IT-driven wave lasting for more than another decade, while the 6th wave will relay on robotics, alternative energies and human enhancement technologies.

Main Trends

The **next long wave** will come with new inventions or mass application of existing ones. It will create, or is creating, new industries, business models, which will lead to social and institutional transformations.

If the current long-term wave has ended and a new one is **beginning**, the world may expect a period of growing prosperity. If not, a decade of sluggish growth may lie ahead.

As natural resources are becoming scarcer, more **efficient use** of resources and energy will be key to economic progress in the next wave. Investment in the green economy will reshape industries due to the need to combat global warming.

Aging societies in many regions may not just be a threat, but also an economic opportunity thanks to a possible massive, job-creating investment in health, old age care systems and deployment of new technologies.

Developments in **biotechnology** will create more and more tailor-made, genetic-based medicines and treatments, helping to extend human life and its quality as well as economic productivity. Massive investment will likely be needed for a new generation of pharmaceutical companies.

Uncertainties

> Is the **current long-term wave** based on information and digital technologies ending or will it last longer? Low productivity growth despite advances in digitalisation would suggest its end. Developments before the 2008 crisis also signalled an approaching end of the cycle. Instead of being invested in the real economy and producing jobs, capital was trapped in the financial system, leading to its degeneration, or invested in wasteful ventures, such as unneeded real estate.

> On the other hand, is **digital technology** approaching such a high level of sophistication that it is set to automatise not only physical tasks, but also complex cognitive tasks? This would point to further potential of IT as an economic driver.

> Which basic invention and leading industry will trigger the **next cycle**? Will it be environmental technology, nano-techology or healthcare? Issues such as aging societies, increasingly scarce natural resources and climate change point in those directions.

Possible disruptions

> Some eminent economists, notably Paul Samuelson, thought the long-waves hypothesis was '**science fiction**'. Governments' fiscal intervention in bad times was supposed to end, or at least to flatten economic cycles.

> Some thinkers believe that long-term waves were characteristic of industrial capitalism, based on the production of physical goods. They **may not apply** to the economy that relies on information and where central banks unleash unconventional monetary policies to spur investment.

> Advanced forms of **Artificial Intelligence** may reshape the economy system and human life in a fundamental way, making old economic patterns impossible to compare with the new ones.

FUTURE

Public Procurement in the City of the Future

Eamonn Noonan with Victoria Jordan (trainee)

Background

Successful cities are those which provide effective **public services** to their citizens. This often involves procurement from and partnership with private companies. In the European Union, €1.9 trillion is spent every year on public procurement.

By 2050, two thirds of the world's population will live in urban areas (NIC 2017). Over half of those areas which are expected to be urban by 2030 are yet to be built (WEF, 2016). The long term trend of **urbanisation** brings a sharply increasing demand for housing, education, transport, healthcare and social services.

The increase in population poses a **challenge for cities**. Will the city of the future run smoothly, or will there be more congestion – more flow, or more friction? Historically, population growth and population diversity has been associated with economic growth. New technology offers new opportunities, both in streamlining the purchasing of services and in the efficiency of the services themselves. But there is also the risk of overcrowding. Slums, logistical bottlenecks, poverty and poor air quality are among the undesirable outcomes. Security is another concern. Issues like inequality, youth unemployment, segmented communities and threats of terrorism will affect public safety.

The need to provide up to date and effective services has long been a key issue of governance. At city level this interacts with other political and economic **trends**, including:

- **A shift of power** to the city level, at the expense of the State. As cities grow bigger and stronger, more and more issues need to be addressed directly at the city level. This can lead to city authorities gaining importance relative to state governments in various areas. One example is security against terrorism: this has traditionally been a national matter, but there is increasing realisation of the role of city administrations in preventing and responding to risks of terrorism.
- **Greater flexibility** in city administrations. Public authorities are increasingly expected to be flexible, adaptable, and fast in response to accelerating urbanisation and rapid technological innovation. The New Urban Agenda elaborated through UN Habitat calls for greater flexibility in governance and planning. Can governments adapt fast enough without the competition and innovation traditionally attributed to the private sector?
- Greater use of the **private sector** also for services previously managed by the public sector. For several decades, authorities have shown an interest in privatising public services. Several urban services have been transferred to the private companies, such as parks, waste disposal and local transport.

The EU's own Urban Agenda emphasises the **sustainable** use of resources, and sets out a strategy for 'innovative and responsible public procurement'. This integrates environmental considerations and the prevention of corruption. Greening and social responsibility have also been written into reformed EU rules on public procurement, with the support of the European Parliament.

Main Trends

Cities see new **technology** as a means to get to grips with many future challenges. Systematic monitoring of data on commuting patterns can lead to a more efficient public transport infrastructure. Monitoring of household water and energy consumption can be used to nudge consumers towards more conservation. This needs to be managed with due regard for individual privacy, as set out in the General Data Protection Regulation (GDPR).

Technology can also help the effort to reduce the **carbon footprint** of cities. Up to date data on air quality is shared on websites maintained by the European Environment Agency and the World Air Quality Index team; clean air is a priority of both the EU and the UN Urban Agendas. Public procurement practice may well embrace further restrictions on the use of private cars and tougher stipulations about energy efficiency in buildings.

Cheaper and better **communications technology** is making it easier to develop global and European networks of cities. Many focus on environmental issues, such as Zero Waste Europe, C40 Cities and Partnership on Public Procurement.

Online platforms enable the spread of **participatory governance**. At city-level, initiatives such as Démocratie Ouverte and MeinBerlin offer citizens greater influence on the allocation of funding to local projects, for example. Currently, this is on a small scale. The future may see this approach being applied to larger budget priorities, including choices on major projects. Participatory platforms open the way for citizens' preferences to play a more direct role in public procurement in future.

Uncertainties

> There are signs of a rethink about the widespread use of **public-private partnerships** (PPPs). A major World Economic Forum report in 2016 noted that the public sector is often unable to afford what has been termed 'the privatisation of profits and the 'publification' of expense.'

> A decision to diminish the use of PPPs could lead to a return to public sector management, with the public sector taking direct responsibility for public services.

> Much will depend on **policy preferences** within city councils, which in turn depends on voter preferences. It seems likely that cities will follow a number of different paths. Nevertheless, the issue of funding and affordability will remain a key driver in procurement strategies.

> A greater emphasis on transparency, **accountability** and due process in the contracting process may emerge in the context of the professionalisation of public administration, and in response to perceived abuses.

Possible disruptions

> The **collapse of a major contractor** could lead to a substantial loss of taxpayers' money and an urgent scramble to make alternative arrangements for a wide range of services. The failure of Carillion in the UK in January 2018 was a case in point.

> Cases of **large-scale corruption** would undermine public confidence in public authorities and in extreme scenarios could lead to social unrest, in an environment already ripe for unrest and violence.

> **City bankruptcy** (e.g. Detroit in 2013) would lead to the short-term closure of many essential services and create long-term uncertainty about their sustainability.

> A large-scale **cyber attack** could shut down key services within the health, transport, energy or water sectors, with damaging consequences for citizen well-being.

Deep Fake: from Fake News to Fake Reality?

Danièle Réchard with Victoria Jordan (trainee)

Background

In the past few years, the rapid spread of so-called **'fake news'** has furthered its perception as a threat. If it is a major concern globally, fake news remains a confusing term: it can cover honest mistakes (misinformation), poor quality journalism, hyper-partisanship and deliberate fabrication, through to conspiracy theories. Therefore, most experts rather use the term 'disinformation' to refer to 'the dissemination of deliberately false information which non-state and state actors can use to undermine adversaries.'

Disinformation is not a new phenomenon – but the tools to produce false news stories and the means to distribute them are. **Technological advances** along with social media and their algorithms have amplified the phenomenon, whose modern characteristic is its spreading speed. According to a recent MIT study, a false (and thus novel) news story will reach 1 500 people six times faster than a verified fact. With Russia's on-going disinformation campaign in Ukraine, proven Russian interference in the 2016 American election campaign through divisive advertisements on social media, and the more recent Cambridge Analytica scandal, the interest of certain actors for online disinformation no longer needs to be demonstrated.

In the many ways that technological progress can further the advance of disinformation, the emergence of media content manipulated with artificial intelligence – or '**deep fakes**' – is a concerning development, yet relatively unknown.

What are deep fakes?

In a nutshell, a deep fake refers to 'the digital manipulation of sound, images, or video to impersonate someone or make it appear that a person did something.'

The term is a combination of '**deep learning**' and '**fake**'. Indeed, the technology combines artificial intelligence (machine-learning algorithms such as neural networks) with audio- and image- editing software in order to create content showing something that never happened. For example, a speech by former American president Barack Obama warning of the potential dangers of deep fakes.

The technology is still in its infancy. Yet, it is **progressing fast** – developed and made available by online communities. It should not be surprising that deep fakes first spread online with the creation of pornographic content. Using video and audio recordings of celebrities, widely available, the technology has been applied to superimpose their faces onto existing pornographic videos. Today, this is the most widespread use of deep fake – available online to anyone, regardless of their technical knowledge.

What are the risks?

As illustrated by the last example, deep fakes entail obvious risks to individuals. Digital impersonation could be used in a multitude of **abusive** ways, to harm the reputation of someone or blackmail them with fake visual evidence. Following the same principle as 'fake news', the authenticity of a video does not matter once it has been shared multiple times on social media.

Similarly, at national and international levels, deep fakes represent the same dangers that we already attribute to 'fake news' – with the heightened impact of visual effect. Indeed, a fake speech by a candidate in a political election which is not identified as such will likely impact its electorate. Fake footage of police violence, announcements of impending catastrophes or evidence of a state leaders' criminal behaviour all have the potential to lead to immediate **social unrest**.

Finally, deep fakes also pose a serious threat to **global security**. They can become a powerful weapon of information warfare in an international environment increasingly vulnerable to hybrid threats. Diplomacy manipulation is nothing new: Bismarck knew its efficiency when he published an edited version of the so-called 'Ems dispatch', which conveniently led France to declare war on Prussia in 1870. Foreign adversaries or non-state actors, such as terrorist groups, could take this strategy much further with deep fakes released instantly and on a wide scale – especially as the technology develops in the open and is available to a large number of different actors.

Main Trends

Artificial intelligence (AI) is improving fast, with machines that can learn from experience through algorithms without human intervention. Further progress will make deep fakes ridiculously easy to produce. It will also facilitate their propagation through new tools like private messaging apps, chatbots and voice-operated systems.

The explosion of **social media** has favoured the spread of fake news in a cheap and anonymous way. It has also amplified phenomena such as group polarisation (although, recent research suggests the echo chamber effect might be exaggerated). This enormous distributive power will encourage the rapid spread of deep fakes. It will also facilitate their development. Indeed, the wide resources of data available online is enabling online communities to share the tools and software necessary for creating deep fakes, as well as the data needed.

Declining trust in institutions and experts has made populations more vulnerable to disinformation campaigns and has worsened tensions on the international stage. This is notably observable through the strong trend in news avoidance – in 2017, the proportion of the population sometimes or often avoiding the news reached 57 % in Turkey, 44 % in Poland and 38 % in the US. Increased doubts concerning the authenticity of the news can only reinforce this trend.

Concern over the threat of disinformation is translating into a debate on **remedies** to fake news that would not impede free speech. These range from demands for more transparency and accountability of platforms, to education campaigns to improve media literacy, or regulation by the state. At EU level, the Commission communication on tackling online disinformation recommends an EU wide code of practice on disinformation and the creation of an independent network of fact-checkers. Through its East StratCom task force, set up in 2015 under the External Action Service, the EU is already addressing Russia's disinformation campaigns.

Uncertainties

- Deep fakes will make it impossible to differentiate truth from fiction. Cognitive biases already encourage resistance to uncomfortable facts, so ubiquitous deep fakes will support this tendency. This could **undermine faith** in evidence-based investigations, policies and decisions.
- Will declining trust in news content, combined with increasing fact-checking costs for news organisations, further the collapse of **journalism**? Or could the spread of deep fakes encourage a return to traditional journalism as there seem to be signals of a resurgence of trust in traditional print and radio journalism against online content?
- Can existing policy responses to fake news and current **anti-fake tools** (like crowdsourcing platforms) tackle deep fakes?
- Could **technology** companies – using AI – assume the function of differentiating fake from real before distribution? Or will deep fakes be created with built-in systems to fool forensic technologies?

Possible disruptions

- The **end of privacy** by social consent: A service could develop for those willing to have their every movement and communication tracked. As individuals agree to the service, the mere idea of privacy would disappear. Also, the data accumulated would represent the widest and deepest database – presumably available for authorities.
- '**Ministry of Truth**': To contain deep fakes, governments set themselves the task of defining what is reality. Protection from internal and external manipulation becomes more important than fundamental rights like freedom of speech, also in the eyes of citizens.
- In the hands of **unpredictable** state or non-state actors with substantive cyber capabilities, deep fakes and similar disruptions could create increasingly challenging scenarios.
- **Collapse** of reality, collapse of democracy? With an erosion of trust and no consent on what is real, there is no informed electorate – without which democracy cannot exist.

Climate Engineering, a Miracle Solution to Climate Change?

Freya Windle-Wehrle

Background

Inadequate climate action, in spite of multilateral agreements in the context of international climate policy, sets the focus on additional options such as **climate- or geoengineering**, particularly as the global 2 °C target is hard to meet, and as it is certain that Earth's overall temperature will increase by over 1 °C. This has huge implications.

With the onset of climate crisis impacts, the spectrum of geoengineering projects increases. Advanced technologies support proponents' belief that engineering the climate has the potential to minimise the problem of **global warming**. Opponents are concerned as effectiveness, costs and risks remain uncertain.

Manipulating the climate was debated as far back as the 1840s. One idea was to set huge fires to generate rain, thinking that heated columns of air would force storm formation. Today's geoengineering tools are more elaborate. A diverse and still largely hypothetical array of techniques to intentionally alter Earth's atmosphere involve interventions on land, in oceans or in outer space. Many options are proposed, but literature commonly divides geoengineering into two categories: **Solar Radiation Management** (SRM) and **Carbon Dioxide Removal** (CDR).

SRM techniques **reflect sunlight and heat** back into space to artificially modify Earth's radiation balance. Within a few years, an effect on the climate could become visible. Proposed methods are, for example, space-based mirrors or enhanced cloud thickness/reflectivity. Contrary to this, CDR intends to capture and **remove Carbon Dioxide** (CO_2) from the atmosphere. The varied options range from ocean fertilisation and direct air capture to afforestation. Ultimately, both categories aim to reduce global temperatures to moderate or forestall some of the effects of climate change to create a future-proof world.

Only CDR combats the root causes of climate change by actively reducing CO_2. SRM technologies do not aim to influence the concentration of greenhouse gases (GHG), a primary cause of climate change; only the symptoms are addressed. But as computer models forecast quick results, geoengineering is considered useful to avoid a **climate 'tipping point'**. A moderate decarbonisation process further fosters research in this direction, particularly in high carbon emitting countries, where cutting emissions to zero is not yet an option.

Downsides also exist: Overconfidence in data and forecasts used to estimate geoengineering impacts might be one. Trans-boundary effects remain unpredictable, for example when creating artificial dust clouds by injecting layers of reflective particles into the atmosphere to mimic the effects of a volcanic eruption. Questions of international governance and expense arise. **'Technofix' initiatives** for environmental modification also have complex ethical implications.

Some geoengineering techniques could be misused as a **tool of warfare**. Cloud seeding during the US-Vietnam war is one of the early examples of weather modification. In the 1990s, the European Parliament conducted enquiries into military research relating to environmental manipulation. This was considered a serious threat to nature with an incalculable impact on human life. The potential of weather as a force multiplier continues to be analysed, even though the Environmental Modification Convention (ENMOD) bans weather warfare and other hostile uses of climate manipulation.

Developing countries are the least responsible for GHG emissions, but could be the most affected by the cross-border nature of certain techniques. The Global South is at the front line of climate change, and is already suffering from increasing extreme weather events. Demands for compensation after unintended natural disasters or disruption in crop production are quite possible. These regions should have a voice in discussions about research, governance and potential deployment of geoengineering.

The **complexity of concerns** associated with geoengineering calls for engagement with the public and policy-makers of today. It also presents a research challenge with evolving efforts to explore the boundaries of the discourse. But, despite growing research and news coverage, climate engineering is still largely limited to a small number of actors in Europe and North America.

Early **governance frameworks,** such as the UN Convention on Biological Diversity (CBD), should become binding for all, to avoid the recurrent questioning of the terms of reference and the vagueness of the distinction between geoengineering and mitigation.

Main Trends

Adaptation and reduction of GHG emissions is likely to be the most **important** means by which climate change is managed. Increasingly vivid signs of global warming, and declining confidence that sufficient **emissions reductions** will occur in the near future, heave led to a rise in geoengineering research.

China is forging ahead. It is building one of the world's largest geoengineering research programmes to assess how it would affect agriculture, sea levels and glaciers. Developing and emerging countries such as Bangladesh, Brazil and Kenya, have been running solar geoengineering workshops as part of the SRM Governance Initiative. India is developing a national geoengineering research programme. US scientists have launched the biggest solar geo-engineering study to date. In addition, the Hewlett Foundation and philanthropists such as Bill Gates are funding research.

Not all countries are seriously pursuing the Paris climate goals. The US withdrew from the agreement. Others may follow, possibly seeking avoidance of serious carbon reduction in favour of national industries. The **difficulty of reaching climate goals** may strengthen the case for using geoengineering to mitigate effects of global warming. A paradigm-shift is possible: geoengineering techniques may capture policy-makers' attention as a 'back-up' plan if rapid decarbonisation proves impossible. This has a potentially damaging effect, if people come to believe that unproven technological solutions ensure climate safety, and then neglect the need for a change of lifestyle. By extension, **multilateral commitments** to reduce emissions could weaken further still.

Codes of conduct and self-regulatory principles are being established due to the insufficient nature of regulatory bodies. Examples are the Geoengineering Research Governance Project, the Asilomar and Oxford Principles. Finally, the UK Research Council is funding examination of climate engineering governance.

Uncertainties

> Environmental **impacts** through GHG will determine the future. Geoengineering may do so even more as they remain largely **unknown and unforeseeable**. The degree of risk involved cannot be anticipated based on past experience or investigation. How can responsibility of unintended side-effects be shared between winners and losers?

> What if climate engineering proves to be beneficial? It might become impossible to live without it once its tools are applied. This may lead to a **treacherous co-dependency**.

> Which policy construct is needed to avoid treaty violations that could create a sphere of insecurity? This remains unclear, and **informed consent** is inexistent.

> What if **weather is commercialised**? Who would hold the 'right' to modify it and at what cost? Monopolies controlling the climate might be a consequence.

> **Risk transfer:** Unchangeable effects of geoengineering might lead to intergenerational injustice.

Possible disruptions

> **Techno-apocalypse:** Can humanity survive if geoengineering techniques suddenly stop working? Will global temperatures skyrocket causing a 'termination effect'?

> **Militarisation:** Certain tools may be used in nation-state's own interest as a geopolitical bargaining chip. Would we enter a new Cold War? New power imbalances and implications for peace could follow, changing the global security context.

> What if all assumptions were wrong and geoengineering manages to create a **climate-safe future**? Certain SRM techniques may even provide a sustainable energy source by not only reflecting sunlight, but also converting it into electricity. An exit from nuclear and fossil-fuel energy could follow.

> **Loss of intangibles:** Premature deaths or health problems may result from exposure to aerosols which could be used for SRM. Biodiversity could be affected; so could some natural phenomena, including the colour of the sky.

Total Global Trendometer Output(2016, 2017, 2018)

Social trends

Essays:

- Increasing inequality: from social and political challenge to economic problem? (2016)
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- Sub-Saharan Africa: Demography is not destiny... if women are empowered (2017)
- The return of redistributive tax policies (2017)
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Vignettes:

- The surplus of men in China: A gender issue or a social threat? (2016)
- The hollowing of the western middle class (2017)
- Remittances (2018)

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Essays:

- Between multilateralism and protectionism: Prospects for International Trade (2017)
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- The Asian century: economic powerhouse or stuck in transit? (2016)
- Jobless growth: will robots and computers destroy our jobs? (2016)
- Additive Manufacturing in 2030: how the next Gutenberg revolution may bring production back to Europe (2016)
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- Blockchains and trust: a revolution, reformation or just another tech-toy? (2016)
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