

SHAPING THE COVID-19 RECOVERY

Ideas from OECD's Generation Y and Z



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Preface

In the spring of this year, the OECD launched a call for its staff, consultants and interns from Generations Y and Z to volunteer some proposals on how countries can emerge from the COVID-19 crisis with a more resilient and inclusive system. We are proud to share 10 of the most innovative proposals. As the world grapples with a multifaceted crisis that will profoundly shape the years to come, these ideas outline the challenges as seen by the younger generations and capture their priorities for a better future.

The coronavirus pandemic represents an unprecedented global crisis, the scale of which will profoundly shape the world for years to come. It is now becoming clear that younger generations will be among the hardest hit. The work of the OECD highlights that COVID-19, both during the public health crisis and the recovery phases, creates specific difficulties for younger people and for their future, from increasing levels of youth unemployment and the implications of rising debt for issues of intergenerational justice, to threats to the well-being of youth and future generations ([OECD, 2020](#)). Young women and men (15-24) already have less income at their disposal compared to previous young generations; they are 2.5 times more likely to be unemployed than people aged 25-64 ([OECD, 2018](#)), and less than half of young people (45%) across the OECD countries express trust in government ([Gallup, 2019](#)). Intersecting identity factors, such as sex, gender, race, ethnicity, and intellectual or physical disability, and socio-economic disadvantage may exacerbate the vulnerability of young people (e.g. homeless youth, young people not in employment, education or training (NEETs), young migrants).

From the very start of the COVID-19 pandemic, the OECD has been at hand to assist countries in responding to the crisis, for example through the launch of our COVID-19 Policy Responses [Digital Hub](#). We also understood, however, that it was imperative to question and challenge our younger colleagues about the changes needed in the post-pandemic world. We thus invited them to examine the crisis from their own unique and diverse perspectives and come up with innovative policy solutions that provide concrete ways to help rebuild our societies and make them more resilient and inclusive. The impact of this crisis looks set to be more severe than the financial crisis of 2007-2008, which had already harshly affected Generation Y. As agents of change, we trusted that they could contribute solutions. And they delivered!

This unique exercise made us really proud to see the great response and the quality of the proposals that were submitted, not only by the finalists, but also by all the colleagues from Generations Y and Z who answered this call.

We want to congratulate the authors of the winning briefs:

- *After the pandemic: Harnessing new habits for a more sustainable world* – Brilé Anderson, Marta Arbinolo, Elena Buzzi, Chiara Falduto, and Frithjof Laubinger
- *Carbon pricing for households: addressing inequalities through a credit system* – Antoine Bonnet
- *Cohesion Services for inclusive growth and resilience* – Louise Phung
- *Drawing lessons on digital from COVID-19: a call for action to the World Trade Organisation* – Andrea Andrenelli
- *Empowering female leaders in science: The role of Generation Y and Z* – Laura Kreiling

- *Enhancing Trust in Data – Participatory Data Ecosystems for the Post-Covid Society* – Archita Misra and Julia Schmidt
- *Fostering resilience in the post-COVID-19 health systems of Latin America and the Caribbean* – Gabriel Di Paolantonio
- *Inclusive Social Insurance for the 21st Century* – Anna Vindics
- *Minimum Standard Framework for Textile Manufacturing* – Philip Zaunders
- [*Youth and Covid-19: Response, Recovery and Resilience*](#) – Moritz Ader, Gamze Igriglu, Giorgia Ponti and Pietro Gagliardi

At the OECD, we believe it is vital that today's younger generations are empowered to voice their concerns and hopes for a better future. In a world full of unknowns and uncertainties, with daunting challenges on the social, environmental and economic front, we need their commitment, their ambition, their vision, and their strong efforts to get better outcomes for people.

Laurence Boone, Chief Economist

Gabriela Ramos, Assistant Director General on Social and Human Sciences at UNESCO & former OECD Chief of Staff

Foreword

During the spring of 2020, Gabriela Ramos, then OECD Chief of Staff, and Laurence Boone, OECD Chief Economist, launched an institution-wide call to colleagues from Generations Y and Z for innovative policy solutions that provide concrete ways to rebuild our societies and deliver a more resilient and inclusive system. It was crucial for younger colleagues at the OECD to be given an opportunity to be heard in those uncertain times and to contribute their perspectives on shaping the COVID-recovery.

Dozens submitted peer-reviewed briefs on policy measures covering all areas of the organisation's work. Through extended cycles of reviews by senior staff, ten of the most innovative ideas were selected. All staff contributed their time voluntarily – living proof that the OECD is a place committed to public service, especially when societies are facing severe challenges.

For their contribution to the review cycles, we thank Gabriela Ramos, Laurence Boone, Juan Yermo, Romina Boarini, Elsa Pilichowski, Geoff Barnard, Andrea Goldstein, Anna Morin, Francesca Bertolino, Kostas Panagiotopoulos, Sonja Agustsdottir, Ziga Zarnic and Zuzana Smidova. We are grateful to Niels Planel for managing the whole initiative, from inception to delivery, and to the Public Affairs and Communications Directorate for its invaluable support with the publication of the winning briefs.

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Executive summary

During the spring of 2020, OECD staff from Generation Y and Z – that is, born in or after 1981 – were invited to examine the emerging COVID-19 crisis from their unique and diverse perspectives and come up with innovative policy solutions that provided concrete ways to rebuild our societies. Dozens submitted peer-reviewed briefs on policy measures covering all areas of the organisation's work. Through extended cycles of reviews by senior staff, ten of the most innovative ideas were selected. All staff contributed their time voluntarily – living proof that the OECD is a place committed to public service, especially when societies are facing severe challenges.

The winning briefs capture the priorities and concerns of Generations Y and Z for the world to come:

- **COVID-19 triggered changes in individual behaviour that have been both beneficial but also harmful to the environment**, suggest Brilé Anderson, Marta Arbinolo, Elena Buzzi, Chiara Falduto and Frithjof Laubinger. Drawing on behavioural economic theory, they offer a set of **possible interventions for policy makers to either foster or revert the behavioural changes that emerged during the peak of the pandemic** – with a particular focus on urban mobility, the sharing economy, and food waste.
- **International trade in digital technologies has been key in allowing the continuation of economic activities online and in keeping societies together during COVID-19 lockdowns**, notes Andrea Andrenelli, calling on the WTO Membership to **draw lessons from this experience, identifying priorities for the international trade policy agenda in the digital domain**.
- Introducing a carbon price may harm the poor, but this does not need to be the case, argues Antoine Bonnet. He shows how **it is possible to put a price on carbon while also reducing inequalities**, through subsidizing low-emitting households and taxing more high-emitting ones.
- **Generation Y and Z individuals, institutions and policy makers are essential to empower female leaders in science in the post-Covid-19 society**, according to Laura Kreiling. She describes the need for inter-generational exchanges and role models at the individual level, as well as the creation of employment and career policies that overcome external barriers, support next generation researchers, and foster initiatives that target girls and their career choices.
- Archita Misra and Julia Schmidt observe that the **development of participatory data systems**, characterised by the direct engagement of citizens in the process of data planning, production and use, can help **counter a trust deficit between citizens and governments** in both OECD and non-OECD countries in the aftermath of the COVID-19 crisis. The establishment of such systems, guided by principles of openness, demand-driven processes, connectivity and data privacy protections, can serve to empower citizens as active stakeholders in the data process. Participatory data ecosystems could pave the way for a new frontier of democratic institutions fit for today's data-driven digital age, conducive to social cohesion and inclusive policies for recovery that leave no one behind.
- According to Gabriel Di Paolantonio, **spending more, better, and in union would highly improve the health systems of Latin America and the Caribbean (LAC), and the well-being of its citizens**. Recent challenges in the region are highlighting the necessity for a more integrated

response to long-standing ordeals. **The inception of regional public health bodies would be a major step towards this goal.** Generations Y and Z of LAC citizens, having emerged in a highly interconnected and global era, could be holding the key to making this possible.

- Louise Phung argues that the disruption brought by the COVID-19 crisis can be **an opportunity to build a new economic and social model with local communities with social cohesion at its core.** By freeing up time for all individuals to engage in more activities within their local community, a sense of “usefulness” and “belonging” for everyone will be restored and, ultimately, local community bonds strengthened. **Strong local community bonds are essential for improving well-being, at individual and collective levels, but also for building resilience from future shocks.**
- Anna Vindics argues that, from a country-wide perspective, **risk-pooling through social insurance is one of the few tools to foster resilience against systemic risks, uncertainties, and potential disruptions** such as the COVID19 crisis. In times of crisis, the system acts as an automatic stabiliser and it reduces negative externalities of job-loss on close individuals (e.g. poverty of dependent children) or the society (e.g. increased crime, lower lifetime tax contribution). However, due to megatrends, new business models and abuse of regulatory arbitrage a variety of employment relationships emerged or became more frequent, which are not covered under such schemes.
- Philip Zaunders makes the case for **the Minimum Standard Framework, which outlines an international baseline for sustainable manufacturing procedures to improve the global textile industry’s environmental performance.** The policy proposes enforcing compliance through import tariffs, and shifting responsibility for environmental protection away from the manufacturer and towards the importer.
- Finally, drawing on **survey findings from 90 youth organisations in 47 countries**, Moritz Ader, Gamze Igriglu, Giorgia Ponti and Pietro Gagliardi **outline practical measures governments can take to design inclusive and fair recovery measures.**

After the pandemic: Harnessing new habits for a more sustainable world

Brilé Anderson, Marta Arbinolo, Elena Buzzi, Chiara Falduto, and Frithjof Laubinger

16 July 2020

COVID-19 has triggered changes in individual behaviour that have been both beneficial but also harmful to the environment. Drawing on behavioural economic theory, this paper offers a set of possible interventions for policymakers to either foster or revert the behavioural changes that emerged during the peak of the COVID-19 pandemic – with a particular focus on urban mobility, the sharing economy, and food waste.

Climate change and the degradation of our environment are among the most pressing issues of our time. While governments grapple with the acute shock of COVID-19, the clock is ticking to address these chronic challenges (IPCC, 2018^[1]). Given the immediacy and severity of both the health and environmental crises, it is fundamental to develop policy solutions that simultaneously address both issues (Gurría, 2020^[2]). Failure to appreciate this when developing COVID-19 recovery strategies will lock the world into a resource- and carbon-intensive pathway that will undermine, if not shatter, climate and sustainable development goals.

During the peak of the COVID-19 pandemic, when approximately half of the world's population lived under full or partial lockdown orders (Euronews, 2020^[3]), the world witnessed deep changes in individual behaviour. Some of these behavioural changes – such as the reduction of air travel for business and leisure and the uptake of cycling in cities – have been beneficial for both climate and the environment. At the same

time, other behaviours that emerged from the COVID-19 crisis – such as the increased consumption of single-use plastics and the reduced appetite for public transport use – undermine past efforts towards improved sustainability, posing a serious threat to the climate and the environment.

Whether the behavioural changes borne out of COVID-19 “stick” – that is, whether these behaviours last once the world population no longer lives in conditions of confinement and social distancing – depends on how individual habits and norms will evolve after the crisis. In fact, while behaviour is determined by a variety of elements, habits and norms seem especially relevant for encouraging sustainable behaviour in the wake of COVID-19. The box on the next page discusses how habits and norms are formed, evolve and interact.

In the context of the climate and environmental crisis of our time, it is crucial to harness the potential of behavioural change (IPCC, 2018^[1]), discouraging unsustainable behaviours and incentivising those behaviours that are in line with current climate and sustainable development goals. The behavioural changes that emerged during the COVID-19 crisis offer valuable insights that can inform the policy-making process in the post-COVID world, and represent an opportunity to make environmentally virtuous behaviours stick over time.

This paper investigates three examples of COVID-19-induced behavioural changes that have beneficial or adverse consequences on the environment. The examples include (i) the shift towards reduced and greener urban passenger transport, (ii) the reduced engagement in peer-to-peer sharing economy business models, and (iii) the decrease in volumes of household food waste. Drawing from behavioural economic theory, this paper provides policy recommendations to support governments in reinforcing or dissuading the behavioural changes observed during the COVID-19 crisis, and applies these to the three different examples studied.

How does behaviour change? Insights into habits and norms

A *habit* is a learned reflex-like behaviour, triggered by familiar external cues (e.g. sanitising after touching a foreign surface during COVID-19) (Southerton, 2013^[4]; Carrus, Passafaro and Bonnes, 2008^[5]; Duhigg, 2012^[6]). *Norms*, in contrast, can be thought of as the blueprints for socially-desirable behaviour within one's social environment, either because of appropriateness (e.g. wearing a facemask in a grocery store) or perceived consequences (e.g. fines for failure to wear a facemask on public transport) (Tankard and Paluck, 2016^[7]; Huber, Anderson and Bernauer, 2018^[8]). Habits and norms interact to mutually inform and amplify one another, eventually shaping human behaviour.

A behaviour, or *routine*, can be altered by (i) a change in an individual's response to a *cue* or by (ii) a *reward mechanism* (Duhigg, 2012^[6]). For example, COVID-19 altered the usual response to the cue of leaving the house. During the peak of the pandemic, a large share of the population has been induced to wear a facemask and to maintain safety distances (new routines) to reduce the risk of infection (the reward). The reaction to a cue depends on the *choice architecture*, which is the set of different ways a choice can be presented – such as the way information is framed or the physical layout of options (Thaler and Sunstein, 2009^[9]).

An example of framing can be made from the way information about the share of population choosing to wear a face mask is presented. One possible framing is: 1 out of 2 people wear facemasks when leaving the house. Another possible framing is: 1 out of 2 people not wear facemasks when leaving the house. Whereas both statements convey the same information, the different framing influences the message perception (Kahneman, 2013^[10]), eventually altering behaviour. Similarly, the physical presentation of options affects their uptake (Thaler and Sunstein, 2009^[9]). For example, having sanitiser available upon entering a grocery store persuades the individual to use it.

Behaviours can also change with modifications to the reward. Rewards can be intangible, and in some cases they are unknown or poorly appreciated by decision makers (Duhigg, 2012^[6]). Once a vaccine is widely available, this reward will likely cease to resonate in the eyes of the public, at least in countries unhabituated to the practice.

An individual's perception of social norms affects *behavioural stickiness* – i.e. the likelihood that a behaviour sticks over time (Nyborg et al., 2016^[11]; Nyborg et al., 2017^[12]). These perceptions are formed from institutional signals and group information, which can be mutually reinforcing (Tankard and Paluck, 2016^[7]). *Institutional signals* indicate what a socially desirable action is (Tankard and Paluck, 2016^[7]), e.g. social distancing signs in streets or shops. In contrast, *group information* indicates what other individuals within one's social group are doing. It is important to note that often individuals belong to more than one social group (e.g. friends, family, country) (Tankard and Paluck, 2016^[7]). If an individual's friends and family are not wearing a facemask, it is less likely that the person in question will do so either. If, after the pandemic, the local administration distributes information on the importance of wearing facemasks and, in combination, a majority in an individual's social groups are wearing facemasks, it becomes more likely that the individual will comply.

Behavioural changes during the COVID-19 pandemic: three case studies

The recent health crisis has induced changes in behaviour throughout all sectors and activities. This section investigates three examples of behavioural changes that occurred during the COVID-19 pandemic, namely (i) modal shifts, including the uptake of cycling in the urban context, (ii) the loss of social trust in the sharing economy and (iii) the change in household food consumption and food waste habits.

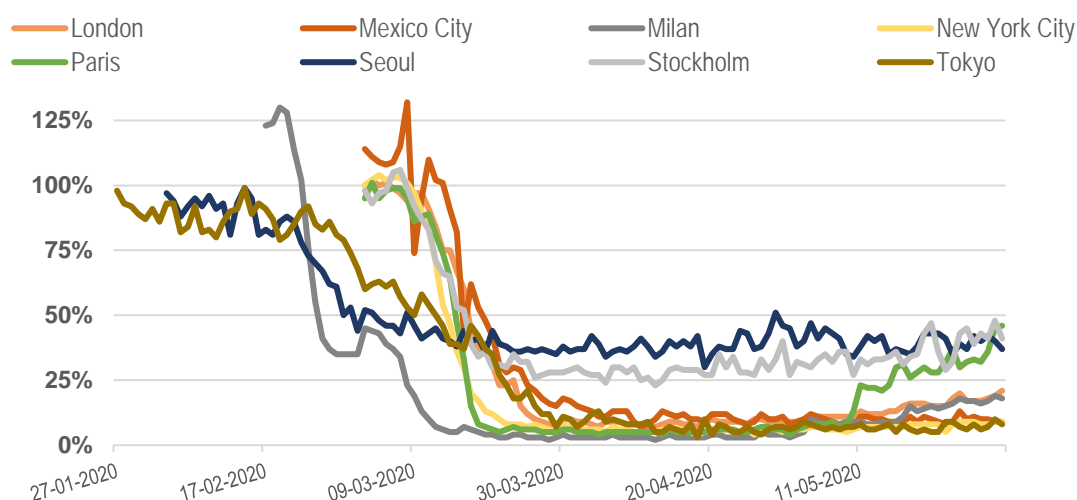
Urban passenger mobility

The transport sector is responsible for about 30% of total carbon dioxide (CO₂) emissions in OECD countries and for about 23% of CO₂ emissions globally. Regional and urban passenger transport make up 50% of these emissions (ITF, 2019^[13]). In EU countries, road transport is responsible for over 70% of transport-related CO₂ emissions (European Commission, 2020^[14]).

Transport is also a major source of air pollution. The tailpipe emissions of harmful pollutants, such as nitrogen oxides, carbon monoxide and particulate matter, contribute to respiratory and cardiovascular diseases, as well as cancer, allergies and negative birth and cognitive outcomes (OECD, 2016^[15]). Non-exhaust emissions (via wear and tear of tyres, road surfaces, and brake pads) further contribute to air pollution by passenger transport (Amato et al., 2020 (forthcoming)^[16]). Overall, in 2016, exposure to outdoor air pollution was responsible for 4.2 million premature deaths worldwide (WHO^[17]). In addition, compromised respiratory or cardiac systems due to air pollution make people more susceptible to suffer from infectious diseases and thus play an important role in the current COVID-19 context (Friedman, 2020^[18]).

Figure 1. The drop in urban passenger transport during and after lockdown measures

Percentage with reference to average CityMapper Mobility activity in the Jan 6 – Feb 2 2020 period



Note: This figure includes trips via public transportation, walking, cycling, other micro mobility options, and cabs. The 100% figure equates to the average no. of daily trips recorded by the app in the Jan 6 – Feb 2 2020 period in each city. See [here](#) for details on the methodology of the indicator used.

Source: CityMapper Mobility Index.

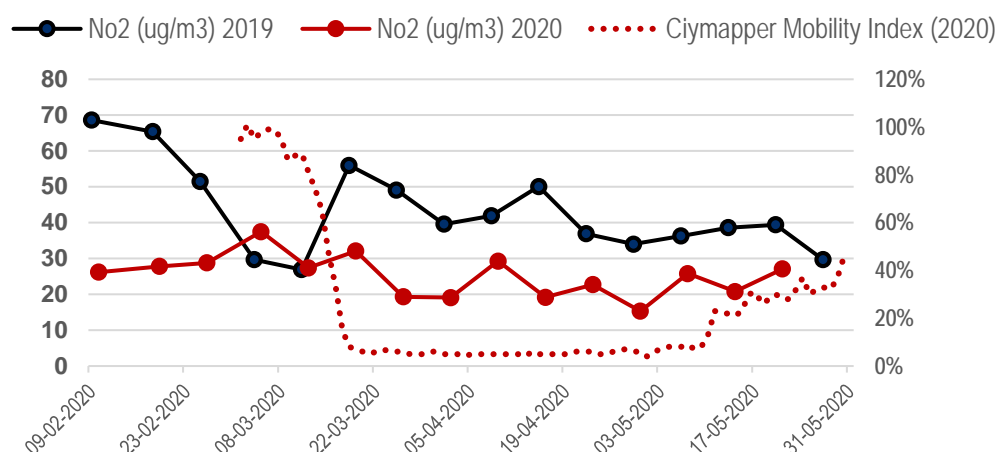
The COVID-19 pandemic has caused major disruptions in passenger transport systems globally. As governments instructed citizens to avoid all non-essential trips, the demand for passenger transport has plummeted. In major cities across the OECD area, the number of daily urban trips has dropped by up to 95%, as compared to pre-lockdown levels (Figure 1). In particular, mass public transport has suffered the most: in London, for example, the number of underground trips fell by 95% and bus trips by 85% (Bloomberg, 2020^[19]).

The reduction in transport demand has had an immediate impact on greenhouse gas emissions and air pollution, with a reduction of daily global CO₂ emissions from the transport sector by 17%, as compared to

2019 levels (Le Quéré et al., 2020^[20]). Furthermore, significantly lower concentrations of air pollutants have been recorded in urban areas across the world. For example, atmospheric concentrations of nitrogen dioxide (NO₂) in the City of Paris dropped by about 40-50% throughout March and April 2020, as compared to the same period in 2019, presumably also due to the reduction in road traffic (Figure 2) (European Environment Agency, 2020^[21]).¹

Figure 2. Transport levels and NO₂ emissions in Paris

Average NO₂ concentrations (left axis) and transport levels for as compared to 2019 levels (right axis)



Source: CityMapper Mobility Index and EEA air pollution data

The key question however is, what will happen to mobility behaviour in the longer term, once lockdown and social distancing measures are lifted. Past experience suggests that demand for public transport is likely to bounce back, albeit incrementally and with slight inertia, as fears of contagion and social distancing requirements remain for some time. During the 2003 SARS epidemic, demand for public transport in Taipei bounced back to pre-epidemic levels within four months (IEA, 2020^[22]). However, in the context of COVID-19, prolonged teleworking and lingering social distancing requirements may further slow the return to previous levels of passenger demand down.

In addition to an anticipated rebound in demand, modal shifts are likely to occur, as people opt for transport modes that reduce their risk of contagion. The scale of contagion and perceived risk, coupled with the need to comply with extra sanitary measures (e.g. wearing a mask), is likely to reduce the attractiveness of public transport in the near future. In a recent survey conducted in the United States, more than 20% of regular public transport users stated that they would forego using public transport, whilst 28% indicated they would use public transport less often in time to come (IBM, 2020^[23]).

The key question here is how trips previously made by public transport are replaced by other modes. In many cases, for medium- and long-distance trips (above 10km), driving may be the only feasible alternative to public transport. The recent decline in oil prices may further encourage this shift. Furthermore, as people become more reluctant to share rides with others, single-occupancy vehicle rides may substitute

¹ The Centre for Research on Energy and Clean Air estimated a 60% reduction in concentrations of NO₂ during lockdown compared to the same period in 2017, 2018, and 2019. Following deconfinement, NO₂ concentrations more than doubled again (+118%) compared to 30-day period when concentrations were the lowest (Le Monde, 2020^[71]).

carpooling and ride-sharing (see sharing economy case study). All these shifts are likely to exacerbate the environmental impacts caused by urban passenger transport.

Conversely, for shorter-distance trips, there are ‘greener’ alternatives – such as cycling, walking and other micro mobility options – that allow for a sufficient control of personal space, thus lowering the risk of infection. In fact, early evidence shows a growing public preference towards active modes of transport. For instance, in May 2020, the City of Paris recorded a doubling of cycling rates compared to May 2019 (Breteau, 2020^[24]).

Evidence shows that behavioural stickiness is particularly strong in mobility habits, even when there would be significant gains from picking an alternative transport option than one’s habitual mode (Thompson et al., 2011^[25]). However, past experience also shows that crises in passenger transport can provide a major window of opportunity to alter these habits and induce a change in behaviour. Overall, the extent to which behaviours concerning urban passenger transport will change on the longer term depends on three main issues:

1. How can the likely rebound effect be mitigated?
2. How can modal shifts in urban passenger transport be steered towards ‘greener’ transport modes, such as walking, cycling and other micro mobility options, and away from increased use of single-person vehicles?
3. How can administrations ensure the environmentally-beneficial habits “stick” and persist in the long-term?

The sharing economy

Recent decades have witnessed an unprecedented growth in demand for natural resources and materials, which is expected to further grow in the decades to come, more than doubling between 2011 and 2060 (OECD, 2019^[26]). In this context, over the past decade, circular business models have received increased interest as a possible way to manage resources more efficiently and reduce materials demand, while at the same time easing the pressure on waste streams, road congestion, and air pollution.

The sharing economy (or peer-to-peer economy) is one of such circular business models. The basic premise of a sharing economy is that under-utilised consumer assets are more intensively used, either through lending or pooling, thereby lowering the demand for new goods and reducing the associated environmental impacts (OECD, 2019^[27]). For example, an overnight stay in a residential house (e.g. through Airbnb) requires on average 63 to 84% less energy and 12 to 57% less water per guest than a typical night in a hotel (Cleantech Group, 2014^[28]; Dolnicar, 2017^[29]). Similarly, modelling estimates indicate that the use of shared mobility options, including peer-to-peer car-sharing and car-pooling services, can reduce urban transport-related energy consumption by 25% (Becker et al., 2020^[30]; Santos, 2018^[31]).

Sharing business models have seen a rapid growth in the past years, facilitated by advancements in internet and mobile phone technologies. Unused apartments, rooms, vehicles or vehicle seats, clothing, and a variety of other consumer goods can now be used to their full capacity, rather than sitting idle. In some sectors, sharing models have become powerful market actors; for example, Airbnb providing lodging, Blablacar providing car-pooling, and Turo and Getaround providing peer-to-peer car-sharing.

Together with technological enablers, such as internet and mobile technologies, social trust is a key element of the sharing economy. Sharing goods and services depends on strangers interacting with each other in person and sharing physical assets. Trust and close interactions are thus a pre-requisite for individuals to engage in such activities (Kong et al., 2020^[32]; Möhlmann and Geissinger, 2018^[33]). The COVID-19 pandemic is a stress-test for many sharing business models – not only in financial terms, but also more fundamentally challenging the social trust underlying the sharing economy.

During the COVID-19 crisis, sharing services such as car-pooling, co-working spaces, and home-sharing have experienced a significant drop in demand, as a direct consequence of the confinement and social distancing requirements. At the peak of the crisis, the ride-hailing service Uber temporarily suspended shared ride options (Uber Pool) and laid off up to 13% of its 27 thousand employees (Rana, 2020^[34]; Uber, 2020^[35]). The Singapore Transport Ministry outlawed carpooling as a whole until further notice (Wei, 2020^[36]). The lodging service Airbnb has suffered a 94% reduction in booking rates as compared to figures for the same period in the previous year (Lock, 2020^[37]), and the rental income of Airbnb hosts dropped by up to 70% between January and March 2020 (Chen et al., 2020^[38]). Similarly, the co-working space provider WeWork had to temporarily shut most of its offices.

Of course, during the lockdown, similar reductions in service demand affected non-shared services too and the question is rather how both develop in the post-lockdown period. Whilst some of these short-term impacts may rebound as confinement orders are lifted, a lingering aversion to risk of infection and an erosion of confidence in other people's trustworthiness may generate longer-lasting impacts on the attractiveness and uptake of sharing business models. A recent survey conducted in the United States shows the first signs of this trend, as 26% of respondents indicated that they will be less likely to use sharing services after distancing rules are lifted (Statista, 2020^[39]). Another survey found that more than half of former users of ridesharing apps in the United States plan to reduce or forego their use completely, whilst only 24% indicated the same for traditional car services (IBM, 2020^[23]). As consumption shifts back to non-sharing options, due to fears of engaging in sharing models, this may lead to a substantial increase in environmental footprints. In addition, trust deficits and risk averse behaviours may be more profound and last longer than the risk justifies.

As social trust is key for the success of sharing platforms, in particular in relation to compliance with hygiene standards by all users involved, sharing economy platforms will need to enforce high hygiene standards to revive customer confidence. Some service providers have already started to do so. For instance, Airbnb has announced a new cleaning protocol for hosts and now requires hosts to keep listings empty for at least 24 hours between reservations.

However, the strict hygiene requirements may increase operating cost, leading to another limiting factor for sharing business models. Before the COVID-19 emergency, sharing economy service providers, such as Airbnb and Blablacar, tended to exert relatively low levels of control and standardisation to their users, in order to maximise economic gains (Constantiou, Marton and Tuunainen, 2017^[40]). Increased levels of stringency and control are now necessary and new hygiene requirements, their enforcement and disclosure are likely to increase the transaction costs for some of these business models, reducing their competitiveness.

Household food waste

Food waste represents a major global issue, with severe effects on the environment and the economy. According to the Food and Agriculture Organisation (FAO), every year a third of global food production is lost or wasted², contributing to the unnecessary use of agricultural land, water and fertilizers (FAO, 2019^[41]) and to 8-10% of global greenhouse gas (GHG) emissions³ (IPCC, 2019^[42]). Food waste also generates significant economic costs to society, estimated at USD 1 trillion per year (IPCC, 2019^[42]; FAO, 2014^[43]).

While food waste occurs at all levels of the food chain, the breakdown for each stage largely depends on the socio-economic context of specific countries or regions. In developing countries, most food losses

² Food losses usually refer to the production and marketing phase of the food chain, while food waste refers to the losses occurring at the end of the food chain, i.e. during the consumption stage (FAO, 2011^[44]).

³ The aerated composting of food waste in landfills contributes to global GHG emissions through the generation of methane (CH₄) and nitrous oxide (N₂O) (He, 2000^[70])

occur in upstream production stages, due to financial and technical limitations such as poor storage and handling conditions (FAO, 2011^[44]). Conversely, in developed countries, food waste mainly occurs at the consumption stage, mainly due to poor purchase planning and careless attitudes towards food waste, which are partly driven by the low relative price of groceries. In Europe, for example, over 50% of food waste is attributable to households, a total of 47 million tonnes of food wasted every year (European Commission, 2019^[45]).

The COVID-19 lockdown has disrupted the food management habits and behaviour of households that surround such practices, in some cases leading to a reduction in household food waste volumes. In general, occurrence of household food waste is primarily caused by ineffective households' food management practices, such as over-shopping, inadequate storage or conservation environment and inefficient meal planning (Aschemann-Witzel et al., 2015^[46]; Farr-Wharton, Foth and Choi, 2014^[47]; Principato, 2018^[48]; Stancu, Haugaard and Lähteenmäki, 2016^[49]; Geffen et al., 2016^[50]).

In the context of the COVID-19 lockdown, socio-economic factors such as changes in perceived or real lower food availability in supermarkets, restricted movements, and loss of income have influenced consumers' habits and behaviours reducing food waste. In addition, the temporary impossibility to consume food outside of the household and to engage in spontaneous eat-outs has allowed people to better plan their meals in advance and to dedicate more time to cooking, which has further contributed to reduce the food waste. Cooking at home also allows for more control over dietary habits and ingredients used, allowing for more sustainable and healthy cooking.

Preliminary evidence from surveys conducted in three European and northern African countries supports these assumptions and suggests that the behavioural changes surrounding food management have resulted in a net reduction in household food waste:

- In Italy, 41% of the respondents declared to be throwing away less food than they did before the lockdown; 39% indicated to plan meals more thoroughly in advance; and 33% declared to eat leftovers more often (Altroconsumo, 2020^[51])
- In the United Kingdom, 35% of the respondents indicated they make better use of leftovers, and more than half declared to value food more and plan meals more carefully than they did before the pandemic (Restorick, 2020^[52]).
- In Tunisia, 85% of the respondents reported to have set up strategies for food storage and reuse of leftovers, and 42% declared that during the pandemic they used shopping lists⁴ significantly more than they did before the crisis (Jribi et al., 2020^[53]).

Whilst these initial results are encouraging, the question is whether this behaviour towards more sustainable food and meal planning will stick over time, as lifestyles return to "normal", with less time spent on meal planning and again more opportunities for spontaneous eat-outs.

Policy recommendations

There is an opportunity for policymakers to intervene and exploit these short-term (more sustainable) behavioural changes – such as lower food waste - from COVID-19 to stick in the long-term. In contrast, policymakers will likely need to intervene to stop less sustainable ones from sticking – like the loss of trust in the sharing economy or public transport. Behavioural insights can guide policymakers' interventions to stick or "un-stick" said behaviours. This paper concentrates on four types of behavioural interventions (only a subset of what is possible) that can be used as a basis for policy-making. The first three

⁴ Making a food-shopping list is considered an effective tool to prevent purchasing surplus foods (Geffen et al., 2016^[50]).

recommendations pertain to encouraging the formation of sustainable habits at the individual level, while the last recommendation pertains to leveraging norms to support these habits.

1. **Alter the physical conditions to facilitate behavioural stickiness:** The availability or physical presentation of a choice influences an individual's choice architecture – which, in turn, alters behaviour (Thaler and Sunstein, 2009^[9]). For example, legally requiring that sanitiser should be available upon entering a shop will, on average, increase the number of individuals that walk past the physical intervention and use the sanitiser.
2. **Provide incentives and reward-schemes for sustainable behaviours:** A behaviour (or *routine*) can be altered by changing the *reward* mechanism (Duhigg, 2012^[6]), as discussed in Box 1. This could be in the form of economic incentives, such as subsidies, cash-back schemes, or even tax exemptions. For example, since 2019, the City of Paris has been offering a 500 euros premium for electric bicycle purchases.
3. **Alter the framing of information to influence individual choices:** Evidence shows that providing more information *per se* tends to be an ineffective way of influencing individual behaviour (Kollmuss and Agyeman, 2002^[54]). However, the way information is presented plays a pivotal role in behavioural change. Framing information in a certain way activates certain values and attitudes (for example, by leveraging social norms) and shapes the way in which an individual processes information (see Box 1).
4. **Shape and alter social and cultural norms:** Individuals' desire to fit in their social environment plays a crucial role in the way rules and behaviours are perceived. In fact, as individuals identify behaviours as socially-acceptable or socially-desirable, they tend to adapt and pick them up more quickly, in order to comply with social norms. For example, when surrounded by a group that uses the bicycle to commute to work, an individual is likely to prefer to commute by bicycle too.

Urban passenger mobility

The analysis above identified three main policy targets: maintaining habits which lower the overall demand for passenger transport, steering transport choices towards low-carbon modes, and ensuring the “stickiness” of both trends. In general, for measures that encourage the use of virtuous mobility alternatives to be effective, the latter needs to respond to both *pre-existing* drivers of individual mobility behaviour (e.g. commuting times, cost, safety), and *new* concerns emerging as a result of the pandemic (e.g. perceived risk of contagion, aversion to high-density spaces).

Alter the physical conditions to facilitate behavioural stickiness.

- Addressing safety and accessibility concerns poses a major obstacle to a larger uptake of cycling, walking, and other forms of micromobility. This suggests the need to rethink urban infrastructure planning. Several cities in the OECD area (e.g. Paris, London, Bogotá, New York, Milan, and Barcelona) have implemented infrastructure measures to encourage the broader uptake of cycling and walking, with the two-fold objective of easing occupancy on public transport and capitalising on the environmental and public health gains associated with cycling and walking (e.g. improved air quality, benefits for human health of physical activity, lower risk of contagion). The introduction of pedestrian-only areas and safe crossing points, improved maintenance of footpaths, and the re-allocation of space previously granted to cars can lead to further reductions in vehicle traffic. Beyond infrastructure, regulatory measures such as the introduction and enforcement of speed limits can improve safety, while also reducing air pollution, GHG emissions, and optimising the use of road space. Milan, for instance, strengthened speed limits to increase cyclists' safety, in addition to converting some streets to cycling and pedestrian-priority.

- Providing tools and skills, such as road safety courses and cycling training (e.g. training schemes for children, city-sponsored on-the-road group cycling training for adults) can overcome entry barriers for new cyclists related to lack of skill or confidence.
- In the context of the COVID pandemic, supporting the public transport system will form an important part of policy responses to the crisis. While encouraging active modes of transport (including via financial support), governments also need to ensure that people have viable transport alternatives to driving, especially in suburban areas. The regular running of buses, underground, and train lines, supported by information provision on health measures, can prevent that people will turn to driving.

Provide incentives and reward-schemes for sustainable behaviours.

- At a time when people are reconsidering their mobility habits in light of the pandemic, economic incentives can be particularly effective to overcome entry-barriers, steer modal shifts, and ensure that the changed behaviour “sticks”. These can take the form of subsidies or purchase premiums for low-emission vehicles or bicycles, reduced tax rates for desired transport modes, or free try-out schemes for bike-sharing programs. For example, several French authorities offer discount schemes for the purchase of new bikes (e.g. e-bikes and cargo bikes) or provide discounted long-term bike rental schemes (e.g. Veligo, Velomag) to help citizens overcome the price entry-barrier,. These measures have been expanded during the COVID-19 pandemic and complemented by a subsidy for bike repair.
- Fiscal incentives which currently encourage long distance, single-person vehicle commuting should be reviewed. These include for instance the provision of tax-free company cars and income tax rebates for driving expenses.
- In addition, further integrating active modes of transport into urban mobility networks, for instance via integrating bike sharing into public transport passes, can foster multi-modal transport, reduce transport costs for the individual, and encourage the uptake of active modes in the long term.

Alter the framing so as to influence people’s short-term mobility responses to the crisis.

- Changing the choice architecture or default options can also influence a shift in transport modes. For instance, including suggestions for active forms of transport in route planning apps, providing information on the economic and environmental costs of mobility options, or presenting them as the default option, can change how people perceive the range of alternatives at their disposal and can render active modes of transport more appealing (Avineri, 2012^[55]).
- The provision of salient information related to elements which tend to affect people’s decisions (e.g. costs, accessibility, environmental and health benefits or impacts) can help encourage environmentally virtuous mobility choices. In the mobility context, persuasive prompts can include, for instance, easy-to-read information on the average time lost in road traffic congestion while commuting, on the potential economic savings of driving less, or the presentation of active modes of transport as win-win solutions in terms of resiliency, health, and environmental benefits. In the context of the COVID-19 crisis, information measures can emphasise on the additional health benefits of active mode of transport relative to single-person vehicle transport, whilst keeping risk of contagion to equally low levels. Additionally, policy-makers can help re-establishing people’s trust in using public transport, by being transparent about the hygiene measures taken.

Shape and alter social and cultural norms.

- Altering the perception of social and cultural norms can potentially go a long way in influencing people’s mobility choices. Generally, mobility preferences are primarily driven by habits and socially conditioned values, rather than knowledge and careful analysis of costs and benefits (Verplanken, Aarts and Van Knippenberg, 1998^[56]). For instance, people may be aware of the fact that private cars are polluting and expensive to maintain and fuel, but may still be more inclined to

purchase them and drive around because it is common norm to do so or because they consider a car as a status symbol among peers.

- Measures aimed at steering public perception towards a higher concern for environmental values can influence people's perception of sustainable transport alternatives. Social norms can affect the underlying values and “emotions” which drive people's decisions, and leverage the potential of information-provision strategies encouraging sustainable mobility choices. In particular, as the current pandemic has highlighted links between air pollution and vulnerability to COVID-19 (BBC, 2020^[57]), the benefits of sustainable mobility habits may resonate more than usual. Particularly in the context of the COVID-19 pandemic and the associated environmental messages (e.g. higher vulnerability due to air pollution), people may be more receptive to sustainability values.
- Video-conferencing and teleworking practices have experienced a major boost in the wake of COVID-19 and substantially lowered demand for passenger transport and flattened transport peaks during rush-hour. Anchoring these practices in social and corporate norms and behaviour can lower or spread demand for urban mobility also in the long-term and possibly also lead to significant reduction in GHG emission through reduced business air travel. Additionally, the establishment of social support and the creation of positive social reinforcements and cues can create and strengthen a “cycling or walking culture”. For instance, cycling ambassadors can serve as role models to spur behavioural change among target groups (e.g. neighbourhoods with cycling infrastructure, youth). Social initiatives can establish long-lasting networks, such as walking and cycling groups, and promote the uptake of safety measures (e.g. use of helmets). Cycling events and celebrations can reinforce the prominence of a cycling culture, possibly including physical prompts (e.g. water bottles and bicycle accessories) and further increase the visibility of role models (Savan, Cohlmeier and Ledsham, 2017^[58]).

The sharing economy

In the wake of the COVID crisis, the sharing economy faces a trust deficit. This, together with lingering risk-averse behaviour and the resulting aversion towards engaging with strangers, may lead to longer-lasting implications for peer-to-peer sharing. Social trust is key for the sharing economy to work; thus, policy makers, as well as firms, need to revive individuals' confidence to continue engaging in such activities.

Alter the physical conditions to facilitate behavioural stickiness. Successful policies could aim at ensuring that existing regulatory frameworks (i) are coherent and fit for purpose, (ii) do not serve to preserve the existing status quo, and (iii) allow for the development and broader use of innovative sharing economy business models.

Provide incentives and reward-schemes. It is important to level the playing field between sharing models and non-sharing options both under a regulatory and fiscal perspective. For instance, reducing environmentally-harmful subsidies for cars or oil can incentivise the uptake of more resource efficient sharing options.

Alter the framing of information to influence individual choices. The risk of infection may be perceived higher in peer-to-peer sharing services, whereas infection risk may in fact be just as high in non-sharing alternatives. For instance, Airbnb and hotel stays are likely to be subject to a similar level of risk, as long as hygiene standards are met. Clear communication on measures taken (by firms and governments) to mitigate risks in sharing activities, together with transparency on hygiene standards, could contribute to re-establishing trust.

Shape and alter social and cultural norms. Anecdotal evidence suggests that the crisis response triggered a resurgence of community-led activities in many countries around the world. Communities have been coming together to help vulnerable individuals to meet their needs. Governments can harness this

“community spirit” and anchor it in social and cultural norms, which would promote peer-to-peer sharing and the collaborative economy. In addition, green public procurement promoting the use of shared assets or actively sharing public assets can increase their demand and strengthen norms around engaging in sharing activities.

Household food waste

Beyond the COVID-19 context, existing literature suggests that it is difficult to motivate households to actively reduce their food waste levels, primarily as the prevention of food waste is characterised by limited direct personal benefits other than acting upon moral principles (van Geffen, van Herpen and van Trijp, 2019^[59]). Previous studies have found a positive relationship between household income and the amount of food wasted, which shows that especially for high-income households the perceived economic savings resulting from reduced food waste might not be sufficient to generate a shift in behaviours and habits in the longer term (OECD, 2017^[60]).

As lockdown measures are lifted, it is also unclear whether the generation of household food waste will bounce back or stay low. Evidence from Greece indicates that the economic recession of the last decade has increased consumers’ consciousness of their spending, shifting behaviour towards long-lasting improved food management (Abeliotis, Lasaridi and Chroni, 2014^[61]). However, a similar study carried out in Italy reveals that the 2008 economic crisis has had little or no long-term impact on the amounts of food wasted by households (Fanelli and Di Florio, 2016^[62]). A number of cultural factors may thus affect the stickiness of behaviours. Encouragingly, the three surveys presented in the food waste case study above indicate an intention to maintain the newly adopted behaviours related to food waste in the longer term. Appropriate “nudging” measures can help to prompt and nourish the maintenance of such virtuous behaviours and change the choice architecture surrounding the issue.

Provide incentives and reward-schemes for sustainable behaviours. Economic incentives can prove to be an effective instrument to shift individual behaviour in the context of food waste. An example is South Korea’s “pay as you throw” (PAYT) scheme, whereby households pay a waste collection fee proportionate to the amounts of waste produced, which incentivises households to produce lower volumes of waste. The implementation of a said scheme has resulted in a significant reduction in food waste per household. Several municipalities across Europe and the United States have also adopted different forms of PAYT systems with preliminary results suggesting positive results towards waste reduction (US EPA, 2016^[63]; European Commission, 2016^[64]).

Alter the framing of information to influence individual choices. Information related to the expiry date of grocery products or concerning the environmental and economic footprint of food can also influence households’ behaviour towards reducing food waste. Clear communication around ‘best before’ and ‘use by’ dates can avoid food being thrown out before the due date. In addition, a better understanding of the scale of the food waste issue (e.g. through environmental footprint labels) may also lead to improved awareness and more virtuous behaviours. Such labelling efforts could also be supported by communication campaigns. For example, the Danish Government has launched a national campaign educating consumers about best-before and use-by labels (Møller et al., 2015^[65]).

Shape and alter social and cultural norms. Displaying virtuous behaviours and highlighting the benefits that derive from saving food can also be effective tools to reduce food waste. Besides raising awareness on the consequences of food waste, it is important to promote messages and campaigns aimed at improving the valuing of food and fostering a social culture that is averse to waste. This can be done by promoting the re-use of leftovers in meal preparation (e.g. by creating special cookbooks), donating unused food, or campaigns that demonstrate how to re-employ leftovers and discarded ingredients in new recipes. For example, a campaign launched in 2007 by the British Government provided practical advice on meal planning, tips for appropriate food storage and recipes for cooking with leftovers. In two years, the campaign helped preventing over 130 thousand tonnes of wasted food across 1.8 million UK households

(WRAP, 2009^[66]). The adoption of legislation that facilitates or even promotes food donations among households, as well as the development and use of apps and platforms for these purposes, such as Olio in the United Kingdom, could also help promote these behaviours. Where food donation among individuals may raise public health and food safety concerns, these could be addressed by requiring that the packaging of the product to be donated is intact.

Conclusions on behavioural changes and insights on role of the youth

Given the immediacy and severity of both the health and environmental crises, it is fundamental to develop policy solutions that address both issues simultaneously (Gurría, 2020^[2]). This paper offers a set of possible interventions for policymakers to either foster or revert the behavioural changes that emerged during the peak of the COVID-19 pandemic – with a particular focus on urban mobility, the sharing economy, and food waste. These interventions would be beneficial for the climate as they help lay the groundwork for systemic change needed to stay well-below the 2°C goal set by the Paris Agreement (UNFCCC, 2015^[67]; IPCC, 2018^[1]). Furthermore, they would also be key to address other environmental challenges such as air pollution.

Younger generations, in particular, hold a vast potential for behavioural change and can potentially guide the world towards lifestyles consistent with climate and environmental objectives, and perhaps, eventually change the norms and habits of our society. On the one hand, adolescents are more open to change and open to adopt different lifestyles than established norms suggest. For example, the car-ownership among young professionals are substantially lower than in previous generations, instead opting for multi-modality and more sustainable modes (UK Government Office for Science, 2019^[68]). Young people are also more likely to engage in innovative sharing business models, accounting for almost half of the users of on-demand sharing services (Barua and Hogan, 2018^[69]). On the other hand, younger generations tend to hold more pro-environmental beliefs as evident by the recent “Fridays for Future” movement and the strong demand by Generation Z for environmental action. All of this will contribute to the systemic change needed in our societies to succeed in the low-carbon transition and stop environmental degradation.

Harnessing the potential for green behavioural change in younger generations along with the rest of society will be pertinent in decades that follow. The disruption of COVID-19 provides an opportunity to change the status quo, and policymakers should seize this by drawing on behavioural insights to guide their policies.

References

- Abeliotis, K., K. Lasaridi and C. Chroni (2014), “Attitudes and behaviour of Greek households regarding food waste prevention”, *Waste Management & Research*, Vol. 32/3, pp. 237-240, <http://dx.doi.org/10.1177/0734242x14521681>. [61]
- Altroconsumo (2020), *Coronavirus e alimentazione: meno spreco, più cucina e attenzione ai prezzi* | Altroconsumo, <https://www.altroconsumo.it/alimentazione/fare-la-spesa/news/coronavirus-cambiano-consumi-e-spesa> (accessed on 5 June 2020). [51]
- Amato, F. et al. (2020 (forthcoming)), “Non-exhaust emissions from road transport”, *OECD Environment Working Papers*, OECD Publishing, Paris. [16]
- Aschemann-Witzel, J. et al. (2015), “Consumer-Related Food Waste: Causes and Potential for Action”, *Sustainability*, Vol. 7/6, pp. 6457-6477, <http://dx.doi.org/10.3390/su7066457>. [46]

- Avineri, E. (2012), "On the use and potential of behavioural economics from the perspective of transport and climate change.", *Journal of Transport Geography*, Vol. 24, pp. 512-521. [55]
- Barua, A. and S. Hogan (2018), *What weighs on millennials' minds ... and wallets? Understanding how behavioral factors may be influencing millennials' lifestyle choices*, Deloitte Insights, https://www2.deloitte.com/content/dam/insights/us/articles/3850_BE-What-weighs-on-millennials/DI_BE-What-weighs-on-millennials.pdf (accessed on 5 June 2020). [69]
- BBC (2020), *How air pollution exacerbates Covid-19*, <https://www.bbc.com/future/article/20200427-how-air-pollution-exacerbates-covid-19> (accessed on 15 July 2020). [57]
- Becker, H. et al. (2020), "Assessing the welfare impacts of Shared Mobility and Mobility as a Service (MaaS)", *Transportation Research Part A: Policy and Practice*, Vol. 131, pp. 228-243, <http://dx.doi.org/10.1016/j.tra.2019.09.027>. [30]
- Bloomberg (2020), *Transport for London to Place a Quarter of Its Staff on Furlough*, <https://www.bloomberg.com/news/articles/2020-04-24/transport-for-london-to-place-a-quarter-of-its-staff-on-furlough>. [19]
- Breteau, P. (2020), *Déconfinement : la forte hausse du trafic cyclable à Paris en 2020 en trois graphiques*, https://www.lemonde.fr/les-decodeurs/article/2020/05/28/deconfinement-la-forte-hausse-du-traffic-cyclable-a-paris-en-2020-en-trois-graphiques_6041056_4355770.html (accessed on 5 June 2020). [24]
- Carrus, G., P. Passafaro and M. Bonnes (2008), "Emotions, habits and rational choices in ecological behaviours: The case of recycling and use of public transportation", *Journal of Environmental Psychology*, Vol. 28/1, pp. 51-62, <http://dx.doi.org/10.1016/j.jenvp.2007.09.003>. [5]
- Chen, G. et al. (2020), *COVID-19 pandemic exposes the vulnerability of the sharing economy*, Research Square, <http://dx.doi.org/10.21203/rs.3.rs-26460/v1>. [38]
- Cleantech Group (2014), *New Study Reveals A Greener Way to Travel: Airbnb Community Shows Environmental Benefits of Home Sharing - Airbnb*, <https://www.airbnb.com/press/news/new-study-reveals-a-greener-way-to-travel-airbnb-community-shows-environmental-benefits-of-home-sharing> (accessed on 2 June 2020). [28]
- Constantiou, I., A. Marton and V. Tuunainen (2017), "Four Models of Sharing Economy Platforms", *MIS Quarterly Executive*, Vol. 16. [40]
- Dolnicar, S. (ed.) (2017), *Peer-to-Peer Accommodation Networks*, Goodfellow Publishers, <http://dx.doi.org/10.23912/9781911396512-3454>. [29]
- Duhigg, C. (2012), *The Power of Habit: Why we do what we do in life and business*, Random House. [6]
- Euronews (2020), "Coronavirus: Half of humanity now on lockdown as 90 countries call for confinement", *Euronews*, <https://www.euronews.com/2020/04/02/coronavirus-in-europe-spain-s-death-toll-hits-10-000-after-record-950-new-deaths-in-24-hou>. [3]
- European Commission (2020), *A European Strategy for low-emission mobility*, https://ec.europa.eu/clima/policies/transport_en#tab-0-0 (accessed on 5 June 2020). [14]

- European Commission (2019), *Recommendations for Action in Food Waste Prevention Developed by the EU Platform on Food Losses and Food Waste*, EU Platform on Food Losses and Food Waste, <https://eplca.jrc.ec.europa.eu/FoodSystem.html> (accessed on 5 June 2020). [45]
- European Commission (2016), *LIFE PAYT - PAYT - Tool to Reduce Waste in South Europe*, https://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5784 (accessed on 5 June 2020). [64]
- European Environment Agency (2020), *Air quality and COVID-19*, <https://www.eea.europa.eu/themes/air/air-quality-and-covid19/air-quality-and-covid19> (accessed on 5 June 2020). [21]
- Fanelli, R. and A. Di Florio (2016), “Domestic food waste, gap in times of crisis 1”, *Rivista di Economia Agraria*, Vol. Anno LXXI/2, pp. 111-125, <http://dx.doi.org/10.13128/REA-20075>. [62]
- FAO (2019), *Food Security and Nutrition in the World*, Food and Agriculture Organisation of the United Nations, <http://www.fao.org/publications/sofi/en/> (accessed on 5 June 2020). [41]
- FAO (2014), *Food Wastage Footprint: Fool cost-accounting*, Food and Agriculture Organisation of the United Nations, [http://dx.doi.org/ISBN 978-92-5-107752-8](http://dx.doi.org/ISBN%20978-92-5-107752-8). [43]
- FAO (2011), *Global food losses and food waste*, Food and Agriculture Organisation of the United Nations, Rome. [44]
- Farr-Wharton, G., M. Foth and J. Choi (2014), “Identifying factors that promote consumer behaviours causing expired domestic food waste”, *Journal of Consumer Behaviour*, Vol. 13/6, pp. 393-402, <http://dx.doi.org/10.1002/cb.1488>. [47]
- Friedman, L. (2020), *New Research Links Air Pollution to Higher Coronavirus Death Rates*, The New York Times, <https://www.nytimes.com/2020/04/07/climate/air-pollution-coronavirus-covid.html> (accessed on 5 June 2020). [18]
- Geffen, E. et al. (2016), *National, qualitative insight on household & catering food waste*, Wageningen University and Research. [50]
- Gurría, A. (2020), *An inclusive, green recovery is possible: The time to act is now*, OECD, Paris, <http://oecd.org/coronavirus/en/>. [2]
- He, Y. (2000), “Measurements of N₂O and CH₄ from the aerated composting of food waste”, *The Science of The Total Environment*, Vol. 254/1, pp. 65-74, [http://dx.doi.org/10.1016/S0048-9697\(00\)00439-3](http://dx.doi.org/10.1016/S0048-9697(00)00439-3). [70]
- Huber, R., B. Anderson and T. Bernauer (2018), “Can social norm interventions promote voluntary pro environmental action?”, *Environmental Science and Policy*, Vol. 89, <http://dx.doi.org/10.1016/j.envsci.2018.07.016>. [8]
- IBM (2020), *IBM Study: COVID-19 Is Significantly Altering U.S. Consumer Behavior and Plans Post-Crisis*, <https://newsroom.ibm.com/2020-05-01-IBM-Study-COVID-19-Is-Significantly-Altering-U-S-Consumer-Behavior-and-Plans-Post-Crisis> (accessed on 1 June 2020). [23]
- IEA (2020), *Changes in transport behaviour during the Covid-19 crisis*, <https://www.iea.org/articles/changes-in-transport-behaviour-during-the-covid-19-crisis> (accessed on 5 June 2020). [22]

- IPCC (2019), *Special Report on Climate Change and Land*, Intergovernmental Panel on Climate Change, <https://www.ipcc.ch/srccl/> (accessed on 5 June 2020). [42]
- IPCC (2018), *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*, IPCC, <http://dx.doi.org/ipcc-2018-1.5-5062019>. [1]
- ITF (2019), *ITF Transport Outlook 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/transp_outlook-en-2019-en. [13]
- Jribi, S. et al. (2020), “COVID-19 virus outbreak lockdown: What impacts on household food wastage?”, *Environment, Development and Sustainability*, Vol. 22/5, pp. 3939-3955, <http://dx.doi.org/10.1007/s10668-020-00740-y>. [53]
- Kahneman, D. (2013), *Thinking, Fast and Slow*, FSG Adult. [10]
- Kollmuss, A. and J. Agyeman (2002), “Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior?”, *Environmental Education Research*, Vol. 8/3, pp. 239-260, <http://dx.doi.org/10.1080/13504620220145401>. [54]
- Kong, Y. et al. (2020), “In Sharing Economy We Trust: Examining the Effect of Social and Technical Enablers on Millennials’ Trust in Sharing Commerce”, *Computers in Human Behavior*, Vol. 108, p. 105993, <http://dx.doi.org/10.1016/j.chb.2019.04.017>. [32]
- Le Monde (2020), *Paris, capitale européenne où le retour de la pollution de l'air a été le plus brutal*, https://www.lemonde.fr/planete/article/2020/06/24/paris-est-la-capitale-europeenne-ou-la-pollution-de-l-air-a-le-plus-rebondi-avec-le-deconfinement_6043946_3244.html. [71]
- Le Quéré, C. et al. (2020), “Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement”, *Nature Climate Change*, <http://dx.doi.org/10.1038/s41558-020-0797-x>. [20]
- Lock, S. (2020), *COVID-19: year-on-year change in global Airbnb bookings by week Q1 2020*, Statista, <https://www.statista.com/statistics/1114065/airbnb-reservations-coronavirus/> (accessed on 1 June 2020). [37]
- Möhlmann, M. and A. Geissinger (2018), “Trust in the Sharing Economy: Platform-Mediated Peer Trust”. [33]
- Møller, H. et al. (2015), *Date labelling in the Nordic countries*, Norden. [65]
- Nyborg et al. (2017), “Social norms as solutions”, *Science*, Vol. 354(6308), pp. 42-43. [12]
- Nyborg, K. et al. (2016), “Social norms as solutions”, *Science*, Vol. 354/6308, <http://dx.doi.org/10.1126/science.aaf8317>. [11]
- OECD (2019), *Business Models for the Circular Economy: Opportunities and Challenges for Policy*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/g2g9dd62-en>. [27]
- OECD (2019), *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264307452-en>. [26]

- OECD (2017), *Tackling Environmental Problems with the Help of Behavioural Insights*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264273887-en>. [60]
- OECD (2016), *The Economic Consequences of Outdoor Air Pollution*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264257474-en>. [15]
- Principato, L. (2018), *Food waste at consumer level: A comprehensive literature review*, <http://dx.doi.org/10.1007/978-3-319-78887-6>. [48]
- Rana, P. (2020), *Uber Cuts 3,000 More Jobs, Shuts 45 Offices in Coronavirus Crunch*, The Wall Street Journal, <https://www.wsj.com/articles/uber-cuts-3-000-more-jobs-shuts-45-offices-in-coronavirus-crunch-11589814608?mod=breakingnews> (accessed on 1 June 2020). [34]
- Restorick, T. (2020), *How has Covid-19 changed our eating habits? | Hubbub Foundation*, <https://www.hubbub.org.uk/blog/how-has-covid-19-changed-our-eating-habits> (accessed on 5 June 2020). [52]
- Santos, G. (2018), "Sustainability and Shared Mobility Models", *Sustainability*, Vol. 10/9, p. 3194, <http://dx.doi.org/10.3390/su10093194>. [31]
- Savan, B., E. Cohlmeier and T. Ledsham (2017), "Integrated strategies to accelerate the adoption of cycling for transportation", *Transportation Research Part F: Traffic Psychology and Behaviour*, Vol. 46, pp. 236-249, <http://dx.doi.org/10.1016/j.trf.2017.03.002>. [58]
- Southerton, D. (2013), "Habits, routines and temporalities of consumption: From individual behaviours to the reproduction of everyday practices", *Time & Society*, Vol. 22/3, pp. 335-355, <http://dx.doi.org/10.1177/0961463X12464228>. [4]
- Stancu, V., P. Haugaard and L. Lähteenmäki (2016), "Determinants of consumer food waste behaviour: Two routes to food waste", *Appetite*, Vol. 96, pp. 7-17, <http://dx.doi.org/10.1016/j.appet.2015.08.025>. [49]
- Statista (2020), *Impact of COVID-19 on sharing economy services usage in the U.S. 2020*, <https://www.statista.com/statistics/1110632/sharing-economy-services-united-states-covid19/> (accessed on 1 June 2020). [39]
- Tankard, M. and E. Paluck (2016), "Norm Perception as a Vehicle for Social Change", *Social Issues and Policy Review*, Vol. 10/1, pp. 181-211, <http://dx.doi.org/10.1111/sjpr.12022>. [7]
- Thaler, R. and C. Sunstein (2009), *Nudge: Improving Decisions About Health, Wealth, and Happiness*, Penguin Books. [9]
- Thompson, S. et al. (2011), *'Moments of change' as opportunities for influencing behaviour*. [25]
- Uber (2020), *Coronavirus (COVID-19) Resources & Updates*, <https://www.uber.com/fr/en/coronavirus/> (accessed on 1 June 2020). [35]
- UK Government Office for Science (2019), *Future of Mobility*. [68]
- UNFCCC (2015), *Paris Agreement*, UNFCCC Secretariat, Bonn, https://unfccc.int/sites/default/files/english_paris_agreement.pdf (accessed on 8 February 2019). [67]
- US EPA (2016), *2006 State Programs | Pay-As-You-Throw*, OSWER, Office of Resource Conservation and Recovery. [63]

- van Geffen, L., E. van Herpen and H. van Trijp (2019), "Household Food Waste—How to Avoid It? An Integrative Review", in *Food Waste Management*, Springer International Publishing, Cham, http://dx.doi.org/10.1007/978-3-030-20561-4_2. [59]
- Verplanken, B., H. Aarts and A. Van Knippenberg (1998), "Habit, information acquisition, and the process of making travel mode choices", *European Journal of Social Psychology*, [https://doi.org/10.1002/\(SICI\)1099-0992\(199709/10\)27:5%3C539::AID-EJSP831%3E3.0.CO;2-A](https://doi.org/10.1002/(SICI)1099-0992(199709/10)27:5%3C539::AID-EJSP831%3E3.0.CO;2-A). [56]
- Wei, T. (2020), *Carpooling now illegal amid COVID-19 outbreak*, <https://www.stcars.sg/guides-articles/carpooling-now-illegal-amid-covid-19-outbreak-148893> (accessed on 1 June 2020). [36]
- WHO (n.d.), *Global Health Observatory (GHO) data*, https://www.who.int/gho/phe/outdoor_air_pollution/burden_text/en/. [17]
- WRAP (2009), *Love Food, Hate Waste (United Kingdom)*. [66]

Carbon pricing for households: addressing inequalities through a credit system

Antoine Bonnet
16 July 2020

The COVID pandemic represents an opportunity to better take into account seemingly remote threats, including climate change. Carbon pricing, possibly the most effective tool in addressing GHG emissions, poses unique political economy and ethical challenges as it may harm lower-income households, which are disproportionately harmed by the pandemic, as well as by pre-existing trends such as automation. This brief presents a novel approach combining carbon pricing to a credit system, which constitutes an opportunity to tackle household-level GHG emissions, while reducing inequalities.

Five years ago, Bill Gates famously warned in a Ted Talk speech that the world was “not ready for the next epidemic. The greatest risk of global catastrophe looks [like a virus]. Not missiles, but microbes,” he said⁵. This prediction, as we all now know very well, came true with the COVID-19 pandemic, which has caused almost 400 000 confirmed deaths worldwide⁶ as of June 5, 2020 and is forecasted to produce a cumulative GDP loss of USD 9 trillion over 2020 and 2021 (IMF, 2020).

Just like the prospect of a global epidemic only a year ago, climate change has long appeared as a remote threat. The current crisis offers an opportunity to change this paradigm by pushing us to collectively tackle such seemingly remote threats. COVID-19 also has a direct relationship with climate change, as pandemic risk appears to be aggravated by phenomena which also contribute to climate change. In particular, land-

⁵ https://www.ted.com/talks/bill_gates_the_next_outbreak_we_re_not_ready

⁶ Source: John Hopkins University

use change, namely aimed at agriculture expansion, bring more people into contact with potentially novel pathogens (OECD, 2020). Land use change is also an important contributor to (net) GHG emissions (IPCC, 2014). Similarly, acute COVID-19 forms appear to be worsened by high levels of fine particulate matter (Wu et al., 2020), the sources of which also emit GHGs.

Just like the prospect of a global epidemic only a year ago, climate change has long appeared as a remote threat. The current crisis offers an opportunity to change this paradigm by pushing us to collectively tackle such seemingly remote threats.

Carbon pricing is considered the most effective means to promote low-carbon growth. However, imposing such a scheme to direct household emissions poses unique political economy challenges. The brief aims at tackling specifically direct household emissions, that is fuel consumed through personal transportation and heating⁷. In order to ensure broad support for this policy, it is crucial to take into consideration redistributive effects. This brief presents a novel proposal for pricing household carbon emissions, by linking it to a carbon credit system. In short, carbon credits are allocated to each household. If the household emits, though its direct consumption of fuel for transport and heating, less than its allocated credit, the household receives a subsidy. If the household wishes to emit more than its credit allocation, it must pay a tax.

This brief shows that it is possible to design a system, which:

- Effectively tackles GHG externalities
- Reduces inequalities
- Allows most households to be on the “winning” side (they receive subsidies instead of paying a tax)
- Is budget neutral

Context

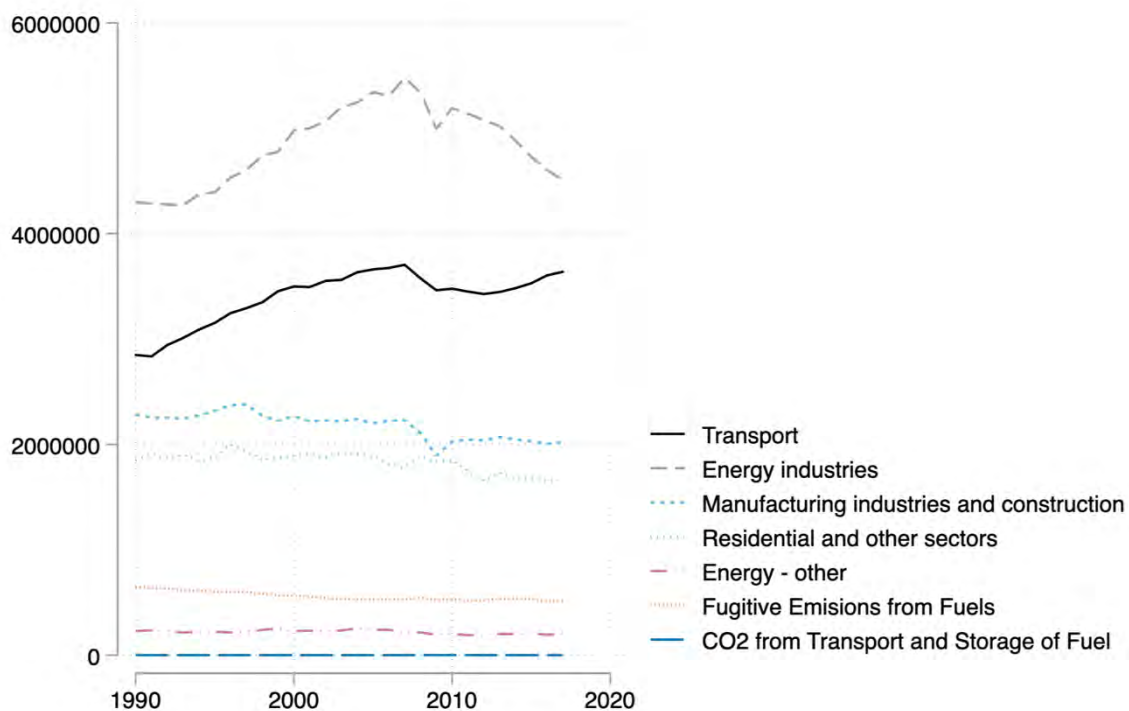
Business as usual GHG emissions trajectories are likely to produce significant GDP losses, with central scenarios projecting a degradation of total global output of about 4% by 2100 (Nordhaus, 2018), and some estimates being as high as 20 %, with much larger potential losses for some countries (Burke et al., 2015), as well as long-tail risks which are difficult to precisely assess (IMF, 2019).

In order to tackle GHG emissions, carbon pricing is considered the most effective policy (OECD, 2018, IMF, 2019). However, it also poses clear challenges as carbon pricing may have undesirable redistributive consequences and is met with opposition from economic and social groups which would be negatively affected. Incentivizing households to lower their direct emissions is however necessary. Emissions from transport, largely related to personal vehicles, have increased in the last decades in OECD countries (Figure 1). In recent years direct household emissions have come to represent a significant share of total emissions, ranging typically from 10 to 30 percent for the countries presented in Figure 2. Interestingly, it is in France and Switzerland, countries that have a relatively small carbon footprint (partly because of the

⁷ There is typically also a category for household emissions other than related residential heating and transport, but those will not be covered here.

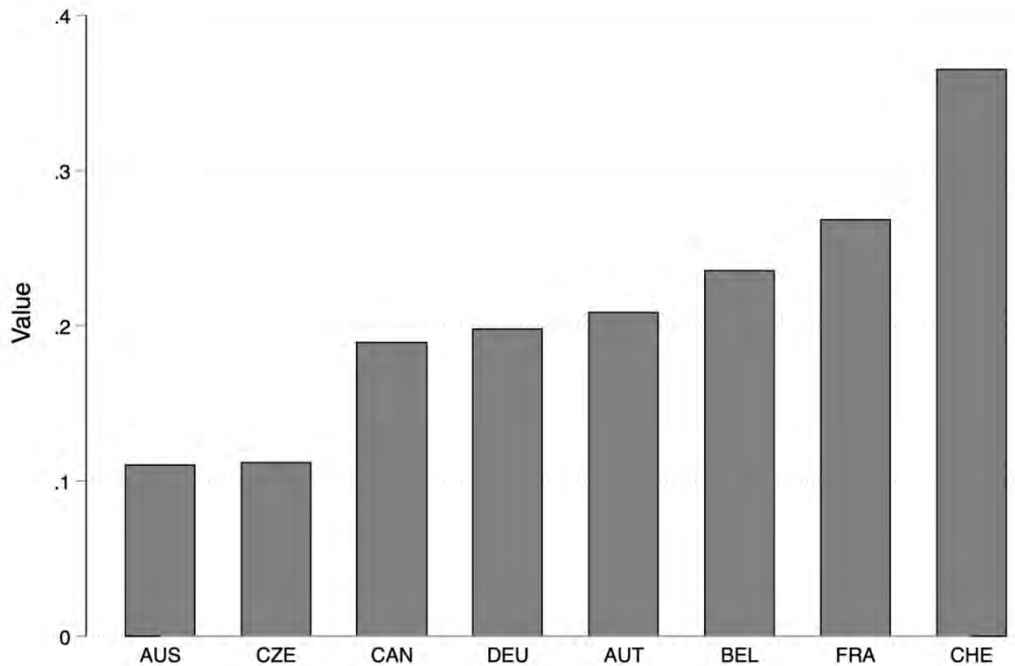
share in their respective energy sources of nuclear power for the former, and hydro for the latter). Therefore, tackling household emissions can be seen as “the necessary next step” for economies, which have already relatively low GHG emissions.

Figure 1: Emissions by source in OECD countries, tonnes of CO2 equivalent, thousands



Source: OECD.Stat

Figure 2: Direct GHG household emissions as share of total in select OECD countries, 2012-2018 average



Source: author's calculations based on OECD.Stat

Political economy and ethical challenges are however particularly stark when it comes to imposing carbon prices directly on household emissions. If implemented in its basic form (an increase in the price of goods and services according to related GHG emissions), carbon pricing translates into lower real incomes, which might be untenable for lower-income households. It is indeed well documented that the COVID pandemic and the related “great lock-down” affects lower income households disproportionately (OECD, 2020). Moreover, particularly in developed countries, lower-income households were already negatively affected by trends like automation (Autor et al., 2015) and trade competition (Autor et al., 2016). In other words, in its basic form, a carbon pricing scheme may exacerbate the effects of (within-country) inequality, which would be politically and ethically inadmissible.

Desirable properties of a carbon pricing scheme

A carbon pricing scheme should ideally have the following characteristics:

Policy objectives: GHG emissions reduction and equality

The carbon pricing scheme should of course effectively decrease GHG emissions, and, as discussed, be designed in such way that it would allow for a decrease (or at least avoid an increase) in inequalities and their consequences.

Political economy constraints

Ideally, the scheme should represent a gain, in economic terms, for the majority of the population and, crucially, be trusted to do so, in order to ensure broad support.

Ensuring a large enough number of winners

Taking into account distributional effects does not necessarily in itself ensure political acceptability. Even in a hypothetical scenario, where the income distribution would remain the same before and after the introduction of carbon pricing, there might be strong opposition against the policy if said policy produced many “losers”: households who would be negatively impacted by the policy. From this perspective, one can draw a comparison with the literature on global income distribution. According to Lakner and Milanovic (2013), since the 1990s, global inequalities have decreased⁸. At the same time, they also point out that there “loser” groups, mostly concentrated in the former Soviet Union, as well as to some extent in Japan. When designing a carbon pricing policy, a reduction in inequalities is not enough: the policy maker must limit the effect on the loser group, thus preventing any political backlash.

Creating trust: the case for public finance neutrality

A carbon pricing scheme used to feed into the general budget might create distrust. There is a potential agency problem between voters and the state in that the principal (the voters) cannot perfectly observe and control the behaviour of the agent (the state). As a consequence, voters might oppose the proposal all together. Therefore, enshrining the principle of public finance neutrality by law might reassure the voters.

Other desirable properties

Besides the efficiency/equality objective and political constraints, the carbon scheme should also avoid being subject to fraud.

Fraud proof

Of course, any mechanism that is subject to fraud should be avoided. As this brief will discuss, a carbon pricing scheme might satisfy objectives of efficiency and equality but create high incentives for the creation of a “carbon black market”. The proposal explicitly aims at ensuring efficiency/equality, while avoiding such perverse incentives.

Stable carbon price

The IMF (2019) has stressed the importance of providing carbon pricing stability and predictability. This dimension is worth stressing, as some hypothetical alternatives to this proposal may not provide these features.

The proposal

This policy proposal describes the scope of the carbon pricing scheme, the general pricing mechanism and specifics about its application.

Scope

While large firms are typically impacted by the Emissions Trading Scheme, household direct GHG emissions remains an area without comprehensive carbon pricing. Therefore, **this proposal focuses on fuel consumed through personal transportation and heating.**

⁸ This is of course contested by Alvaredo et al (2018) and is merely used here for illustration.

Mechanism

Efficiency through a single price applying to all households, at all level of GHG emissions

The price of carbon is set, for example, at USD 70/ton, as recommended by the IMF (2019). As discussed, a carbon tax “needs to be imposed on top of these taxes because existing taxes are embedded in BAU fuel use projections and may be addressing non-carbon externalities and fiscal needs”. An alternative to setting a price, would be to set a quantity (say a cap to the maximum the households can jointly emit), and let the price be formed endogenously. While potentially theoretically equivalent, price predictability is seen as a desirable property of a carbon pricing system, as discussed above (IMF, 2019). Therefore, the option of price setting is here chosen over quantity setting.

The credit allocation ensures redistributive and political economy objectives are addressed

Each household receives a given amount of carbon credits. Each carbon credit allows the household to emit at no extra cost, that is at the same price as before the policy was introduced. If the household does not use the entirety of their credit allocation, it can return the credits to the state and be compensated ~USD 70 per ton. Instead, if the household wishes to consume more fuel and/or heating than allowed by their initial carbon credits endowment, they must purchase extra credits to do so. Therefore, this produces symmetric incentives to reduce emissions, whether the household would emit above or below the credit allocation. As the right incentive exists at any level of consumption, efficiency is achieved regardless of the credit allocation given to each household. Note that, of course, all considerations here (inequalities, credit allocation) should be adjusted by household size. For simplicity, I will consider a hypothetical situation, where all households are of size one.

As efficiency is ensured, we can turn to the second main policy objective: equality.

The policy objective maximization problem is as follows:

$$\begin{aligned} & \min_{\text{credits}_i, i \in S} \text{Inequality}_{i \in S}(I_i - p(\text{consumption}_i - \text{credits}_i)) \\ \text{s. t. (1) } & \text{ShareWinners} = \frac{\sum_{i \in S} I(\text{credits}_i - \text{consumption}_i)}{N} > 50\% \\ & \text{(2) } \sum_{i \in S} \text{credits}_i - \text{consumption}(p)_i = 0 \end{aligned}$$

$\text{Inequality}_{i \in S}(\cdot)$ is a measure of inequality over all households incomes, such as Gini coefficient, top 10%/bottom 10% ratio, etc. I_i is the household income. consumption_i is the consumption of the household **while the carbon price is in place**. credits_i are the credits allocated to household i .

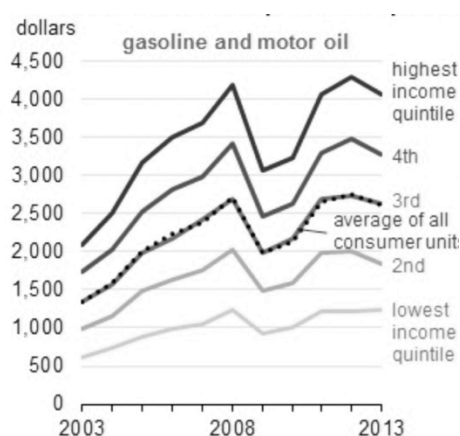
The policy maker wishes to distribute credits in order to obtain the lowest possible inequality. This policy objective comes with two constraints. Constraint (1) says that the majority of households (considering for simplicity each household has only one member) needs to consume less than their credit allocation. If they consume less than their credit allocation, they will be on the subsidy side of the mechanism: society will be paying them to avoid emitting, rather than them having to pay a tax for their emissions. This situation can clearly be described, from the household’s perspective, as an economic win. The fact that the condition specifies that the majority of households should be in this “winning” situation is meant to reflect the possibility for the population to vote out the government in the next election if they do not agree with the policy. Condition (2) is the budget neutrality principle: the credits bought and returned to the state are equal.

In other words, we want to distribute the credits in order to maximize the share of winners, given the carbon price p (USD 70/ton of CO₂ equivalent, as suggested by the IMF, 2019) and while satisfying a “market

clearing condition”, which means that credits returned to the state are equal to credits bought from the state. This condition is therefore equivalent to public budget neutrality.

Let’s explore the consequences of conditions (1) and (2). Condition (1) implies that the **median** consumption (after the carbon pricing scheme is introduced), should be lower than the **median** credit. Condition (2) implies that the **average** consumption credit should be equal to the **average** consumption (after the carbon pricing scheme is introduced). Let’s explore the consequences of these properties taking the example of the US, using 2013 data. The average consumption is at 2,500 USD/year. The median consumption is at roughly 2,250 USD/year, as shown in Figure 3. With an average USD 3.49 per gallon, it roughly implies an average consumption of 716 gallons and a median consumption of 644 gallons. After the introduction of the tax, assuming inelastic supply, the actual price of a gallon of gasoline is this initial price, plus the added carbon price, which is given by the quantity of GHG emissions contained in one gallon (roughly 0.00982 tons) times the carbon price (70 USD/ton), that is an additional price of USD 0.6874. This results in a new price of 4.18, or an increase of roughly 20%. What would the resulting average and median consumptions be now? Taking a price elasticity of -0.3 as measured in Dahl (2012), this 20% price increase results in a consumption reduction of 6%, therefore an average of 673 and a median of 605 gallons. From condition (2), the average credit allocation is the equivalent of 673 gallons. It is directly apparent that if the policy consists in providing the same credit allocation to each household (that is, everyone gets this average allocation equivalent to 673 gallons), more than the majority of households become “winners” (they get paid for not emitting GHGs rather than having to pay for it) and are therefore likely to support the policy proposal. In other words, conditions (1) and (2) are easily compatible, as long as the median consumption is lower than the average consumption. This is likely to be the case in most countries, as fuel consumption increases in income in a wide range of countries (Dahl, 2012), and because a typical feature of income distributions is that the average is higher than the median. Given that the average income is higher than the median income, and because higher income households tend to have higher consumption of fuel, the average consumption is very likely to be higher than the median consumption in most countries.

Figure 3: Consumer transportation expenditures by income quintile, 2003-2013, USA

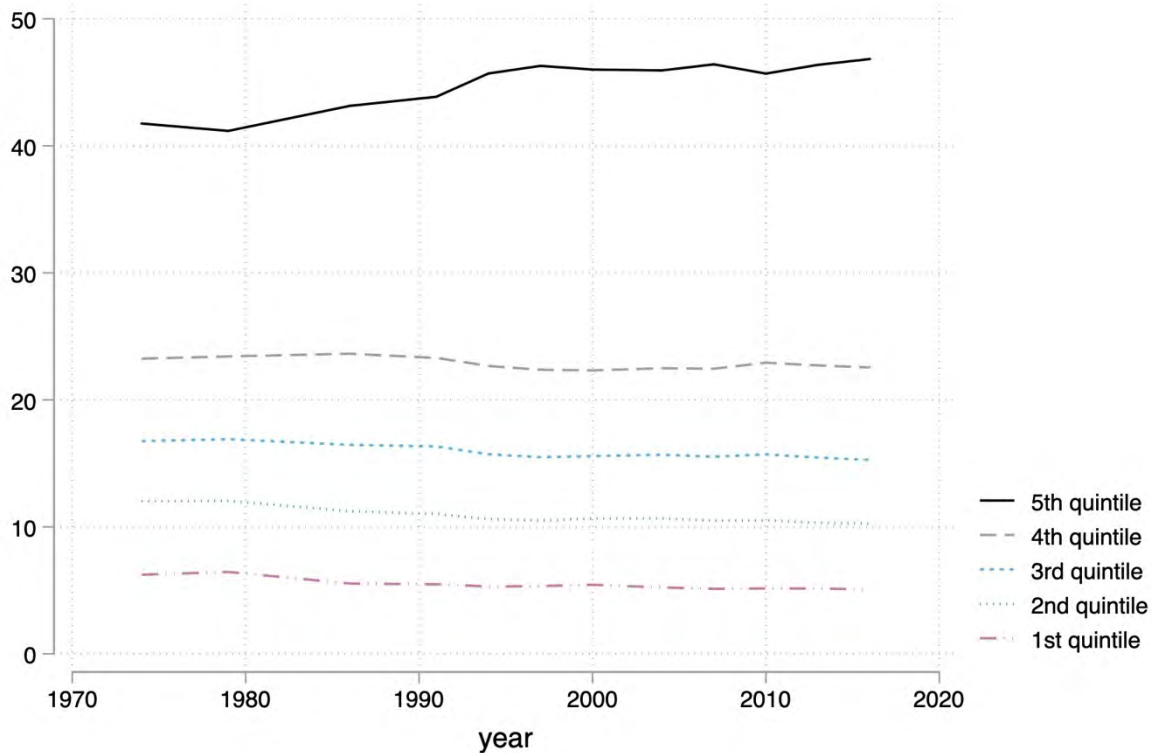


Source: adapted from: Energy Information Administration (EIA)

In order to ensure a maximum level of winners, the credit allocation should aim at being as close as possible to the initial emissions level of the household. A natural way forward is to use rural/urban status

to determine different allocations. As consumption tends to be higher in rural areas at carbon price p (Wadud et al., 2010), one can decide to allocate more credits to rural households.

Figure 4: Share of total national income by income quintile, 1974-2016, USA



Source: author's calculations based on POVCAL, World Bank

Now that all constraints have been addressed, and because we know that efficiency is achieved for any credit allocation, the policy maker should allocate credits in a way that minimizes inequalities. To further take into account political economy dynamics, one could exempt from credits the higher parts of the income distribution, which have had the most favorable dynamics in recent years: for example, in the US, since the 1970s, there is a clear divergence between the incomes of the 5th quintile of the income distribution and the rest of the population, as shown in Figure 4. The 4th quintile receives a stable share of the overall income distribution, while the lower segments of the income distribution experience a relative decline. Therefore, the credits could be progressively phased out starting at the 4th decile to reach zero at the 90th percentile, for example.

To summarize the proposal:

- Each household receives a carbon credit for its use of personal transport and heating fuel
- If the household consumes less than their credit, they can return the remainder to the state, which pays the household a subsidy equivalent to the carbon price times the “tons not emitted”. Following IMF’s (2019) recommendation this price is USD 70/ton. Instead, if the household wishes to emit more than its credit, it pays an extra tax per quantity of emitted carbon, at a rate that is equivalent to the subsidy, USD 70/ton.

In order to allocate the credits:

- The state allocates credits, while simultaneously estimating the resulting average emissions, such that the average credit is equivalent to the average emissions.
- As long as the average emissions are higher than the median emissions, it is possible to allocate credits in such way that the majority of households receive a subsidy.

Households are divided between rural and urban households. Rural households receive a higher credit allocation than urban households. The credits are the same for all households (depending on urban/rural status), except for the richest 20% of all households. For them, the credit is phased out, such that the top 5% of all households do not receive any credit.

Comparison with existing and proposed policies

The credits could be used through a credit card-like system. The carrier uses the card every time they buy fuel for their personal use. If one either forget the card or is short of credits, the gas station, for example, simply charges the price of the fuel plus additional credits. It is worth noting that there are not incentives to sell your credits to another household, as the state would buy from one household and sell to another at the same price. However, there are no particular reasons to ban between-household trade.

Carbon tax feeding into general budget

An intuitive alternative to the present proposal is carbon tax, without the described credit system, the revenue of which fuels the general state budget. In France, for example, part of the taxation of carbon is directly allocated to renewable energies development, while the rest of said revenue feed into the general budget⁹. While such a setting has clear advantages, given that it can contribute to reduce other taxes, which typically have distortive effects on the economy, it poses the risk of not being supported by the general population because of the agency problem described above.

The budget neutrality of the present proposal represents therefore an advantage over a carbon tax feeding into the general public budget, as it creates trust, given the absence of agency problem regarding the use of public revenue from (budget increasing) taxation.

Canada's Climate action incentive

In Canada, most of the carbon tax (about 90%) is returned to households as a lump sum payment: the Climate action incentive (CAI). This lump-sum payment depends on some eligibility criteria, but crucially, it does not change in income¹⁰. There are two important differences between this system and the one proposed in this brief.

First, the CAI does not explicitly aim at minimizing inequalities, even though it does not increase them compared to the situation ex-ante. Given the phase out of credits beyond a certain income, the present proposal outperforms the CAI in terms of redistributive consequences.

It is worth mentioning that the CAI could be re-designed, in order to provide similar payoffs to households than this brief's proposal. However, one should not overlook the symbolic dimension of the subsidy: here, explicitly, every amount of GHG not emitted below the credit allocation results in a reward, which goes

⁹ Source : <https://www.lesechos.fr/2015/11/le-gaz-et-les-carburants-vont-payer-pour-le-solaire-280784>

¹⁰ Source : <https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/about-your-tax-return/tax-return/completing-a-tax-return/deductions-credits-expenses/line-45110-climate-action-incentive.html#Eligibility>

beyond a simple monetary payoff, as it can be seen as society recognizing a household's extra effort for contributing to the collective objective.

Piketty's proposal for a progressive taxation of carbon

In his recent essay *Capital and Ideology*, Piketty (2019) suggests a variable, progressive tax on individual GHG emissions, that is the tax rate would be an increasing function of individual emissions and/or individual income. The author supports his idea with two arguments: the incentive to reduce emissions exists and redistributive considerations are addressed. However, one could question whether such a mechanism could create high incentives for fraud, for a "carbon black market", which may defeat its very objective: as the tax rate is not the same for everyone and at each level of emissions, there are strong incentives for individuals to trade fuel/credits between themselves. This could have unintended harmful environmental consequences (one should prefer fuel to be traded at a gas station rather than in a P to P setting). The situation also has an ambiguous effect on redistribution, as a higher income individuals might have higher bargaining power on this "carbon black market".

The price symmetry embedded in the present proposal (same price whether one returns credits to the state or buy more of them), deters incentives of trading outside the system.

Conclusions

The COVID pandemic has revealed the need to take into account seemingly remote threats like climate change and given the disproportionate impact of the crisis on lower-income households, it has also made the challenges of addressing inequalities even more pressing.

The brief proposes a novel approach to carbon pricing regarding household direct emissions, a relatively large share of all GHGs.

The proposal can be summarized in the following manner:

- Each household receives a carbon credit allocation.
- If the household consumes less than their credit allocation, they can return the remainder to the state, which pays the household a subsidy equivalent to the carbon price times the "tons not emitted".
- In order to allocate the credits:
 - The state allocates credits, while simultaneously estimating the resulting average emissions, such that the average credit is equivalent to the average emissions.
 - Households are divided between rural and urban households. Rural households receive a higher credit allocation than urban households. The credits are the same for all households (depending on urban/rural status), except for top quintile of the income distribution. For this segment, the credit progressively is phased out, such that, for example, the top 10% do not receive credits.

Importantly, because of characteristics of the income distribution, it seems possible to ensure that most households are on the "winning" side: they receive a subsidy.

Compared to alternative systems, the present proposal is better at creating general public trust because of its budget neutrality dimension and because it addresses redistributive objectives.

References

- Alvaredo, F., Chancel, L., Piketty, T., Saez, E., & Zucman, G. (Eds.). (2018). *World inequality report 2018*. Belknap Press.
- Autor, D. H., Dorn, D., & Hanson, G. H. (2015). Untangling Trade and Technology: Evidence from Local Labour Markets. *The Economic Journal*, 125(584), 621–646. <https://doi.org/10.1111/ecoj.12245>
- Autor, D. H., Dorn, D., & Hanson, G. H. (2016). The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade. *Annual Review of Economics*, 8(1), 205–240. <https://doi.org/10.1146/annurev-economics-080315-015041>
- Burke, M., Hsiang, S. M., & Miguel, E. (2015). Global non-linear effect of temperature on economic production. *Nature*, 527(7577), 235–239. <https://doi.org/10.1038/nature15725>
- IMF. (2019). Fiscal Policies for Paris Climate Strategies-from Principle to Practice. *Policy Papers*, 19(10), 1. <https://doi.org/10.5089/9781498311717.007>
- IMF. (2020). *World Economic Outlook, April 2020: The Great Lockdown*. IMF. <https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020>
- IPCC. (2014). *Climate change 2014: Mitigation of climate change*. Cambridge University Press.
- Lakner, C., & Milanovic, B. (2013). *Global income distribution: From the fall of the Berlin Wall to the Great Recession*. 62.
- Nordhaus, W. (2018). Projections and Uncertainties about Climate Change in an Era of Minimal Climate Policies. *American Economic Journal: Economic Policy*, 10(3), 333–360. <https://doi.org/10.1257/pol.20170046>
- OECD. (2018). *Effective Carbon Rates 2018: Pricing Carbon Emissions Through Taxes and Emissions Trading*. OECD. <https://doi.org/10.1787/9789264305304-en>
- OECD. (2020). *From containment to recovery: Environmental responses to the COVID-19 pandemic*. OECD. <http://www.oecd.org/coronavirus/policy-responses/from-containment-to-recovery-environmental-responses-to-the-covid-19-pandemic-92c49c5c/>
- OECD (2020), *OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis*, OECD Publishing, Paris, <https://doi.org/10.1787/1686c758-en>.
- Okun, A. M. (1975). *Equality and efficiency: The big tradeoff*. The Brookings Institution.
- PewResearch. (2020, January 9). Trends in U.S. income and wealth inequality. *Pew Research Center's Social & Demographic Trends Project*. <https://www.pewsocialtrends.org/2020/01/09/trends-in-income-and-wealth-inequality/>
- Piketty, T. (2019). *Capital et idéologie*. Seuil.
- Wadud, Z., Graham, D. J., & Noland, R. B. (2010). Gasoline Demand with Heterogeneity in Household Responses. *The Energy Journal*, 31(1), 47–74. JSTOR.
- Wu, X., Nethery, R. C., Sabath, B. M., Braun, D., & Dominici, F. (2020). *Exposure to air pollution and COVID-19 mortality in the United States: A nationwide cross-sectional study* [Preprint]. *Epidemiology*. <https://doi.org/10.1101/2020.04.05.20054502>

Cohesion Services for inclusive growth and resilience

Louise Phung

Growing global shocks, such as the COVID-19 pandemic, call for more resilience in our societies and economies. The Cohesion Services policy suggests to build resilience through social cohesion at the local level. The core concepts of this policy is to free up time for all individuals to engage in other activities than work, such as social activities and personal development, and to strengthen local community bonds. This includes reinforcing social support to vulnerable groups to reduce their social exclusion, enhance the labour market opportunities available to them and reinforce their economic security.

Introduction

The COVID-19 crisis has highlighted the need for more resilience in contemporary societies, resilience being increasingly essential to support our societies and economies in period of growing global shocks. The shortage of essential items to protect the population from the disease, such as ventilators, masks and tests, reminded us the fragility of our social and economic systems. By definition, resilience is the capability of a system to recover in the midst of shocks or stresses over time. The concept of resilience describes a global state of preparedness and considers how systems absorb threats and maintain their inherent structure and behaviour, rather than approaches meant at minimising risks coming from conventional risk assessment methodologies (NAS, 2012^[1]; Linkov and Trump, 2019^[2]). Resilience-based approaches are especially relevant in the context of high-consequence events, such as *Black Swan* events, and they benefit to systems with inherent nested interdependencies, like many of those we rely on in our daily lives (e.g. global value chains) (Linkov, Trump and Hynes, 2019^[3]). *Black Swan* events, like 9/11, are characterised by huge systemic impacts, radical uncertainty and the inability to be forecasted nor modelled beforehand, though they can be rationalised retrospectively (Taleb, 2007^[4]). The COVID-19 crisis and the Great Recession could be considered as *Black Swan* events, not because they were inherently unpredictable, but because the design of our models prevented from incorporating growing weak signals. The International Risk Governance Centre stresses that interconnected systems, intertwining with one another, amplify the impacts of systemic threats; a disruption to one area “may cause uncontrolled feedback and cascading effects, extreme events, and unwanted side effects”, implying that the potential for cascading disruption is a growing and critical concern for many facets of daily life (IRGC, 2018^[5]).

Being resilient is going towards a new development defines Boris Cyrulnik, a neuropsychiatrist specialised in resilience. The same holds true at the individual and systemic levels. The COVID-19 crisis, which induced a global economic collapse, also appears as a wake-up call to effectively engage in sustainable development. The current “paradigm of efficiency” in operation, management and outcomes (e.g. delocalisation to reduce costs) of various economic and social systems has induced the interconnection and complexity of our systems to better deliver goods and services, amplifying their vulnerability to sudden and unexpected disruption (Juttner and Maklan, 2011^[6]; OECD/FAO, 2019^[7]). The race for efficiency has also been the cause of some systemic risks since the attempts to maximise efficiency in subsystems led to suboptimal efficiency at higher levels (e.g. policy of *just-in-time* production) (OECD, 2020^[8]). To move towards a new paradigm of resilience, all levels of governments and societies must, first, address climate change, a major source of growing systemic threats as illustrated by extreme weather events such as the severe 2019–20 Australian bushfire season, and its unwanted side effects like the 2020 massive locust invasion in Africa and the COVID-19 pandemic. In particular, the circular economy aims to strengthen local resilience by limiting the system’s dependence on inflows of resources, making it possible to optimize the use of materials and energy to benefit the local economy (Economie Circulaire, 2004^[9]). The new Circular Economy (CE) package of the European Commission, adopted on December 2, 2015, aims to support “smart, sustainable and inclusive growth”. Up-to-date, the circular economy remains one of the most far-reaching projects where resilience thinking is being used as a catalyst for economic sustainability (High Level Group / Stockholm University, 2016^[10]).

Second, governments and societies must also engage further in inclusive growth, an indispensable component to build resilience, including for individual resilience through skills development. In light of the COVID-19 crisis and the lockdown measures to address it, “invisible” jobs, i.e. mostly lower-skilled and low-paid jobs, such as custodial staff, cashiers or care home staff, have proven to be essential for the well-functioning of our societal and economic systems, emphasising the necessity to revalorise them and rethink our labour markets. The confinement measures, which have had differentiated effects on people according to their economic situation, have made visible potential growing inequalities in our labour markets. Individuals who are able to telework, mostly in high-skilled and high-paid jobs, have appeared to be more resilient to shocks as they can continue working, in a safe environment, and maintain a source of

income, while those who cannot are threatened by unemployment or the risk of contamination. In particular, these inequalities may widen the gap between those with higher and lower levels of education, often working in “higher” and “lower” skilled jobs. This threat of unemployment is critical when considering that up to 50% of SMEs are at risk of running out of business in the following months. Since SMEs hire up to 90% of the labour force in most countries, including a great share of “lower” skilled jobs, the potentially slow economic recovery could widen the gap even further (OECD, 2020^[11]; ILO, 2019^[12]). In the face of this social crisis, however, there are signs that the virus has reinforced feelings of solidarity and shared destiny across the population and the social groups. The impressive range of local initiatives are a fertile substrate to build a new local resilient model based on social cohesion. Indeed, media across OECD countries have noted acts of local collective action, such as donations and support to hospital staff, while local public services have facilitated occupational health and safety, accompanied citizens to obtain income support and supported vulnerable citizens (OECD, 2020^[13]; OECD, 2020^[14]).

The COVID-19 crisis thus offers an opportunity to build a new economic and social model with local communities and social cohesion at its core, capitalising on the solidarities the crisis has created. Social cohesion appears essential to build resilience within our communities because it acknowledges existing interdependencies between individuals and sectors, and provides social, economic, political, and legal spaces to strengthen them. The *Cohesion Services* policy is a policy that aims at building social cohesion to promote inclusive growth and resilience at the local level. It is a local and systemic policy that invites us to rethink our social and economic relations. It enables the creation of more diverse and deeper links among our communities that puts back people at the core of its matrix. This policy is about the creation of a *platform of Cohesion Services* at the local level. The objective is that each individual of a given territory, i.e. unemployed people and workers during their working days, allocate time to participate in the Cohesion Services of their choice. The aim of this policy is twofold: (1) it aims at developing people’s adaptability, enabling them to develop more flexible and transversal skills, which supports individual resilience, and (2) it aims at redeveloping a sense of *community* within territories, which supports local resilience. This policy can be developed as a pilot project, starting for instance in volunteering municipal districts. It is important that the population actively participate and support this policy, for it to work effectively.

Building social cohesion at the local level

Why social cohesion is important?

Social cohesion is essential to build resilience within local communities (100 Resilient Cities, 2019^[15]). According to the United Nations, social cohesion is the absence of fractures or divisions within society and the ability to manage such divisions. A cohesive society creates a sense of belonging, promotes trust, and offers its members the opportunity of upward mobility. Hence, social cohesion strengthens citizens’ voluntary economic, social and political participation. Social cohesion relies on two pillars. First, social integration: each individual, with equal rights, has an active role to play in society. Second, on social inclusion: the process of improving the terms of participation in society for people who are disadvantaged on the basis of age, sex, disability, race, ethnicity, origin, religion, or economic or other status, through enhance opportunities, access to resources, voice and respect for rights (United Nations, 2016^[16]). The local level is the ideal level to build social cohesion, which relies on the creation of bonds within a community. Indeed, bonds are more easily built through proximate and frequent contacts. Currently, many initiatives, aimed at making cities more resilient to the physical, social and economic challenges that our societies face, consider social cohesion as one of the characteristics of a resilient city, such as Resilient Rotterdam¹¹. There is also growing evidence that the concept of resilience can remain

¹¹ <https://www.resilientrotterdam.nl/en/rotterdam-resilient-city/>

useful only if we take into account social dimensions (Fonseca, Lukosch and Brazier, 2019^[17]). Aldrich (2017^[18]) analyses a number of recent disasters from the perspective of social networks, notably in Bangkok, Thailand, the Tohoku region, Japan, and Christchurch, New Zealand, to highlight that “social cohesion keeps people from leaving disaster-struck regions, allows for the easy mobilization of groups, and provides informal insurance when normal resource providers are not open. Social networks improve disaster recovery for local residents, communities, and the nation as well”.

Social cohesion appears as essential to better prepare and response to shocks; even more, the lack of social cohesion in a local territory can be a major stress unto itself. In the context of high levels of trust and goodwill, members of a community, as well as networks of multiple communities, can work together to better prepare for shocks ahead of time, thereby mitigating the worst impacts. A high level of social cohesion also represents a latent resource that can be utilised in period of shock since it increases the likelihood of community members to connect to formal government recovery processes and to help one another during a major shock. It allows affected communities to regroup and build back faster following such a shock. On the other hand, lack of social cohesion can increase the risk of manmade crises like violent crimes or civil unrest. Chronic divides among local populations deprive the marginalised communities of the opportunities and resources they need to success, leading to persistent inequalities that increase the larger community’s vulnerability to shocks. For example, the local authority of Athens, which faced a dual challenge of slow economic recovery and large influx of migrants, developed a proactive inclusion initiative, the “Schools Open to the Neighbourhood”. This initiative provides space in school premises during after-school hours and on weekends to host activities accessible to all residents. Cooking lessons that engage women’s networks and cook recipes from all over the world have proven to be a particularly successful activity to build relationships among Athenians old and new, serving to defuse tensions in an otherwise challenging environment (100 Resilient Cities, 2019^[15]).

Threats to social cohesion

Social cohesion is needed to address existing megatrends, such as demographic change, urbanisation, digitalisation / automation and globalization. However, these megatrends also appear as threats to social cohesion, in particular globalisation, digitalisation and automation (United Nations, 2016^[16]). These global megatrends have weighed on social cohesion at the local level. For instance, income inequalities have risen since the 1980s; the top 1% in China, Europe and the United States increased their share of wealth from 28% in 1980 to 33% today. In the United States alone, the wealth share of the top 1% has increased by at least 10%-point (Zucman, 2019^[19]). One cause of these increasing inequalities is the inability of most governments to implement effective redistributive policies to share the benefits from globalisation and the *financialisation* of the economy. This economic divide ultimately translates in political divide and the rise of populism; the *left behind* feeling abandoned by the society and governments, damaging social cohesion (Piketty, 2018^[20]; World Bank, 2018^[21]; Rodrik, 2017^[22]; Godechot, 2015^[23]). The recent social movements, often rooted at the local level, in Hong Kong, Chile, France, Iran or Lebanon are the explicit manifestation of this deepening social divide. The strong territorial nature of these movements, also known as the *Geography of Discontent*, shows that the negative social and economic impacts of globalisation are locally or regionally grounded due to excessive industrial / economic specialisation. This evidence supports the need to build social cohesion and resilience at the local level, to revalorise one’s own territory and to improve her /his territory’s self-sufficiency (OECD, 2019^[24]).

Digitalisation is also a threat to social cohesion. The development of digitalisation in the beginning of the 21st Century has enabled to duplicate efficiency, but it also represents a risk for social links and relations, especially when individuals are excluded from major networks where it is possible to meet individuals, i.e. the labour market and the leisure economy. The unemployed and older people do not participate in the labour market and the poorer people cannot participate in the leisure economy (United Nations, 2016^[16]). Digitalisation, and peculiarly the rise of social media, have enhanced the development

of societies in silo that lock people within certain communities and develop strong confirmation bias, lack of mutual understanding and lack of trust (Pariser, 2011^[25]).

Another growing divide arises from labour markets. In particular, many labour markets have undergone a degree of polarisation in which the relative share of middle-skilled jobs, typically associated with the manufacturing industry, have declined compared to low and high skilled employment (OECD, 2019^[26]). These middle-skilled workers often find difficulties to reallocate in other sectors, being at risk to long-term unemployment and exclusion from the labour market. In addition, the upskilling of labour markets has not been accompanied with a consistent rise in higher wages for the greater relative number of higher skilled jobs. Automation may play a role in these trends, as the computerisation of tasks risks replacing human routine work associated with many middle-skilled jobs, while digitisation has allowed a greater use of platform work. Platform work has supported the rise of Non-Standard Work (NSW), which can be associated with lower job quality and less stable working conditions. The OECD finds these trends to unfold unevenly across territories, giving rise to certain territories facing a greater degree of change from megatrends relative to others (OECD, 2018^[27]). Global shocks such as COVID-19 can often accentuate these trends. Indeed, evidence suggests that pandemics tend to accelerate the pace at which enterprises replace labour with technology, thus accelerating disruptive changes locally (Seric and Winkler, 2020^[28]). Labour market polarisation, NSW and automation reduce labour opportunities of parts of the population, potentially excluding them from the labour market, hence threatening social cohesion.

These trends call for policies to reinforce social cohesion at the local level. Existing policies are currently focused on targeted groups, i.e. assistance to vulnerable groups. These policies are essential for these groups to improve their conditions and opportunities. But this is not sufficient to address the current challenges around the world that tend to increase inequalities and put further pressure on social cohesion. In fact, due to their targeted nature, these policies are often taken in a piece-meal manner, often lacking a local vision of social cohesion that would entail both the most and less vulnerable to reinforce their involvement in the community. These vulnerable groups must be more broadly integrated in the local community, feeling a sense of “belonging” not only within their group but also within the entire local society. Hence, local communities must engage in a systemic and whole-of-society approach to build resilience effectively (Cázarez-Gradedá, 2018^[29]).

How Cohesion Services can help strengthen social cohesion?

After months of confinement in many countries to address the COVID-19 pandemic, people have discovered new ways of organising their lives, developing many social initiatives, and rediscovered what “truly” matters, including social interactions. These confinement measures have had, however, disproportionate effects on vulnerable groups, widening social gaps. Elderly, disabled and mentally ill individuals suffered significantly more from social distancing measures. Low-income children, who could not benefit from schools’ meals nor participate in virtual class, faced increased precariousness and accumulated additional disadvantages, potentially hindering further their future labour, hence economic, opportunities. Many low-skills and, often low-paid, workers, who were unable to telework, faced increased economic insecurity (OECD, 2020^[30]). The COVID crisis appears as the culmination of a long-term trend of shrinking social interaction opportunities after, first, over a century during which local events have been disappearing in Occident (Weber, 1976^[31]) and, second, the development of communities in silo. Therefore, this crisis appears as an opportunity to redefine social and economic interactions, and create space for them to develop.

The core concept of the *Cohesion Services* policy is to free up time for all individuals to engage in other activities than work, such as social activities and personal development, and to reinforce social support to vulnerable groups to reduce their social exclusion, enhance the labour market opportunities available to them and reinforce their economic security. More broadly, this policy will enable individuals to develop a sense of “usefulness” and “belonging” through active participation in the society, improving individual and

collective well-being. This policy offers another approach to the labour market and the value of work, because the price of services provided under the *Cohesion Services* policy will be indirect, i.e. not paid by the receiver of the service, and will be de-correlated from their traditional economic values, enabling to redefine our economic interactions from a more social and interactive angle (see below). Ultimately, the *Cohesion Services* policy enables to build individual and systemic resilience. Individuals become more resilient because, if they lose their jobs, which becomes increasingly likely with the accelerating transformations in the labour market (OECD, 2019^[26]), they will have a network of contacts they can activate to find another job and, they will rely on a wide range of skills they have developed, which can be used in other sectors; individuals will be more flexible and they will learn, thanks to *Cohesion Services*, how to adapt more easily. Societies will also be more resilient, because when a crisis will occur, people will have a better understanding of how other sectors work, and how they can jointly adapt their activities to face the crisis. The network of contacts will also help to anticipate the shocks or to ask for advice. Indeed, people often do not even know who to contact to ask for advice, this can be overcome thanks to the community created by the *Cohesion Services* policy.

The *Cohesion Services* policy will also support individuals from Generations Y and Z, who are at high risk of social exclusion and/or mental health issues. On the one hand, individuals from Generation Y, born in the 80s and early 90s, feel social and professional pressures that are unsustainable. Increasing trends of burnouts and depressions worldwide are symptoms of unhealthy social organisation, which has negative impacts on well-being, producing in turn negative impacts on decision-making at personal, professional but also political levels. On the other hand, individuals from Generation Z, born in the late 90s and 2000s, are often excluded from the labour market since unemployment affects disproportionately the youth, who are 2.5 times more likely to be unemployed than workers aged 25-64 (OECD, 2020^[32]). Individuals from both Generations Y and Z suffer significantly more from loneliness and depression than other aged groups (World Economic Forum, 2019^[33]; United Kingdom Government, 2018^[34]; Mojtabai, Olfson and Han, 2016^[35]). Lack of professional opportunities, especially when social integration in other networks such as education and leisure economy is weak, creates mental disruption, breaks the feeling of “hope” and increases political frustration. Recent social movements, such as the Arab Spring in the 2010s and the ongoing Hong-Kong insurrection, which are youth-driven political contestations, highlight the current worldwide youth distress. The COVID-19 crisis has already worsened youth job opportunities further since they have been the most hardly hit (OECD, 2020^[32]). There is thus an urgent need to provide alternative policies. The *Cohesion Services* policy aims at breaking these unsustainable trends by providing means for younger generations, and any other social groups, to integrate in the local society and to participate in collective works. Creating a sense of “purpose” and “belonging” is essential to restore hope among these young generations and to improve their mental and social well-being. Ultimately, the well-being of any social groups and their effective integration and inclusion within the society will participate in collective well-being and resilience.

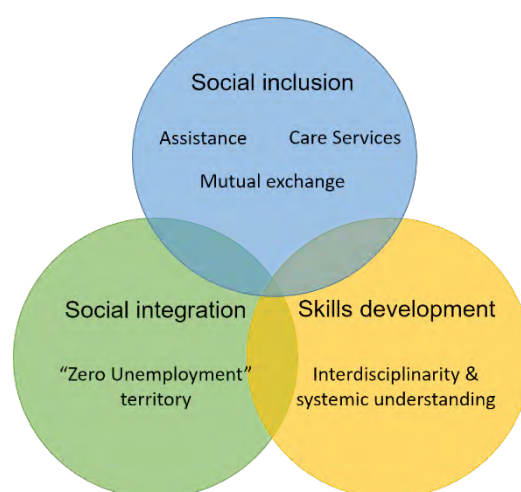
A platform for Cohesion Services to build individual and systemic resilience

The Cohesion Services policy

What?

The Cohesion Services policy is a local policy organised in three pillars: social inclusion, social integration and skills development. The three pillars will participate in strengthening social cohesion, hence in improving local resilience. In the implementation phase, a local authority can first develop one pillar over another, capitalising on existing local initiatives and policies. Ultimately, however, the three pillars must be implemented in a co-ordinated manner to effectively enable a systemic approach. The *platform of Cohesion Services* allows to create interactions and interweaving across the three pillars.

Figure 3.1. The three pillars of the Cohesion Services policy



Source: Author's own compilation

The Cohesion Services policy is meant to be integrated in a broader circular economy shift, with a focus on recycling, the revalorisation of second-hand goods, and do-it-yourself exchange of skills during *associative* Cohesion Services. There is also a focus on local agriculture, to improve local resilience through improved autonomy, adapting to sectorial needs and seasonality.

The participation of the local government, the local population and the private sector is essential for this policy to work effectively. First, local residents must be willing to engage in activities outside of work or to learn new skills. Second, enterprises must be willing to financially support their employees during their Cohesion Services. To make this policy sustainable, the Cohesion Services must have a legal status. One possibility would be that in the worker's working contract it is stated that her job consists in her "normal work", for instance, four days a week and in a Cohesion Services once a week on Friday. This type of contractual change could be done at the legislative level, or, on the basis of local inclusive business guidelines set by municipalities in the framework of the circular economy transition. Hence, local leaders will have to demonstrate the benefits of this policy. One possibility could be to implement this policy as a pilot project, starting for instance in a small municipal district that volunteered for participating in the experiment. Another option could be for the local authority to dispatch some of its employees in associations and participating enterprises to demonstrate the benefit of interdisciplinary, skills' exchanges and network building.

Who?

At the final stage of the policy, the goal is that each local resident is involved in the process. This could require significant changes in the labour market's regulations and in financing mechanisms, which might imply the involvement of the national government through broader national reforms. At this stage, the policy concerns wage-earning workers from all-size enterprises, local public servants, precarious workers and unemployed people. Note that on average in the European Union, only 15.3% of the labour force was self-employed in 2018, this group can be included in the policy in a flexible manner once the framework is adjusted and the pilot projects are run. (OECD Data, 2019^[36]).

- **Social inclusion pillar:** *Associative* Cohesion Services: all individuals, from vulnerable groups, e.g. elderly, disabled, those with mentally disabilities, disadvantage children, poor households, etc., should be integrated as beneficiary of Cohesion Services. All wage-earning workers and local public servants, who choose "associative" Cohesion Services, participate as providers of services, i.e. "volunteers".

- **Social integration pillar:** all unemployed individuals and precarious workers should participate. The unemployed individuals should be registered at the governmental employment agency and the precarious workers should be registered at the governmental solidarity platform support (e.g. RSA in France). According to the funding allocated to this policy, the coverage of the social integration pillar could be extended to encompass disable people, who cannot work in normal structures and require Supported Employment mechanisms, or self-employed and independent workers who want to participate but cannot afford to do so because of current labour market's regulations and financial constraints (e.g. high charges, retirement entitlement frameworks, etc.).
- **Skills development pillar:** Traineeships: all wage-earning workers and local public servants, who choose traineeships, participate as "trainees".

Part-time wage-earning workers can participate in Cohesion Services. Their participation is proportional to their working time.

Where?

The Cohesion Services policy is a local policy aimed at strengthening bonds and connexions within a local territory and can be implemented at the initiative of the local authority. The active participation of the local government and the population itself is essential in the implementation and functioning of the policy. Hence, locally elected governments will enable to create a stronger link with their local community than deconcentrated units. Municipalities can be the appropriate level of implementation. For municipalities above 500,000 inhabitants, sub-municipal levels may be preferred. At the other end of the spectrum, small municipalities of less than 2,000 inhabitants may engage with neighbouring municipalities, through a joint-municipal policy, to develop inter-municipal links and expand the range of jobs and sectors involved. This policy can also be an opportunity for commuter towns to reinvest their local territory, creating a shared sense of community and developing local activities.

In local areas with high unemployment rates and/or high levels of precarious work, the implementation of the social integration pillar can be financially supported by the central government. This is for example the case for the French *Territoire Zéro Chômage Longue Durée* initiative (Banque des Territoires, 2020^[37]). This can, for instance, be integrated as a parameter of equalisation systems. Indeed, the pressures from megatrends on social cohesion have not only produced deepening social divides, but also deepening territorial disparities (OECD, 2019^[24]). If social cohesion at the local level is essential to build resilience, lagging territories must be supported to have the means to develop local social cohesion, ultimately reinforcing social cohesion at the national level.

How?

The platform of Cohesion Services is a digital platform to match, on the one hand, vacant positions in associations and enterprises, and, on the other hand, volunteers and trainees seeking to engage in Cohesion Services. Wage-earning workers will receive a username from their employing enterprise, job seekers will receive their username from the governmental employment agency and precarious workers will receive their username from the governmental solidarity support platform; this ensures that financing is secured for them to participate in Cohesion Services. Any other local resident can freely register in the platform and participate in Cohesion Services but at this stage of the policy, they will receive no financing for their participation (see Who?). For individuals with low digital literacy, local authorities can consider creating a duty period during which local servants assist those in need to register and use the platform. On the one hand, associations and enterprises of all sizes seeking to host *Cohesion Services* participants can solely open vacancies for a certain duration (e.g. one semester) that can be renewed a certain amount of time (e.g. three times); they cannot choose who will come in their organisation. On the other hand, the participants decide first if they want to participate in *associative Cohesion Services* or in *traineeships*, and second, they make a list of wishes, ordering what they would like to do and/or where

they would like to go. If too many participants select the same vacancies, they will be drawn randomly and the others will get the next choice of their list. The *Cohesion Services* policy is not a way to optimise the current labour market, it aims at creating and redefining social and economic interactions. Hence, it is essential that individuals cannot apply – the core objective is to give a chance to everyone independently of their current skills, economic status, origins, etc. Similarly, it will not be possible to rate participants or hosting organisations. However, participants and/or hosting organisations that do not behave properly can be signalled to limit abuses. Note that many local authorities do not have the capacity to develop such a digital system. The participation of the national level could thus be welcomed to provide the digital tool that can be used by any willing local authorities. Otherwise, the local authority can hire an enterprise to build the platform.

The financial mechanisms will be different, on the one hand, for job seekers and precarious workers, and, on the other hand, for local public servants and wage-earning workers. First, the financing allocated by the local authority for this policy as well as participative budgets for specific projects will finance Cohesion Services for job seekers and precarious workers, who will participate full-time or part-time according to their needs and availability. Note that if the funds collected for this policy exceed the costs of job seekers' wages and precarious workers' complementary wages, the coverage can be expanded and encompasses independent or self-employed workers. It can also encompass workers from micro- and small enterprises, which might not have the financial means to enable their employees to participate in Cohesion Services. Second, wage-earning workers and local public servants will participate during their working time, either on a monthly basis, one to four times a month, or on a trimester basis, one to two weeks every three to four months. They will receive their wages as they normally would, i.e. workers will be considered working when participating in their Cohesion Services. If the policy is supported at the national level, first, the national government can enable national public servants to participate in Cohesion Services in the local territory they are based. Second, the national government can create another classification of *non-working paid* days to facilitate the implementation and the spread of the policy. For instance in France, together with the RTT (Reduction of Working Time), which are paid holidays, can be developed an ATT, *Amélioration du Temps de Travail* (Enhancement of Working Time).

These financial mechanisms enable first, to redefine human and economic interactions and activities, and second, to systematise life-long training. First, the service's receiver do not directly pay the service received, hence the service will be perceived differently. Besides, the participants provide services outside of their job and their participation is not based on application, hence participants can more easily free themselves from the paradigm of "obligation" and "performance", giving a more important place to the social exchange. Decreasing performance pressure can also enhance individuals' creativity and inventiveness (Amabile, Hadley and Kramer, 2002^[38]). Second, the sending enterprise, in which the participant works, has also a lot to gain from enabling – and financially supporting – its employees to participate in Cohesion Services. Cohesion Services are a long-term investment in people's skills, adaptability and well-being that supports the sustainability of the enterprises and of the society as a whole. Enterprises will benefit indirectly from enhanced local resilience since the collapse of the community can negatively affect them. Enterprises will also directly benefit from the enhancement of their workers' skills, which can benefit to their work. In fact, several studies show that workers' well-being is key to sustain work efficiency and innovation; well-being being itself supported by personal development outside of work and diversification of activities (Kimball, 2018^[39]; Paggi, Jopp and Hertzog, 2016^[40]). Several studies also highlight the benefit of part-time work; the reduction of worktime (e.g. four-day working week or six-hour working day) improves productivity as it has already been observed in the late 50s through the Parkinson's Law (ILO, 2012^[41]; Parkinson, 1957^[42]). These findings support the concept of the *Cohesion Services* policy that aims at reducing working time to engage in other social activities. Ultimately, this policy aims at highlighting inter-dependencies between the public and private sectors, between the society as a whole and its components, between economic sectors and individuals.

The three pillars

Support social inclusion

The social inclusion pillar aims at strengthening assistance to vulnerable groups, better including them within the society and enhancing inter-social links among the local population. Individuals from vulnerable groups encompass homeless people, elderly, disabled, mentally ill people, disadvantaged children, poor households, etc. This pillar is based on three dimensions: the development of the society of care, assistance and mutual exchange. This pillar is mainly implemented through the existing network of associations on the local territory to provide a framework for *Cohesion Services* volunteers. However, it can be expected that this policy will lead to the creation of other associations to expand the diversity of possible services.

The care services are targeted at homeless, disabled, elderly and mentally ill people. Every *volunteer* from *Cohesion Services* will participate through associations in a wide range of activities including cooking for isolated old persons, assist professionals of elderly houses or of facilities for disabled and/or mentally ill people to organise outside trips, develop activities – such as painting, boarding game tournament, soft gym, etc. – in these facilities, participate in social round-up – simply by talking with homeless people or cooking for them, etc. An impressive number of social activities through local associations already exist in the world. The aim is thus to increase the involvement of the local population to boost the leverage effect of these initiatives and the creation of social links within the local community.

The assistance dimension of the social inclusion pillar is meant for professionals who want to share their knowledge and skills with others, notably by providing assistance to the most vulnerable. The assistance dimension is this only dimension of the *Cohesion Services* policy for which participants will have to justify their ability, according to either their work experience or their certificate, to participate. The *Cohesion Services* could for instance take the form of courses to improve digital, banking or accounting literacy in the population, organised either in the premises of associations already providing such assistance or in public schools premised outside of school hours (see Box 3.1.). These *Cohesion Services* could also encompass academic support to disadvantaged youth, and home support for individuals and households who requested help, such as for administrative, legal and accounting procedures. On a different note, guides and curators of private galleries and museums, during their *Cohesion Services*, could host freely a group of children, elderly or disabled people, sharing their passion for art and providing adapted knowledge. This type initiative already exists in several museums while in others, this exists on a one-to-one basis, when e.g. a teacher directly contacts the museum; the aim is to significantly develop these practices, making them more systematic.

Box 3.1. Improving banking literacy to support social inclusion

During her Cohesion Services, for instance twice a month, a banker offers banking advice to people with low banking literacy. During these two days, she will provide financial advice, without any objectives of profitability nor time constraints to support the poorest clients of the bank, who often are those the bank spent the shortest time with during meetings because of the lack of profitable opportunities. Alternatively or in addition to these personalised advice, the banker can provide more general advice on how to manage a bank account and one's finance during workshops in small groups, for instance in an association's premises. These workshops enable to create new types of social links, getting rid of top (banker) – down (poor client) relations and promoting exchanges and horizontal relations. Such assistance mechanisms are valuable to promote individual resilience – the greater the banking literacy, the lower the probability of financial downturns – and social resilience through the development of social links and the creation of trust and mutual understanding. Indeed, in 2012, a Gallup survey showed that, on average in the European Union, 55% do not trust banks, rising to 83% in Ireland and 82% in Greece (Gallup, 2013^[43]). In France, a 2019-survey from the French National Bank shows that 43% of the respondents feel they do not have enough reliable and neutral information to manage their budget effectively (Banque de France, 2019^[44]).

The mutual exchange dimension in the social inclusion pillar is meant to gather individuals around a common interest and the desire to share moments and knowledge. This dimension encompasses initiatives such as the proactive inclusion initiative “Schools Open to the Neighbourhood” of the City of Athens (see above). This dimension also focuses on the circular economy and the mutual exchange around a green objective, such as recycling. Taking the example of *Recycleries* (see Box 3.2.), the *Cohesion Services* policy will significantly increase the pool of volunteers able to participate in the *Recyclerie*. For instance, a computer engineer can help the *Recyclerie*'s salaries to recondition still-working computers while she / he can learn how to repair a washing machine.

Box 3.2. French “Recycleries”

Athis-Mons, Grasse, Paris 10th, Romans-sur-Isère and Saint-Herblain

Recycleries are associations that often rely on a salary basis, which is supported by a wide range of volunteers for the fixation of prices, the screening of waste, the creation of events, etc. More rarely they only rely on volunteers, like the Solidary Library in Paris 10th. A team of operators, often in partnership with the local authority, is in charge of collecting bulky wastes at houses, and repairing or recycling them. Other missions, such as awareness campaign can be organised, as it is the case in Saint-Herblain. The operators are in charge of spotting “wild” bulky wastes but also of informing local residents about the waste collection system and the opportunities of second-hand goods revalorisation. Another team is in charge of the sale. In larger *Recycleries*, employees and volunteers' positions can be more specialised: dismantling, diversion of objects and information of local residents at waste centres, input management (including identification and screening), repairs, cleaning, customisation, hosting repair / customisation events, etc. The *Recyclerie* offers a strong support for return to employment since salaries and volunteers can experiment a large diversity of activities and train themselves to a wide range of jobs, from logistics, handling, sales, etc. Several digital software are often used, for objects screen and sales, for instance, enabling to develop IT skills, which can easily be transferred to other jobs and sectors.

Source: (CNLRQ, 2016^[45])

Support social integration

The social integration pillar aims at providing an active role in the society for every individual willing to participate; it focuses on providing a sense of “usefulness” through the creation of a “zero unemployment” territory. This pillar is inspired by the initiative *Territoires zéro chômeur de longue durée (TZCLD)* in France, aimed at adapting jobs to those most excluded from working life (Association TZCLD, n.d.^[46]). This pillar seeks to make TZCLD a systematic objective and policy at the local level. As discussed above, if funding are sufficient, independent and self-employed workers could be financially supported by the local authority. In the first step, the local community will determine everything that needs to be repaired, improved or created on the local territory through local and participative democratic mechanisms. This first step participates in the development of social interactions and integration because each citizen has a role to play in highlighting what could be done within the local territories. It also empowers local communities to redefine the type of local society they want to create, through the types of installation, improvements, etc. they want to develop. All the local unemployed and precarious workers will participate in these activities, financed by the local government and/or participative budgets. The financing of some projects through participative budgets will empower and involve further local residents in their local community. Job seekers and precarious workers can either be directly employed by the local government or integrated in local businesses to perform the tasks. The integration of job seekers and precarious workers within a local business on behalf of the local authority could be a good mean to promote future employment if the local business grows. Job seekers and precarious workers will also have access to both “associative” Cohesion Services and traineeships. Through Cohesion Services, unemployed workers can maintain a sense of “usefulness” while preserve their well-being, mental health and trust; long-term unemployment having harmful psychological and social impacts (Düll, Thureau and Vetter, 2016^[47]).

Development of transdisciplinary skills and mutual understanding

The skills’ development pillar aims at promoting exchanges of employees across enterprises and providing training for unemployed people. This pillar is based on two dimensions, first, the mere development of skills and second, the development of better understanding of other working environments and systemic processes. This pillar promotes the development of life-long training oriented towards practical and transversal experiences, across sectors, activities and positions, to support transdisciplinarity (Bridle et al., 2013^[48]). Since formal application is not possible through the platform of Cohesion Services, everyone can participate in the traineeship of their choice, depending solely on space availability, regardless of their current position, profession or education background. This dimension promotes values of equity, mutual inter-dependencies and mutual understanding; everyone can bring something to someone.

The training Cohesion Services is based on mutual benefit and transdisciplinarity. Traineeships are beneficial for *trainees*, who develop new skills, as well as for their employers and their host institutions. First, *trainees* can take advantage of their new skills within their own enterprise, developing new angles of actions that can help improve their work. Second, host enterprises also benefit from trainees since trainees can help develop new ideas thanks to their different background, knowledge and perception. In this way, they help improve existing mechanisms, develop new activities and support innovation and creativity. For wage-earning workers, if their enterprises also host trainees, this creates highly virtuous exchanges of employees across enterprises; this practice can even be extended within large enterprises, across units. The presence of the agriculture sector on the platform of Cohesion Services is important for individuals to re-establish connections with nature and support the development of local distribution channels; two aspects that are essential to effectively engage in the environmental transition. Supporting local agriculture also strengthens local resilience, providing basic essential goods and diminishing the dependency on global value chains that might be disrupted. This became evident during the COVID-19 pandemic. The needs in trainees will be adapted to the sector’s specificity and seasonality.

The skill's development pillar, and more broadly the overall Cohesion Services policy, aims at creating an active local community based on mutual understanding and trust. An emblematic example is the French hospital of Valenciennes. In 2019, the hospital won the Operational Excellence Price for its innovative management based on co-decision making between administrative staff and doctors. The ten services are managed autonomously, with their own independent budget, and co-ordinated. The Human Resources strategy is also innovative, targeted at improving intra-departmental communication. Worker exchanges are organised across services and units of the hospital for all personnel, e.g. nurses, doctors, biologists, administrative workers, accountants, etc. For instance, when a doctor integrates a nurses' unit for a determined amount of time, she / he takes the position of a nurse. The core objective is to better understand each other's work and to become aware of challenges other professions may have, which might not be perceived from outside. First, these exchanges enhance tolerance, i.e. if this hospital service takes more time that expected to deliver, it is not because they are lazy or unorganised but because they face challenges that I can now grasp, and reinforce the feeling of community. Second, these exchanges also help to anticipate each other's needs to make the organisation function smoother (Centre Hospitalier de Valenciennes, 2017^[49]). The *Cohesion Services* policy aims to expend this initiative at the city or district level. In addition to promoting trust and mutual understanding, this policy enable individuals to meet people they would not have met in other circumstances, creating social links and friendships that may not have existed otherwise. This will support social cohesion and diversity. Overall, this policy will participate to create a more tolerant and resilient society.

References

- 100 Resilient Cities (2019), *Social Cohesion: A Practitioner's Guide to Measurement Challenges and Opportunities*, Facebook / Rockefeller Foundation, <http://100resilientcities.org/wp-content/uploads/2019/09/100RC-Facebook-Social-Cohesion-Report.pdf>. [15]
- Aldrich, D. (2017), *The Importance of Scoail Captial in Building Community Resilience*, http://dx.doi.org/10.1007/978-3-319-50171-0_23. [18]
- Amabile, T., C. Hadley and S. Kramer (2002), "Creativity Under the Gun", *Harvard Business Review*, <https://hbr.org/2002/08/creativity-under-the-gun>. [38]
- Association TZCLD (n.d.), "Les fondements", *Territoires Zéro Chômeur de Longue Durée*, <https://www.tzclld.fr/decouvrir-lexperimentation/les-fondements/>. [46]
- Banque de France (2019), "77% des Français estiment avoir un niveau de connaissance moyen ou faible sur les questions financières selon une enquête Audirep réalisée par Banque de Rance", *communiqué de presse*, <https://www.banque-france.fr/communiquede-presse/77-des-francais-estiment-avoir-un-niveau-de-connaissance-moyen-ou-faible-sur-les-questions>. [44]
- Banque des Territoires (2020), *Territoire zéro chômeur: un décret précise le montant de la participation de l'État*, <https://www.tzclld.fr/decouvrir-lexperimentation/les-fondements/>. [37]
- Bridle, H. et al. (2013), "Preparing for an interdisciplinary future: A perspective from early-career researchers", *Futures*, Vol. 53, pp. 22-32, <http://dx.doi.org/10.1016/j.futures.2013.09.003>. [48]
- Cázarez-Gradedá, K. (2018), *The Whole of Society Approach: Levels of engagement and meaningful participation of different stakeholders in the review process of the 2030 Agenda*, <http://www.partners-for-review.de/wp-content/uploads/2018/11/Whole-of-Society-P4R-Discussion-Paper-Oct.-2018-1.pdf>. [29]

- Centre Hospitalier de Valenciennes (2017), *Projet d'établissement 2018-2023*, <https://www.ch-valenciennes.fr/wp-content/uploads/2018/11/PE-CHV-2018-2023-sans-annexes.pdf>. [49]
- CNLRQ (2016), *Les recycleries, des ressources pour les quartiers*, https://www.regiedequartier.org/wp-content/uploads/2016/12/2016-Guide_Recycleries-PLw.pdf. [45]
- Düll, N., L. Thurau and T. Vetter (2016), *Long-term Unemployment in the EU: Trends and Policies*, Bertelsmann Stiftung, https://www.bertelsmann-stiftung.de/fileadmin/files/user_upload/Studie_NW_Long-term_unemployment.pdf. [47]
- Economie Circulaire (2004), *Circular Economy Challenges for Local Authorities*, <https://www.economiecirculaire.org/static/h/circular-economy-challenges-for-local-authorities.html>. [9]
- Fonseca, X., S. Lukosch and F. Brazier (2019), "Social cohesion revisited: a new definition and how to characterize it", *Innovation: The European Journal of Social Science Research*,, <http://dx.doi.org/10.1080/13511610.2018.1497480>. [17]
- Gallup (2013), *European Countries Lead World in Distrust of Banks*, <https://news.gallup.com/poll/162602/european-countries-lead-world-distrust-banks.aspx>. [43]
- Godechot, O. (2015), *Variétés de financiarisation et accroissement des inégalités*, pp. 51-72, <https://www.cairn.info/revue-francaise-de-socio-economie-2015-2-page-51.htm>. [23]
- Group, N. (ed.) (2019), *Resilience-based Strategies and Policies to Address Systemic Risks*, OECD Publishing, [https://www.oecd.org/naec/averting-systemic-collapse/SG-NAEC\(2019\)5_Resilience_strategies.pdf](https://www.oecd.org/naec/averting-systemic-collapse/SG-NAEC(2019)5_Resilience_strategies.pdf). [3]
- High Level Group / Stockholm University (2016), *Through Resilience Thinking Towards Sustainability and Innovation*, https://docs.wixstatic.com/ugd/4bc46b_d7e342c1418b4fbd042f27d73ff713c.pdf. [10]
- ILO (2019), *The Power of Small: Unlocking the Potential of SMEs*, <https://www.ilo.org/infostories/en-GB/Stories/Employment/SMEs#intro>. [12]
- ILO (2012), *The effects of working time on productivity and firm performance: a research synthesis paper*, https://www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@travail/documents/publication/wcms_187307.pdf. [41]
- IRGC (2018), *Guidelines for the Governance of Systemic Risks*, https://www.researchgate.net/profile/Marie_Valentine_Florin/publication/328334939_IRGC_GUIDELINES_FOR_THE_GOVERNANCE_OF_SYSTEMIC_RISKS_In_systems_and_organisations_In_the_context_of_transitions. [5]
- Juttner, U. and S. Maklan (2011), "Supply chain resilience in the global financial crisis: an empirical study", *Supply Chain Management: An International Journal*, Vol. 16/4, pp. 246 –259. [6]
- Kimball (2018), *The Connection Between Well-Being and Creativity*, https://www.kimball.com/getattachment/499a8ae4-bb0c-4b83-a1b0-b40ce019167a/Connection-Between-Well-Being-and-Creativity_Nov2018_SM.pdf. [39]
- Linkov, I. and B. Trump (2019), *The science and practice of resilience*, Springer. [2]
- Mojtabai, R., M. Olfson and B. Han (2016), "National Trends in the Prevalence and Treatment of Depression in Adolescents and Young Adults", *Pediatrics*, <http://10.1542/peds.2016-1878>. [35]

- NAS, N. (2012), *Disaster Resilience: A National Imperative*, The National Academies Press. [1]
- OECD (2020), *A systemic resilience approach to dealing with Covid-19 and future shocks*, OECD Publishing, <http://www.oecd.org/coronavirus/policy-responses/a-systemic-resilience-approach-to-dealing-with-covid-19-and-future-shocks-36a5bdfb/>. [8]
- OECD (2020), *Covid-19 : SME Policy Responses (as of 19 May 2020)*, <http://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/>. [11]
- OECD (2020), *COVID-19: Cities policy responses (as of 27 March 2020)*, https://read.oecd-ilibrary.org/view/?ref=126_126769-yen45847kf&title=Coronavirus-COVID-19-Cities-Policy-Responses. [13]
- OECD (2020), “COVID-19: Protecting people and societies (as of 31 March 2020)”, *OECD Policy Responses to Coronavirus (COVID-19)*, <http://www.oecd.org/coronavirus/policy-responses/covid-19-protecting-people-and-societies-e5c9de1a/#section-d1e1433>. [30]
- OECD (2020), *The territorial impact of COVID-19: Managing the crisis across levels of governments (as of 3 April 2020)*, <http://www.oecd.org/coronavirus/policy-responses/the-territorial-impact-of-covid-19-managing-the-crisis-across-levels-of-government-d3e314e1/>. [14]
- OECD (2020), “Youth and COVID-19: Response, Recovery and Resilience”, *OECD Policy Responses to Coronavirus (COVID-19)*, <http://www.oecd.org/coronavirus/policy-responses/youth-and-covid-19-response-recovery-and-resilience-c40e61c6/>. [32]
- OECD (2019), *OECD Employment Outlook 2019: The Future of Work*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9ee00155-en>. [26]
- OECD (2019), *OECD Regional Outlook 2019: Leveraging Megatrends for Cities and Rural Areas*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264312838-en>. [24]
- OECD (2018), *Job Creation and Local Economic Development 2018: Preparing for the Future of Work*, <http://www.oecd.org/publications/job-creation-and-local-economic-development-26174979.htm>. [27]
- OECD Data (2019), *Self-employment rate*, <https://data.oecd.org/emp/part-time-employment-rate.htm#indicator-chart>. [36]
- OECD/FAO (2019), *Background Notes on Sustainable, Productive and Resilient Agro-Food Systems: Value Chains, Human Capital, and the 2030 Agenda*, OECD Publishing, Paris/Food and Agriculture Organization of the United Nations, Rome, <https://dx.doi.org/10.1787/dca82200-en>. [7]
- Paggi, M., D. Jopp and C. Hertzog (2016), *The Importance of Leisure Activities in the Relationship between Physical Health and Well-Being in a Life Span Sample*, pp. 450-458, <http://dx.doi.org/10.1159/000444415>. [40]
- Parkinson, C. (1957), *Parkinson's Law*, http://www.unilanguage.ru/_ld/0/80_read_book.pdf. [42]
- Penguin (ed.) (2011), *The Filter Bubble : What The Internet is Hiding from you*. [25]
- Piketty, T. (2018), “Brahmin Left vs Merchant Right: Rising Inequality & the Changing Structure of Political Conflict”, *World Inequality Lab*, <http://piketty.pse.ens.fr/files/Piketty2018.pdf>. [20]

- Recherches, É. (ed.) (1976), *La fin des terroirs: La modernisation de la France rurale (1870-1914)*, Fayard. [31]
- Rodrik, D. (2017), "Populism and the Economics of Globalisation", *Centre for Economic Policy Research*, https://cepr.org/active/publications/discussion_papers/dp.php?dpno=12119. [22]
- Seric, A. and D. Winkler (2020), *COVID-19 could spur automation and reverse globalisation - to some extent*, <https://voxeu.org/article/covid-19-could-spur-automation-and-reverse-globalisation-some-extent>. [28]
- Taleb, N. (2007), *The Black Swan: The Impact of the Highly Improbable*, Random House, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.695.4305&rep=rep1&type=pdf>. [4]
- United Kingdom Government (2018), *A connected society A strategy for tackling loneliness – laying the foundations for change*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/750909/6.4882_DCMS_Loneliness_Strategy_web_Update.pdf. [34]
- United Nations (2016), *Chapter 1: Identifying social inclusion and exclusion*, <https://www.un.org/esa/socdev/rwss/2016/full-report.pdf>. [16]
- World Bank (2018), *Poverty and Shared Prosperity*, World Bank Group, <https://www.worldbank.org/en/publication/poverty-and-shared-prosperity>. [21]
- World Economic Forum (2019), *Loneliness has become a global epidemic among young people today*, <https://www.weforum.org/agenda/2019/10/1-in-3-young-adults-are-lonely-and-it-affects-their-mental-health/>. [33]
- Zucman, G. (2019), *Global Wealth Inequality*, <https://gabriel-zucman.eu/files/Zucman2019.pdf>. [19]

Drawing lessons on digital from COVID-19: a call for action to the World Trade Organisation

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Amidst the radical changes brought by the COVID-19 pandemic and in light of the central role played by digital technologies to alleviate the consequences of lockdown measures, international trade in IT-related products assumes renewed importance in today's economic systems. This brief shows how international trade and its governance have been pivotal in making the internet accessible and allowing societies to adapt to the new conditions created by the pandemic, highlighting the role that multilateral rules can continue to play towards building inclusive and resilient societies. On this basis, the brief elaborates a call for action to the WTO Membership in four main areas: extend the geographical coverage of existing agreements; consider whether they are up to date; give priority to multilateral trade negotiation; and design trade policies for the new generations.

The COVID-19 pandemic brought radical change in the way societies work: it led to the emergence of teleworking arrangements as a key form of economic activity; it affected how families and friends keep in touch with each other, highlighting the benefits of technology to hear, see and talk to our loved ones; it shaped the way consumers shop and the way people spend their leisure time, with online platforms for shopping and streaming services experiencing growth amidst the troubled economic times. Behind these changes stands the internet, sometimes referred to as the 'hidden hero' of the current crisis (ITU, 2020^[1]).

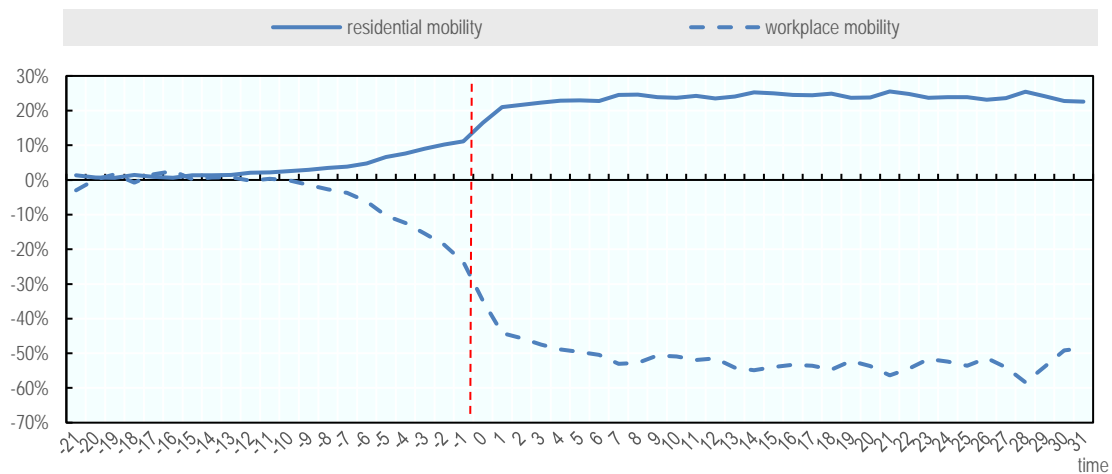
This brief brings to light the role of a different yet related ‘hidden hero’ in the COVID-19 pandemic: international trade and its governance. Better understanding the links between trade and the internet is indeed key to guiding international policy-making towards needed action in this area. The brief is structured in three main sections: the first documents the unprecedented changes societies have experienced and the role played by digital technologies at the height of the pandemic. The second section brings to light the contribution of international trade and its governance both towards preparing societies for the shock and during the pandemic. The third section focuses on what remains to be done, and elaborates an ambitious call for action to the World Trade Organisation Membership.

Digital technologies have played a key role in attenuating the impact of COVID-19

The COVID-19 pandemic led countries to adopt restrictive health-related measures, often in the form of partial or stringent lockdowns, with unprecedented impacts on societies. Google mobility data reveals that lockdown measures resulted on average in a 53% drop in workplace-related mobility one week following their imposition (Figure 1). This was accompanied by an increase in the time spent at home – reflected in a 25% rise in residential mobility in the same week. Lockdown measures appear to have been anticipated by citizens and governments, and they also seem to have lasting effects on mobility a month following their adoption, suggesting that the ability to adapt to the new conditions is crucial.

Figure 1. Lockdown measures resulted in significant changes in workplace and residential mobility

% change in mobility relative to the median mobility in January-February 2020, international average



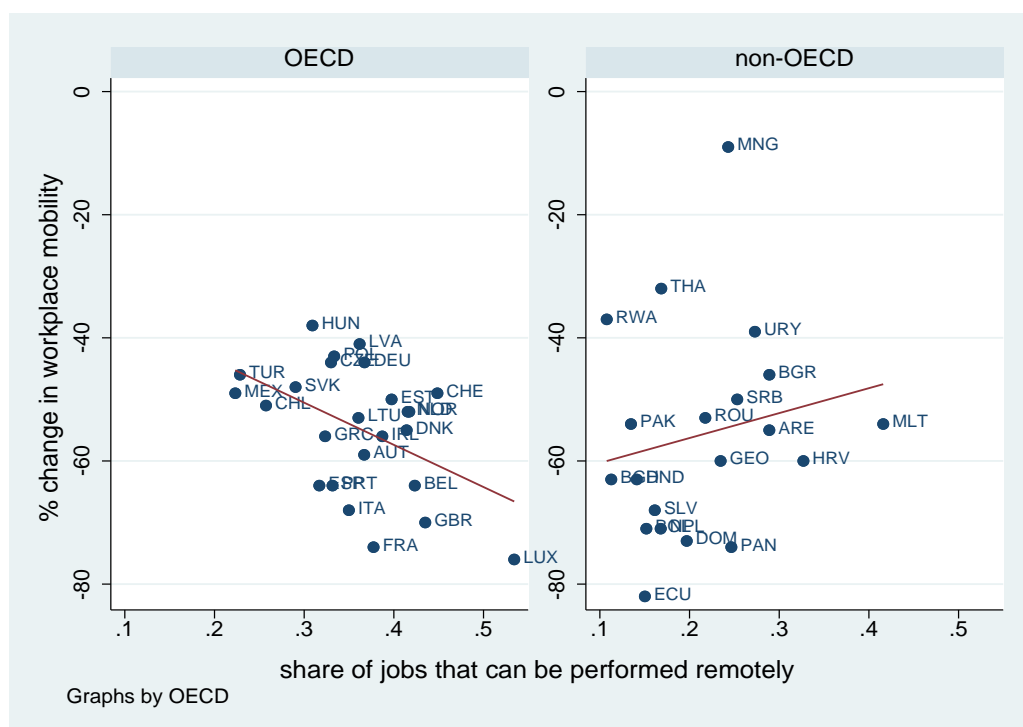
Note: The figure shows % changes relative to the baseline mobility, defined as the median mobility over the five week period from January 3 to February 6. Time=0 refers to the date of adoption of social distancing measures. The international average is based on a sample of 72 countries which adopted partial or total national lockdown measures. The start dates for lockdown measures and country-level results for workplace mobility are reported in Annex Table 1.A.1 and Annex Figure 1.A.1. Workplace mobility is defined as “Mobility trends for places of work”. Residential mobility is defined as “Mobility trends for places of residence”.

Source: Google COVID-19 Community Mobility Reports, <https://www.google.com/covid19/mobility> (accessed May 2020).

However, different countries, industries, and jobs are not equally placed to respond to the new environment, and not all restrictions shared the same level of stringency. This means that the extent to which mobility has actually responded to government measures differs from country to country (Annex Figure 1.A.1). Evidence suggests that OECD countries that were most susceptible to adopting remote working arrangements experienced the largest drop in workplace-related mobility two weeks following the imposition of confinement measures, while this does not appear to be the case for non-OECD countries

(Figure 2). Although a variety of elements may explain this finding, such as skill levels and different economic structures, access to efficient digital networks and Information Technology (IT) devices is likely to be an important factor behind the untapped potential of teleworking in some non-OECD countries.¹² A well-functioning digital environment is indeed key to shifting economic activity from the offline space to the online domain.

Figure 2. In OECD countries, workplace mobility has fallen where more jobs could be performed remotely



Note: the % change in workplace mobility is measured two weeks following the imposition of national confinement measures ($t=14$).
Source: Google mobility data and Dingel and Neiman (2020_[22]). Author's calculations.

The extent to which the internet is accessible to the wider public and the capacity of the digital environment to provide space for economic activity are respectively two essential dimensions of inclusiveness and resilience in today's economic systems. Access to the internet and IT equipment is not only central to engaging in teleworking and reducing the risk of contagion; it also allows education to continue remotely during school closures, while helping families and friends to remain connected, as digital communication is no longer the prerogative of new generations.

International trade is key for shifting activities online

Although its contribution is to some extent 'hidden', international trade plays an important part in ensuring digital connectivity. Trade supports the value chains involved in the production of IT products; it provides the network equipment upon which the internet operates; and it enables access to the computers and

¹² It is important to note that some developing and low-income countries registered significant drops in workplace-related mobility while having a lower share of jobs that could be performed remotely (bottom left corner of the non-OECD graph). The type of lockdown measure adopted is also likely to play an important role.

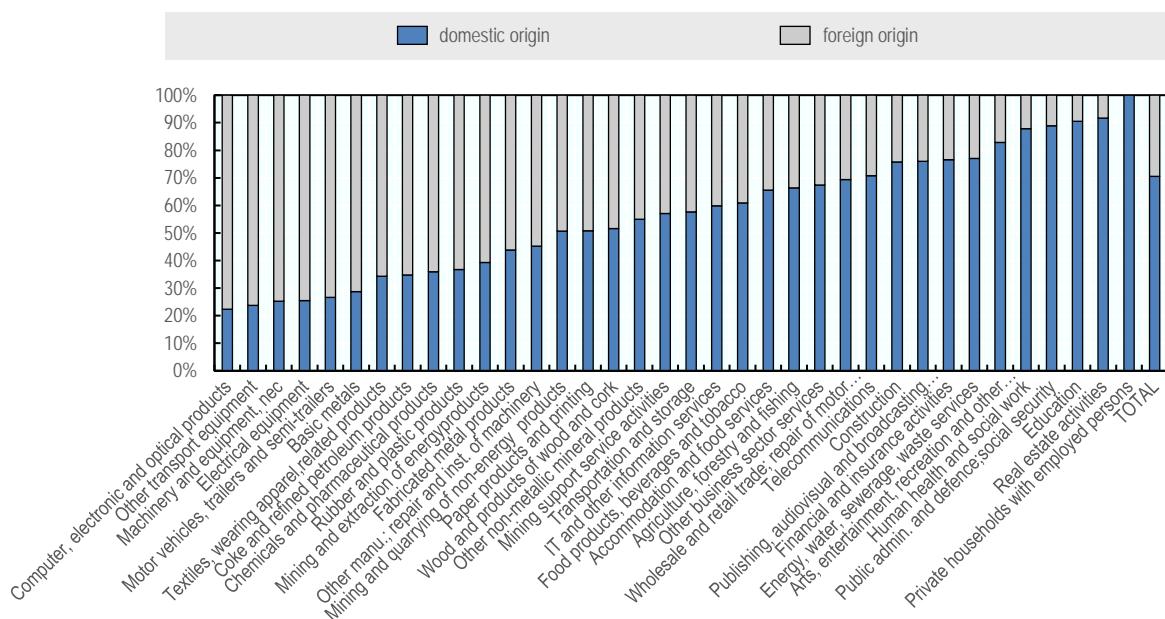
smartphones used to access the web. Trade policy establishes the regulatory framework for the exchange of goods and services across borders, enabling international production and playing an important role in lowering prices on the products needed to access the web.

International trade in goods and services enables access to the internet

Manufacturing of electronic products takes place today in highly complex and internationally integrated value chains (De Backer and Miroudot, 2013^[31]). Estimates from the OECD Trade in Value Added (TiVA) database reveal that about 78% of the value added in the final demand for computer, electronic and optical products is of foreign origin on average (Figure 3). In other words, for the average country more than three quarters of what is consumed in this sector is made up of value added (e.g. embodied in physical inputs or software) that comes from a different country than that of ultimate use. Similarly, the provision of IT services and Telecommunication services involves a significant share of foreign value added (40% and 29% respectively), highlighting the importance of trade for access to complementary services.

Figure 3. The value chain of computer, electronic and optical products is among the most internationally integrated value chains

% of value added of domestic and foreign origin in final demand, 2015, simple average



Note: The figure shows the simple average of the respective foreign and domestic shares in final demand for the 64 countries in the OECD TiVA database.

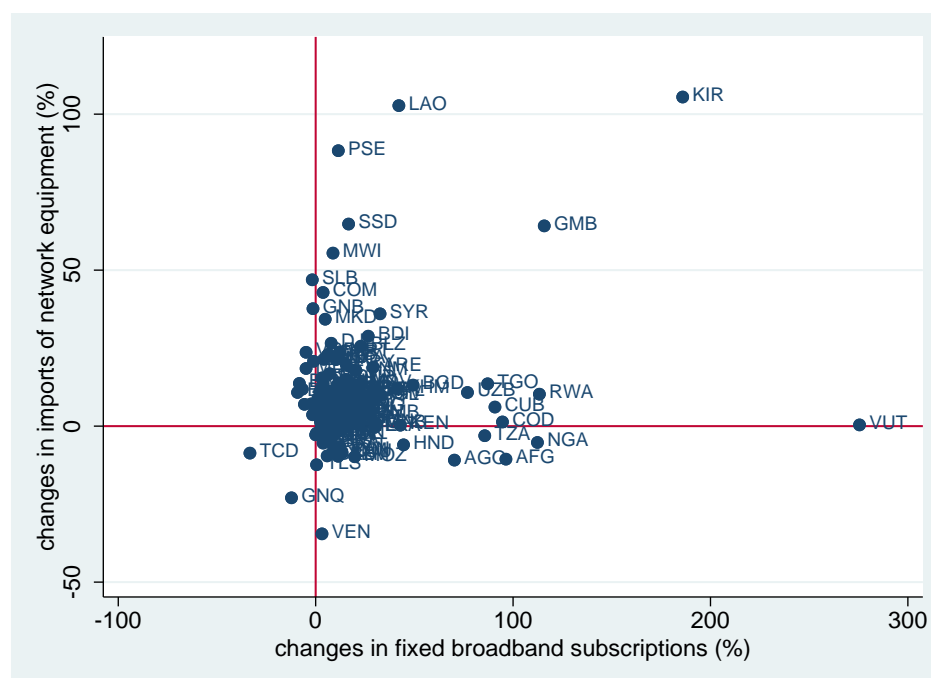
An important reason for the fragmentation of the electronics value chain is the high modularity of its products, as standardisation, codification and computerisation allow for a large interoperability of parts and components (De Backer and Miroudot, 2013, p. 28^[31]). International markets can also be the source of supply for which few domestic substitutes can be found, as international production is the result of the combination of unique knowledge and capabilities of firms located in different geographical areas.

In light of the predominantly international nature of this value chain, importing becomes key to creating the enabling environment for internet access. The cables, devices and services coming from abroad are

essential *digital enablers* for engaging in economic activity online, both within and across borders (López González and Jouanjean, 2017^[41]). As Figure 4 shows, increases in imports of network equipment like fibre-optic cables, routers and switching apparatus accompanied positive changes in the number of fixed broadband subscriptions for most countries (i.e. most observations are in the top-right quadrant), which suggests a relationship of complementarity between imports of physical equipment and the provision of fixed-broadband services.¹³

Figure 4. Imports of network equipment accompanied the growth of fixed-broadband subscriptions

Average growth rates for the period 2013-2018, percentage point changes



Note: based on a sample of 160 countries. Growth rates are defined as the average of year-on-year % changes in imports and subscriptions. For instance, a value equal to 100 for subscriptions means that these have grown by 100% relative to the previous year on average. Source: BACI database (CEPII research centre) and International Telecommunications Union (ITU).

The role of trade becomes all the more essential at a time when the digital infrastructure is under significant strain and the quality of internet connection is critical. Since the start of the COVID-19 crisis, demand for broadband communication services has soared, with some operators experiencing as much as a 60% increase in internet traffic compared to pre-crisis levels (OECD, 2020^[5]). In addition, broadband use has shifted from places of work to residential areas, altering the geography of internet usage (ITU, 2020^[11]). This has resulted in the need for hardware products to upgrade existing networks; it made access to datacentres and data-related services key; and it created the requirement for specialised personnel to intervene in order to make adjustments to the network infrastructure (OECD, 2020^[5]). These transactions involve international trade in whole or in part, including through the movement of technical personnel across borders.

The contribution of international trade to digital connectivity also extends to the devices we use daily to make use of the web. While network equipment forms part of the backbone to the internet infrastructure, computers and peripheral equipment (e.g. laptops and computer monitors) and communication equipment

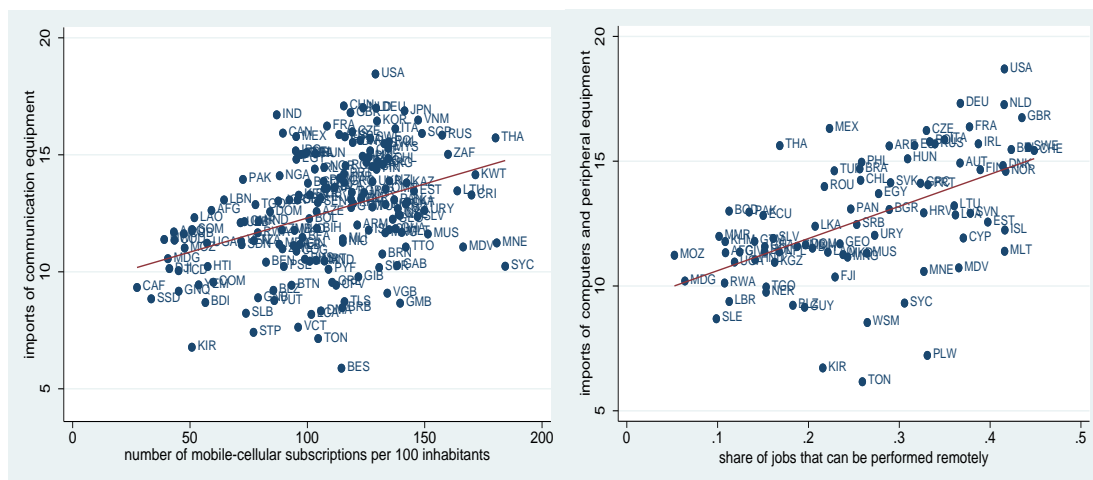
¹³ See Annex Table 1.A.2 for a full list of network equipment goods.

(e.g. smartphones) allow people to take advantage of this infrastructure.¹⁴ For instance, access to the internet and to information and communication technology (ICT) is among the conditions needed to move education activities online, and barriers to access can prevent students from taking full advantage of digital learning solutions (OECD, 2020^[6]).

Imports of communication equipment positively correlate with the number of mobile subscriptions per 100 inhabitants (left), while imports of computers and peripheral equipment generally accompany a higher share of jobs that can be performed remotely (right, Figure 5).¹⁵

Figure 5. Imports of ICT goods enable mobile connectivity and teleworking

Correlation between imports of communication equipment and mobile subscriptions per 100 inhabitants (left) and between imports of computers and peripheral equipment and the share of jobs that can be performed remotely (right). Log import values, 2018.



Note: based on a sample of 168 (left) and 84 countries (right). Mobile-cellular subscriptions are a main form of internet access in developing and low-income countries.

Source: BACI, ITU, and Dingel and Neiman (2020^[2]).

Additional signals in support of the importance of ICT trade during the crisis come from proxy measures for demand and the most recent statistics on international trade. Google searches for words like ‘computer monitor’ or ‘smartphone’ more than doubled globally during lockdown periods (Annex Figure 1.A.2), while early signs from Chinese trade data suggest that trade in the sector has been less hit than trade in other sectors during confinement (OECD, 2020^[7]).

Trade policy creates the conditions for more affordable access to the internet

In a value chain where access to foreign physical inputs, services and knowledge is essential, policies affecting the flow of goods and services across borders assume renewed importance. Trade policy has

¹⁴ Computers and peripheral equipment and communication equipment are identified with the ICT goods definition developed by the OECD's Working Party on Indicators for the Information Society (WPIIS), and updated by UNCTAD in the context of the Partnership on Measuring ICT for Development. Full list available: https://unctadstat.unctad.org/en/Classifications/DimHS2017Products_Ict_Hierarchy.pdf (Accessed 2nd June 2020).

¹⁵ It is important to note that these correlations do not imply causation – demand for IT equipment may be growing as a result of greater access to mobile subscriptions, for instance. However, they do point to trade (and more specifically to imports) as important elements for accessing and taking advantage of digital networks.

allowed wider access to the internet by lowering prices on IT goods and creating competitive conditions for the provision of telecommunication services. These valuable examples can guide trade policy-makers towards needed action in this area.

The 1996 Information Technology Agreement (ITA) signed at the inaugural World Trade Organisation (WTO) Ministerial conference in Singapore played a key role in promoting access to digital technologies¹⁶. Feenstra (2008, p. 113^[8]) estimates that – as a result of fragmented production processes – the ITA multilateral tariff reductions had a highly magnified effect on prices of IT equipment, leading to a fall in import prices that was many times higher than the tariff cut itself.. The WTO (2017, p. 10^[9]) reports that trade has greatly benefitted from the ITA, with the impact of reducing tariffs on ITA products by one percent being a 0.7 to 0.8 percent increase in their imports. Membership to the ITA also resulted in an average increase of 8.5 percent of final goods exports for developing countries, reflecting growing integration in downstream stages of global value chains (WTO, 2017, p. 11^[9]).

The 1996 WTO Information Technology Agreement significantly lowered prices of IT goods, increased trade in IT products and created new export opportunities for developing country members in downstream industries.

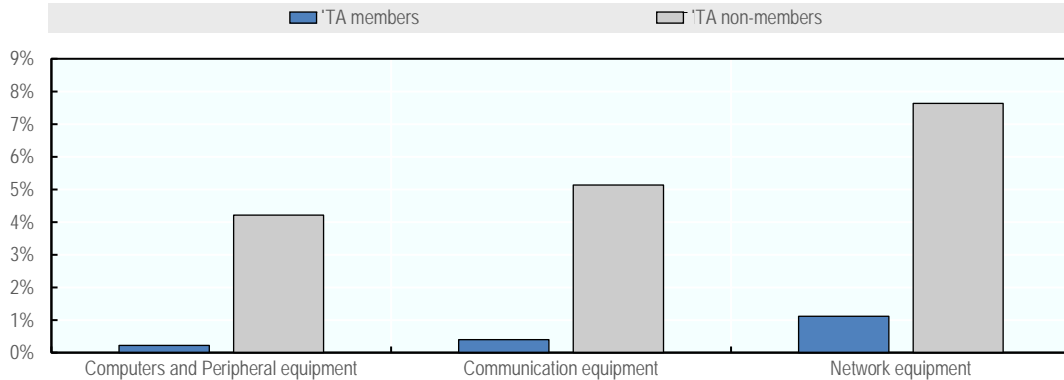
The ITA agreement covers the lion's share of trade in the *digital enablers* identified in this brief (i.e. computers and peripheral equipment, communication equipment and network equipment), which leads to important differences on tariffs applied on these goods between members and non-members to the agreement (Figure 6). In fact, estimates based on the TRAINS database reveal that, on average, at least 93% of the value of imports of computer and peripheral equipment, 97% of trade in communication equipment, and at least 62% of trade in network equipment occurs in products that attract zero tariffs when the importing country is an ITA member.¹⁷

¹⁶ Members to the agreement set tariffs to zero on a wide range of IT goods on a Most-Favoured Nation basis. This means that countries that are not part of the agreement can still benefit from the tariff elimination afforded by the ITA.

¹⁷ Estimates obtained using TRAINS data on the value of imports for the year 2018 with a sample of 102 countries (based on data availability). The identification of ITA product categories is based on a correspondence between the goods covered in the original agreement in the HS1996 nomenclature and the HS2017 nomenclature. The correspondence is adjusted through a feedback loop with the tariffs effectively applied by ITA members on goods covered by the agreement. These are lower bound estimates because HS 6 digits codes only partly covered by the agreement (i.e. containing 'ex-outs') are excluded from the calculations.

Figure 6. Non-members to the WTO Information Technology Agreement apply higher tariffs on digital enablers

Average applied tariff rate on digital enablers, 2017-2018

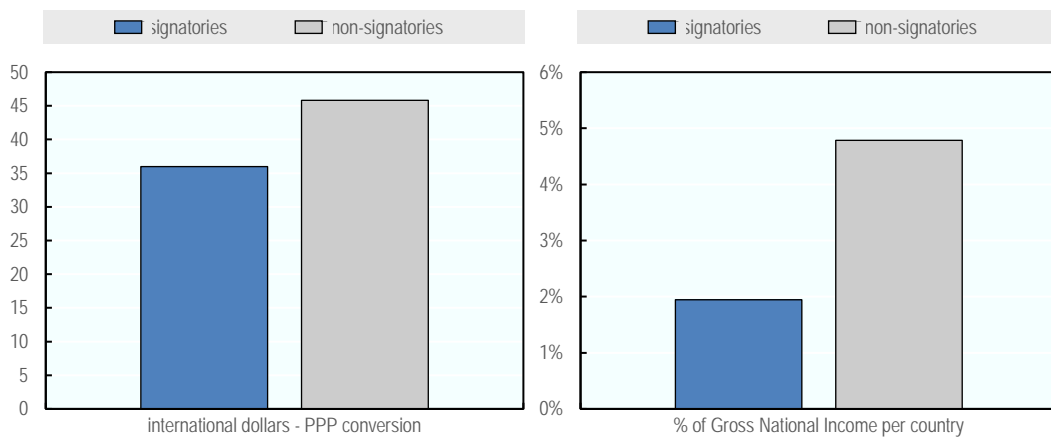


Note: Simple average; based on 128 countries. Tariffs applied on *digital enablers* by members of the agreement are different from zero due to the less than full coverage of these goods in the ITA. This also reflects implementation choices in national schedules of commitments in HS2017. Source: TRAINS database

Beyond lowering tariff rates, intended as the ad-valorem taxes paid on goods by virtue of them crossing a border, trade policy can also play a role in lowering internet tariff rates, intended as the prices paid to make use of the web. The General Agreement on Trade in Services (GATS) 1997 Agreement on Basic Telecommunications contributed to the creation of competitive conditions for the provision of telecommunications services (Box 1). For signatories of the Reference Paper on Telecommunications, the average price to access a basic fixed-broadband internet connection stands at about \$36 (equal to approximately 2% of the average income in those countries), compared to \$46.8 for non-signatories (equal to 4.8% of average income) (Figure 7). While trade policy is only one element of broader regulation in this sector, it can extend the benefits of complementary reforms and guarantee their certainty.

Figure 7. Fixed broadband is more accessible among signatories of the WTO Reference Paper on Telecommunications

Median price for a fixed-broadband monthly subscriptions, PPP\$ (left) and % of GNI (right), 2019



Note: The fixed-broadband basket is based on the cheapest fixed-broadband monthly subscription offered in a country with as a minimum a 5 GB monthly usage and an advertised download speed of at least 256 Kbit/s (ITU,2020). Based on a sample of 160 (left) and 172 (right) countries. Source: ITU, WTO-World Bank I-TIP services database, and original supplements to GATS schedules of commitments

Box 3. The 1997 GATS Agreement on Basic Telecommunications

The GATS schedules of commitments in telecommunication services

The first element of the agreement consists in the multilateral concessions contained in the schedules of the 108 members that have made commitments. This includes the establishment of new telecoms companies, foreign direct investment in existing companies and cross-border transmission of telecoms services. Ninety-nine members have also committed to extend competition in basic telecommunications (e.g. fixed and mobile telephony, real-time data transmission, and the sale of leased-circuit capacity).

The Reference Paper

The second important element of the agreement is the creation and adoption by 82 countries of the legally binding “Reference Paper”, which establishes regulatory principles in telecommunications and provides a blueprint for sector reform that reflects best practices in telecoms regulation. Provisions include:

- Competitive safeguards, including the prevention of anti-competitive practices and the prohibition of anti-competitive cross-subsidization.
- Interconnection, including the possibility of linking with suppliers providing public telecommunications transport networks on non-discriminatory conditions and in a quality no less-favourable to that provided for own like services.
- Universal service, including the right of any member to define the kind of universal service obligation it wishes to maintain, provided that they are not per se anti-competitive; that they are administered transparently, non-discriminatorily, and in a competitive neutral manner; and that they are not made more burdensome than necessary.
- Public availability of licensing criteria, including the period normally required to obtain a license to provide telecommunication services and the terms and conditions for obtaining individual licenses.
- Independent regulators, establishing that the regulatory body shall be separate from, and not accountable to, any supplier of basic telecommunications services.

The Annex on Telecommunications

The third and last element of the agreement whose importance has clearly surfaced during lockdown periods is the Annex on Telecommunications. Recognizing the specificities of the telecommunications services sector and, in particular, its dual role as a distinct sector of economic activity and as the underlying transport means for other economic activities, the Annex addresses access to telecommunication services by users rather than the ability to enter markets to sell such services. As such, it binds all 108 members regardless of their specific commitments in the telecommunications sector, and ensures non-discriminatory access to telecom networks for the supply of other services such as financial or IT services.

Source: WTO website: https://www.wto.org/english/tratop_e/serv_e/telecom_e/telecom_e.htm (Accessed on June the 2nd 2020)

The contribution of international trade rules to internet access and trade in digital technologies also extends beyond the ITA and negotiations of telecommunication services. For instance, the WTO agreement on technical barriers to trade (TBT) and the TBT committee continue to ensure product standardization and limit trade frictions across borders, which is key in light of the high modularity of the IT value chains. Beyond multilateral trade negotiations, important steps forward have also been taken in this area as part of Regional Trade Agreements (RTAs).

A call for action to the World Trade Organisation Membership

In the aftermath of the first wave of the COVID-19 pandemic and in the face of widespread uncertainty, debates on trade and globalization are centred on the merits of re-shoring strategic value chains such as the production of medical equipment. Similarly, commentators focused on what the optimal short-term trade policy responses should be in the midst of a global pandemic, including on the costs of export restrictions (Baldwin and Evenett, 2020^[10]; OECD, 2020^[11]).

In the limited space of this short document, it is argued that multilateral trade liberalisation has improved access to the IT equipment needed to make use of the web, while trade-related reforms helped lower the price paid for internet connections. Trade policy, in conjunction with complementary policy action, can allow the benefits of technological progress to be shared across borders, while wider access to the internet – itself the result of economic interdependence and international cooperation – contributed to making our societies more resilient in the face of the COVID-19 pandemic.

Economic interdependence and international cooperation contributed to making IT equipment more accessible and to lower the costs of internet access, allowing activities to continue online during lockdown periods. Interdependence made societies more resilient in the face of the COVID-19 pandemic.

With reference to the horizon of trade policy discussions, this brief aims to stretch the current debates a bit further in the future. Having documented the role that digital technologies played during the crisis and the contribution that trade can make towards promoting access to the digital economy, it becomes important to elaborate a plan of action for what comes next on the trade policy agenda.

Although of central importance, existing agreements may fall short of responding to the needs of the digital economy and to the new consumption patterns and work arrangements of generations Y and Z. At the same time, the experience of the pandemic and the role played by digital technologies can provide a powerful stimulus for trade policy discussions in this area. Matters relating to the digital economy are actively discussed at the WTO Joint Statement Initiative on e-commerce, launched at the 11th Ministerial conference in Buenos Aires (2017) and now gathering more than 80 members.

In light of the above, this document elaborates an ambitious call for action to the World Trade Organisation Membership:

Increase participation in IT-related agreements

Although bringing together a large number of countries, agreements like the Information Technology Agreement and the Annex on Telecommunications do not count among their signatories the full Membership of the WTO, as an important share of developing and low-income countries does not currently take part in these agreements.

Non-members should give new and careful consideration to the benefits of participation in WTO plurilateral agreements in light of the prevailing economic conditions. To the extent that these are regarded as complementary, discussions on capacity building and technical cooperation should accompany new undertakings.

Work towards updating existing agreements

In parallel to a larger participation in existing agreements, members may want to consider whether these sufficiently reflect the prevailing economic reality. For instance, commitments under the ITA were expanded by a group of 51 members at the 10th Ministerial Conference in Nairobi (2015), to include new generation multi-component integrated circuits (MCOs) and touch screens, among other goods.

Consideration should be given to whether existing agreements in telecommunications, such as the Reference Paper, well account for the considerable changes that occurred over the past 20 years, including the growth of mobile telephony and mobile internet connectivity, the use of packet-switching and voice over IP (VoIP) over circuit-switching in telecommunications, and the rise of cloud service providers.

Give priority to multilateral trade negotiation and MFN commitments

The unprecedented shock brought about by the COVID-19 pandemic highlights the importance of Most-Favoured Nation (MFN) commitments and multilateral trade negotiation. At present, there is widespread uncertainty on the future course of the pandemic, and some regions of the world might face further difficulties while others experience recovery.

Non-discriminatory access to as many markets as possible means that firms can leverage the changing sources of supply and demand across borders to cushion the impact of the crisis. The benefits of a common rulebook become considerable if firms need to diversify their value chains for inputs and exports across many trade partners to minimise risks.

When tackling emerging issues, design trade policies for the new generations

While WTO agreements provide a flexible regulatory framework that is adaptive to technological change, consideration should also be given to whether these can properly account for patterns of consumption and work that mainly characterise generations Y and Z, and which were central to alleviating the social consequences of COVID-19. In this area, new regulation needs to be as forward-looking as possible.

Smartphone applications radically changed the way services are obtained both within and across borders, while the emergence of digital platforms and digital ordering has revolutionized the delivery of goods, boosting trade in small parcels. The increasing use of data by domestic and international firms calls for regulatory approaches that allow for the benefits of data analytics while ensuring that the privacy of citizens is not compromised. Trade policy can promote interoperability among different regulatory approaches, as it aims to minimize disruptions from the interaction of different national or regional regimes. As some of the social changes brought about by the pandemic may be here to stay, members may also want to consider whether a sustained growth in the use of teleworking and teleconferencing activity would have implications for the existing trade architecture, especially in services.

At last, it is important to underscore that while international trade can be an integral part of the governments' response to the COVID-19 pandemic, the benefits of trade materialise when complementary domestic policies are in place (OECD, 2017_[12]). While increased competition in the telecommunications sector encourages the expansion of digital networks, the economic case for connecting remote areas may be weak, meaning that governments might have to step in to promote a far-reaching internet infrastructure. While international trade can help lower the price of IT equipment, this could remain inaccessible for low-income families, meaning that governments might have to adopt other measures to support access for those with weaker revenues. Critically, the possibility to take meaningful advantage of digital solutions firmly rests on education, highlighting the role that schools play in preparing societies to the use of the internet. Careful consideration shall also be given to those jobs that cannot be performed remotely, while promoting circularity in the disposal of electronic waste will also be fundamental. In sum, trade policy is but one instrument in the policy toolbox for more inclusive and resilient societies.

References

- Baldwin, R. and S. Evenett (2020), *COVID-19 and Trade Policy: Why Turning Inward Won't Work*, CEPR Press, London, <https://voxeu.org/content/covid-19-and-trade-policy-why-turning-inward-won-t-work>. [10]
- De Backer, K. and S. Miroudot (2013), "Mapping Global Value Chains", *OECD Trade Policy Papers*, No. 159, OECD Publishing, Paris, <https://dx.doi.org/10.1787/5k3v1trgnbr4-en>. [3]
- Dingel, J. and B. Neiman (2020), "How Many Jobs Can be Done at Home?", *Working Paper*, No. 26948, National Bureau of Economic Research (NBER), <https://www.nber.org/papers/w26948>. [2]
- Feenstra, R. (2008), "Offshoring in the Global Economy", *The Ohlin Lectures*, Stockholm School of Economics, Stockholm, <https://www.researchgate.net/publication/242382768>. [8]
- ITU (2020), *Digital cooperation webinars*, <https://www.itu.int/en/ITU-D/Pages/seminars/2020/DigitalCooperation/default.aspx>. [1]
- López González, J. and M. Jouanjean (2017), "Digital Trade: Developing a Framework for Analysis", *OECD Trade Policy Papers*, No. 205, OECD Publishing, Paris, <https://dx.doi.org/10.1787/524c8c83-en>. [4]
- OECD (2020), *International Trade Pulse, OECD - Updated: May 2020*, <https://www.oecd.org/sdd/its/international-trade-pulse-oecd-updated-may-2020.htm> (accessed on 27 May 2020). [7]
- OECD (2020), "Keeping the Internet up and running in times of crisis", *OECD Policy Responses to Coronavirus (COVID-19)*, Organisation for Economic Cooperation and Development, Paris, https://read.oecd-ilibrary.org/view/?ref=130_130768-5vgoglwswy&title=Keeping-the-Internet-up-and-running-in_times-of-crisis. [5]
- OECD (2020), "Learning remotely when schools close: How well are students and schools prepared? Insights from PISA", *OECD Policy Responses to Coronavirus (COVID-19)*, Organisation for Economic Cooperation and Development, Paris, https://read.oecd-ilibrary.org/view/?ref=127_127063-iiwm328658&title=Learning-remotely-when-schools-close. [6]
- OECD (2020), "Trade interdependencies in COVID-19 goods", *OECD Policy Responses to Coronavirus (COVID-19)*, Organisation for Economic Cooperation and Development, Paris, https://read.oecd-ilibrary.org/view/?ref=132_132706-m5stc83159&title=Policy-Response-Trade-Interdependencies-in-Covid19-Goods. [11]
- OECD (2017), "Making trade work for all", *OECD Trade Policy Papers*, No. 202, OECD Publishing, Paris, <https://dx.doi.org/10.1787/6e27effd-en>. [12]
- WTO (2017), *20 Years of the Information Technology Agreement*, World Trade Organisation, Geneva, https://www.wto.org/english/res_e/booksp_e/ita20years_2017_full_e.pdf. [9]

Annex 1.A. Supplementary tables and figures

Annex Table 1.A.1. Start dates of national social distancing measures

Country	Start date	Country	Start date	Country	Start date
Argentina	2020-03-19	Honduras	2020-03-20	Pakistan	2020-03-24
Australia	2020-03-23	Hungary	2020-03-28	Panama	2020-03-25
Austria	2020-03-16	India	2020-03-25	Papua New Guinea	2020-03-24
Bahrain	2020-03-26	Iraq	2020-03-22	Paraguay	2020-03-20
Bangladesh	2020-03-26	Ireland	2020-03-12	Peru	2020-03-16
Barbados	2020-03-28	Italy	2020-03-09	Poland	2020-03-13
Belgium	2020-03-18	Japan	2020-04-07	Portugal	2020-03-19
Bolivia	2020-03-22	Jordan	2020-03-18	Romania	2020-03-25
Botswana	2020-04-02	Kuwait	2020-03-14	Rwanda	2020-03-21
Bulgaria	2020-03-13	Latvia	2020-03-12	Senegal	2020-03-23
Chile	2020-03-19	Lebanon	2020-03-15	Serbia	2020-03-15
Colombia	2020-03-25	Libya	2020-03-22	Singapore	2020-04-07
Costa Rica	2020-03-23	Liechtenstein	2020-03-16	Slovakia	2020-03-16
Croatia	2020-03-18	Lithuania	2020-03-16	South Africa	2020-03-26
Czech Republic	2020-03-16	Luxembourg	2020-03-18	Spain	2020-03-14
Denmark	2020-03-11	Malaysia	2020-03-18	Switzerland	2020-03-17
Dominican Republic	2020-03-19	Malta	2020-03-12	Thailand	2020-03-25
Ecuador	2020-03-16	Mexico	2020-03-28	Trinidad and Tobago	2020-03-17
El Salvador	2020-03-12	Mongolia	2020-03-10	Turkey	2020-03-21
Estonia	2020-03-13	Namibia	2020-03-27	United Arab Emirates	2020-03-26
France	2020-03-17	Nepal	2020-03-24	United Kingdom	2020-03-23
Georgia	2020-03-31	Netherlands	2020-03-16	Uruguay	2020-03-13
Germany	2020-03-23	New Zealand	2020-03-26	Venezuela	2020-03-17
Greece	2020-03-23	Norway	2020-03-12	Zimbabwe	2020-03-30

Note: Social distancing measures took a wide variety of forms, from curfews for the elderly and chronically ill to closure of non-essential business. The sample includes national confinement measures only. Source: Author's calculations.

Annex Figure 1.A.1. Changes in workplace mobility, by country

% change relative to baseline in January-February 2020



Source: Google COVID-19 Community Mobility Reports, <https://www.google.com/covid19/mobility> (accessed May 2020), own calculations.

Annex Table 1.A.2. Harmonised system classification of network equipment goods

Working list

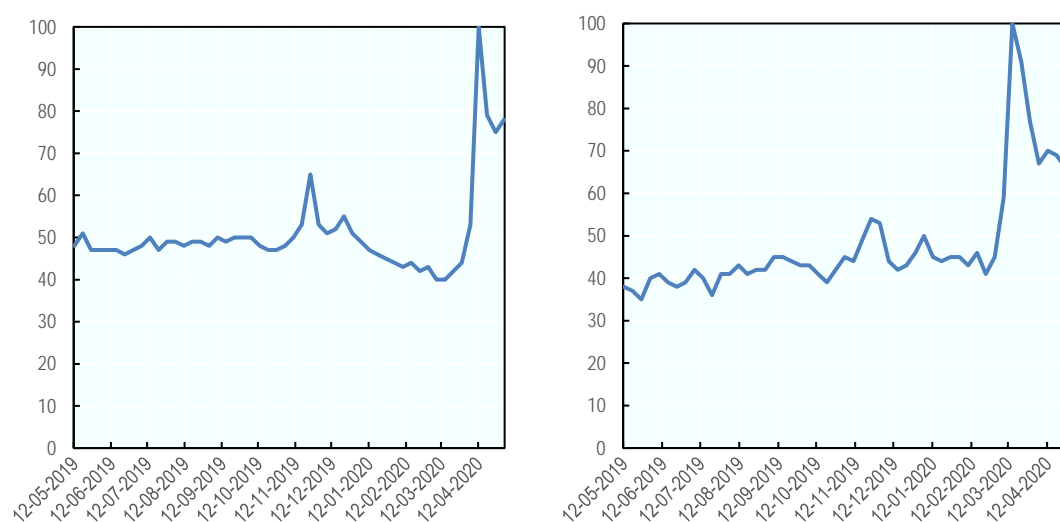
HS2017	Product description
851762	Machines for the reception, conversion and transmission or regeneration of voice, images or other data, including switching and routing apparatus
851769	Machines for the reception, conversion and transmission or regeneration of voice, images or other data, including switching and routing apparatus - Other
853630	Electrical apparatus: for protecting electrical circuits, not elsewhere classified in heading no. 8536, for a voltage not exceeding 1000 volts
853650	Electrical apparatus: switches not elsewhere classified in heading no. 8536, for a voltage not exceeding 1000 volts
853669	Electrical apparatus: plugs and sockets, for a voltage not exceeding 1000 volts
853690	Electrical apparatus: not elsewhere classified in heading no. 8536, for switching or protecting electrical circuits, for a voltage not exceeding 1000 volts
853810	Electrical apparatus: parts (e.g. boards, panels, consoles, desks, cabinets, other bases), for goods of heading no. 8537, not equipped with their apparatus
854442	Insulated electric conductors: for a voltage not exceeding 1000 volts, fitted with connectors
854449	Insulated electric conductors: for a voltage not exceeding 1000 volts, not fitted with connectors
854470	Insulated electric conductors: optical fibre cables
900110	Optical fibres, optical fibre bundles and cables
903040	Instruments and apparatus: specially designed for telecommunications (e.g. cross-talk meters, gain measuring instruments, distortion factor meters, psophometers)

Note: The working list contains relevant products in chapter 85 and 90 of the harmonised system of classification. It does not aim to be exhaustive.

Source: Author's calculations.

Annex Figure 1.A.2. Google searches for 'smartphone' (left) and 'computer monitor' (right)

Global Google searches over a 12 month period, in 'all categories'



Note: extracted on the 12th of May 2020. Data expressed relative to the peak frequency (=100). A value equal to 50 means that the word has been used half as often in Google searchers relative to its peak use. Note that Google trends data may not fully reflect searches in different languages.

Source: Google trends, <https://trends.google.com/trends/?geo=EN>

Empowering female leaders in science

Laura Kreiling

16 July 2020

Generation Y and Z has an important role to play in building a future with more female leaders in science. As a link between today's decision makers and the next generation of university students and researchers, we have to become role models and ensure inter-generational exchange. Policy sets the framework conditions. This will be a fundamental building block of the post-Covid-19 society, driven by innovative solutions based on scientific discovery in a more equitable research world.

Scientific advancement is essential for developing solutions and advising governments during the current coronavirus (Covid-19) pandemic. Hence, investment into higher education, academic research and the transfer of scientific knowledge into application will become ever more important when building more resilient societies. This brief focusses on the lack of female leaders in science which has been a longstanding problem (OECD, 2006^[1]). However, the current crisis and emergency responses have been exacerbating existing gender inequalities (OECD, 2020^[2]). It explores the role of Generation Y and Z to address this. During the lockdown in May 2020 was the 75th birthday of the child hood heroine for many of us from Generation Y and Z: Pippi Longstocking, the unconventional, free-spirited girl who lived the dream that anything is possible. She was 'born' from the writing of Astrid Lindgren shortly after the death of Marie Curie in 1934, an exceptional female pioneer in science. What would Marie Curie have thought of the situation today: 50.8% of women and 38.5% of men in the age group of 25-34 years have tertiary education¹⁸, but only 35% of all researchers are women in OECD countries.¹⁹

¹⁸ OECD statistics: Education at a glance: Educational attainment and labour-force status. "Population with tertiary education" 2018 or latest available. Accessible online: <https://data.oecd.org/chart/5Rpg>

¹⁹ OECD statistics: Main Science and Technology Indicators. "Researchers" 2018 or latest available. Accessible online: <https://data.oecd.org/rd/researchers.htm#indicator-chart>

Key messages

- The phenomenon of a ‘glass ceiling’ in business exists also in science with a ‘leaky pipeline’ in that women are dropping out of research and academic careers at a faster rate than men.
- Generation Y and Z individuals, institutions as well as policy makers play an important role in overcoming external and internal barriers for more female scientists in leadership positions in the post-Covid-19 society.
- Solutions consist in inter-generational exchanges and role models on the individual level and the creation of employment and career policies that overcome external barriers; support of next generation researchers and foster initiatives that target girls and their career choices.

The ‘leaky pipeline’²⁰ is not closing – an urgent issue to resolve

At first sight, the problem at hand appears like a paradox: the science performance of girls at school age is slightly better than of boys according to the latest available PISA (Programme for International Student Assessment) data²¹ and on average 41.3% of academic staff in the EU (European Union) is female (The European Commission, 2019_[3]) but less than 30% of the global R&D workforce are women according to the UNESCO Institute of Statistics (UIS)²² and the latest OECD International Survey of Scientific Authors (ISSA2) showed that only 30 percent of corresponding authors are women (Bello and Galindo-Rueda, 2020_[4]).

In terms of grant applications, the statistics from the [Marie Skłodowska-Curie Actions](#) (MSCA) indicate a worrying trend: while the share of women receiving MSCA grants between 2014 and 2018 has been around 40% for most type of grants, the largest gender gap was in RISE (Research and Innovation Staff Exchange) Action (13.2%) whose projects involve also senior whereas other MSCA actions only involve early stage- and experienced researchers (i.e. pre- and post-doctoral researchers). The data also shows only 30% female applicants across all European Research Council call types in 2017.

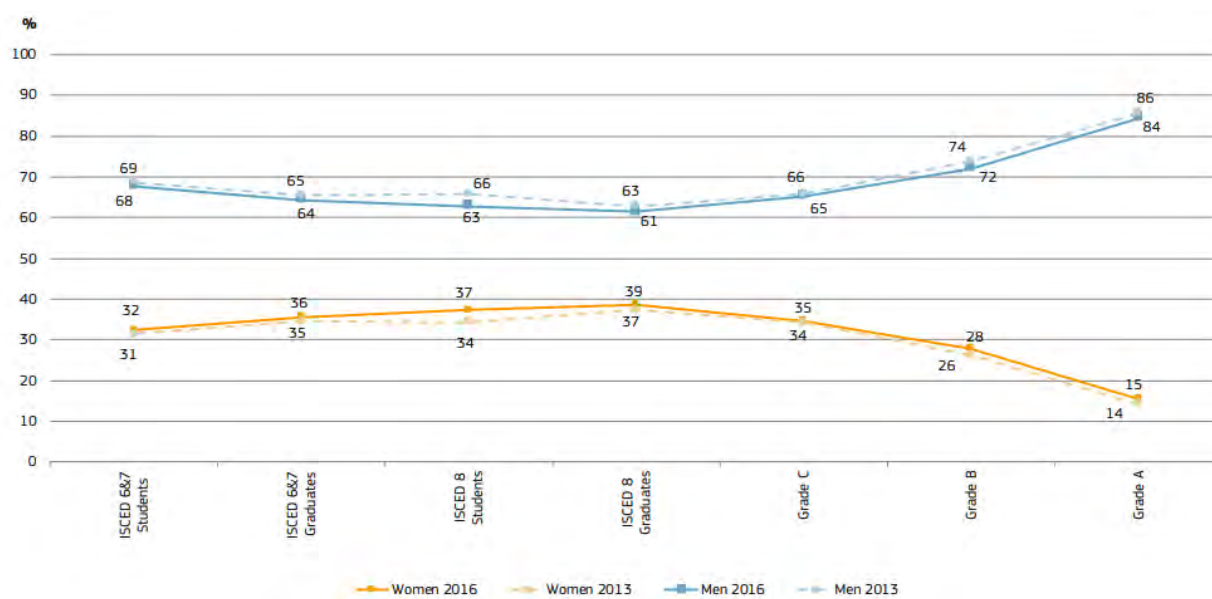
Over the course of a researcher career, the gender imbalance in favour of men begins at the PhD stage (48 % women), continues in the postdoctoral stage (46 % women) and at mid-career level (40 % women) so that at senior level the rate of female leaders is at 24%(The European Commission, 2019_[3]). In other words, as women advance to higher positions in research organisations, their share of academic staff rapidly declines which suggests that there are barriers for women in science to move up the career ladder. This so-called ‘leaky pipeline’ (see Figure 1) clearly shows that female scientists are under-represented in research leadership positions.

²⁰ The term ‘leaky pipeline’ refers to the phenomenon that women are dropping out of research and academic careers at a faster rate than men

²¹ PISA results 2018. OECD average in science performance. Accessible online: <https://data.oecd.org/pisa/science-performance-pisa.htm#indicator-chart>

²² UIS factsheet 2019 “Women in Science” Accessible online: <http://uis.unesco.org/sites/default/files/documents/fs55-women-in-science-2019-en.pdf>; numbers in headcounts, including part and full-time employees,

Figure 8. Share of men and women in science and engineering careers - students and academic staff, EU-28 (2013-2016)



Source: Figure 6.2 (The European Commission, 2019, p. 117^[3])

Searching for reasons

In order to advance to the identification of solutions, it is important to reflect about why so few senior female researchers make it to grade A and B positions. Reasons can be grouped into three categories: personal, institutional and cultural.

Personal preferences are related to someone's character in terms of the degree of altruism, competitiveness and risk attitude as well as values, such as work-life-balance. In terms of institutional factors that might contribute to the fact that women leave science are implicit gender bias in performance assessment and gender stereotypes by recruitment decisions and promotion of women to senior grade positions, evaluation committees and university oversight bodies and scientific committees responsible for research funding. Other issues include gendered perceptions of leadership and leadership styles as well as the prevalence of short-term contract research positions of female scientists.

In terms of the cultural component, national culture which favours rather traditional gender stereotypes will make women less likely to strive for a career in science and/or leadership position because their contribution to society is seen elsewhere. Furthermore, the culture in the research field might favour the advancement of men. To explore this cultural component more, the role of scientific discipline and national context is further discussed in the next section.

The scientific field and national context matters

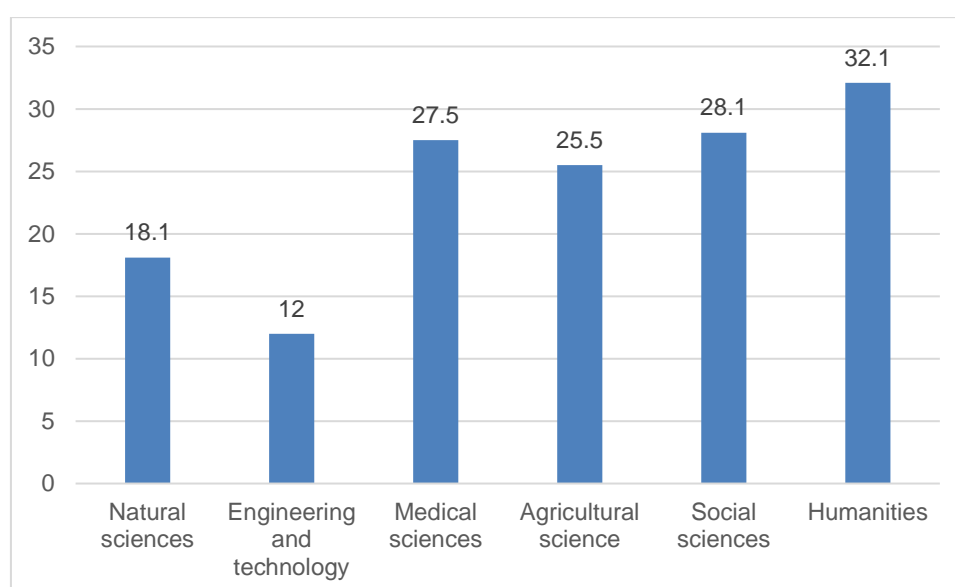
To get a more fine-grained understanding of the issue, it is important to disentangle the data with regard to the academic discipline and the national context. On the latter, the global R&D workforce reported in the UIS 2019 factsheet for the year 2017²³ show wide differences ranging from countries with above 55% female scientists (like Tunisia, Myanmar, Azerbaijan, Mongolia and Venezuela) and a few less than 20%

²³ UIS factsheet 2019 "Women in Science" Accessible online: <http://uis.unesco.org/sites/default/files/documents/fs55-women-in-science-2019-en.pdf>

in some African and Asian countries. In Europe, the share of female scientists ranges from above 50% in North Macedonia, Latvia, Lithuania and Serbia to less than 30% in Austria, Luxembourg, Malta, Germany, France, the Czech Republic and the Netherlands (in descending order between 29.5% and 25.8%).

It is not surprising to find that the share of women varies by scientific field. In fact, data from the EU-28 shows that women in academic leadership positions (grade A) are more common in social sciences and humanities (respectively 28.1% and 32.1%) unlike natural sciences and engineering and technology (respectively 18.1% and 12.0%)(see Figure 2). This trend is also reflected in the aforementioned issue of fewer female corresponding authors. The latest OECD ISSA²⁴ data shows that women are corresponding authors in only 15% of publications in physics and astronomy whereas they represent 45% of corresponding authors in the social sciences and psychology.

Figure 9. Share of women (%) in grade A positions in the EU-28 in 2016



Source: She figures 2018, the European Commission

The recent statement of the [Australian Chief Strategist](#) on the impact of the Covid-19 pandemic on women in the STEM (Science, Technology, Engineering and Mathematics) workforce points out alarming disparities: early evidence from Australia suggests that women in STEM careers have been facing reduced career opportunities and higher job insecurity since the beginning of the pandemic. The former results from the unequal distribution of domestic workloads and more disruption of working hours than men and the latter from short-term or casual employment situations which are now threatened by cuts.

²⁴ The data of the OECD International Survey of Scientific Authors (ISSA) survey is accessible online: <http://www.oecd.org/sti/survey-of-scientific-authors.htm>

Institutions and individuals are needed to drive solutions

In view of the aforementioned facts, it is of paramount importance to ensure that the number of women in top science positions continues to grow and that the average annual growth of 2.9 between 2013 and 2017 accelerates (The European Commission, 2019^[3]). The challenge at hand is multifaceted and thus solutions have to be sought on multiple levels: policy makers and institutions can address external barriers and we - the Generation Y and Z who are either still in higher education, postgraduates or early-stage researchers - can act on the individual level in supporting women to overcome internal barriers to become scientists and take on leadership positions in the post-Covid-19 research world.

The role of Generation Y and Z

Internal barriers that are cause for women to decide against careers in research are not often in the limelight, but they can be directly controlled by individuals and thus deserve attention. They consist in, for example, lower expectations of what they can achieve, taking up majority of house work, compromise career goals for partner and children, aspire to senior positions.

Management research on leadership has long found that traits matter, however, “traits only endow people with the potential for leadership. To actualize this potential, additional factors are necessary (...) skills, vision, and implementing the vision” (Kirkpatrick and Locke, 1991, p. 56^[5]). In order to learn to adopt and act on these factors, inter-generational exchange and role models are vital.

The importance of inter-generational exchange

There is extensive evidence that we are all shaped by who we have grown up with. An important part of everyone’s education are the people that we learned to trust and that we were surrounded with.

Some of us were raised by mothers who were the first generation of female members in their family that went to university and received a higher education degree. This pertains particularly to Europe, where the generation of their parents, our grandparents, grew up in the midst of the Second World War. As a post-war generation, our parents, had to fight for their rights and some of them struggled to make it through their studies before entering the labour market. The challenges were not only financially, but also culturally because the women who decided to go to university also had to overcome prejudice and not seldom hardship from their own families. In fact, shortly before the first of us were born, the “equal marriage model” came into force in some countries. For example in Germany in 1977, it stated that “the spouses regulate the management of the household by mutual agreement” (law: 1356 BGB).

In other parts of the world, our parents largely profited from free tertiary education whereas we are now accruing large debts. Forbes recently reported that the [2020 student loan debt statistics in the United States](#) is at a record of 1.56 trillion USD with a total 45 million borrowers and an average student debt of 32,731 USD. Similarly, in Australia a [decline by nearly 50% of the national subsidy](#) in the higher education system since the mid-1970s, has resulted in rising costs for education and an average of 21,000 AUS debt per student graduate. Despite these burdening realities for us today - that call for inter-generational justice, a topic that is not further explored at this point – fact is that our parents, the so-called ‘baby-boomers’ are the generation who will reach retirement soon and this is why us, their children, have to pass on the drive to lead and empower the next generation which was instilled to us from those who raised and cared for us and who we have been looking up to.

Acting as role model

Scientific evidence from psychology research shows the effects of role models on womens’ actual behaviour in leadership tasks, finding that “subtle exposures to highly successful female leaders inspired women's behaviour and self-evaluations in stressful leadership tasks” (Latu et al., 2013^[6]). Furthermore,

research in organizational behaviour and career theory agrees that the identification with role models is an important element that guides decision making and career development. A ‘role model’ is “a cognitive construction based on the attributes of people in social roles an individual perceives to be similar to him or herself to some extent and desires to increase perceived similarity by emulating those attributes.” (Gibson, 2004, p. 136^[7]) This view emphasises the active ‘cognitive construction’ by the individual and thus departs from the traditional view of the construct as being a rather passive example to imitate. This is an important point because while it is lost labour of love to attempt to recreate someone’s unique road of life, it is important to offer similarities which others can relate to.

There are two formats that come to mind where we, the Generation Y and Z, can create direct relations with and provide guidance to the researchers of tomorrow: mentoring and active engagement in alumni associations. Being at the end of our higher education or in early career researchers, we have accumulated first precious years of experiences and have started to build our professional networks. Active engagement in alumni associations of our school or university are great ways to stay in contact with the generations that will follow us. The author has been participating in annual high-school events with the purpose that former students share their life path with current pupils who are approaching the end of their school career. From personal experience, it is enriching to reflect about decisions in one’s past which are posed by others who are 10, 15 or even 20 years younger, but who can relate with one’s advice because we are still speaking their language and have things in common. Moreover, explaining decisions taken in the past, for example related to university selection or professional decisions, and providing one’s own rationales is a powerful way to instilling confidence in others.

More intense exchanges allow formats such as mentoring programs because they are more than one-off events and often built on one-on-one exchanges which are creating lasting relationships and trust. This is not suitable for everyone and very often the number of participants outnumber the available mentors. To address this, incentives need to be created for more mid- to senior scientists to become a mentor in respective programs. Recognition for this – often voluntary – engagement needs to be enhanced because dedicating time and tailoring personal advice is an invaluable contribution which might lay the ground for a career of a future leader in science.

Recommendations for policy actions

The aforementioned actions on the individual level need to be complemented by suitable institutional policies and initiatives.

Create employment and career policies that overcome external barriers

Policy can set the framework conditions which ensure that external barriers, such as care responsibilities, can be reconciled with a researcher career. The creation of flexible work arrangements and suitable parental leave provisions present viable policy options to consider. Here, the policy mix is crucial, because if policies favour part-time working, then women might be inclined to cut back their working hours. This would not only widen the gap between the 13% female and 8% male researchers who worked part-time in 2016 (The European Commission, 2019^[3]), but also compromise their ability to compete for more senior researcher jobs. This is because current policies on scientific career advancement favour the production of scientific output in the form of publications and citations which researchers in part-time positions have less time for than colleagues with full-time positions.

A reform of scientific career policies in favour of publications and teaching outcomes has been called for since the ‘third mission’ of universities, i.e. research commercialisation, has been increasing in importance, (OECD, 2013^[8]). Moreover, research commercialisation and more generally science-industry knowledge transfer occurs in formal and informal channels (OECD, 2019^[9]) and there are efforts underway to broaden knowledge transfer metrics to include societal impact of scientific knowledge (Campbell et al., 2020^[10]) (Kreiling and Bounfour, 2019^[11]). Thus, future hiring and scientific career policies should account for a

broader range of aspects, such as skills in teamwork, scientific communication and the translation of scientific findings into application, for example via patents, academic spin-offs etc.

In terms of hiring policies, mandatory gender quotas in scientific hiring committee might be an option to ensure equal gender balance for important recruitment decisions in the mid-term. It is a controversial issue, as the study '[exploring quotas in academia](#)' by the Robert Bosch Stiftung in 2015 found and is thus an option which needs to be considered with caution.²⁵

Support next generation researchers

Career decisions are made based on employment attractiveness criteria such as remuneration and job stability. Many of us - the senior students or early career researchers in Generation Y and Z today - are already or will become part of the 'research precariat' which current work by the [OECD Global Science Forum](#) defines as "*The population of researchers with a doctoral degree that hold temporary positions without any commitment to renew their positions or transform those positions into long-term or permanent contracts*". A key driver for short-term contracts and resulting job insecurity in academia has been the shift towards project-based funding, away from institutional block funding which allows research institutes and higher education institutions greater long-term planning capacity.

Furthermore, emerging technologies, such as Artificial Intelligence (AI), are developed in academic as well as industry research labs. Given the shortage of qualified staff in the field there is competition for the best talent and it is not seldom that academic careers end when the deep pockets of an IT giant recruit highly skilled young talent. To stop this '[academic AI brain drain](#)' the attractiveness of a researcher career needs to improve in these highly competitive fields.

Policy makers can support public research organisations in becoming more attractive employers for us. This brief has argued that we are an important link between today's decision makers and the next generation of students and researchers. Hence, it is in the interest of the students and researchers of tomorrow that we see a future in our scientific careers and that we are not forced to abandon them because of concerns over job security and financial difficulties. Policy makers need to set the framework conditions by creating employment policies which foster secure long-term job prospects with attractive pecuniary and non-pecuniary conditions.

Foster programmes and initiatives that target girls and their career choices

With an increasingly globalized world today, school graduates are facing vital decisions for their personal and professional development when they end their school careers. Policy makers can support pupils to face this crucial moment in their lives by raising awareness and providing opportunities for exploration of subjects and jobs that they might have otherwise never considered.

Indeed, there are lighthouse examples of higher education institutions which offer programs for particularly bright pupils to try out university studies while still being in school. An example is the [Schülerstudium](#), for example at the University of Konstanz in Germany. However, this will not be an option for the majority of pupils and thus policy initiatives with a broader scope, in terms of the number of participants as well as vocational fields and topics, is important.

An example of this kind is the [Girls'Day](#) initiative which is a nation-wide day in the school year, recently it was 26 March 2020, in which girls of a particular age group are not obliged to follow regular school classes but are free to try out jobs and do a kind of short internship. Particularly encouraged are technical and vocational professions. It has been existing in Germany for 20 years. Every year, about 10,000 events for about 1.9 million girls are organised as part of this initiative which has been evaluated as highly successful

²⁵ Online article in Nature "How a hiring quota failed". February 2019. Accessed online: <https://www.nature.com/articles/d41586-019-00504-3>

because evaluations show that 70% of participants learned about professions in which they became interested. The initiative is funded by the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth and the German Federal Ministry of Education and Research, with the support of a wide range of associations, agencies and federations. Because of its success, Girls' Day or similar actions have been taking place in more than twenty different countries so far: in the other European countries and there is nowadays also Asia Girls' Day - in Kyrgyzstan, Japan and South Korea – and Girls' Day held in Ethiopia, Egypt and Lebanon.

Looking ahead – the impact on Generation Y and Z

This brief showed that individuals from Generation Y and Z are uniquely positioned to be the link between today's decision makers and the next generation of university students and researchers. They can act on the individual level - by becoming role models and ensure inter-generational exchange – to support more women in overcoming internal barriers in order to attain their full scientific potential. Interaction with girls and young women is required to raise their awareness to the existence of self-inflicted road blocks and convince them to reach out to their potential and live the lives they desire in line with their goals, values and dreams.

Generation Y and Z individuals are either still in higher education, postgraduates or early-stage researchers today. This means that they could indeed also be impacted by the proposed recommendations for policy actions. It does not pertain so much to programmes and initiatives that target career choices of young adults, but rather the support of next generation researchers and employment and career policies. Concretely, the revision of policies on scientific advancement, as well as more inclusive and broader parameters used in hiring and scientific career policies, could also influence the scientific careers of Generation Y and Z.

The enabling conditions for a diverse research workforce have to be created now. Together with apt framework conditions set by institutions and government, Generation Y and Z plays a crucial role in empowering girls and young women to become scientists and take on leadership positions in the post-Covid-19 research world.

References

- Bello, M. and F. Galindo-Rueda (2020), *Charting the digital transformation of science: Findings from the 2018 OECD International Survey of Scientific Authors (ISSA2)*, <https://doi.org/10.1787/1b06c47c-en>. [4]
- Campbell, A. et al. (2020), *Knowledge Transfer Metrics. Towards a European-wide set of harmonised indicators.*, <http://dx.doi.org/10.2760/907762>. [10]
- Gibson, D. (2004), "Role models in career development: New directions for theory and research", *Journal of Vocational Behavior*, Vol. 65/1, pp. 134-156, [https://doi.org/10.1016/S0001-8791\(03\)00051-4](https://doi.org/10.1016/S0001-8791(03)00051-4). [7]
- Kirkpatrick, S. and E. Locke (1991), "Leadership: do traits matter?", *Academy of Management Perspectives*, Vol. 5/2, pp. 48-60, <https://doi.org/10.5465/ame.1991.4274679>. [5]
- Kreiling, L. and A. Bounfour (2019), "A practice-based maturity model for holistic TTO performance management: development and initial use", *Journal of Technology Transfer*, <http://dx.doi.org/10.1007/s10961-019-09756-7>. [11]
- Latu, I. et al. (2013), "Successful female leaders empower women's behavior in leadership" [6]

- tasks”, *Journal of Experimental Social Psychology*, Vol. 49/3, pp. 444-448, <https://doi.org/10.1016/j.jesp.2013.01.003>.
- OECD (2020), “Women at the core of the fight against COVID-19 crisis”, *OECD Policy Responses to Coronavirus (COVID-19)*, <http://www.oecd.org/coronavirus/policy-responses/women-at-the-core-of-the-fight-against-covid-19-crisis-553a8269/> (accessed on 30 May 2020). [2]
- OECD (2019), *University-Industry Collaboration : New Evidence and Policy Options*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/e9c1e648-en>. [9]
- OECD (2018), *Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264308817-en>. [13]
- OECD (2014), “The crisis and its aftermath: A stress test for societies and for social policies”, in *Society at a Glance 2014: OECD Social Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/soc_glance-2014-5-en. [14]
- OECD (2013), *Commercialising Public Research: New Trends and Strategies*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264193321-en>. [8]
- OECD (2010), *OECD Employment Outlook 2010: Moving beyond the Jobs Crisis*, OECD Publishing, Paris, https://dx.doi.org/10.1787/empl_outlook-2010-en. [12]
- OECD (2006), *Women in Scientific Careers: Unleashing the Potential*, <https://doi.org/10.1787/9789264025387-en>. [1]
- The European Commission (2019), *She Figures 2018*, <http://dx.doi.org/10.2777/936> (accessed on 20 May 2020). [3]

Enhancing trust in data – participatory data ecosystems for the post-COVID society

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This policy brief argues that the development of participatory data systems, characterised by the direct engagement of citizens in the process of data planning, production and use, can help to counter a trust deficit between citizens and governments in both OECD and non-OECD countries in the aftermath of the COVID-19 crisis. The establishment of such systems, guided by principles of openness, demand-driven processes, connectivity and data privacy protections, can serve to empower citizens as active stakeholders in the data process. However, this requires greater financial support for robust statistical systems and solid legal frameworks for better data governance. Furthermore, policymakers should prioritise statistical literacy programmes for citizens in order to enhance the public understanding of data. Participatory data ecosystems can contribute to a “post-COVID-19” trust strategy, conducive to social cohesion and inclusive policies for recovery that leave no one behind.

²⁶ The authors would like to acknowledge Johannes Jütting (SDD/P21) and Jan Rieländer (DEV/TD/MDCRs) for their feedback and review. Further, the authors are thankful for comments by Lara Fleischer (SDD/HSPM), data analysis support by Yu Tian (SDD/P21) and design support by Sasha Ramirez-Hughes (SDD/P21).

COVID-19: Challenging times for trust in data, evidence and institutions

The novel coronavirus spread across the globe earlier this year was unprecedented and laid bare the fragility of a world characterized by hyper-connected economies. One of the things that separates the COVID-19 pandemic from those of the past is the extraordinary abundance of data that is being generated and used to inform decision-making at the individual, institutional and societal level.

A data crisis at the heart of an infodemic

The COVID-19 pandemic is accompanied by an infodemic (WHO, 2020_[1]). Since its onset, the public in many countries has been confronted with a torrent of information, data, and statistics. These data are often of variable quality, and sometimes conflict with one another, leaving the ordinary layperson at times more confused than informed. Consequently, there is rampant misinformation, a growing cacophony of factoids and fake figures on social media, news and other information channels.

While official statistical agencies once served as the primary source of national data, today myriad public and private entities report data on different dimensions of public and private life. Within an unregulated data landscape, aggregators, analysts and curators have filled in the public consciousness with numbers and charts on “flattening the curve” (Aula, 2020_[2]). When the data turn out to be flawed or spurious, serious health or economic consequences ensue, and people become even more unsure about which COVID-19 data can be trusted (Balsari, Buckee and Khanna, 2020_[3]). Policymakers have been also misguided by unverified data sources (McLean, Maestro and Herna, 2020_[4]). Recent reports indicate that the WHO and a number of national governments changed their COVID-19 policies based on unreliable data from a small US-based healthcare analytics company (Davey, Kirchgaessner and Boseley, 2020_[5]). Two of the world’s leading medical journals (the Lancet and the New England Journal of Medicine) also published studies using these flawed data, and later released “expression of concern” notices.

Further, high-resolution data from non-traditional sources like contact tracing applications, satellites or social media are increasingly deployed to track population movements and spread of the outbreaks (Zaimova, 2020_[6]). Yet, concerns around the applications of these technologies remain (Soltani, Calo and Bergstrom, 2020_[7]), including ethical issues of data sensitivity and anonymity, representation of vulnerable groups, and compromise of civil rights and privacy (Oliver et al., 2020_[8]); (Gray, 2020_[9]). This has further amplified the fault lines of today’s inadequately governed data and information landscape.

The roots of today’s fragmented data ecosystems

The COVID-19 pandemic revealed fractures in modern information and data ecosystems. The crisis of trust in data, evidence and institutions predates the ongoing health crisis, and can be characterised by the following three key trends:

First, the last few years have witnessed an unfettered proliferation of data from new data sources and heterogeneous actors with varying quality standards. A vast volume of digital data, or “big data” is being generated from call detail records to smart appliances. Unofficial data from social media, remote-sensing technologies, and satellite imagery provide an opportunity to produce data faster, cheaper and easier (OECD, 2017_[10]). Consequently, official statistics are now only one of many competing sources of data, and may not be the most reliable or accessible data sources. At the same time, adequate regulations and safeguards to govern the modern data ecosystem are still lacking (Verhulst and Zahuranec, 2020_[11]). Such safeguards are especially important in the

context of developing countries, where a deficiency of legal frameworks and institutional mechanisms for coordination, regulating data-sharing and protecting privacy and confidentiality hinder the sustainable use of new technologies. Advanced economies are not immune to data protection issues either. A rise in GDPR violations in recent years suggests that in even in countries with established safeguards, data breaches are a growing threat (Palmer, 2020^[12]). A 2019 Pew Research Centre survey found that 70% of American adults perceive their personal data is less secure than five years ago, and 81% think that data collection by companies poses more risks than rewards (66% report the same about government data collection) (Auxier et al., 2019^[13]).

Second, the ability of data users to critically analyse and interpret data and statistics, commonly referred to as “statistical literacy”²⁷ is low. PARIS21’s statistical literacy indicator finds that, between 2016 and 2019, starkly low levels of use and critical engagement characterised the presence of statistics in national newspapers from 70 IDA countries (PARIS21, 2019^[14])²⁸. For OECD countries, findings from the 2018 PISA round show that fewer than 1 in 10 students were able to distinguish between fact and opinion (OECD, 2019^[15])²⁹. This has negative implications for the ability of data users to combat the rise in misinformation and disinformation.

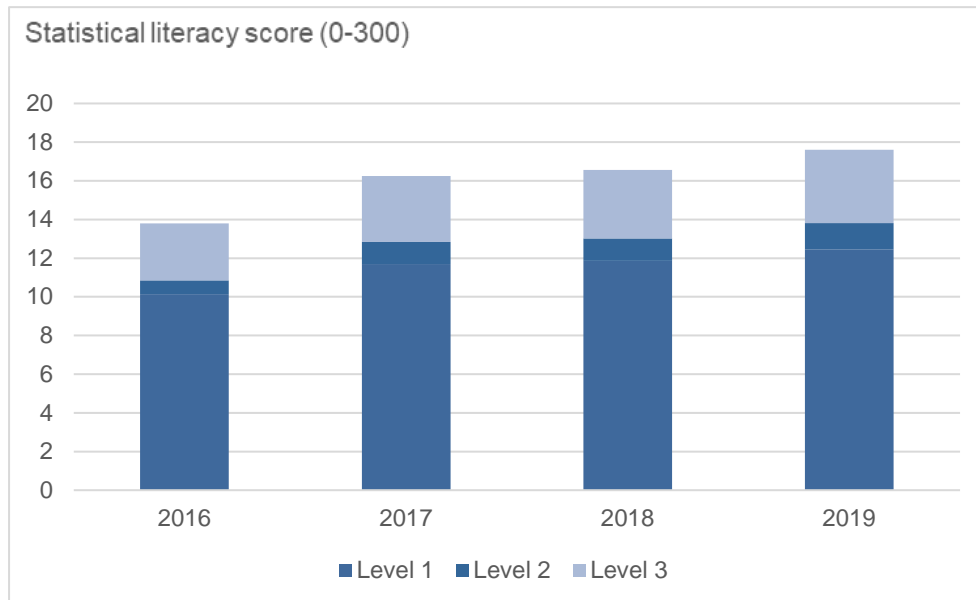
²⁷ Statistical literacy refers to the ability of data users to interpret and critically evaluate statistical information in a variety of contexts; as well as the ability to use it for analytical purposes and to communicate this understanding. It also includes the use of statistical inference to make decisions in situations of uncertainty.

²⁸The statistical literacy indicator measures the use of and critical engagement with statistics in national newspapers. The target population are journalists and newspaper readers. Levels of use are defined as consistent non-critical (level 1), critical (level 2) and critical mathematical (level 3).

²⁹ This was tested as part of “reading” than science or mathematics, but remains relevant as the task was based on implicit cues pertaining to the content or source of the information.

Figure 10. Statistical literacy remains low

Statistical literacy scores (from 0 to 300) as defined by the PARIS21 indicator, measuring statistical literacy and critical thinking in national newspapers and online media in 70 IDA countries.



Note: Levels of use are defined as consistent non-critical (level 1), critical (level 2) and critical mathematical (level 3). The indicator monitors statistical literacy in 70 International Development Association (IDA) countries.

Source: Calculations based on the PARIS21 Statistical Capacity Monitor, www.statisticalcapacitymonitor.org and (Klein, Galdin and Mohamedou, 2016^[16]); <https://iase-web.org/documents/papers/rt2016/Klein.pdf>

Third, the crisis of trust in data and evidence is exacerbated by contemporary scepticism of expertise, increasingly seen as distant from the layperson, coupled with low trust in public institutions (Mantashyan, 2020^[17])(Dimock, 2020^[18]). An analysis from Edelman's Global Trust Barometer points to a mounting trust gap between the informed public and mass population, between 2007-2020, for all key institutions: businesses, non-governmental organisations, government and media (Edelman Trust Barometer, 2020^[19]). Evidence from the Gallup World Poll suggests that on average in 2018, trust in governments of OECD countries and its strategic partners remained at a low 45%, increasing slightly from 43% in 2017 (OECD, 2019^[20]).

These trends have ushered in a new "post-truth" socio-political climate characterised by an aggravated suspicion towards data and facts, polarisation and amplified biases in real and virtual echo chambers (Kavanagh and Rich, 2018^[21]; Davies, 2017^[22]). The set of choices for data consumers has expanded, without adequate data literacy, in an expanding and unregulated data ecosystem. This reinforces tendencies and multiplies possibilities for users to align data and statistics with their inherent preferences. Collectively, the three strands contribute to weakening of trust in data, statistics and evidence and the institutions that support them.

Transitioning towards a trusted data ecosystem

Addressing the frailties of today's data ecosystem calls for improved data governance, with national statistical offices leading the role of trusted stewards and custodians of data and statistical information.

National statistical offices as trust brokers in modern data ecosystems

Trust in data and statistics acquires added layers of complexity in the digital age. With different data being generated by actors with diverse interests and processed by intricate “black box” techniques, the official statistics community has a renewed importance in playing a critical role to bring credible, evidence-based information to the public. To do so, institutions like national statistical offices (NSOs) must go beyond their traditional data production remit to become a trusted, visible arbiter for reason in people’s lives by building trust, embracing relevance, and communicating proactively. This is especially important since data quality (a conventional focus for NSOs) is a necessary but not a sufficient condition to create and sustain trust in statistics (PARIS21, 2019^[23]).

The COVID-19 crisis has shown need for policymakers and statisticians to collaborate and bring credible data and statistics closer to the people. This requires strengthening statistical capacities in the National Statistical System (NSS)³⁰, and enhancing data and statistical literacy of users. NSSs need to adopt a user-centric focus, produce granular data that enhances relatability, engage in advocacy campaigns and forge new partnerships. Most importantly, statistical agencies must be open, providing citizens with a clear understanding of where the data came from, safeguard the privacy of that data, and clearly establish the parameters for its use.

The barriers to brokering: the state of play of statistical systems today

Many NSOs have started to adapt to the new realities of the modern data ecosystem. Embracing openness, using new channels of communication, collaborating with diverse stakeholders from the private sector, the media and academia are all helping to seat national statistics in the real world. Yet for many others, especially among low-income countries with fledgling statistical systems, the path to increasing relevance and trustworthiness may not be obvious.

Some trust determinants show promise: relatability, openness, and compliance to fundamental principles

OECD’s *How’s life? Measuring Well-being* report produces new and improved statistical measures to fill the gap between standard macroeconomic statistics that are sometimes used as proxies of people’s welfare and indicators that have a direct relation to people’s lives (OECD, 2020^[24]). This directly addresses concerns that highly aggregated indicators like GDP appear less relatable and abstracted from diverse lived realities, threatening their long-term relevance and credibility.

The open government and open data movement have also led to an increase in transparency and public availability of statistics. Trends from the Open Data Inventory (ODIN) indicate that the global average of the coverage and openness of statistics as published on the official website of NSOs increased from 30 to 45 (where the index varies from 0 to 100) between 2015-2018 (Open Data Watch, 2018^[25]).

In 2019, 132 countries reported having national statistical legislation that was compliant with the United Nations Fundamental Principles of Official Statistics (UN FPOS), up from 111 countries in 2018 as

³⁰ National Statistical System (NSS) is defined as ‘the ensemble of statistical organisations and units within a country that jointly collect, process and disseminate official statistics on behalf of the national government’. Typically, the NSO serves as the lead or co-ordinating agency of this system. The modern data ecosystem is made up of multiple communities of data producers and users beyond the national statistical system, including civil society; the private sector; academic and scientific communities; as well as regional, international and UN agencies; and specialised data producers.

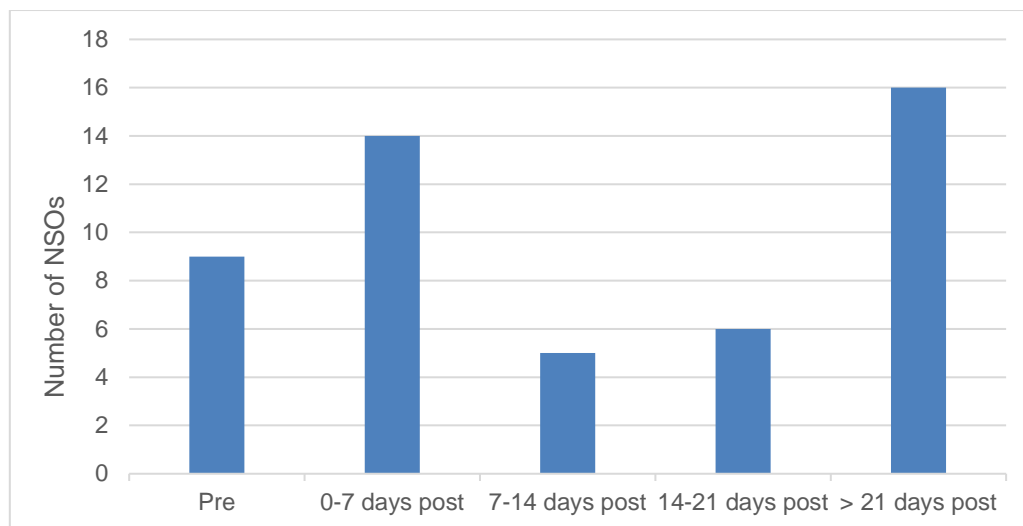
measured by the SDG indicator 17.18.2 (PARIS21, 2020^[26]). UN FPOS provide a benchmark for NSOs to serve as trustworthy custodians of the statistical system (UNSD, 2014^[27])³¹.

But challenges remain in terms of proactive communication, new partnerships, funding to statistics and statistical literacy

Most NSOs reacted slowly in terms of communicating content related to the pandemic. A review of over 200,000 tweets from 90 NSOs³² showed that by 7 May 2020, 72% (64 out of 90) of NSOs had tweeted information on COVID-19. But for 50 countries that enacted containment measures³³, NSOs took on average 14 days after the announcement of government lockdown restrictions to tweet about COVID-19 for the first time (Tian, Schmidt and Misra, 2020^[28]).

Figure 11: Pre-or-post lockdown: When was the first COVID-19-related tweet shared by the NSO?

Number of days for NSOs to post the first COVID-19 related tweets after the lockdown policy begins in countries.



Note: The first bar shows the number of NSOs that communicated before the corresponding government's lock-down policy began. For reference, the median number of confirmed cases per 1 million population was 16 when the NSOs posted their first tweet on COVID-19. This analysis is also based on the assumption that no earlier tweet related to COVID-19 has been deleted. Data on number of cases are based on the harmonised database from the Coronavirus Resource Center of the Johns Hopkins University Center for Systems Science and Engineering <https://coronavirus.jhu.edu/>. It should be noted that testing varies significantly across countries. Further investigation is needed to better understand this variance across countries.

³¹ For instance, Principle 2 of the UN FPOS states: To retain trust in official statistics, the statistical agencies need to decide according to strictly professional considerations, including scientific principles and professional ethics, on the methods and procedures for the collection, processing, storage and presentation of statistical data.

³² Most account information is found through web scraping. One may argue that if an NSO's information online is "web scrapable", it might have a better communication team and thus a better chance of tweeting information about COVID-19. In the future, more NSO accounts will be added to the analysis to expand the coverage and avoid bias.

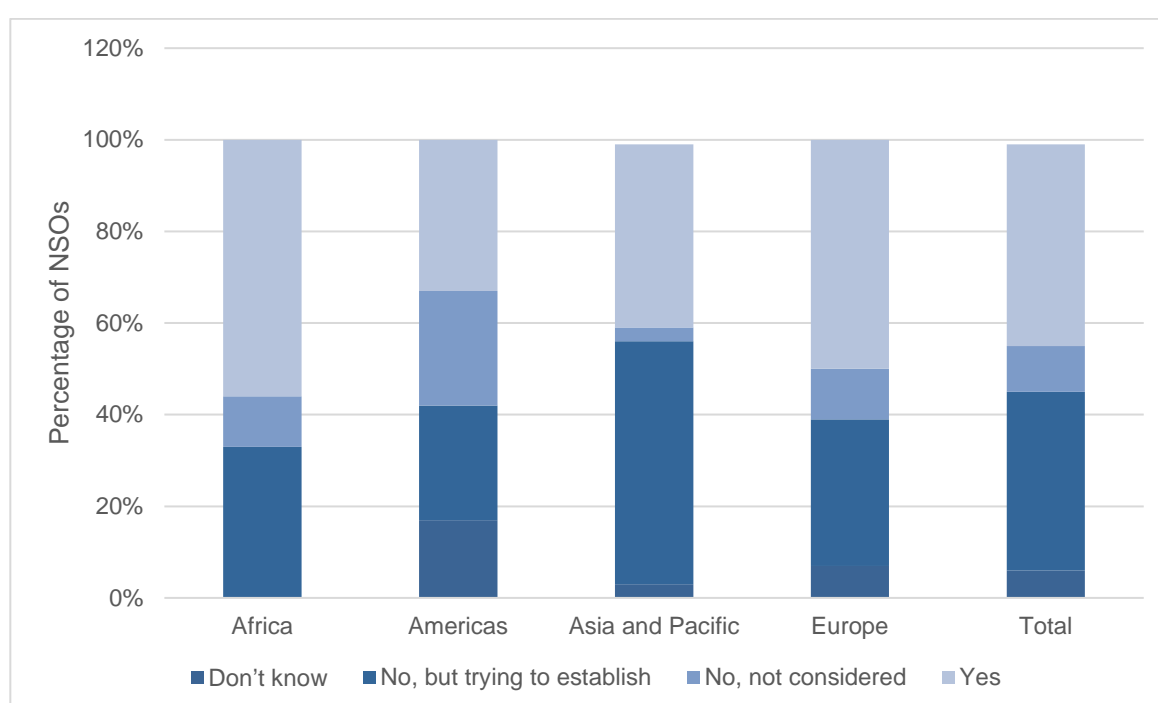
³³ As defined by the Oxford Covid-19 Government Response Tracker, see <https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>

Source: Calculations based on (Tian, Schmidt and Misra, 2020^[29]), <https://www.oecd.org/sdd/theoecdstatisticsnewsletter-allissues.htm>.

While NSOs report a high interest to forge partnerships with new data sources and providers, most of them do not have adequate institutional mechanisms to do so and reap the benefits of big data sustainably. Findings from UNSD's 2019 'assessment of NSO readiness for the use of big data in official statistics' indicate that only 44% of the 160 responding NSOs have a legal framework that covers access to big data from other government departments and big data partnerships (UNSD, 2020^[29])³⁴. Partnerships inside the NSS and with the government still dominate the field; only a quarter of NSOs engage with academic institutes and satellite or aerial image provider (ca. 26% respectively). Less than 5% have established partnerships with social media providers.

Figure 12: Not enough NSOs have legal frameworks that enable access to big data from other government departments and big data partnerships

Share of NSOs relying on legal frameworks that guarantee access to big data.



Note: Data for this figure comes from 'An assessment of NSO readiness for the use of big data in official statistics from the UN GWG Task Team on Training, Competencies and Capacity Development'. This questionnaire was issued to 160 NSOs during the period from 4th October 2019 to 15th November 2019. Responses were received from 109 statistical organisations. After data cleaning, 100 National Statistical Organisations (NSOs) were then used for the analysis. The overall response rate was 63%

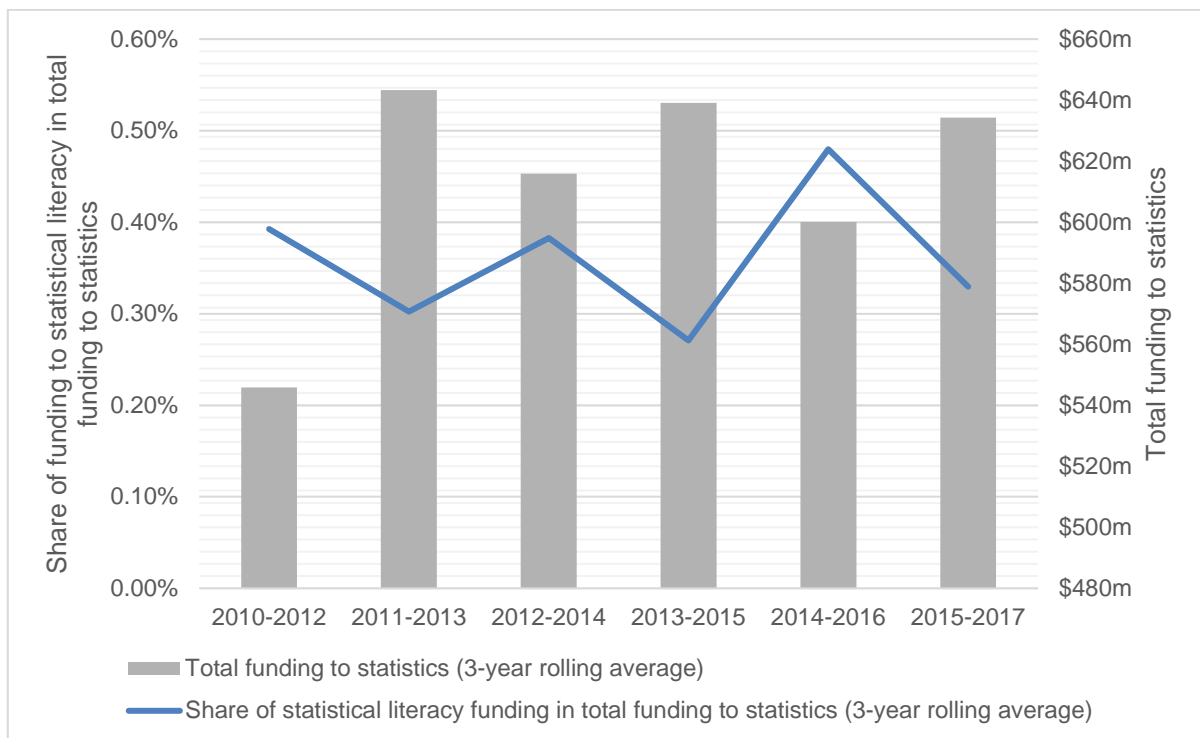
Source: Calculations based on 'Results of the UN Global assessment on the use of big data in official statistics', (Feb 2020), part of the work stream of the UN Global Working Group on Big Data for Official Statistics. (UNSD, 2020^[29]), <https://unstats.un.org/unsd/statcom/51st-session/documents/2020-24-BigData-E.pdf>

³⁴ The authors are part of the UNSD Global Working Group on Big Data and have access to the raw data of the assessment survey.

Official development assistance (ODA) to data and statistics in 2017 was only USD 689 million, a share of 0.34% of total development support (PARIS21, 2019^[30]). Further, ODA funding to projects on statistical literacy has been persistently low over the period 2010-2017. Even in terms of relative importance, ODA funding for supporting statistical literacy as a share of total funding to data and statistics continues to remain below 0.5 % over the same period.

Figure 13. Funding to statistics and statistical literacy remains low

Share of official development assistance (ODA) to projects related to statistical literacy, as part of total funding to statistics (in %), and total allocation of ODA to statistics (in million USD) between 2010 and 2017, presented in 3 year rolling averages.



Note: The methodology used to compile PRESS data is described in the 2009 PRESS methodology report at www.paris21.org/sites/default/files/PRESS2009-methodology.pdf

Source: Calculations based on the PARIS21 PRESS Database, https://paris21.org/sites/default/files/inline-files/UNV002_Press%202019%202011.pdf, accessed from the PARIS21 Statistical Capacity Monitor, www.statisticalcapacitymonitor.org

The modern data ecosystem requires a fundamental re-imagining of the role of national statistical offices and other agencies in national statistical systems. This policy brief argues that developing participatory data ecosystems with an empowered NSO at its centre is the key to enhancing trust in data, statistics and evidence in the post-COVID society.

Participatory data ecosystems as the ticket for sustaining trust in a post-COVID world

Participatory data systems, characterised by the direct engagement of citizens in the process of data collection, analysis and dissemination, can help to overcome a deficit of trust between citizens and their governments in many OECD countries, as they respond to the COVID-19 crisis.

Proposing a model for participatory data ecosystems

In recent years, an increasing number of public institutions started to promote participatory approaches for more effective public service delivery, building on methods and tools of citizen science (European Commission, 2014^[31]). Citizen science is the collaboration of volunteers and scientists to answer real-world scientific questions (Cornell Lab of Ornithology, 2015^[32]). It is used in a wide variety of fields, including monitoring environmental change, classifying objects in space, health research, digitising historic records and many more. By definition, participatory systems are “large-scale social-technical systems enabled by technology/connectivity, coordinating and orchestrating self-organisation, designed to provide individuals and organisations the ability to act and take responsibility in today’s networked society” (Technical University Delft, 2014^[33]).

A participatory data ecosystem engages with people to produce trustworthy data. Such a system can harness digital technologies to coordinate and orchestrate citizen actions for better data planning, collection, dissemination and use. Building on participatory research tools such as scorecards, social audits and community groups, the system creates an environment for responsible statistical activities, empowers citizens to evaluate statistical products and educates citizens about statistics and data (World Vision, 2019^[34]).

NSOs should act as stewards of the participatory data ecosystem, actively coordinating with non-governmental data producers (in particular civil society organisations or citizens) and seeking the best sources of data to meet the needs of a variety of user communities (OECD, 2017^[10]). This engagement with civil society should take place within a robust and transparent data governance framework in order to safeguard the rights and protections of civil society (Radermacher, 2019^[35]). This is crucial to ensuring representativeness of citizen participation in the production of such statistics (see Box 1).

Citizen engagement can occur along all steps of the Data Value Chain (OECD, 2017^[10]) (see Figure 5). Yet, until today, participative approaches have so far mostly focused on data collection and co-production (Paul, 2018^[36]).

Figure 14: Participatory approaches along the data value chain



Source: Authors creation of the data value chain based on (OECD, 2017_[10]), <https://doi.org/10.1787/dcr-2017-en>

In the planning stage, NSOs can actively engage with citizens to prioritise data collection activities and identify structural data gaps. Often, a data gap mapping exercise, comparing existing official data with data requirements of international frameworks such as the Sustainable Development Goals, can lead the prioritisation process. Moreover, citizens can assess particular public services through user satisfaction surveys or social audits, asking citizens to evaluate the issue at stake based on their own benchmarks and comparing the statistical concept measured with the lived reality of those affected. Those processes can result in an action plan for statistical methods and collection (World Vision, 2019_[34]).

In the design stage, statisticians traditionally decide on methods and instruments to generate high quality statistics and data and ensure that those methods adhere to international standards. Inviting citizens to statistical research design groups may foster a shared understanding of the methods used and the applicability to the local context. Moreover, joint citizen-statistician workshops on data structures and collection methods can foster statistical literacy. The Mexican NSO (INEGI), for example, involved university students in the refinement of a machine-learning algorithm designed to measure the mood of Mexican Twitter users (National Institute of Statistics and Geography (INEGI), 2015_[37]).

The most common form of civic engagement in statistical processes occurs during data collection. A large variety of tools ranging from online survey to web-scraping or microdata platforms can facilitate the collection of citizen-generated data. Statistics Canada’s crowdsourced mechanism on housing data is a good example. While the statisticians developed the data model to ensure comparability and standardised data collection, citizens were brought on board to map locations and buildings (Lämmerhirt et al., 2020_[38]).

Box 1 - Which citizens are we talking about?

Participatory data systems can contribute to strengthening trust between citizens, public institutions involved in data production and policy makers. Yet, evidence shows that representativeness and egalitarian participation does not automatically occur when designing community-led data initiatives.

Evaluations of citizen-led data initiatives detected a self-selection bias among participants. In a nationwide project in Great Britain, most participants were white, high-income middle-class population that were motivated by career prospects or altruistic motivation (West, Pateman and Dyke, 2016^[43]). Evidence shows that participants from less privileged backgrounds cannot afford voluntary engagement, thus making small salaries or stipends essential to achieve an inclusive participation (Lämmerhirt et al., 2020^[42]).

It is thus important to collect a sufficient amount of data from a diverse set of people, large enough to normalize the distribution of the sample. Moreover, the research design can influence biases in the resulting statistics. To avoid biases in citizen-led data initiatives, NSOs can apply their statistical expertise to create neutral collection instruments, and research designs. In addition, policymakers and NSOs have to think about which incentives to promote and offer to achieve an inclusive and representative sample.

In some cases, citizens can play a vital role in data analysis and interpretation. This can be especially important when seeking to understand how data are perceived by, and how they affect people of different backgrounds. Engaging village inhabitants, women, or people of colour for instance in a data analysis exercise might lend the process crucial insights that would be otherwise hidden or overlooked by a research pool of dominant demographic.

Finally, citizens can become data ambassadors and promote the use of statistical products or champion the role of national statistical organisations in society. Data portals, published by civil societies and citizen networks, are a good example of this. Live Twitter chats and interactive podcasts are also used by statistical offices to promote participatory approaches. Citizens could also be included in wider decision-making processes beyond the data value chain. For example, South Africa's Department for Monitoring and Evaluation developed a framework for public institutions on how to include citizen-based monitoring into existing planning, budgeting and evaluation processes.

Depending on existing statistical capacity, the NSO can alter the degree of engagement. Low-capacitated NSOs might choose a supportive role of citizen initiatives in one particular phase of the data value chain, such as data collection. High-capacitated NSOs, on the contrary, might consider engaging with citizens in several stages of the data value chain and strive for long-term partnerships with civil society organisations (see a selection of examples in Box 2).

Box 2: Good practice examples for participatory practices in national statistical systems

Statistics Canada – Mapping geographical data for better housing data

Statistics Canada (StatCan) is in the process of developing a national register of buildings. The NSO primarily used Open Street Maps (OSM) to collect data on any type of building, including their locations and physical attributes. Statisticians developed the data model themselves and involved citizens to collect the data. OSM online documentation was used to train inexperienced mappers. Roughly, 200 contributors took part in the initiative, with about 10 ‘power contributors’ accounting for roughly 90 per cent of the data collected. StatCan managed to map virtually 100% of their targeted area in four months, which exceeded by far the expectations of the team.

Assessing the well-being of citizens via Twitter in Mexico

The National Institute of Statistics and Geography (INEGI) of Mexico developed a methodology to measure “the mood” of citizens using twitter. The institute collected public georeferenced tweets from Mexican citizens, assigned mood tags using machine learning and cleaned the data through an analytical process. While citizens were not involved in the data collection process, INEGI collaborated with the Tec Milenio University (UTM) to develop the methodology. More than 5 000 students contributed to the refinement of the algorithm by assigning mood tags to thousands of tweets. Every tweet was presented several times to different students with the objective to obtain a consensus on the label.

Using a community information system for sub-national household data in Uganda

In Uganda, household surveys are primarily conducted at the national or district level and therefore do not adequately reflect the situation at sub-district administrative levels, such as parishes and villages. In 1997, the Uganda Bureau of Statistics (UBOS) set up a community-based information system (CIS) to provide more granular and disaggregated data at the sub-national level. To do so, UBOS expanded collaborations by providing training and guidelines to actors from civil servants to parish chiefs, as well as individuals from village communities. The initiative leveraged the influence of village chiefs, elected representatives of their communities, to understand the problems specific to their communities and build familiarity and trust within their communities. The household survey 2016-2017 offers one community module, analysing, economic, labour and social conditions in local communities.

Source: (Lämmerhirt et al., 2020^[42]); (National Institute of Statistics and Geography (INEGI), 2015^[45]) ; (Uganda Bureau of Statistics, 2017^[44])

Incentives for stakeholders to contribute to a participatory data ecosystem

Participatory decision-making is an important mechanism for the empowerment and inclusion of the body politic among democracies, and for ensuring the legitimacy of elected officials and the health of democratic processes. Regional, national and local governments, development agencies and NGOs, scientists and companies all stand to benefit from the participation of citizens in decision-making processes. The following describes a number of specific incentives for three core data stakeholders, citizens, NSOs and policymakers:

Citizens

- **Political enfranchisement:** Such data systems provide a mechanism for the enfranchisement of citizens beyond the regular political processes (voting, census). Bringing vulnerable and

marginalised communities into the process can be especially valuable, and serves to link articulated needs with policy changes.

- **Accountability:** Participatory data systems empower citizens to produce data on local issues, thus improving public service delivery. For example, community-generated data might illustrate a pattern of poor hygiene at community clinics, thereby persuading sub-district governments to deliver more water tanks (World Vision, 2019^[34]).
- **Mutual learning and statistical literacy:** Engaging citizens in data creation can significantly enhance statistical literacy in areas truly relevant to them, such as for example environmental monitoring. By sharing experience, data and knowledge citizens can learn with and from each other (Ruppert et al., 2018^[39]).

National statistical offices

- **Disaggregated data at low cost:** National statistical offices can collect large datasets and complete labour-intensive tasks with the help of motivated citizens at low cost (Sauermann and Franzoni, 2015^[40]). Moreover, citizens are able to collect data that are more detailed than survey estimates, thus filling structural data gaps. Crowdsourcing data might be more efficient and enables NSOs to collect a substantial amount of data in a short period of time.
- **Experts vs. layperson:** Participatory approaches create a dialogue between statistical experts, policymakers and non-professionals. Such a process can reduce the gap between citizens' everyday life, and the way statistics is categorising these concepts in variables. Joint research groups might create a common interpretation of that data, and improve citizens' identifications with the resulting statistics (Ruppert et al., 2018^[39]).

Policymakers

- **Inclusive policies:** Women, immigrants, racial and ethnic groups are impacted differently by the crisis. Data collected by citizens might enable policymakers to understand highly sensitive policy issues, such as for example violence against women or racial discrimination in health care provision, and design gender-sensitive and inclusive interventions.
- **SDG localisation:** In many countries, policymakers struggle to align national and local development priorities with monitoring requirements put forward by the global SDG indicator framework. Citizen-generated data could facilitate the alignment of global development goals with local policy priorities (Centre for Open Data Initiatives, 2018^[41]).
- **Social cohesion:** Participatory approaches help to achieve consensus when differences in opinion and even conflicts need to be resolved (Slocum-Bradley, 2003^[42]). Governments can then take action on citizen assessments of public services in order to accelerate progress and address the issues that merit a more systemic response (World Vision, 2019^[34]).

Box 3: Potential risks of setting up a participatory system

Despite the benefits of participatory data systems, policymakers have to moderate their expectations. Before recommending concrete actions on how to set up such a system, it is crucial to pinpoint potential challenges and threats that should be taken into account when deciding to engage in participatory data production:

- **Vote buying and patronage networks:** While participatory approaches leverage the benefits of social networks and community ties, it might also leave room for direct political influence and practices such as vote buying, especially in countries where political dynasties, patronage politics and corruption are still common (Cruz, 2019^[41]).
- **Digital divide:** Research on the effects of internet use on political participation has shown that access to digital tools is not distributed evenly across the population. Especially vulnerable populations, such as people with lower socio-economic status, women, elderly, refugees or indigenous populations are not represented adequately in participatory processes based on digital technology (Zilien and Hargittai, 2009^[40]).
- **Sustainability of participatory approaches:** Even if the public institution, in this case the NSO, is committed to long-term data collection processes, participatory approaches rely on the motivation of citizens. Assessments of civil science projects show that motivation changes over time, and in most cases, the majority of data collected comes from a small group of highly motivated citizens (West, Pateman and Dyke, 2016^[43]).

Policy recommendations

The COVID-19 crisis has raised the spectre of a world where data is abundant, yet unstructured, unverified and unmanageable. Participatory approaches present national statistical offices with an opportunity to become trust brokers within modern, digital data ecosystems. This will require different measures, depending on the state of the NSO and the institutional, social and economic context in which it operates.

Immediate policy actions

1. Establish sub-national policy dialogues: To understand the needs of local communities, policymakers should engage with civil society organisations and sub-national branches of national statistical offices to place policy issues. Virtual channels, such as Twitter chats or webinars are proving to be an effective vehicle for such exchanges in the context of the COVID-19 pandemic.
2. Design COVID-19 crowdsourcing pilot initiatives: Policymakers should empower citizens to contribute to crowdsourcing initiatives. For example, consider crowdsourcing an assessment of market dynamics during COVID-19 recovery. Amazon market surveys are a suitable tool to evaluate price dynamics and consumer behaviour in fragile contexts. The results of the crowdsourcing initiative could be then compared to traditional price indices to evaluate the capacity for participatory approaches.
3. Design peer learning mechanisms on participatory approaches for data: Policymakers can learn from pioneers in the field of community-based monitoring systems, such as, for instance, the Philippines or Uganda. South-South collaboration enables a wide range of perspectives on the opportunities and challenges of participatory approaches.

Long-term policy reforms

1. Invest in strong and resilient national data systems: Official statistics are the backbone of trustworthy, evidence-based decision-making. Policymakers should mobilise domestic resources to bolster statistical capacity in the areas of highly skilled human resources and digital infrastructure for NSOs, and in effective monitoring and evaluations systems to assess the effectiveness of a potential participatory system.
2. Develop solid legal frameworks for better data governance: There is a reputational risk in relying on unverified data sources for policy interventions. Policymakers should support statistical offices to counter misinformation and harness the potential of big data sources. Regulatory frameworks and statistical laws should regulate and enable trustworthy partnerships with big data providers. Moreover, data governance should also guarantee privacy rights and data security.
3. Educate citizens in statistical literacy: Citizens should learn how to make use of data and statistics in their everyday lives, and engage in critical thinking and data-driven arguments. Therefore, policymakers should include data science and statistical reasoning in national school curricula and support the development of adult learning platforms offering courses to develop number sense.

How participatory data ecosystems will shape the future of Generation Y & Z

Participatory data systems aim to bring data closer to the people, and people closer to the data. We argue that such systems thrive on four principles: openness, demand-driven processes, connectivity and protection. Further, such systems, established by policymakers and implemented by national statistical offices, could strengthen trust in data as a public good. In a post-COVID world, we posit three key ways in which these systems will impact the lives of Generations Y and Z.

First, at an individual level - participatory systems could act as a lever to scale up data literacy and promote trust in digital technology. As big data and artificial intelligence increasingly permeate our daily lives, studies show that citizens are generally open to such technologies, but remain sceptical on how to apply and use them (IPSOS Mori Social Science Institute, 2016^[43]). This scepticism stems from, *inter alia*, a low awareness and familiarity with how data sets are collated, caution about techniques that cluster individuals, or the degree of confidentiality guaranteed by black-box models. Participatory systems are in principle designed such that citizens become integrated into these processes as data planners, collectors, analysts or communicators.

Second, at an institutional level - participatory data systems can help operationalise data and digital ethics. Participatory data systems are functional when built on legal frameworks and institutional mechanisms to make the principles of openness and privacy actionable. Generations Y and Z are already more aware than older generations that there is no such thing as a simple search on the Internet. In reality, all data are tracked, analysed, retrieved and reused (OECD, 2019^[44]). Yet, there exists little real substitute than to passively submit one's data to large corporations due to lack of ethical, cost-effective and secure alternatives. Implementing participatory data systems could help fill this void. For instance, data ethics commissions in statistical offices could include citizens, civil rights groups, and their representatives.

Third, at a community and societal level - participatory data systems could structurally improve political participation, particularly amongst Generations Y and Z. Arguably the most tech savvy and digitally native, Gen Y and Z have creatively leveraged social media and digital technologies to champion causes ranging from gender equality to climate change in the political discourse. The rise of influencers and digital activism has shown how successful movements are built in these networks. However, this phenomenon has not translated itself to higher political participation in the form of voting or institutional policy processes in a systematic way. Further, participatory data systems help dismantle echo chambers prevalent in today's social networks as citizens ultimately collaborate with other citizens from different socio-economic strata

throughout the data value chain. Therefore, such data systems could provide the platform to harness the socio-political potential of Generations Y and Z, channelling their activism into sustained engagement in data governance and policymaking processes.

Overall, participatory data systems can lead to more effective forms of public service delivery, as e-governance becomes increasingly adopted. For instance, citizens and civil rights organisations could collaborate with policy planners for a public deliberation on the use and re-use of data for crisis response (GovLab, 2020^[45]). In doing so, citizens can understand the impact of data on policymaking and public service delivery and can link them to their own personal data. The system thus invites citizens to hold their national governments or local representatives accountable on the basis of the data they have created. Eventually, participatory data ecosystems could pave the way for a new frontier of democratic institutions fit for today's data-driven digital age.

References

- Aula, V. (2020), *The public debate around COVID-19 demonstrates our ongoing and misplaced trust in numbers*, <https://blogs.lse.ac.uk/impactofsocialsciences/2020/05/15/the-public-debate-around-covid-19-demonstrates-our-ongoing-and-misplaced-trust-in-numbers/>. [2]
- Auxier, B. et al. (2019), *Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information*, <https://www.pewresearch.org/internet/2019/11/15/americans-and-privacy-concerned-confused-and-feeling-lack-of-control-over-their-personal-information/>. [13]
- Balsari, S., C. Buckee and T. Khanna (2020), *Which Covid-19 Data Can You Trust?*, <https://hbr.org/2020/05/which-covid-19-data-can-you-trust>. [3]
- Centre for Open Data Initiatives (2018), *Strategies for SDG National Reporting. A review of current approaches and key considerations for government reporting on the UN Sustainable Development Goals*, http://reports.opendataenterprise.org/CODE_StrategiesforSDGreporting.pdf. [41]
- Cornell Lab of Ornithology (2015), *Defining Citizen Science — Citizen Science*, <https://www.citizenscience.org/>. [32]
- Cruz, C. (2019), "Social Networks and the Targeting of Vote Buying", *Comparative Political Studies*, Vol. 52/3, pp. 382-411, <http://dx.doi.org/10.1177/0010414018784062>. [50]
- Davey, M., S. Kirchgaessner and S. Boseley (2020), *Surgisphere: governments and WHO changed Covid-19 policy based on suspect data from tiny US company*, <https://www.theguardian.com/world/2020/jun/03/covid-19-surgisphere-who-world-health-organization-hydroxychloroquine#maincontent>. [5]
- Davies, W. (2017), "How statistics lost their power – and why we should fear what comes next", *The Guardian*, <https://www.theguardian.com/politics/2017/jan/19/crisis-of-statistics-big-data-democracy>. [22]
- Dimock, M. (2020), *An update on our research into trust, facts and democracy*, <https://www.pewresearch.org/2019/06/05/an-update-on-our-research-into-trust-facts-and-democracy/>. [18]
- Edelman Trust Barometer (2020), *20 Years of Trust*, <https://www.edelman.com/20yearsoftrust/>. [19]
- European Commission (2014), *Green paper on Citizen Science for Europe: Towards a society* [31]

- of empowered citizens and enhanced research, <https://ec.europa.eu/digital-single-market/en/news/green-paper-citizen-science-europe-towards-society-empowered-citizens-and-enhanced-research#:~:text=The%20Green%20Paper%20aims%20to.and%20dialogue%20in%20the%20EU.&text=Participants%20provide%20experiment>.
- GovLab (2020), *The Data Assembly. A Public Deliberation on the Re-Use of Data*, [45]
<https://thedataassembly.org/files/TheDataAssembly2-Pager.pdf>.
- Gray, S. (2020), *A Closer Look at Location Data: Privacy and Pandemics*, [9]
https://fpf.org/2020/03/25/a-closer-look-at-location-data-privacy-and-pandemics/?mkt_tok=eyJpIjoiT0RjNE1UTm1PR013WldWbClslQoiJoa111eWw1blk5a2dJVDRkZUFPTXg1cVZcL1oxUXpEYThFT21mYnFwNFozdXVZGdMYjE3OFhQMXFmMm9YWG1CTHZYc0J1b2ExcHk0QnNYR0Q4REw0eXA5Vjd5Z3BLZE.
- IPSOS Mori Social Science Institute (2016), *Public dialogue on the ethics of data science in government*, [43]
<https://www.ipsos.com/sites/default/files/2017-05/data-science-ethics-in-government.pdf>.
- Kavanagh, J. and M. Rich (2018), *Truth Decay. An Initial Exploration of the Diminishing Role of Facts and Analysis in American Public Life*, [21]
https://www.rand.org/pubs/research_reports/RR2314.html.
- Klein, T., A. Galdin and E. Mohamedou (2016), *An indicator for statistical literacy based on national newspaper archives*, [16]
<https://iase-web.org/documents/papers/rt2016/Klein.pdf>.
- Lämmerhirt, D. et al. (2020), *Advancing sustainability together. Citizen-generated data and the Sustainable Development Goals.*, [38]
http://www.data4sdgs.org/sites/default/files/services_files/Advancing%20Sustainability%20Together%20CGD%20Report_0.pdf.
- Mantashyan, G. (2020), *What can we do about the crisis in trust in public institutions?*, [17]
<https://www.weforum.org/agenda/2020/02/what-to-do-crisis-trust-public-institutions/>.
- McLean, S., L. Maestro and S. Herna (2020), *The Covid-19 pandemic has catapulted one mysterious data website to prominence, sowing confusion in international rankings*, [4]
<https://edition.cnn.com/interactive/2020/05/world/worldometer-coronavirus-mystery/>.
- National Institute of Statistics and Geography (INEGI) (2015), *Estado de ánimo de los tuiteros en los estados Mexicanos*, [37]
http://internet.contenidos.inegi.org.mx/contenidos/Productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825099718.pdf.
- OECD (2020), *How's Life? 2020: Measuring Well-being*, OECD Publishing, [24]
<https://doi.org/10.1787/9870c393-en>.
- OECD (2019), *Government at a Glance 2019*, OECD Publishing, [20]
<http://dx.doi.org/10.1787/8ccf5c38-en>.
- OECD (2019), *PISA 2018 Results (Volume I): What Students Know and Can Do*, OECD Publishing, [15]
https://www.oecd-ilibrary.org/education/pisa-2018-results-volume-i_5f07c754-en;jsessionid=Gbsd2zfq8EowlunlOmwyel3.ip-10-240-5-54.
- OECD (2019), *We need to talk about data ethics*, <https://www.oecd.org/science/we-need-to-> [44]

[talk-about-digital-ethics.htm](#).

- OECD (2018), *Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264308817-en>. [47]
- OECD (2017), *Development Co-operation Report 2017: Data for Development*, OECD Publishing, <https://doi.org/10.1787/dcr-2017-en>. [10]
- OECD (2014), “The crisis and its aftermath: A stress test for societies and for social policies”, in *Society at a Glance 2014: OECD Social Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/soc_glance-2014-5-en. [48]
- OECD (2010), *OECD Employment Outlook 2010: Moving beyond the Jobs Crisis*, OECD Publishing, Paris, https://dx.doi.org/10.1787/empl_outlook-2010-en. [46]
- Oliver, N. et al. (2020), *Mobile phone data and COVID-19: Missing an opportunity*, <https://arxiv.org/ftp/arxiv/papers/2003/2003.12347.pdf>. [8]
- Open Data Watch (2018), , <https://odin.opendatawatch.com/>. [25]
- Palmer, D. (2020), *GDPR: 160,000 data breaches reported already, so expect the big fines to follow*, <https://www.zdnet.com/article/gdpr-160000-data-breaches-reported-already-so-expect-the-big-fines-to-follow/>. [12]
- PARIS21 (2020), *Statistical Capacity Monitor*, <https://statisticalcapacitymonitor.org/>. [26]
- PARIS21 (2019), *Building Trust in Data: What’s new for National Statistical Systems?*. [23]
- PARIS21 (2019), *Partner Report on Support to Statistics 2019*, https://paris21.org/sites/default/files/inline-files/UNV002_Press%202019%2011.pdf. [30]
- PARIS21 (2019), *Statistical Capacity Development Outlook*, <https://statisticalcapacitymonitor.org/report>. [14]
- Paul, K. (2018), “Collective organization of discourse expertise using information technology – CODE IT!”, *Information technology*, Vol. 60/1, <http://dx.doi.org/10.1515/itit-2017-0022>. [36]
- Radermacher, W. (2019), “Governing-by-the-numbers/Statistical governance: Reflections on the future of official statistics in a digital and globalised society”, *Statistical Journal of the IAOS*, Vol. 35/4, pp. 519-537, <http://dx.doi.org/10.3233/SJI-190562>. [35]
- Ruppert, E. et al. (2018), “Citizen Data and Trust in Official Statistics”, *Economie et Statistique / Economics and Statistics* 505d, pp. 171-184, <http://dx.doi.org/10.24187/ecostat.2018.505d.1971>. [39]
- Sauermann, H. and C. Franzoni (2015), “Crowd science user contribution patterns and their implications”, *Proceedings of the National Academy of Sciences*, Vol. 112/3, pp. 679-684, <http://dx.doi.org/10.1073/pnas.1408907112>. [40]
- Slocum-Bradley, N. (2003), *Participatory Methods Toolkit - A practitioners manual*, King Baudouin Foundation & Flemish Institute for Science and Technology Assessment, <http://cris.unu.edu/participatory-methods-toolkit-practitioners-manual>. [42]
- Soltani, A., R. Calo and C. Bergstrom (2020), *Contact-tracing apps are not a solution to the COVID-19 crisis*, <https://www.brookings.edu/techstream/inaccurate-and-insecure-why-> [7]

- [contact-tracing-apps-could-be-a-disaster/](#).
- Technical University Delft (2014), , <http://www.participatorysystems.nl/>. [33]
- Tian, Y., J. Schmidt and A. Misra (2020), *Communicating COVID-19: What are NSOs doing?*, OECD Statistics and Data Directorate, <https://www.oecd.org/sdd/theoecdstatisticsnewsletter-allissues.htm>. [28]
- Uganda Bureau of Statistics (2017), *Uganda National Household Survey 2016/2017 Report*, https://www.ubos.org/wp-content/uploads/publications/03_20182016_UNHS_FINAL_REPORT.pdf. [49]
- UNSD (2020), *Report of the Global Working Group on Big Data for Official Statistics*, <https://unstats.un.org/unsd/statcom/51st-session/documents/2020-24-BigData-E.pdf>. [29]
- UNSD (2014), *Fundamental Principles of Official Statistics (A/RES/68/261)*, <https://unstats.un.org/unsd/dnss/gp/fundprinciples.aspx>. [27]
- Verhulst, S. and A. Zahuranec (2020), *Using Data for COVID-19 Requires New and Innovative Governance Approaches*, <https://medium.com/data-policy/using-data-for-covid-19-requires-new-and-innovative-governance-approaches-6c1350d9a2f2>. [11]
- West, S., R. Pateman and A. Dyke (2016), *Data Submission in Citizen Science Projects. Report for Defra (Project number PH0475)*, <https://www.york.ac.uk/media/sei/documents/publications/projectreports/West-Pateman-Dyke-DEFRA-Data-Submission-in-Citizen-Science-Projects.pdf>. [52]
- WHO (2020), *Director General Speech Munich Security Conference*, <https://www.who.int/dg/speeches/detail/munich-security-conference>. [1]
- World Vision (2019), *Putting People at the Centre of the Data Revolution. The Case for Citizen Generated Data for SDG Accountability.*, <https://www.wvi.org/sites/default/files/2019-08/The%20Case%20for%20Citizen%20Generated%20Data%20for%20SDG%20Accountability%20final.pdf>. [34]
- Zaimova, R. (2020), *How data can help fight a health crisis like the coronavirus*, World Economic Forum, <https://www.weforum.org/agenda/2020/03/role-data-fight-coronavirus-epidemic/>. [6]
- Zilien, N. and E. Hargittai (2009), “Digital Distinction: Status-Specific Types of Internet Usage”, *Social Science Quarterly*, Vol. 90/2, pp. 274-291, <http://dx.doi.org/10.1111/j.1540-6237.2009.00617.x>. [51]

Fostering resilience in the post-COVID-19 health systems of Latin America and the Caribbean

Gabriel Di Paolantonio

This policy brief discusses the resilience of Latin American and Caribbean health systems during the COVID-19 pandemic so far, and their preparedness in the face of upcoming similar health crises. Some of the specific characteristics of the region are highlighted and taken into consideration for the analysis: 1) high levels of economic inequality and informality; 2) high density in most metropolitan areas, which is even higher in informal settlements; 3) weak health systems; 4) and lack of regional response mechanisms in LAC. An initial approach to compartmental epidemiological models applied to LAC is also presented. The brief discusses that the region could learn from this pandemic so as to be better prepared for future crises, improve their health systems for less exceptional contingencies, invest not only more on health systems but also in a more efficient way, and increase the co-operation between countries in order to articulate joint responses that may improve their effectiveness.

Key messages

- Latin American and Caribbean health systems have progressed in quality and accessibility over the last decades, but there is still a long road ahead towards high-quality universal health coverage (UHC).
- COVID-19 has been widely spread among the region, with countries like Brazil, Chile, Mexico, and Peru continuously exhibiting a circulation level of the virus above the required threshold to slowdown the epidemic.
- Economic inequalities, informality, and areas with high population density such as informal settlements may be some of the underlying causes of the wide spread of SARS-CoV-2 in the region, and key facts towards strengthening the preparedness for facing upcoming epidemics and outbreaks.
- Not all lessons from the 2009 AH1N1 pandemic were applied before the current COVID-19 pandemic, the region could learn vastly from this experience in order to be better prepared in the future.
- More, better, and co-ordinated spending could be key for improving the quality and access to health systems for Latin American and Caribbean citizens. This crisis could help the region to establish bodies such as a LAC Centre for Disease Prevention and Control (LAC-CDC), and a LAC Observatory for Health Systems and Policies.
- The OECD has a privileged position for assisting the co-ordination of these projects thanks to its growing co-operation with the region (14 of the 33 LAC countries are either OECD member countries, key partners, or members of the OECD Development Centre).

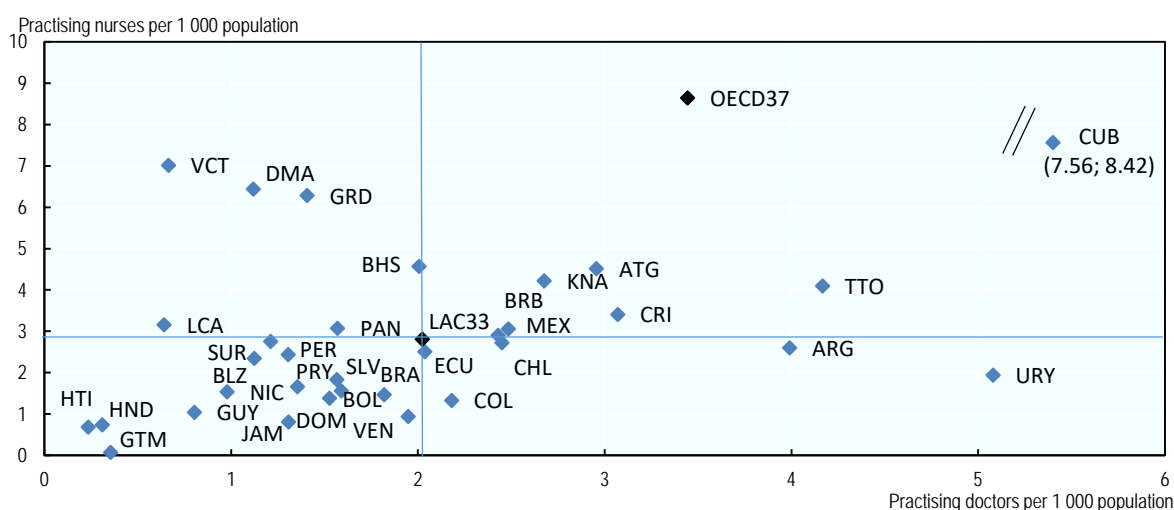
1. A glance into the Latin American and Caribbean health systems before the COVID-19 pandemic

A popular *merengue* song from 1998 narrated that receiving proper public medical attention in the region is as hard as crossing the Niagara Falls on a bicycle. Ever since, many Latin American and Caribbean citizens have unfortunately identified themselves with the lyrics of this track from the Dominican singer and song-writer, Juan Luis Guerra. And even if during the last 20 years most countries in the region have experienced substantial improvements in the quality of their public health systems, there is still a long road ahead towards high-quality UHC.

So far, the effects of COVID-19 in countries such as Brazil, Peru, Chile, Mexico, and Ecuador seem to highlight the immense amount of health systems' deficiencies, and inequalities, that persist in 2020. When measuring the size of the health workforce and availability of key medical equipment such as computed tomography scanners and Intensive Care Unit (ICU) beds, and comparing them to OECD averages, the forecast for the impact of an extended spread of the infection in LAC as the one experienced in Europe or North America could be quite gruesome. This pandemic should therefore be assessed *a posteriori* not only by the number of infections, casualties, and economic impact, but also by how regional health systems will increase their resilience and preparedness to face upcoming epidemics, hopefully mirroring the way Asia learned from their experience during the SARS epidemic of 2003.

A detailing indicator of the low availability of health workforce to face the COVID-19 pandemic in the region is that none of its countries have more nurses per 1 000 population than the average among the 37 OECD members; and only Argentina, Trinidad and Tobago, Uruguay, and Cuba have a density of doctors higher than the OECD average. Countries such as Haiti, Honduras, and Guatemala had considerably reduced health workforces before the onset of the health crisis (see Figure 1).

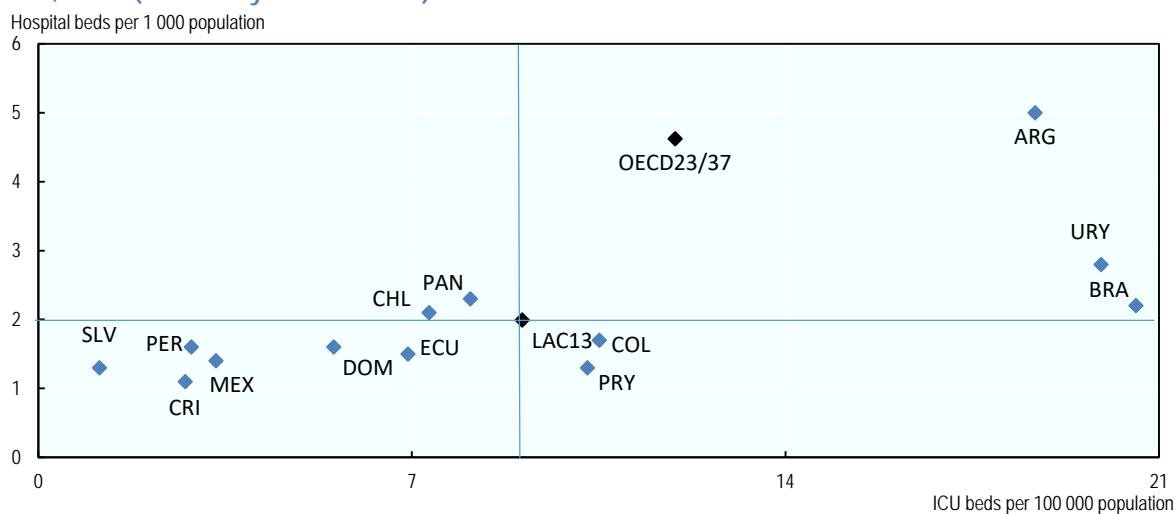
Figure 15. Number of doctors and nurses in LAC countries and the OECD, 2017 or latest year available



Source: OECD Health Statistics 2019; WHO Global Health Observatory Data Repository. See Chapter 5 of Health at a Glance: Latin America and the Caribbean 2020.

The lack of health systems' infrastructural capacity facing the COVID-19 pandemic in comparison to OECD members can also be seen by the relatively low number of hospital beds and, more determinant during this type of crises, ICU beds. Among a selected list of 13 countries in the region, only Brazil, Uruguay, and Argentina had more ICU beds per 100 000 population than the OECD average. Whereas for hospital beds capacity, only Argentina was slightly above the collective average of members of the organisation (see Figure 2).

Figure 16. Capacity of intensive care beds and hospital beds in selected LAC countries and the OECD, 2020 (or latest year available)

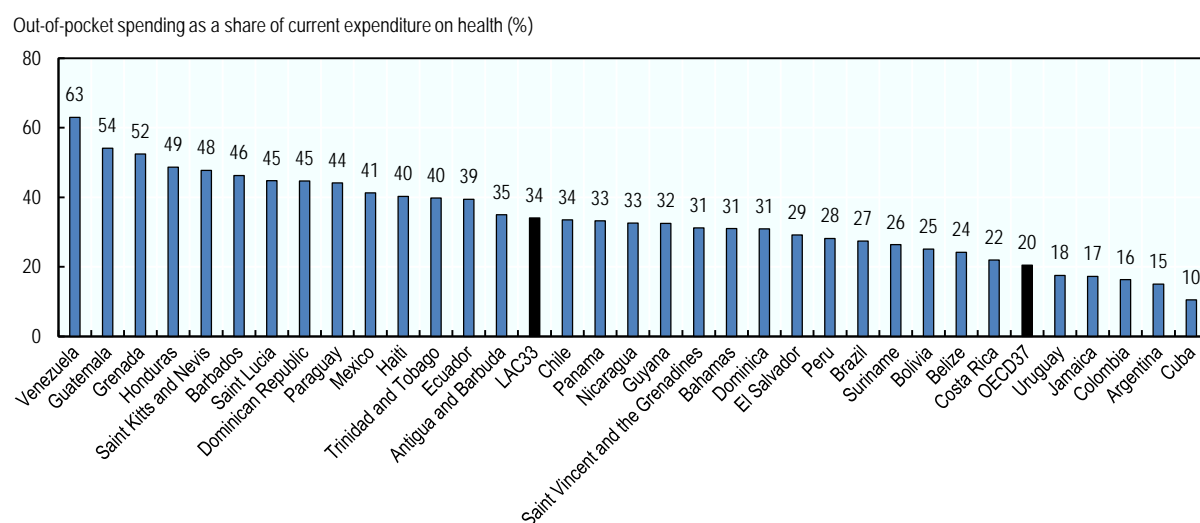


Note: OECD23 refers to the average of ICU beds, whereas OECD37 refers to the average of hospital beds. There may be differences in the notion of intensive care affecting the comparability of the data. Data refers to adult ICU beds only in Peru. Data include only public ICU beds in Costa Rica, Dominican Republic, Peru, El Salvador and Uruguay, and both public and private in other LAC countries. Information was collected to reflect the situation of ICU beds before the emergency measures due to the COVID19 pandemic.

Source: OECD Health Statistics 2019; World Bank World Development Indicators 2019. See Chapter 5 of Health at a Glance: Latin America and the Caribbean 2020. REPS-Nation's Attorney General Colombia 2020; Ministry of Health of Argentina 2020; RUSNIS-Ministry of Health of Peru 2020; DATASUS Brazil 2020; Chilean Society of Internal Medicine 2020; Ministry of Health of Mexico 2020; La Nación reported by Leticia Pintos, Division of Therapies at the Ministry of Health of Paraguay 2020; Ministry of Health of Uruguay 2018; Diario Delfino reported by Costa Rica's Social Security Institute (CCSS) 2020; Ministry of Health of Ecuador 2018; Diario El Salvador reported by Milton Brizuela, President of the Medical College of El Salvador 2020; Diario Acento reported by National Health Service (SNS) - Ministry of Health of the Dominican Republic 2020; National Institute of Statistics and Census of Panama 2018.

Moreover, citizens from the region experience limited access to health services, which is partly a symptom of the existing economic inequalities. For example, the out-of-pocket spending in Latin America and the Caribbean represents on average 34% of current expenditure on health; whereas this proportion is almost halved for OECD countries, which show an average of 20% (see Figure 3). These inequalities are exacerbated also in terms of child and infant mortality, where lower-income households are more prone to these deaths than high-income ones, not only in Latin America and the Caribbean (OECD/The-World-Bank, 2020^[11]), but also in regions with considerable income disparities such as Asia/Pacific (OECD/WHO, 2018^[12]).

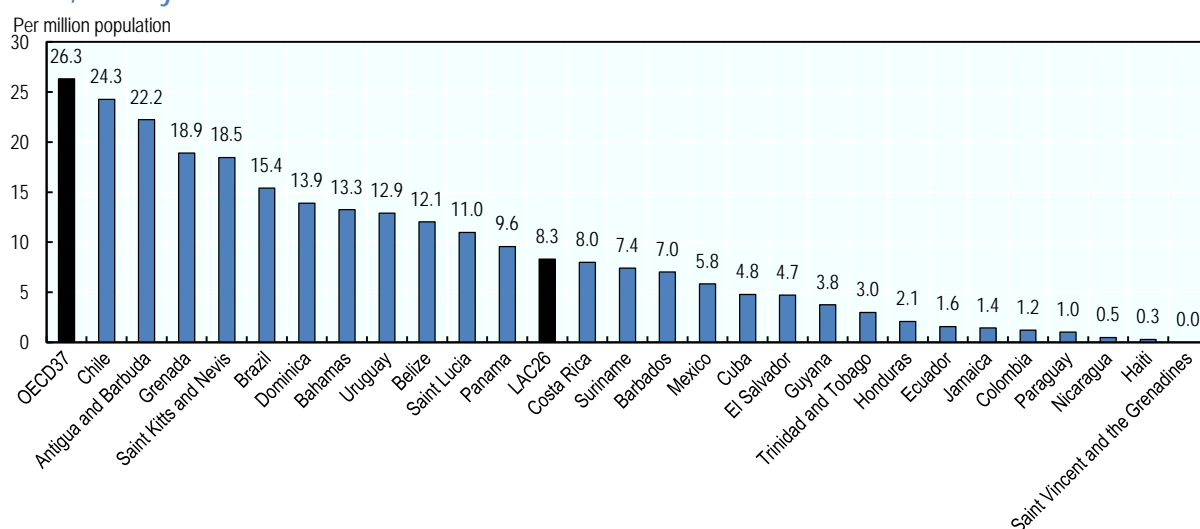
Figure 17. Out-of-pocket spending as a share of current expenditure on health in LAC countries and the OECD, 2017



Source: WHO Global Health Expenditure Database 2020; OECD Health Statistics 2019. See Chapter 6 of Health at a Glance: Latin America and the Caribbean 2020.

Taking into consideration health care resources other than workforce, and comparing them to OECD countries, also highlights aspects to improve among LAC health systems. Medical instruments used in the diagnosis of COVID-19 and to estimate the duration of infection, such as computed tomography scanners (Bernheim, 2020^[3]), are comparatively scarcer in Latin America and the Caribbean compared to members of the organisation. LAC has on average 8.3 CT scanners per million population, which is less than a third of the density shown in the OECD, with countries like Nicaragua, Haiti, and Saint Vincent and the Grenadines having less than one CT scanner per million population (see Figure 4).

Figure 18. Computed tomography scanners per million population in 26 LAC countries and the OECD, latest year available

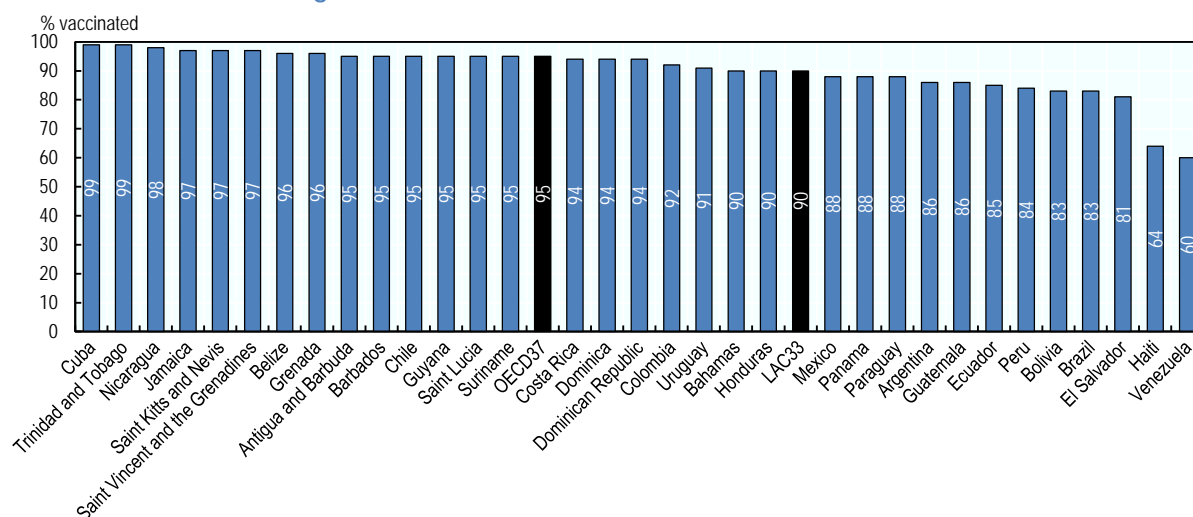


Source: WHO GHO 2016; OECD Health Statistics 2019 for Chile, Colombia, Costa Rica, and Mexico. See Chapter 5 of Health at a Glance: Latin America and the Caribbean 2020.

And while the world's scientific community is working towards the development and rapid availability of a vaccine against SARS-CoV-2 to further control the pandemic, some doubts may be cast around the distribution networks among LAC nations, and the capacity to immunize their citizens based on the figures

from the access to certain drugs from the WHO list of essential medicines (WHO, 2019^[4]), such as the diphtheria, tetanus toxoid, and pertussis vaccine, or DTP3. When analysing Brazil, Ecuador, Chile, Mexico, and Peru -the five countries with the highest number of infections from the virus causing COVID-19 in the region-, only Chile has a vaccination rate for DTP3 on average above the OECD level. Whereas Brazil, Ecuador, Mexico, and Peru are not only below the OECD average, but also below the LAC average. The figures for Haiti and Venezuela are also worrisome as more than a third of children aged around 1 are not immunized against diphtheria, tetanus toxoid, and pertussis in these two countries (see Figure 5).

Figure 19. Vaccination rates for diphtheria, tetanus toxoid, and pertussis (DTP3) in LAC countries and the OECD, children aged around 1, 2018



Source: WHO GHO 2019. See Chapter 7 of Health at a Glance: Latin America and the Caribbean 2020.

2. The epidemiology of COVID-19 in Latin America and the Caribbean

Forecasting the spread of an infectious disease is not an easy task. Epidemiologists have built years of work and research on mathematical tools and models that help them on this matter, taking into consideration novel factors that could improve their accuracy as this science evolves. Nevertheless, with outbreaks of new pathogens on which little is known, calibrating these models with elements such as the basic reproduction number (R_0), and more importantly the effective reproduction number (R_t), is a continuous and dynamic process. Other factors such as the immunity that hosts develop after an infection in terms of duration and strength are also decisive in the way that these models are developed. A basic compartmental model including susceptible, infectious, and recovered population (SIR) could become more complex if the recovered population becomes susceptible again after the immunity against the pathogen in question wears off, thus giving rise to a SIRS model (see Box 1).

Box 4. Compartmental epidemiological models

Susceptible, infectious, and recovered population approach

Scottish biochemist, William Ogilvy Kermack, and Scottish physician, Anderson Gray McKendrick were the first to propose a mathematical theory for disease epidemics in 1927, which transformed our perception of infectious disease dynamics.

The most basic compartmental model, known as the SIR model, accounts only for susceptible (S), infectious (I), and recovered (R) individuals while assuming that nobody dies and that $S + I + R$ represents the total population. Factors taken into consideration to determine the evolution of infectious diseases' spread are a transmission parameter (α), and a recovery parameter (β).

The duration and extension of the epidemic will be determined by parameters α and β . If both are high, then the epidemic will be widely spread but fast, and the opposite will occur if both are low. This latter scenario is what most governments have tried to achieve in order to flatten the curve of the COVID-19 pandemic, therefore allowing their health systems to avoid saturation by limiting the number of infectious population that possibly require medical attention at a single point in time.

More complex approaches

Other compartmental models that try to better resemble the reality of epidemics may also include compartments containing individuals that become susceptible again after being recovered (due to immunity wearing off), and also demographic changes such as births and people deceased due to the infection. Another important factor is the exposed population, which accounts for people that are incubating the disease after being exposed to an infective person and that are capable of transmitting it to the susceptible population before developing symptoms.

The basic reproduction number (R_0), which represents the expected number of cases directly generated by an infected individual of the population and determines the viability of an epidemic when it is higher than one, is another fundamental rate for these models. It is considered as the most important factor to take into consideration when studying any epidemiological model for an infectious disease (Brauer, 2008^[5]). Nevertheless, it has an important caveat when analysing ongoing epidemics such as COVID-19, it is *static*.

In order to understand the current evolution of SARS-CoV-2 infections among regions and countries, it is therefore recommended to take a look at the *effective* reproduction number (R_t). R_t is defined as the average number of people infected by a single infectious individual at a specific time. R_t is essential to dynamically assess public policies during an epidemic, and it can be used to study the effectiveness of non-pharmaceutical interventions like social distancing and lockdowns, or what fraction of the population will require immunization to reach herd immunity (Arroyo-Marioli, 2020^[6]).

Cities and sectors with high inequalities, informality, and population density are potentially more prone to experience increases in the spread of infectious diseases. Economic inequalities can translate into health inequalities due to limited access to proper health services and lower awareness of related topics; informality can push people to avoid confining in order to keep working for an income that is generally not covered by welfare states; and high population density in areas such as informal settlements can hinder the correct application of social distancing, hygiene standards, and quarantine measures. Unfortunately, Latin America and the Caribbean is widely affected by these conditions, therefore finding ways of accounting for these characteristics in epidemiological models could be helpful to estimate the spread of

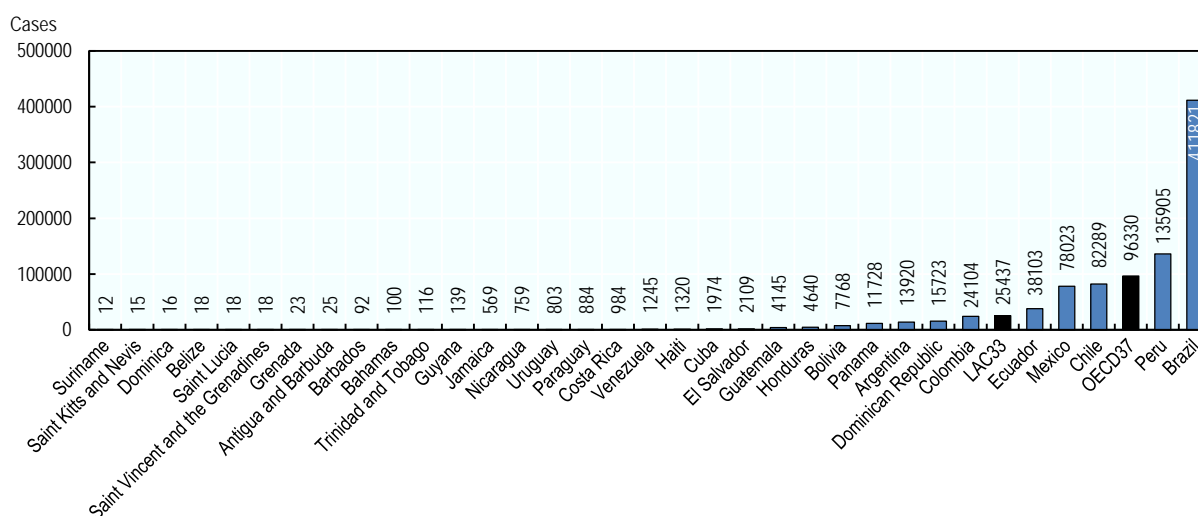
SARS-CoV-2 and of any upcoming epidemics both in the region and in other areas with similar conditions, by possibly using data collected from previous health crises as a starting block.

Another aspect to take into account are major migration flows, which have occurred recurrently in the region due to political and economic instability. Most recently, the migration flow from Venezuela to other countries in the region due to the ongoing crises in the former, and the current repatriation of a considerable number of these Venezuelan migrants from the most affected countries by COVID-19 in the region due to the growing unemployment. These flows should be taken into consideration by epidemiological models, and also for the development of health measures applied in the countries receiving them. There is a growing necessity for addressing this kind of issues on a regional basis, as uncoordinated national measures are probably not the ones best suited for crises of this magnitude.

3. The spread of COVID-19 among Latin American and Caribbean countries

At the time of drafting this publication, the five most affected countries in the region by number of reported infections and deaths attributed to COVID-19 were Brazil, Peru, Chile, Mexico, and Ecuador. These countries were all above the LAC average in terms of reported cases, and both Brazil and Peru had a higher number of cases reported than the average of the OECD. With the exception of Mexico, it is possible to see that the epicentre of the SARS-CoV-2 infections has been in the southern hemisphere section of the continent, with the Caribbean and Central America mostly spared (see Figure 6).

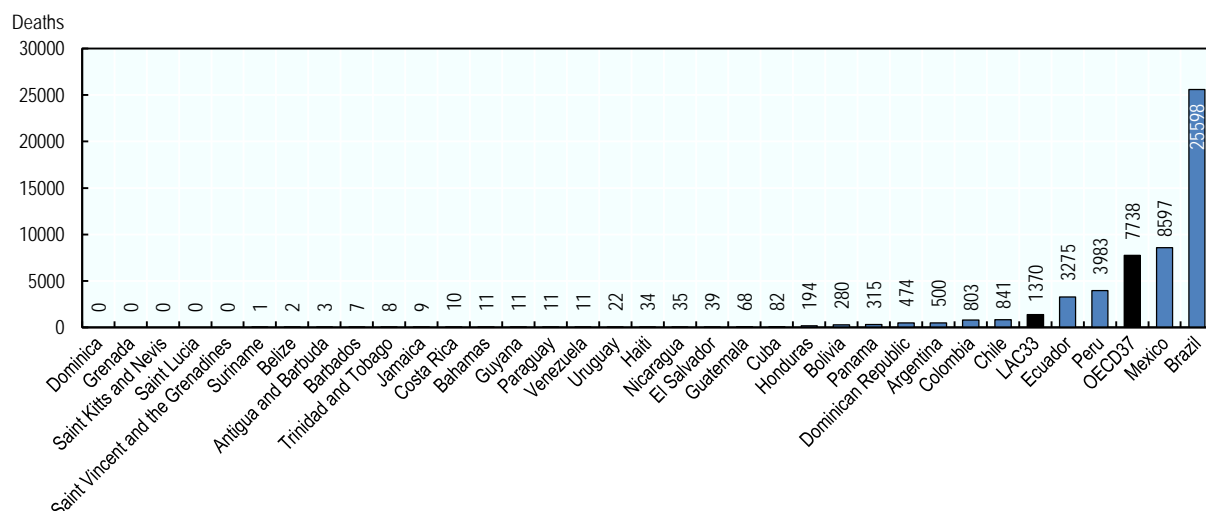
Figure 20. Reported cases of COVID-19 in LAC countries and the OECD



Source: Our World in Data. <https://ourworldindata.org/covid-cases> accessed 29 May 2020.

Another grim indicator of the extent of the COVID-19 crisis in Latin America and the Caribbean is the number of reported deaths attributed to the disease. For this figure, Chile falls below the LAC average, but Ecuador, Peru, Mexico, and Brazil are still above it; the latter two countries are even above the number of reported deaths attributed to COVID-19 on average for OECD countries (see Figure 7). It is important to mention that if these indicators were to be analysed as densities per population, Chile would exhibit the highest density of reported cases, while Ecuador the highest density of reported deaths. However, the purpose of these total figures is to show up to which point the SARS-CoV-2 has spread inside the region, and to provide a magnitude of how some countries have been more affected than others.

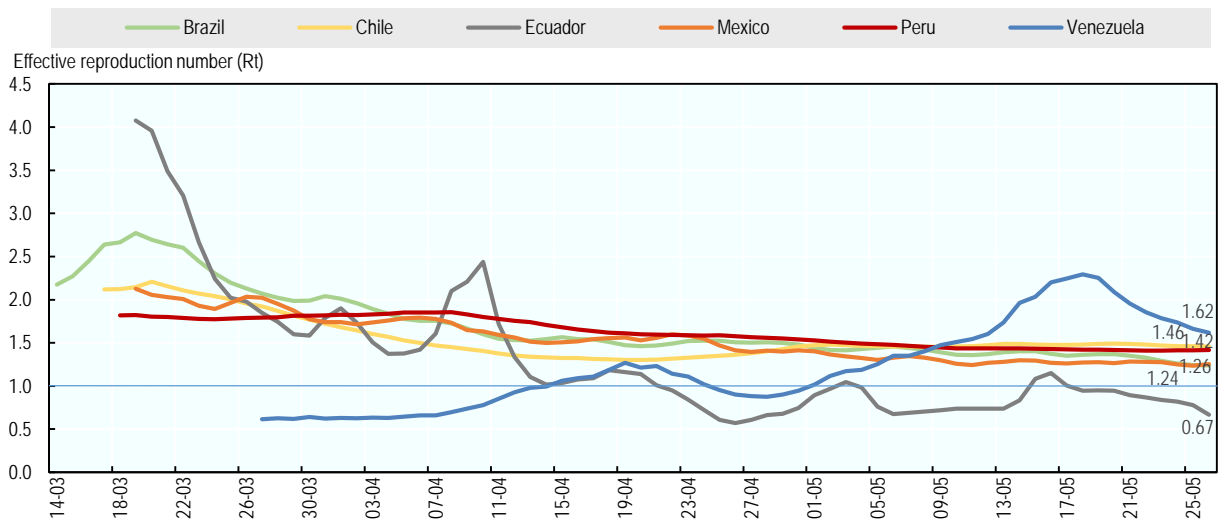
Figure 21. Reported deaths attributed to COVID-19 in LAC countries and the OECD



Source: Our World in Data. <https://ourworldindata.org/covid-deaths> accessed 29 May 2020.

As data from Figures 6 and 7 is static, it is also insightful to see how the pandemic is evolving in the LAC region. As mentioned in Box 1, one of the most useful indicators for policy-makers during ongoing epidemics is the effective reproduction number (R_t). This dynamic indicator allows us to have an idea of how large the virus circulation is at a specific time. We can observe how Ecuador had a peak in mid-March simultaneously with Brazil but with a higher R_t , then experienced a second peak during the second week of April, but has ever since mostly managed to maintain the R_t lower than one; this means that the SARS-CoV-2 is not circulating at a sufficient rate to continue the increase of the epidemic. On the other hand, Brazil, Chile, Mexico, and Peru have experienced very similar R_t during the pandemic (except for Brazil's peak), which have not yet fallen below the rate of one, indicating that the virus is still sustainably circulating and possibly explaining why these countries are among those most affected by COVID-19. Finally, Venezuela started well below the line in which R_t equals one, but virus circulation has accelerated with a first peak in mid-April and a second one in mid-May, and now seems to be converging towards the rate of Brazil, Chile, Mexico, and Peru (see Figure 8). Policy makers should consider keeping non-pharmaceutical interventions like social distancing and lockdowns until the R_t is consistently less than one. On this topic, the region could highly benefit from having joint epidemiological surveillance mechanisms as mentioned in Box 2 for a proposed LAC-CDC.

Figure 22. Effective reproduction number in selected LAC countries, March to May 2020



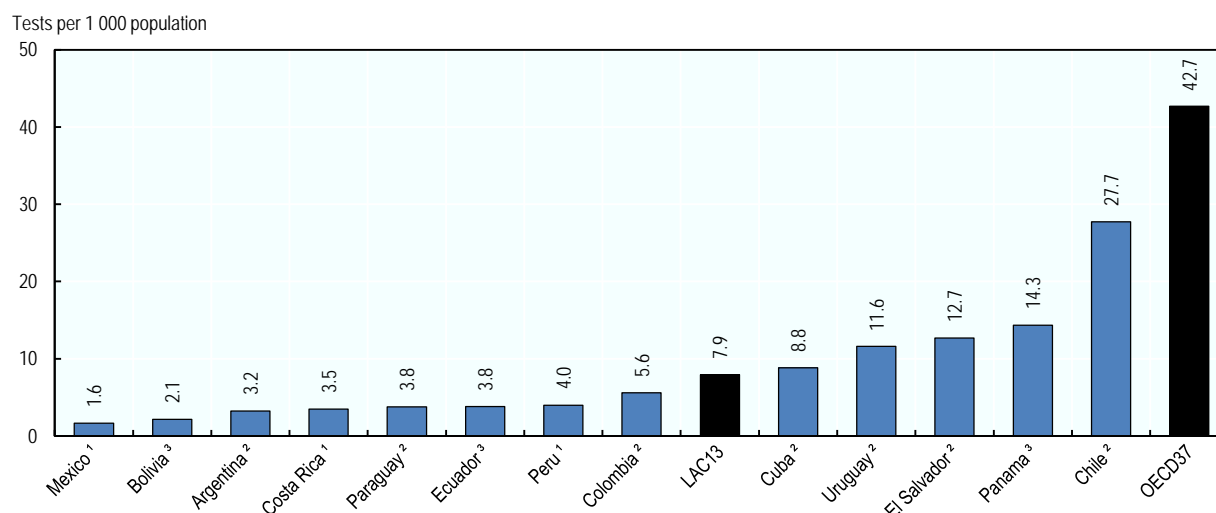
Note: Average Serial Interval set at 7 days.

Source: Real-Time Estimates of the Effective Reproduction Rate (Rt) of COVID-19 (Arroyo-Marioli, 2020[6]). <http://trackingr-env.eba-9muars8y.us-east-2.elasticbeanstalk.com/> accessed 4 June 2020.

Finally, the testing density gives us an idea of which countries have been able to deploy them more efficiently. An effective national strategy that tests, tracks people infected, and traces their contacts (TTT), helps to reduce the spread of SARS-CoV-2 and thus bring its effective reproduction number below one. As testing the entire population is virtually impossible, the two main options for a TTT strategy to yield good results are to either begin testing the population when cases are starting to appear more frequently (as could be the current case for Venezuela), or confine the population and be prepared to test once the de-confinement starts (more appropriate to the situation in Ecuador).

The density of testing among LAC countries is much lower than that of the OECD (7.9 tests on average per 1 000 population compared to 42.7). It is possible to observe an important variation between the three LAC members of the OECD, with Chile having the highest number of SARS-CoV-2 tests per 1 000 population at 27.7, while Colombia has close to the LAC average at 5.6, and Mexico is the country with the lowest reported number of tests per 1 000 population among these selected LAC countries with as few as 1.6. Ecuador shows a testing density of 3.8, which is less than half the LAC average (see Figure 9). Here again, the guidance of a LAC Centre for Disease Prevention and Control would be useful to overcome the testing difficulties that some nations are experiencing.

Figure 23. Cumulative diagnostic testing for COVID-19 in selected LAC countries and the OECD, per 1 000 population



Notes: 1. People or cases tested. 2. Tests performed or samples tested. 3. Units of test unclear or inconsistent. Differences exist as to whether figures include tests, or individuals tested; whether they include all lab tests (public and private) or not; on how regularly data is updated by each country; and other aspects. This data refers to PCR diagnostic tests, as case confirmation is generally based on a positive result from a PCR test, in line with WHO recommendations. Date of testing data shown in the graph varies between 20 May and 28 May 2020.

Source: Our World in Data. <https://ourworldindata.org/covid-testing> accessed 29 May 2020.

4. What can the region learn from past and current epidemics?

Latin America and the Caribbean has not been exempt from previous epidemics and outbreaks. The 2009 pandemic of the infectious respiratory disease produced by the influenza A virus subtype H1N1 greatly affected the region, as well as the rest of the Americas. And even though the vaccine was developed and delivered during the same year, its coverage among certain countries was not complete. Countries like Bolivia, Chile, El Salvador, Guyana, and Mexico reached 90% influenza vaccine coverage on adults during 2009, but Colombia, Paraguay, and Uruguay reached less than 40% of coverage. Figures for 2010 show Argentina and Panama at 100% coverage, but Colombia only at 60%, and Venezuela with less than one fifth of its adult population immunized (PAHO, 2019^[7]). Once the SARS-CoV-2 vaccine is made available, distribution will be key to limit the number of susceptible people and therefore reduce the spread of the virus. Nevertheless, experience from previous crises will be necessary to improve these processes, and to prevent clusters of COVID-19 among the countries and areas facing the highest difficulties in distribution of the vaccine.

National stockpiles of personal protective equipment (PPEs), laboratory reagents, and other health resources such as ventilators exhibited an important variance among LAC countries during the 2009 AH1N1 pandemic (PAHO, 2010^[8]), highlighting the necessity of implementing evidence-based best practices and recommendations to help them better prepare for outbreaks of infectious diseases.

Trade is essential during a pandemic, as increased demand for resources cannot be covered by any one country alone. This was highlighted in the example of face masks³⁵ as PPE. Transportation, both international and domestic, is also fundamental in order to avoid bottlenecks in the distribution chain. But as trade is also not enough, Latin America and the Caribbean should generate incentives for companies to adapt their assembly lines for the production of face masks, also expediting certification procedures so that new companies in this domain can start production faster. Also, a more effective and cost-efficient

³⁵ “Face masks” generally refers to surgical masks, and also covers N95 respirators as they have a similar value chain.

solution in the long-term could be the combination of national and regional strategic stockpiles, establishing agreements with companies for rapid conversion of assembly lines during crises, and supportive international trade provisions (OECD, 2020^[9]). As Latin American and Caribbean countries are generally importers of other COVID-19 goods such as medical devices (produced mainly in Germany and the United States), and protective garments (from China and Malaysia), reducing barriers on imports of these products, even if temporarily, would also be helpful (OECD, 2020^[10]).

On a specific case, Mexico began preparing a National Influenza Preparedness Plan (NIPP) shortly after the SARS 2003 epidemic emerged in Asia. This plan was completed in 2005, and by 2006 was already being tested at a national level. In the absence of LAC regional mechanisms, Mexico's NIPP was complemented with the North American Plan for Avian and Pandemic Influenza developed by the governments of Canada, Mexico, and the United States. This national plan allowed Mexico to face the 2009 AH1N1 pandemic with stockpiles of strategic medicines and PPEs, pre-tested risk communication campaigns, and networks to distribute vaccines more efficiently. Nevertheless, the preparedness for ICU beds, ventilators, and the number of capacitated personnel to use these tools were not sufficient, as has been the case so far during the COVID-19 pandemic. Furthermore, even if vaccines were available, they arrived late and in limited amounts, signalling another aspect to improve (Córdova-Villalobos, 2017^[11]). Lessons from these kinds of contingencies, especially with Mexico being affected by the 2009 AH1N1 pandemic from the beginning, could be priceless in terms of saved lives during the COVID-19 pandemic and other health crises.

Lessons that ought to have been learned from the 2009 AH1N1 pandemic but that were not applied consistently in Latin America and the Caribbean also include the late involvement of the highest-level authorities, who generally convened after the arrival of SARS-CoV-2 to the region and therefore delayed inter-sectoral readiness; and the slow reaction to acquire strategic medical resources such as PPEs, drugs, and laboratory supplies, which resulted in countries from regions affected before LAC to exponentially increase their demand for these goods, thus distorting global markets and making these medical supplies scarcer and more expensive, and ultimately probably impairing the capacity of LAC countries to face the pandemic (Hernández-Ávila, 2020^[12]).

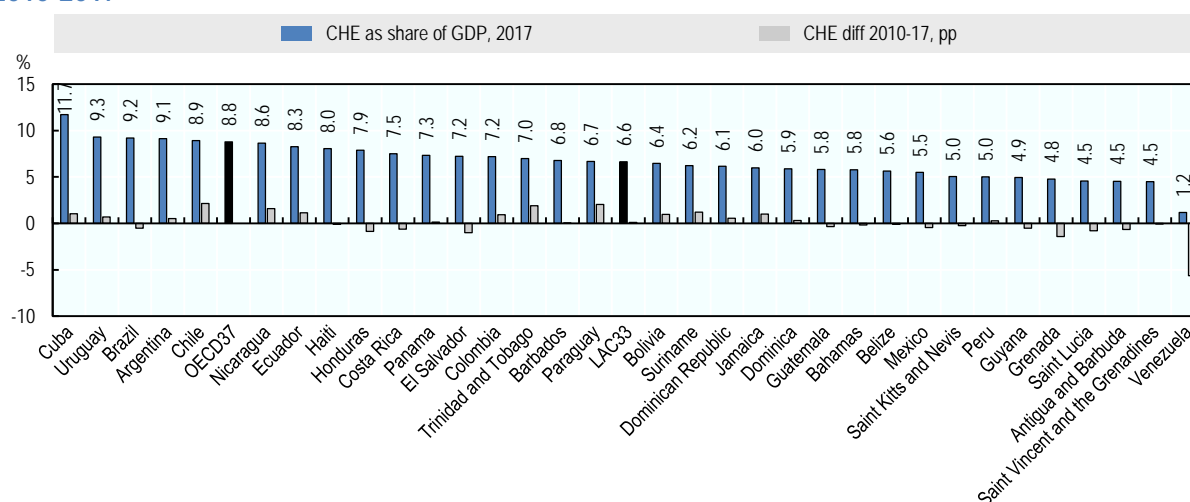
LAC countries should develop both national and regional epidemic preparedness plans, possibly based on influenza-specific plans. Programmes for epidemiological surveillance, diagnosis centres, early detection of emergent infection clusters, pre-tested risk communication strategies, faster convening of highest-level taskforces, greater stockpiles of PPEs and strategic drugs, vaccine production facilities and distribution networks, as well as expanded capacities for ICU beds and ventilators with enough trained personnel, are some of the key aspects that would allow these epidemic preparedness plans to work efficiently during upcoming health crises. Other episodes such as the 2015-2016 Zika virus epidemic, and recurring outbreaks of Dengue, Chikungunya, Yellow Fever, and Cholera among LAC countries are also worth studying at regional research centres, both existing and proposed –such as the Latin America and the Caribbean Observatory on Health Systems and Policies mentioned in Box 2-, in order to improve the response of the countries while facing upcoming epidemics thanks to a deeper level of integration and co-operation.

5. The road ahead: moving towards better spending and a more integrated health sector in the region

Latin America and the Caribbean has a long road ahead towards more resilient, prepared, and inclusive health systems. Even if some countries have been achieving important results during the last decades, these have been hindered by the fact that increases in current health expenditures as a share of GDP amount to less than 0.1% on average for the period 2010 to 2017 (see Figure 10). However, the paradigm of spending more in order to improve the health systems in the region should not be applied without

improvement in the efficiency of this augmented investment, therefore not only spending more, but spending better. Excessive frugality in health expenditure could be as negative as wasting or misusing these scarce resources.

Figure 24. Change in current expenditure on health (CHE) as a share of GDP in LAC countries, 2010-2017



Note: 2018 data for Brazil, Chile, Colombia, Costa Rica and Mexico.

Source: WHO GHED 2020; OECD Health Statistics 2019 for Brazil, Chile, Colombia, Costa Rica and Mexico. See Chapter 6 of Health at a Glance: Latin America and the Caribbean 2020.

Nevertheless, it is necessary to acknowledge the inherent restrictions on Latin American and Caribbean economies, due in part to fiscal limitations that hinder budgetary expansions, and also their status as emerging nations. That being said, there is room to improve the public-private mix of the health sector, which could boost the LAC health systems into higher quality and expenditure plateaus that could afterward be more reliant on public expenditure, as is the case in more advanced economies with welfare states, and long-standing tradition on public health. It is also of paramount importance to alter the perception of health expenditure in the region from a cost to an *investment*. If the world has learned something from the COVID-19 pandemic, it is how dependent national economies are to the health of their citizens. A healthy population covered by a strong and inclusive health sector is therefore a fundamental building block for any nation, and the emerging economies of LAC are no exception.

Another recommendation for the region in the post-COVID-19 scenario is the promotion of integration and linkages between national health systems. This crisis has shed light on most of the deficiencies these sectors have even in regular times, and has proven how pandemics cannot be effectively addressed without appropriate international and regional co-operation. The aftermath of this health crisis could push Latin America and the Caribbean forward to establish a more integrated regional health system, following the likes of European agencies such as the European Observatory on Health Systems and Policies, and the European Centre for Disease Prevention and Control - ECDC, which have proven to be useful tools for European policy-makers, health professionals, and public in general during the ongoing crisis (see Boxes 2 and 3).

Box 5. Proposal for LAC regional public health bodies

Latin America and the Caribbean Centre for Disease Prevention and Control (LAC-CDC)

In 2005, the European Union established the European CDC, partly as a response to the challenges faced around the 2003 SARS epidemic and the need they saw to co-ordinate public health responses at a continental level, especially as intra-European borders were opening, and their national economies were linking.

2020 and the ongoing COVID-19 pandemic could be the nudge required by the LAC region to promote synergies between national health systems, perhaps beginning under the umbrella of established organisations such as PAHO, and related bodies of the OECD.

A region-wide CDC could help LAC exchange public health and epidemiologic information, expertise, and best practices more freely and efficiently, as to act more quickly during next outbreaks and epidemics. Countries and areas could be better prepared through joint actions if, for example, an outbreak of Yellow Fever or Zika is observed through dedicated surveillance networks in a region bordering two or three different nations. Further co-operation in migration flows health observation, and intra- and extra-regional land, air, and maritime travel controls following a pandemic like COVID-19 could be beneficial as well for all the involved parties, especially the citizens of Latin America and the Caribbean.

Latin America and the Caribbean Observatory on Health Systems and Policies

In 1998, the WHO Regional Office for Europe pursued a project to establish a “clearing-house on health care reforms”, which later on became the European Observatory on Health Systems and Policies, one of the leading world brokers in health topics, as a joint effort with national and regional governments, health and international organisations, and academia.

At a time in which LAC policy-makers could benefit the most from co-operation and evidence-based health recommendations and analysis, the networks between national health systems and academia from these countries are relatively less strong when compared to regions such as Europe. A LAC Observatory on Health Systems and Policies could help fill this void by giving these actors a forum in which exchange, compare, and evaluate ideas to improve the health systems in the region, and therefore the well-being of their citizens.

Taking advantage of the network of LAC countries that are collaborating with the OECD, and the OECD Development Centre, plus the in-house experience on health topics at the organisation, local policy-makers and experts could start enhancing the spill over of knowledge and best practices in order to be better prepared for upcoming health crises and also during normal contingencies.

Evidence and best-practices developed during and after the COVID-19 pandemic could be key for LAC to lessen the impact of upcoming epidemics and outbreaks, whether they are from known viruses such as Dengue and Chikungunya, or from unknown pathogens such as SARS-CoV-2. In order to assure regional dissemination and evaluation of these learnings, a LAC Observatory on Health Systems and Policies would be immensely helpful.

Box 6. Responses from European public health bodies to the COVID-19 crisis

European Centre for Disease Prevention and Control (ECDC)

As an important effort to tackle the spread of SARS-CoV-2 in Europe, the ECDC undertakes an epidemiological surveillance with continuous updates, as well as risk assessments of the crisis, down to a sub-national basis. Allowing, for example, countries to better prevent and address infectious clusters in regions that share borders with more affected areas located in neighbouring countries.

Daily situation updates are published for member states of the European Union, the European Economic Area, as well as for the United Kingdom. Guidance and technical support are provided for health professionals and policy-makers.

In order to have a more direct contact with European citizens and to prevent misinformation, verified information in the form of infographics, posters, and videos is also provided for the general audience.

These measures are also constantly applied to other types of infectious diseases that affect the continent such as measles and hepatitis B, which provide the ECDC with the necessary experience to be better prepared in the face of a pandemic like COVID-19.

European Observatory on Health Systems and Policies

As a joint project with the European Commission and the WHO Regional Office for Europe, the European Observatory on Health Systems and Policies designed the Health Systems Response Monitor (HSRM). Its purpose is to address the COVID-19 crisis by collecting and organising real-time information on how countries are responding to the pandemic.

Different cross-country analyses of health systems responses and key policy lessons are published by the HSRM, in addition to tools that allow the comparison of country responses and a collection of verified references.

The continuous assessment and comparability of health systems and responses allow policy-makers to be in the avant-garde of knowledge on COVID-19, as well as on other health-related matters before and after this crisis.

Increased public awareness on health topics among Latin American and Caribbean citizens, and the subsequent push for augmenting budget allocations in this domain could serve as building blocks for the establishment of public health agencies in LAC. Such projects could first start as co-operation forums between a group of leading parties under the umbrella of long-standing bodies such as the Pan American Health Organization (PAHO), and joint efforts from the Health Division and the Development Centre of the OECD. Taking advantage of the increasing number of LAC countries that are involved with the OECD either as member states, key partners, or members of the Development Centre (14 countries in total from the 33 that encompass Latin America and the Caribbean).

Latin American and Caribbean citizens from Generations Y and Z have grown up in an era of high interconnectivity. Real time communication and resource dissemination are possible between, say, Caracas, Mexico City, and Rio de Janeiro, something that would have been unthinkable decades ago. The COVID-19 crisis has highlighted even more the great potential this connectivity has to promote synergies between different countries and stakeholders. The continuous reduction of the long distances that have obstructed regional integration could be one of the main pillars in which our generations should base upcoming work.

Having more resilient and integrated health systems in the region could be one of the direct products of this increased co-operation. Providing young Latin American and Caribbean citizens with a better health for a better life, while giving the region a more interconnected identity.

More in general, spending more, better, and in union could be key for LAC citizens to improve health care access and quality -both during crises and regular times-, while comparing it less and less to crossing the Niagara Falls on a bicycle.

References

- Arroyo-Marioli, F. (2020), *Tracking Rt of COVID-19: A New Real-Time*, MedRxiv, [6]
<https://doi.org/10.1101/2020.04.19.20071886>.
- Bernheim, A. (2020), *Chest CT Findings in Coronavirus Disease-19 (COVID-19): Relationship to Duration of Infection*, Radiological Society of North America: Radiology, Oak Brook, Illinois, <https://pubs.rsna.org/doi/10.1148/radiol.2020200463>. [3]
- Brauer, F. (2008), *Compartmental Models in Epidemiology*. In: Brauer F., van den Driessche P., Wu J. (eds) *Mathematical Epidemiology. Lecture Notes in Mathematics*, vol 1945., Springer, Berlin, Heidelberg, <https://link.springer.com/content/pdf/10.1007%2F978-3-540-78911-6.pdf>. [5]
- Córdova-Villalobos, J. (2017), *The 2009 pandemic in Mexico: Experience and lessons regarding national preparedness policies for seasonal and epidemic influenza*, Gaceta Médica de México 2017;153:102-10, Mexico, http://www.anmm.org.mx/GMM/2017/n1/GMM_153_2017_1_102-110.pdf. [11]
- Hernández-Ávila, M. (2020), *Mexico: Lessons learned from the 2009 pandemic that help us fight COVID-19*, Canadian College of Health Leaders, Volume: 33 issue: 4, page(s): 158-163, <https://doi.org/10.1177/0840470420921542>. [12]
- OECD (2020), *OECD Policy Responses to Coronavirus (COVID-19). Trade interdependencies in Covid-19 goods*, OECD, Paris, <http://www.oecd.org/coronavirus/policy-responses/trade-interdependencies-in-covid-19-goods-79aaa1d6/>. [10]
- OECD (2020), *OECD Policy Responses to Coronavirus (COVID-19). The face mask global value chain in the COVID-19 outbreak: Evidence and policy lessons*, OECD, Paris, <http://www.oecd.org/coronavirus/policy-responses/the-face-mask-global-value-chain-in-the-covid-19-outbreak-evidence-and-policy-lessons-a4df866d/>. [9]
- OECD/The-World-Bank (2020), *Health at a Glance: Latin America and the Caribbean 2020*, OECD, Paris, <https://doi.org/10.1787/6089164f-en>. [1]
- OECD/WHO (2018), *Health at a Glance: Asia/Pacific 2018*, OECD, Paris, <https://www.oecd.org/health/health-at-a-glance-asia-pacific-23054964.htm>. [2]
- PAHO (2019), *Influenza Vaccine Coverage in countries and territories of the Americas, 2005-2018*, Pan American Health Organization / World Health Organization. Washington, DC, <http://ais.paho.org/imm/InfluenzaCoverageMap.asp>. [7]
- PAHO (2010), *Response to Pandemic (H1N1) 2009 in the Americas: Miami, Florida, 15–17 September 2009*, <https://www.paho.org/hq/dmdocuments/2010/Lessons-learned-2010-H1N1.pdf>. [8]

WHO (2019), *World Health Organization Model List of Essential Medicines, 21st List*, World Health Organization, Geneva,
<https://apps.who.int/iris/bitstream/handle/10665/325771/WHO-MVP-EMP-IAU-2019.06-eng.pdf?ua=1>.

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Inclusive Social Insurance for the 21st Century

Anna Vindics

7 April 2020

This brief focuses on the important role social insurance can play in rebuilding our societies, so that our countries can come out of the COVID-19 crisis with a more resilient and inclusive system. It argues for the need of a new social contract and particularly for revamping social insurance. In doing so it identifies the main challenges of the current systems and outlines what governments can do to make social insurance work in the 21st century.

Summary and Policy Recommendations

The COVID crisis has highlighted the gaps in social protection as another dimension of inequality. Those who are most affected economically (own-account workers, small business owners, temporary workers) also tend to have less protection because they often lack social insurance entitlements. They are overrepresented in industries that have been restricted or shut down because of quarantine, e.g. in the hospitality and culture sectors, but also in personal services such as hairdressers. (OECD, 2020^[1]) Increase in non-standard work partially reflects the lower labour costs as a result of weakening social protection (OECD, 2018^[2]). The divide between those enjoying high salaries and good protection and those with low salaries and high risks can partly explain the rise in populism, mass protests and extremism.

Adapting social insurance for the 21st century would lead to both more resilient and inclusive societies. Due to increased perceptions of insecurity and anxiety around the world, there is renewed interest in the role of social insurance and calls for a “new social contract” to address risks, uncertainties, and potential disruptions (Jorgensen and Siegel, 2019^[3]). From an economy-wide perspective, risk-pooling, and income-smoothing foster resilience against systemic uncertainties, including those related to the speed and magnitude of future labour market transformations (OECD, 2019^[4]). Additionally, in a society where risks are negatively correlated with income, social insurance (if well calibrated) can achieve more effective redistribution than the tax-transfer system would on its own. Parameters of the social insurance system can be adapted to respond to calls for increased universality and progressivity.

The COVID crisis creates an optimal context for reform. To address coverage gaps many countries quickly introduced additional measures or extended existing ones. Post-crisis social protection systems should be reformed to broaden coverage and support inclusive growth, but also to meet longer-term sustainability objectives. (OECD, 2020^[1]) Governments can build on the current public support for social protection schemes and the recognised importance of the issue. In the past many key social protection reforms came at a similar time following a crisis or recession. This report focuses mainly the social insurance, a key part of the social protection system.

Reforming social insurance would have a positive impact on generation Y and Z both in a direct and indirect way. Younger generations are more frequent among non-standard workers with high insecurity and precarious employment positions. They also find it more difficult to access income support due to their short and often patchy employment period resulting from internships and temporary positions. A more inclusive social insurance system mindful of this issue would provide income security for youth, many of whom cannot rely on parental help. This is of high importance amid a difficult labour market situation such as the current crisis. In addition, reforming social insurance would be a step towards a system that is more aligned with the preferences of the millennials. It would bring more flexibility for individuals to change between employers, employment forms and even work and sabbatical years. It would result in a fairer system, where risks do not fall on those in vulnerable positions and where disadvantaged individuals are not coerced to bear the risks of tomorrow in order to receive income today. It would also be a step towards a society with more solidarity and social cohesion.

Policy Recommendations for inclusive social insurance in the 21st Century

Combat non-standard work resulting from regulatory arbitrage

- Minimise differences in taxes and social security coverage between non-standard and standard work. Italy managed to close a loophole between para-subordinate workers and dependent

employees by increasing the contribution level gradually until it was comparable to standard employees.

Address market failures and widen coverage

- **Build on legal obligations to extend social insurance schemes.** In Sweden, gig-workers are legally required to register with an umbrella company, which acts as the employer in administering their payroll tax and social security payments in exchange for a fee.
- **Where challenges to extend coverage are too great, consider introducing specially designed schemes.** Under the German artist's insurance scheme, half of the contributions are paid by the artists themselves, while the other half comes jointly from institutions such as publishers, theatres or libraries and general taxation.

Adapt the system to more volatile career paths and employment relations

- **Consider value-added social security contributions as a response to complexities.** In France, there have been discussions about a "social" value-added tax, earmarked to finance the social security system.
- **Strengthen portability of social insurance rights across different programmes.** In Latvia, the social insurance scheme is fully individualised, as each person's contributions are registered in a separate account.

Make sure that the system works for vulnerable individuals

- **Ease access to better support the most vulnerable.** In France, artists and technicians on fixed-term contracts in the entertainment industry benefit from shorter contribution periods to access unemployment benefits.
- **Find innovative ways to finance a more inclusive system.** Taxing capital or robots and other technologies could raise revenue for social insurance schemes.
- **Build awareness among the key target groups.** Raising awareness about social insurance among not covered workers through direct outreach can increase their voluntary participation.

Why is this important?

Need for a new social contract

Social insurance schemes were designed for a different economic and labour market context. The COVID-19 crisis brought to the forefront existing issues of social protection systems, notably that they were largely designed for full time dependent employees with a single employer (standard work). (OECD, 2020^[11]) It was the straightforward way of targeting in industrialised economies, as employment was a binary phenomenon (either full time or no employment at all). Dependent workers had stable career paths working for the same employer for decades (Barr Nicholas, 2020^[5]). The model was organised around the male breadwinner model, therefore dependent family members were typically insured through the main earner too. The social contract was clear and there was limited room for evasion.

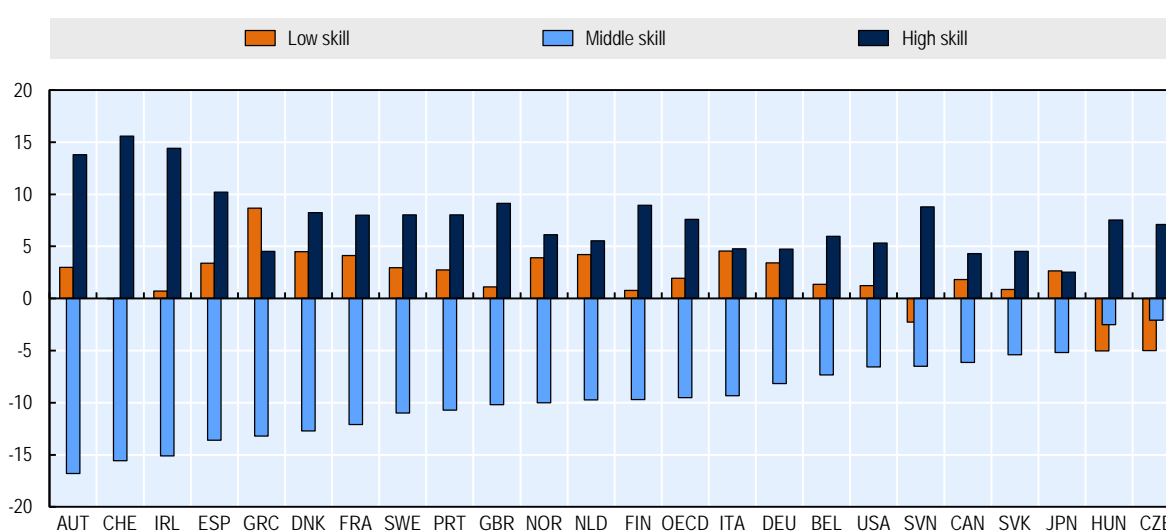
The changing nature of work led to emergence of new groups who are not covered. Due to megatrends (automation, globalisation and digitalisation) as well as new business models, a variety of employment relationships emerged or became more frequent. These include platform work, on-call or zero-hours contracts and various forms of own-account work (OECD, 2018^[2]). Some of these non-standard forms of work are not protected from a legal perspective. Others are, but in practice, individuals face difficulties accessing support. At the same time added complexities make it increasingly difficult to correctly categorise workers and administer contributions (Bussolo et al., 2018^[6]). As a result, in some countries non-standard workers are 40-50% less likely to receive income support than standard employees when

going through a period of unemployment (OECD, 2019^[7]). Additionally, those receiving support typically only qualify for income assistance, which is often significantly less generous than insurance based support.

Many traditional labour market insiders from the middle class also lost access to social insurance. Recent labour market trends increased vulnerability among middle-income households. The quantity of middle class jobs decreased along with the shrinking manufacturing sector in many OECD countries, which long provided stable employment (Figure 1). Workers in routine-task-intensive occupations do not easily transition to other jobs, especially as job growth has been primarily in lower-quality service-sector occupations (OECD, 2019^[8]). Loss of long-held jobs and occupations for middle-class workers means more than lower earnings; it also means loss of security and identity. (Bussolo et al., 2018^[6])

Figure 25. Middle skill jobs are disappearing

Change in share of total employment from 1995 to 2015, percentage point.



Note: High-skilled occupations include jobs classified under the ISCO-88 major groups 1, 2, and 3, Middle-skilled occupations include groups 4, 7, and 8 while Low-skilled occupations include major groups 5 and 9.

Source: OECD EMO 2019, based on (OECD, 2017^[9])

These trends undermine the sustainability of the system. Rising share of those without social insurance coverage makes pooling and diversification of risks less effective. The financial sustainability of the system becomes at risk, which can lead to need for reducing outflows by tightening eligibility and generosity. Such cuts have been implemented in many OECD countries especially over the past decades (UNRISD, 2016^[9]). There is evidence that decline in redistribution across OECD countries over this period was largely driven by less redistributive social insurance transfers (Causa and Hermansen, 2017^[10]). As a result, those covered by the system experience diminishing protections leading to perceptions of unfairness. Across the OECD 58% of middle-income households consider that they do not receive a fair share of public benefits given the taxes and social security contributions that they pay (OECD, 2019^[11]). Due to declining participation, the sustainability of the system becomes under pressure both from a financial point and due to erosion of public support.

Insiders and outsiders; a reason behind social unrest and populism. There is a divide between labour market insiders, who enjoy good salaries, employment prospects and protection, while significant groups are stuck with low quality jobs and high risks (OECD, 2018^[12]). Inequality is widening between population groups, fuelling an important source of distributional tension. Younger generations are more frequent among non-standard workers and can find it more difficult to access income support due to their limited

contribution periods. Those with low level of skills and low bargaining power are also more likely to be on non-standard contracts and some middle class jobs are increasingly fail to deliver the same labour market security as in the past (Bussolo et al., 2018^[6]). This may help to explain the growing discontent in many OECD countries, not only at the bottom of the income distribution, but also among middle-class households demonstrated by rise in mass protests, extremism and populism. (OECD, 2019^[4])

The case for revamping Social Insurance

Social insurance creates resilient and inclusive economies. Loss of employment is a key factor that pushes households into poverty. (UNRISD, 2016^[9]) Social insurance (Box 1) helps individuals and families to manage risks and makes the impacts of adverse life events (ill health, accident etc.) less damaging on their longer-term prospects. For example, there is evidence that unemployment benefit helps individuals avoiding defaults on their mortgage debt (Hsu, Matsa and Melzer, 2014^[13]). Hence, it has positive effects on maintaining consumption and smoothing income. In times of crisis, the system acts as an automatic stabiliser. Social insurance also improves productivity by helping with job re-allocation or increasing risk-taking of individuals to reach for higher skilled jobs (Acemoglu and Shimer, 2000^[14]; OECD, 2007^[15]). Social insurance reduces negative externalities of job-loss on close individuals (e.g. poverty of dependent children) or the society (e.g. increased crime, lower lifetime tax contribution). (Barr Nicholas, 2020^[5]) Collective social insurance increases social solidarity as everyone is covered under a common scheme.

Box 7. Social insurance as income support during adverse life events.

The focus of this policy brief is on contributory programs, where participants make regular payments in exchange for **income support in case of specific life events over working life** (e.g. job loss or ill health). It does not directly examine provision of health insurance and old age pensions. Although, eligibility for such schemes coincides in many countries, therefore policies that improve coverage of social insurance can result in improved access to other aspects of social protection. There are some efficiency gains to win from a comprehensive approach. For example, as unemployment and longevity risks are typically negatively correlated, packaging eligibility for unemployment and pensions under the same system can help to maintain a more diversified risk pool, improving attractiveness of the system for a larger share of the population.

Source: (OECD, 2019^[7]).

Individuals prefer certainty, but private insurance markets would fail. Insurance pools funds from many entities to pay for the losses that some incur (Feldstein, 2005^[16]). This increases well-being, as people are risk averse; they prefer to pay a premium for more certainty in the future (Barr Nicholas, 2020^[5]). However, insurance against certain risks such as unemployment is typically not viable on the private market due to asymmetric information. Two consequences of information failure are moral hazard and adverse selection, which result in market failure. Adverse selection means that the insurer has difficulties to differentiate low risk individuals from high-risk individuals. If the price of the insurance would be the average of what individuals are willing to pay, than the low-risk individuals would not purchase it, only those with high-risks. This would result in the need to increase the premium leading to even more people opting out until the collapse of the market. (Akerlof, 1970^[17]) Moral hazard means that the event against which insurance is purchased (i.e. becoming unemployed) can be influenced by the insured individual. As a result, the insurer cannot differentiate if the action is voluntary or involuntary leading to perverse incentives for the insured. (Barr Nicholas, 2020^[5])

Risk sharing through social insurance has strengths in terms of both equity and efficiency. By making participation compulsory, social insurance addresses adverse selection as low risk individuals cannot opt

out. This makes risk pooling more efficient (across all industries, education levels, ages etc.) and the overall system more resilient (Jorgensen and Siegel, 2019^[3]). Another advantage of social insurance – especially in the current context – is that the contract between the insurer and the insured is less specific than private contracts. This leaves room for providing protection even if ‘new’ risks emerge over time (Barr Nicholas, 2020^[5]). Issues related to moral hazard are not resolved, although mechanisms are typically put in place to reduce resulting inefficiency (e.g. activation measures). Social insurance can be organised in a way that it serves additional objectives such as poverty alleviation or mitigating inequality.

Public risk management fosters resilience in a complex and interconnected world. The world is perceived as becoming more unpredictable, largely due to globalization and the fast transmission of events (as highlighted by the COVID Crisis) (Jorgensen and Siegel, 2019^[3]). The world of work is under transformation due to innovations in the fields of information and communication technologies, artificial intelligence and robotics (OECD, 2017^[18]). Concerns about natural disasters, climate change and conflicts add to fears of potential disruptions (World Bank, 2018^[19]). Such uncertainties and disruptions points to the critical role of social insurance to maintain social stability and cohesion. From an economy-wide perspective risk pooling, income-smoothing and enabling support for emerging vulnerable groups is one of the few tools to foster resilience against systemic uncertainties.

In a world of widening inequalities, social insurance is also a crucial vessel for inclusiveness and redistribution. Many organisations and researchers point to strengthening universalism and progressivity of the social protection systems (Bussolo et al., 2018^[6]; Jorgensen and Siegel, 2019^[3]; OECD, 2018^[12]). Social insurance schemes can play an important role in this. As unemployment risks are negatively related to income, social insurance combined with income taxation can redistribute more effectively than the latter alone (Cremer and Pestieau, 1996^[20]). The tax-transfer system redistributes between persons of different productivity, while social insurance also redistributes between persons in ‘different states of nature’. As typically a higher proportion of low-skilled and low-income persons will be in a ‘bad state of nature’, social insurance can enhance redistribution effectively, without increasing tax distortion. (Boadway et al., 2006^[21]) Reforms to replace large parts of traditional social insurance with a universal basic income would be either very expensive or have unfavourable distributional outcomes at the expense of the most vulnerable groups (OECD, 2017^[22]).

The COVID crisis creates optimal conditions for reform. The current situation highlighted that workers in independent forms of employment also need to be able to build up rights to out-of-work support. They are overrepresented in some of the industries that have been restricted or shut down because of quarantine, such as hospitality and culture sectors, but also in personal services such as hairdressers. (OECD, 2020^[11]). Governments quickly launched or expanded schemes instead of leaving people on their own. A strategically planned, diversified and sustainable system would be however more beneficial for the public budget on the long run. It would be advantageous to take stock of the knowledge and carry out a comprehensive reform. After all, the unemployment insurance program in the United States was also created in 1935 in the depth of the great depression (Feldstein, 2005^[16]). At this moment governments can also build on increased solidarity, public support towards and recognition of the importance of social insurance.

What are the main challenges of the current system?

A significant share of workers is not adequately covered by social insurance

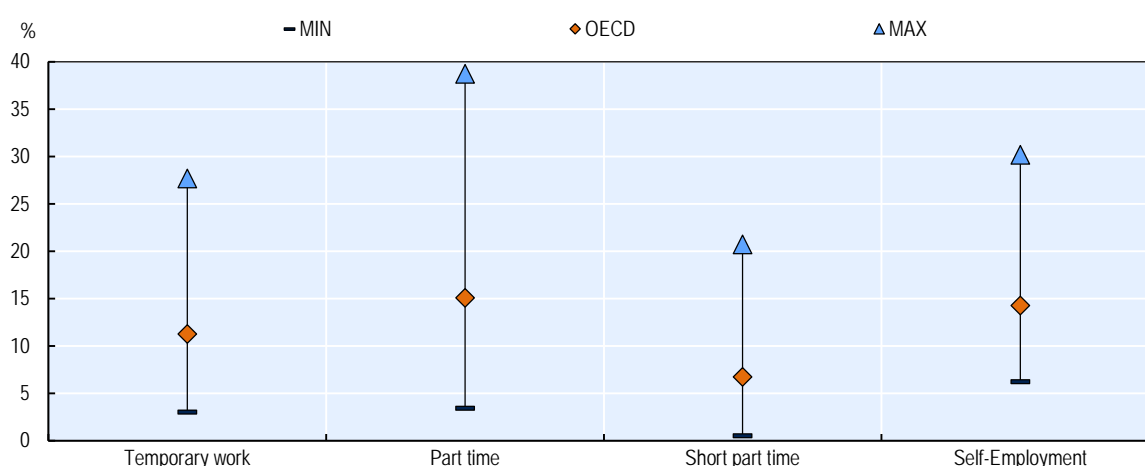
Non-standard work is not a marginal phenomenon. Non-standard workers’ employment relationships differ from conventional open ended, full time and dependent employment in at least one way. Across the OECD, around 14% of all workers are self-employed and out of those in dependent employment, around 13% are on temporary, while 15% are on part time contracts (Figure 2). There can be overlaps in these attributes.

For example, online platforms gave way for employment that is temporary, working hours can be as many as the individual would like to undertake and the livelihood of the worker depends on multiple clients. Such platform or gig workers - despite the increasing attention on them - are still a relatively small part of the labour market (estimated to be around 2%) (ILO and OECD, 2020^[23]). Young and low skilled adults are more frequent to be among non-standard workers.

- **Temporary workers have a fixed end date in their contracts.** In around half of the OECD countries, there has been a long-term upward trend in temporary employment. Such contracts can be stepping-stones to more stable employment, however, in some countries these are increasingly used for longer periods. Employment through temporary work agencies, who mediate specific work between employees and employers has grown in most OECD countries (OECD, 2019^[11]).
- **Part time workers work fewer hours per week than full-time employees.** Part-time employment has risen in most OECD countries over the past few decades and an increasing share of part-time work is involuntary. Incidence of “short part-time” work (individuals working 20 hours per week or less) increased in around half of the OECD countries. This might be partly underpinned by increases in very atypical contracts such as flexible, on-call or zero-hour work, where the employer does not offer a minimum of working hours, while in turn the employee is not required to accept hours offered. (OECD, 2019^[11])
- **Self-employed workers’ income do not depend on one single employer.** There has been a long-term decline in self-employment as a share of total employment across the OECD driven mainly by the shrinking agricultural sector. This trend stabilised in the past two decades and there have even been recent increases in some countries. (OECD, 2019^[11]) It is difficult to delineate the group of self-employed; there is a legal grey area between self- and dependent employment. Some countries have seen increase in independent contractors, who contractually have control over their working hours and workflow, but are remunerated for their time (instead of output) and remain highly dependent on one or a few clients (OECD, 2018^[24]).

Figure 26. Incidence of non-standard work across the OECD is not marginal

Temporary and part time work as share of dependent work, self-employed as share of total employment, all ages, 2017, percentage.



Note: Part-time employment is defined using a common definition of 30-usual-hour cut-off in the main job. Short part-time is defined as usually working 1-19 hours per week. Temporary employment is defined as fixed term employment contracts. Self-employment data for Latvia is 2015 instead of 2017.

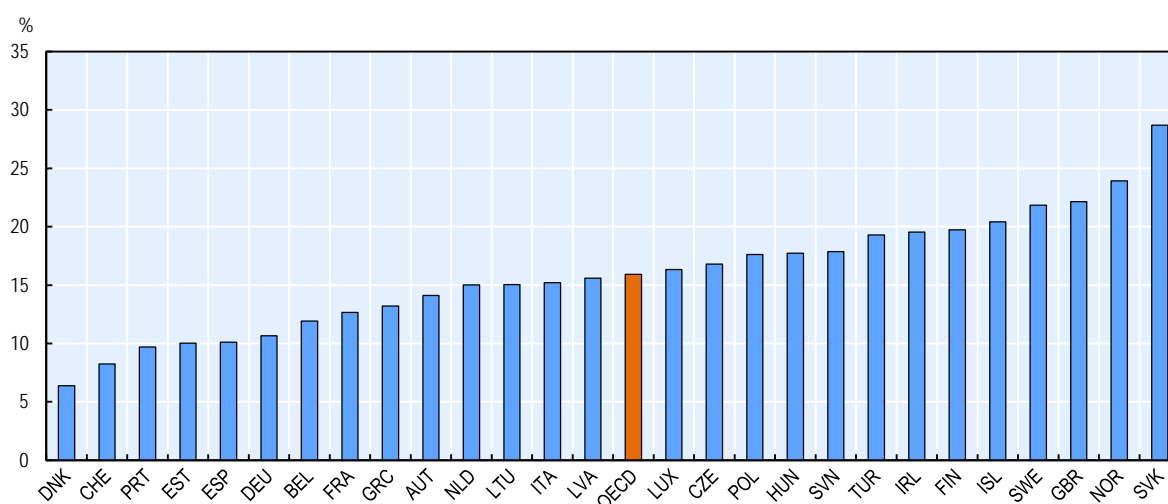
Source: OECD Employment database, www.oecd.org/employment/database.

Non-standard work can be desirable. The resulting flexibility can be advantageous for both the employer and the employee. It can help companies to adjust workforces to fluctuating demand, while workers may be seeking greater freedom to achieve a better work life balance (OECD, 2018^[21]). An increasing share of people (particularly in generation Y and Z) would prefer to work less than the conventional full time hours and there are additional arguments in favour of this for sustainability reasons. Issues arise, when employers (or even employees) use these as a way to shift risks on the individuals and to drive down labour costs due to lower taxes and less stringent regulation. There is evidence of increase in such behaviour over the past decades.

The group of self-employed is very heterogeneous. It comprises of vulnerable individuals with low earnings and bargaining power, but also of successful businesspersons who take large risks for the potential of very large rewards. Policies should ensure protection for those, who are in the grey zone between dependent and self-employment, but due to their status, they lack some protections and rights enjoyed by employees. In some countries the share of self-employed, who are only dependent on one or few clients (hence might be misclassified) is high (Figure 3) and have been increasing (OECD, 2018^[24]).

Figure 27. Across the OECD 15% of self-employed have only one dominant client

Share of self-employed, 2017, percentage.



Note: OECD is unweighted average of countries shown.

Source: (OECD, 2019^[25]), OECD calculations based on the EULFS, Eurostat.

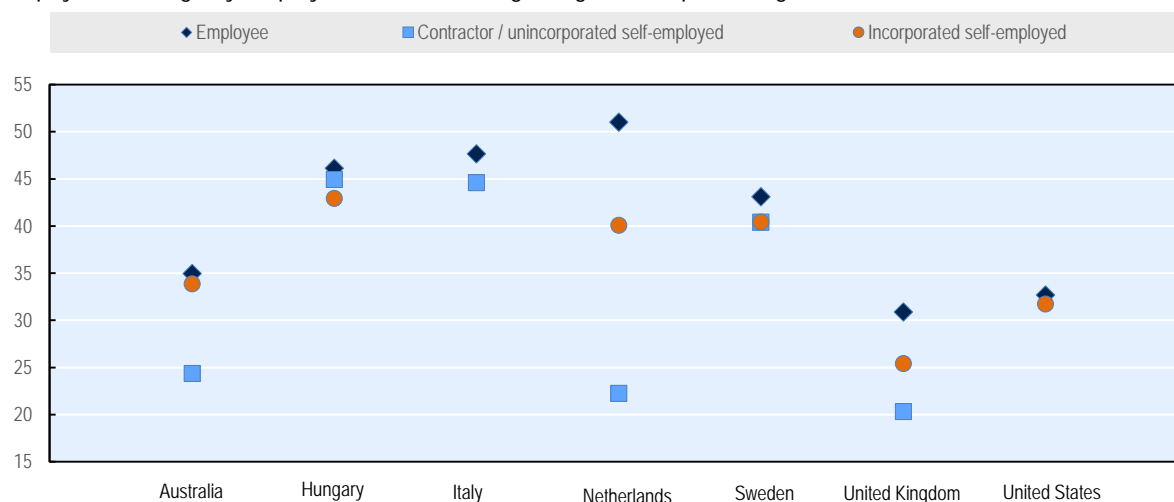
Reasons behind inadequate coverage

False categorisation of workers is damaging for individuals and competition. There is evidence that in some countries recent growth in non-standard work has been driven primarily by fiscal and regulatory differences between employment forms (OECD, 2019^[71]). If only some categories of workers are liable to pay social contributions, firms have an incentive to shift work onto those workers who enjoy the least protection. In the Netherlands, for example, the total “payment wedge” between a dependent employee and an independent contractor is 30%, majority of which are employer social security contributions (Figure 4, Box 2). In theory, this difference could be pocketed by either the employer or the employee, but there is evidence, that for low-wage employees this is almost entirely captured by employers. (OECD, 2018^[21]) In this case, companies due to unequal bargaining power coerce disadvantaged individuals to bear the risks

of tomorrow in order to receive some income today. This practice is also harmful for those employers who play by the rules, as their prices become uncompetitive leading to race to the bottom.

Figure 28. Non-wage labour costs can vary substantially across contractual arrangements

Total payment wedge by employment at the average wage, 2017, percentage.



Note: The total payment wedge is the sum of income taxes, social contributions and other compulsory payments as a percentage of total labour costs. Based on country-specific employment forms. Where there were multiple employment forms for unincorporated and incorporated self-employed the lowest value is displayed.

Source: Adapted from (OECD, 2019^[41]) based on (Milanez and Bratta, 2019^[26])

Box 8. Regulatory differences can drive incidence of non-standard work

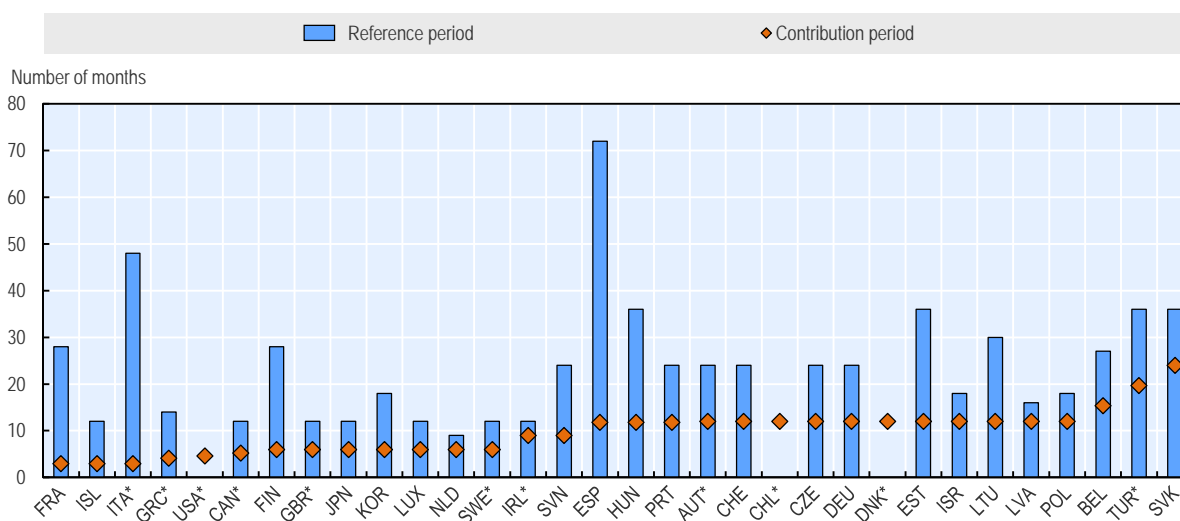
Over the last decades, the share of non-standard work in The Netherlands has grown substantially and it is now among the highest of all OECD-countries. Approximately one in three workers are on a non-standard arrangement (including own-account or temporary work, variable hours contracts and agency work). In The Netherlands, firms can avoid social contributions, severance payments, reintegration obligations and tedious dismissal procedures by hiring people as own account workers. By using non-standard work arrangements, employers can circumvent employment protection legislation.

Source: (OECD, 2018^[21])

Part time and temporary workers are often insured theoretically, but receive little protection in practice. In most countries, temporary and part-time workers can benefit from the same schemes as standard workers as long as they meet the minimum requirements. Such requirements typically include length of contribution (employment) over a specific period (Figure 4). For example in Slovakia individuals are only eligible for unemployment insurance if they have been employed for at least 2 out of the past 3 years. However, often there are additional requirements such as a certain amount of time since the last unemployment spell, uninterrupted contribution period or an income threshold. These can raise the bar too high for non-standard workers to access protection (OECD, 2019^[7]). This is especially the case as for temporary workers, who go in and out of unemployment more frequently than standard workers do. Young adults in many ways face similar issues due to patchy employment records at the beginning of their careers (OECD, 2018^[27]), which is one of the outcomes of tightening such policies over the past decades. (UNRISD, 2016^[9]).

Figure 29. Employment requirements for unemployment benefits range from 3 to 24 months

Length of contribution, 2018, number of months.



Note: * signals that there are additional conditions in level of contributions, period since last unemployment or work continuity.
Source: (OECD, 2019^[4]) based on OECD tax-benefit model and policy database (www.oecd.org/social/benefits-and-wages.htm).

Self-employed have not been traditionally covered in social insurance schemes. For instance they do not fit easily into the framework of contributory social insurance systems for a number of reasons, for example due to the difficulty of monitoring moral hazard (OECD, 2018^[12]). Social insurance schemes are based on both employer and employee contributions to divide the burden between both beneficiaries of the system. Requiring self-employed to pay both contributions can be unrealistic as a large share of them are low-earners with insufficient bargaining power to incorporate this into their prices. Raising labour costs for the self-employed also comes at the risk of pushing economic activities into the informal economy. The state could step in, but subsidising self-employed individuals' contributions from tax funding may raise issues of fairness as for example certain self-employed are high earners. (OECD, 2018^[24]) It could also create the wrong incentives and further encourage companies to shift the burden on individuals and the public budget. Additionally, if the system is not compulsory, some self-employed could cut their costs by opting out, which would result in a race to the bottom.

The gap goes beyond the realm of social insurance. There are also large differences in employment regulation such as those governing dismissals. Disparities exist in access to re-training or other opportunities for development and career progression. Non-standard workers have also limited access to public employment services due to the lack of insurance relation. Union membership and collective bargaining coverage is lower among non-standard workers. Self-employed are in the specific situation that they are generally prohibited from unionising due to competition laws. This poses further efficiency and fairness problems for misclassified self-employed workers, who therefore face a power imbalance vis-à-vis their employer or client. (OECD, 2019^[4])

What can governments do?

Extensive reforms are needed in the field of social insurance and beyond. Reforms needed to combat false self-employment, widen coverage, make the system more inclusive and adapt it to the new labour market context. Moreover, to achieve truly resilient and forward-looking systems, holistic reforms touching on other areas such as labour legislation will be key. For example, employment definitions should be renewed, it

should be made easier for workers to challenge their employment status and law enforcement efforts should be scaled up (Prassl, 2018^[28]). Extending collective bargaining rights to some workers in the grey zone or specific groups of self-employed would also be beneficial to improve dialogue and counter the current power imbalances. (OECD, 2019^[4])

Improved security has trade-offs. With the incorporation of non-standard workers in social insurance and closing regulatory and tax loopholes non-wage labour costs will rise. This potentially can lead to more standard and secure employment (quality), but also decrease in employment (quantity). (OECD, 2018^[21]) To what extent is this an issue has to be examined in the country context. Average wages have been decoupling from worker productivity, which might signal a room for increased employee costs on the employer's side. Moreover, the current wave of dissatisfaction might signal that individuals prefer higher security. Accompanying steps should also be taken to prevent increase in informality.

Combat non-standard work resulting from regulatory arbitrage

Minimise differences in taxes and social security coverage between non-standard and standard work. Governments should ensure that differences in the tax and regulatory treatment of different forms of employment do not encourage the misclassification of workers (OECD, 2019^[7]). Italy for example managed to close a loophole between para-subordinate workers and dependent employees by increasing the contribution level gradually until it was comparable to standard employees (Raitano, 2018^[29]). Austria integrated independent contractors to the social insurance system, who are now liable to pay the same contributions as standard employees (OECD, 2018^[24]). Both reforms led to decline in the number of non-standard workers (Box 3). Widening the tax base by bringing self-employed or the platform economy into the tax system can increase revenues and improve risk pooling.

Box 9. Aligning non-wage labour costs rapidly changes employment patterns

In Italy, the number of para-subordinate workers was on the rise. They were categorised as self-employed, but in fact, they were highly dependent on one or very few clients. Para-subordinate workers were not covered by unemployment or sickness benefits, which resulted in significantly lower non-wage labour costs. To remove unintended incentives, Italy gradually increased their contribution (and benefit eligibility), one percentage point per year between 2007 and 2018. During this time the number of para-subordinate workers more than halved.

In Austria, independent contractors are in a grey zone between dependent and self-employed. They control their own working time and workflow, but are contracted for their time and effort. The government decided to integrate them in the social protection system due to concerns that employers might use this form of employment to evade compulsory payments. Since 2008, independent contractors are liable for the same social security contributions as standard employees. Their number began to fall following the reform, and was at its all-time low in 2016.

Source: (Raitano, 2018^[29]; OECD, 2018^[24])

Address market failures and widen coverage

Build on legal obligations to extend social insurance schemes. There is evidence that purely voluntary insurance schemes for non-standard workers do not work well. The lack of compulsory participation leads to low coverage, which can eventually lead to adverse selection and the failure of the scheme. When a Swedish scheme increased premiums to remain financially viable, membership dropped by around 10 percentage points. Those with the lowest risks opted out, while those with the worse perspectives remained creating more difficulties. To avoid such failures some countries mandated non-standard workers to pay

social contributions by law. In the United States, self-employed workers pay both employer and employee contributions to social insurance. While in Sweden, gig-workers are legally required to register with an umbrella company, who nominally acts as the employer of the gig-worker in administering their payroll tax and social security payments in exchange for a fee. (OECD, 2018_[24])

Where challenges to extend coverage are too great, consider introducing specially designed schemes. As discussed earlier, it is not always possible or desirable to put the whole contribution burden on the worker. In Germany, the artist's insurance scheme found an inventive way to distribute the contribution payments on multiple stakeholders benefiting from art. Under this scheme half of the contributions are paid by the artists, while the other half jointly by institutions such as publishers, theatres or libraries (as they rely on the artists' services) and the household's tax contributions (who consume art such as books) (OECD, 2018_[24]). This way the contributions are dispersed among the worker, the industry and the end consumer of the services. Based on this approach, platforms or temporary work agencies could be made liable to pay the social security contributions of the workers they connect with jobs.

Adapt the system to more volatile career paths and employment relations

Consider value added social security contributions as a response to complexities. Another attractive feature of the above-mentioned insurance scheme is that all expenditure on artists' and writers' fees is subject to a contribution. As it is regardless of the artists' status, it limits market distortion by avoiding perverse incentives to contract instead of hire. (OECD, 2018_[24]) This way it works similarly to a value added tax regarding the sales of goods and services, but it is earmarked to finance the social security system. A possibility could be that all invoices provided by non-dependent workers automatically have to include a certain (potentially capped) percentage as social insurance contributions. This would reduce the incentives to shift work on certain type of workers due to lower costs and would also prevent race to the bottom. In France, for example, social charges are levied on personal capital income and there has discussions of introducing a "social" value-added tax. (OECD, 2018_[12])

Strengthen portability of social insurance rights across different programmes. Linking eligibility to contributions rather than employers makes it easier for workers to switch between jobs and even between different forms of employment. This flexibility might be welcome as individuals have more volatile career paths than before and labour markets are expected to transform considerably. Austria achieved portability through replacing the severance pay scheme by company-based pension accounts financed by both the employer and the employee. These accounts are linked to the employees and follow them upon changing jobs. This measure increased job mobility for workers in distressed firms (on the verge of a plant closure or mass layoff), enhancing productive reallocation. The scheme was extended to independent contractors in 2008. (OECD, 2018_[24]; Kettemann, Kramarz and Zweimüller, 2016_[30]) Such an approach would also facilitate the harmonisation of entitlements across contractual arrangements. In line with this, several OECD countries intend to introduce "individual activity accounts", where individuals collect entitlements on portable accounts that can be used flexibly according to needs. (OECD, 2018_[27]). For example, in Latvia the social insurance scheme is fully individualised, as each person's contributions are registered on a separate account. (OECD, 2018_[12])

Make the system work for vulnerable individuals

Ease access to better support the most vulnerable. As discussed above, those on temporary or part time contracts find it difficult to accumulate eligibility rights. Changing the reference period and putting higher weight on recent or current incomes could improve this problem. In France, artists and technicians on fixed-term contracts in the entertainment industry benefit from shorter contribution periods for eligibility to the unemployment insurance. This scheme recognises that performers and film technicians are hired for productions on a short-term basis and would otherwise struggle to qualify for benefits. Improving the minimum benefit could also be considered. Certain countries provide means-tested benefits for those in

need within the contribution-financed system, such as the basic pension scheme in the Netherlands. (OECD, 2018^[24])

Find innovative ways to finance a more inclusive system. Strengthening support could require additional resources. This calls for a review of countries' spending priorities as well as a reflection on their tax systems. (OECD, 2019^[4]) More inclusive social insurance systems can be financed in a sustainable and equitable way, for example through a combination of contributions and taxes (ILO, 2018^[31]). At the birth of social insurance, Bismarck initially proposed to finance the system from tax on tobacco. (World Bank, 2018^[19]) Taxing robots and other technologies, or capital in general, could raise revenue for more inclusive schemes, which would help sharing productivity gains more widely among the population. As such taxes can only work effectively if there is limited possibility for relocation, internationally harmonising tax rules or creating a global 'tax floor' would be desirable (ILO, 2018^[31]; OECD, 2018^[32]).

Build awareness among the key target group. An effective way of increasing coverage is to be 'pro-active' and get in touch with workers, who are not covered. Education and awareness-raising activities can have positive impact as poor knowledge on the topic is one of the key factors behind the lack of interest in registering for social security. For example in Cape Verde, out-reach included a communication campaign through various channels (TV, radio, brochures etc.), workshops with social partners and direct contact with self-employed workers. Additionally, the officials have been engaging with children and youth to show future contributors the benefits of social security and the important role that the institution plays in national development. This approach could both increase coverage and support of the social insurance system. (Durán-Valverde et al., 2013^[33])

References

- Acemoglu, D. and R. Shimer (2000), "Productivity gains from unemployment insurance", [14]
European Economic Review, Vol. 44/7, pp. 1195-1224, [http://dx.doi.org/10.1016/s0014-2921\(00\)00035-0](http://dx.doi.org/10.1016/s0014-2921(00)00035-0).
- Akerlof, G. (1970), "The Market for "Lemons": Quality Uncertainty and the Market Mechanism", [17]
The Quarterly Journal of Economics, Vol. 84/3, p. 488, <http://dx.doi.org/10.2307/1879431>.
- Barr Nicholas (2020), *The Economics of the Welfare State*, Oxford University Press, Oxford. [5]
- Boadway, R. et al. (2006), "Social Insurance and Redistribution with Moral Hazard and [21]
Adverse Selection*", *Scandinavian Journal of Economics*, Vol. 108/2, pp. 279-298,
<http://dx.doi.org/10.1111/j.1467-9442.2006.00446.x>.
- Bussolo, M. et al. (2018), *Toward a New Social Contract: Taking on Distributional Tensions in [6]
Europe and Central Asia*, The World Bank, <http://dx.doi.org/10.1596/978-1-4648-1353-5>.
- Causa, O. and M. Hermansen (2017), "Income redistribution through taxes and transfers [10]
across OECD countries", *OECD Economics Department Working Papers*, No. 1453, OECD
Publishing, Paris, <https://dx.doi.org/10.1787/bc7569c6-en>.
- Cremer, H. and P. Pestieau (1996), "Redistributive Taxation and Social Insurance", [20]
International Tax and Public Finance, Vol. 3, pp. 281-295.
- Durán-Valverde, F. et al. (2013), *Innovations in extending social insurance coverage to [33]
independent workers*, ILO, Geneva.
- Feldstein, M. (2005), *Rethinking Social Insurance*, National Bureau of Economic Research, [16]
Cambridge, MA, <http://dx.doi.org/10.3386/w11250>.

- Hsu, J., D. Matsa and B. Melzer (2014), *Positive Externalities of Social Insurance: Unemployment Insurance and Consumer Credit*, National Bureau of Economic Research, Cambridge, MA, <http://dx.doi.org/10.3386/w20353>. [13]
- ILO (2018), "Innovative approaches for ensuring universal social protection for the future of work", *Issue Brief, The Global Commission on the Future of Work*, ILO, Geneva, <https://www.ilo.org/wcmsp5/groups/public/---dgreports/--->. [31]
- ILO and OECD (2020), "Ensuring better social protection for self-employed workers", *Paper prepared for the 2nd Meeting of the G20 Employment Working Group*. [23]
- Jorgensen, S. and P. Siegel (2019), "Social Protection in an Era of INcreasing Uncertainty and Disruption: Social Risk Management 2.0", *Social Protection and Jobs*, No. 1930, World Bank, Washington DC. [3]
- Kettemann, A., F. Kramarz and J. Zweimüller (2016), "Beyond Severance Pay: Labor market", University of Zurich, Zurich, <http://www.econ.uzh.ch>. [30]
- Milanez, A. and B. Bratta (2019), "Taxation and the future of work: How tax systems influence choice of employment form", *OECD Taxation Working Papers*, No. 41, OECD Publishing, Paris, <https://dx.doi.org/10.1787/20f7164a-en>. [26]
- OECD (2020), *Supporting livelihoods during the COVID-19 crisis: closing the gaps in safety nets*, OECD, Paris, <http://www.oecd.org/coronavirus/policy-responses/supporting-livelihoods-during-the-covid-19-crisis-closing-the-gaps-in-safety-nets-17cbb92d/>. [1]
- OECD (2019), "Labour market regulation 4.0: Protecting workers in a changing world of work", in *OECD Employment Outlook 2019: The Future of Work*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/b40da5b7-en>. [25]
- OECD (2019), "Left on your own? Social protection when labour markets are in flux", in *OECD Employment Outlook 2019: The Future of Work*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/bfb2fb55-en>. [7]
- OECD (2019), *OECD Employment Outlook 2019: The Future of Work*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9ee00155-en>. [4]
- OECD (2019), "The future of work: What do we know?", in *OECD Employment Outlook 2019: The Future of Work*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/ef00d169-en>. [11]
- OECD (2019), *Under Pressure: The Squeezed Middle Class*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/689afed1-en>. [8]
- OECD (2018), *Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264308817-en>. [12]
- OECD (2018), *Opportunities for All: A Framework for Policy Action on Inclusive Growth*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264301665-en>. [27]
- OECD (2018), *Tax Challenges Arising from Digitalisation – Interim Report 2018: Inclusive Framework on BEPS*, OECD/G20 Base Erosion and Profit Shifting Project, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264293083-en>. [32]
- OECD (2018), "The Future of Social Protection: What works for non-standard workers?", [24]

- Policy Brief on the Future of Work* OECD Publishing, <https://www.oecd.org/social/Future-of-social-protection.pdf>.
- OECD (2018), *The Future of Social Protection: What Works for Non-standard Workers?*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264306943-en>. [2]
- OECD (2017), “Basic Income as a policy option: Can it add up?”, *Policy Brief on the Future of Work*, OECD, Paris, <http://www.oecd.org/employment/future-of-work.htm>. [22]
- OECD (2017), “How technology and globalisation are transforming the labour market”, in *OECD Employment Outlook 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/empl_outlook-2017-7-en. [18]
- OECD (2014), “The crisis and its aftermath: A stress test for societies and for social policies”, in *Society at a Glance 2014: OECD Social Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/soc_glance-2014-5-en. [35]
- OECD (2010), *OECD Employment Outlook 2010: Moving beyond the Jobs Crisis*, OECD Publishing, Paris, https://dx.doi.org/10.1787/empl_outlook-2010-en. [34]
- OECD (2007), *OECD Employment Outlook 2007*, OECD Publishing, Paris, https://dx.doi.org/10.1787/empl_outlook-2007-en. [15]
- Prassl, J. (2018), *Humans as a Service*, Oxford University Press, <http://dx.doi.org/10.1093/oso/9780198797012.001.0001>. [28]
- Raitano, M. (2018), “Italy: Para-subordinate workers and their social protection”, in *The Future of Social Protection: What Works for Non-standard Workers?*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264306943-9-en>. [29]
- UNRISD (2016), “Trends and Innovations in Social Policy”, in *Policy innovations for Transformative Change*, United Nations , Geneva, <http://www.unrisd.org/flagship2016-chapter2>. [9]
- World Bank (2018), *World Development Report 2019: The Changing Nature of Work*, The World Bank, <http://dx.doi.org/10.1596/978-1-4648-1328-3>. [19]

Minimum Standard Framework for Textile Manufacturing

Philip Zaunders
16 July 2020

The focus of this brief is to address the poor environmental outcomes of the global textile manufacturing industry, and recommending the OECD establish an international Minimum Standard Framework for Textile Manufacturing to create a universally-accepted baseline of sustainable manufacturing procedures.

The global trend in textile manufacturing towards 'fast-fashion' has led to an increase in cheap, disposable clothing, contributing to the deterioration of global environmental outcomes. The disruption to the textile manufacturing industry caused by the COVID-19 pandemic presents an opportunity for international reform, as the interruption to global consumption patterns provides a catalyst for behavioural change towards more sustainable practices.

Introduction

The global trend in textile manufacturing towards ‘fast-fashion’ – “...*faster and more flexible production and lower prices*” – led by multinational firms such as Zara and H&M, has led to an increase in cheap, disposable clothing, designed to quickly mass-produce social trends (ILO, 2020).

Box 10. Global textile industry statistics and environmental impact

In 2018, the global textile industry accounted for:

- Global industry annual growth rate: 1.08%;
- Percentage of global imports: 3.67%;
- Global total import value: USD\$692 billion.

In 2017, the global textile supply-chain had a large environmental footprint:

- It is responsible for 8% of global greenhouse gas emissions;
- Annual usage of 93 billion cubic metres of water – 7,571 litres of water is needed to make one pair of jeans;
- The equivalent of 1 garbage truck of textiles is landfilled or burned every second.

Source: WITS (2018), Ellen MacArthur Foundation (2017)

Therefore, this paper recommends the OECD establish an international Minimum Standard Framework for textile manufacturing, with the aim of creating a universally-accepted baseline of sustainable manufacturing procedures.

The Minimum Standard Framework will focus on environmental outcomes, grouped into four categories: resource usage, chemical usage, pollution, and waste.

Uniquely, the Minimum Standard Framework enforces compliance by applying customs duties to textile imports which do not meet the Standards. With reference to technical benchmarks, manufacturers will face demand-side pressure to improve manufacturing procedures, or lose competitiveness.

The disruption to the textile manufacturing industry caused by the COVID-19 pandemic presents an opportunity for global reform. The interruption to global consumption patterns provides a catalyst for behavioural change towards more sustainable practices.

Ultimately, the Minimum Standard Framework addresses deteriorating global environmental performance by providing oversight to weakly regulated manufacturers, improving long-term economic security for both younger and future generations.

Textile Industry

Overview

The textile manufacturing industry is a major source of global employment, value-added output, and retail consumption. As per the World Bank (WITS, 2018), the global textile manufacturing industry accounted for:

- Global import value: USD\$692 billion;

- Percentage of global imports: 3.67%;
- Global industry annual growth rate: 1.08%.

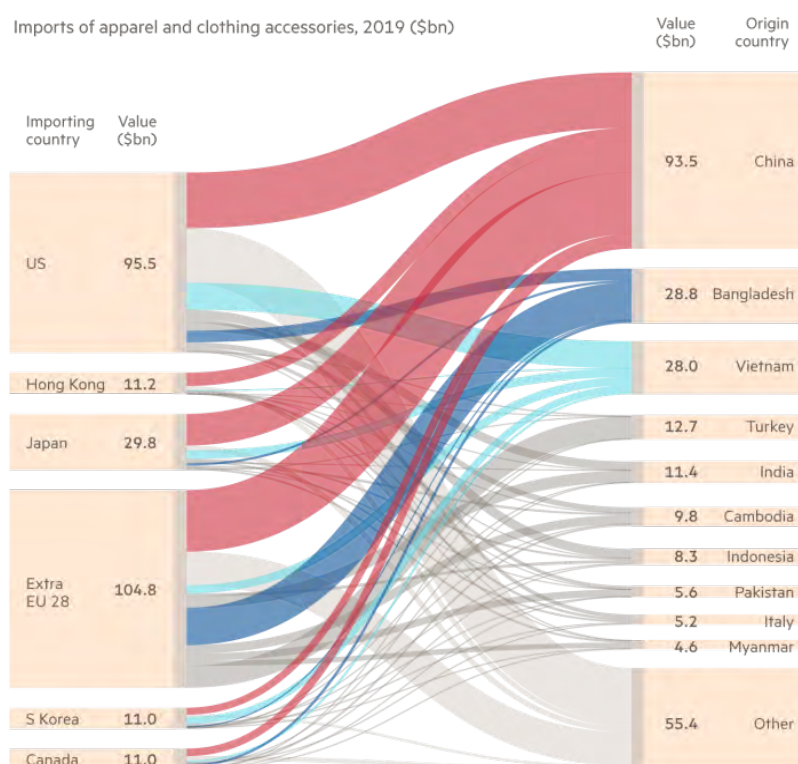
As per the OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector report (2018), the global textile manufacturing industry comprises of:

- Mostly low-skilled workers, many of whom are women;
- Acts as an entry point into the formal economy in many countries.

Figure 1 illustrates the top five origin and destination countries of textile imports (UN Comtrade, 2019). The origin countries are largely developing and emerging economies, while the destination countries are developed economies.

Figure 30. Global source of textile imports (2019)

Imports of apparel and clothing accessories (USD\$bn)



Note: Only top 10 origins are labelled

Source: Visualisation by Chelsea Bruce-Lockhart & Liz Faunce published in Financial Times (2020), data from UN Comtrade (2019)

Environmental impact

The global textile industry has a large, negative impact on the environment (Ellen MacArthur Foundation, 2017). The environmental impact of textile manufacturing can be grouped into four broad categories: resource usage, chemical usage, pollution, and wastage. As per the Ellen MacArthur Foundation (2017):

Resource usage

- Utilisation of 98 million tonnes of non-renewable resources annually (all stages of the supply-chain);

- Plastic-based fibre production uses an estimated 342 million barrels of oil annually;
- Textile production uses approximately 93 billion cubic metres of water annually (equivalent to 4% of global freshwater withdrawal).

Chemical usage

- Cotton production is estimated to require 200,000 tonnes of pesticides and 8 million tonnes of fertilisers annually;
- Cotton production accounts for 16% of all pesticides used but only uses 2.5% of the world's arable land;
- In India, 50% of all pesticides are used for cotton production.

Pollution

- Greenhouse gas emissions from textile production totalled 1.2 billion tonnes of CO₂ equivalent in 2015;
- 1 tonne of textile production generates 17 tonnes of CO₂ equivalent.

Wastage

- Wastage is typically landfilled or incinerated rather than recycled;
- 87% of total fibre input used for clothing is landfilled or incinerated;
- Less than 1% of material used to produce clothing is recycled into new clothing.

Box 11. Quick facts on the textile industry's environmental impact

- 7,571 litres of water is needed to make one pair of jeans
- Annual usage of 93 billion cubic metres of water
- Produces 20 per cent of industrial global wastewater
- Responsible for 8% of global greenhouse gas emissions (clothing and footwear production)
- The equivalent of one garbage truck of textiles is landfilled or burned every second

Source: Published in UN News (2019), data from Ellen MacArthur Foundation (2017)

Relevancy to COVID-19

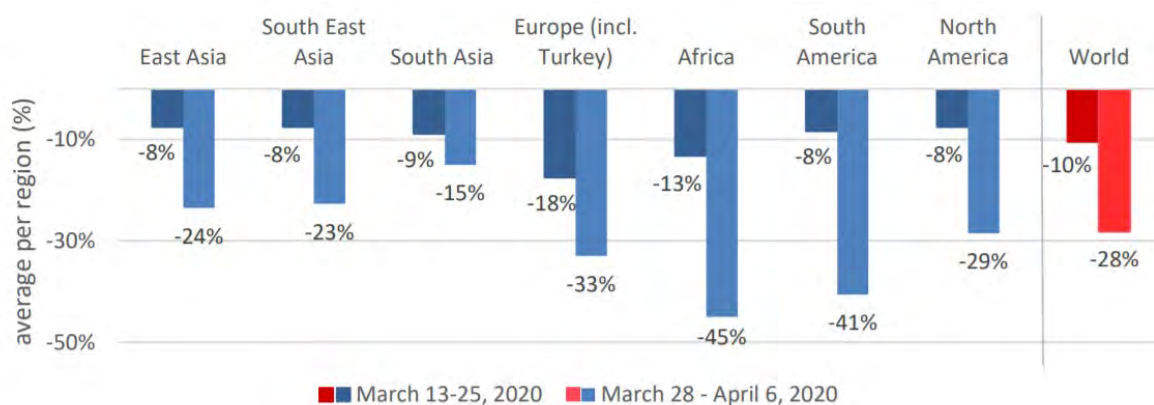
The global textile industry has suffered strong negative exposure to the COVID-19 pandemic (OECD, 2020, "Fashion brands"). The International Textile Manufacturers Federation surveyed 700 global companies for the period March 28 – April 6 2020, reporting (IMTF, 2020):

- Worldwide expected turnover 2020 vs. 2019 is down -28% on average (see Figure 2);
- Worldwide current orders are down -31% on average (see Figure 3).

Figure 31. COVID-19 impact on global textile manufacturers' turnover

Source: (IMTF, 2020)

The economic shock of COVID-19 presents an opportunity to reflect on the environmental impact of the global textile industry, considering the forecasted industry growth driven by fast-fashion. The current decrease in global demand for textiles allows manufacturers to implement new production procedures, establish better environmental protection measures, and redesign infrastructure with respect to sustainability. The interruption to global consumption patterns provides a catalyst for behavioural change towards more sustainable practices, allowing for the opportunity to reform textile manufacturing on a global



scale.

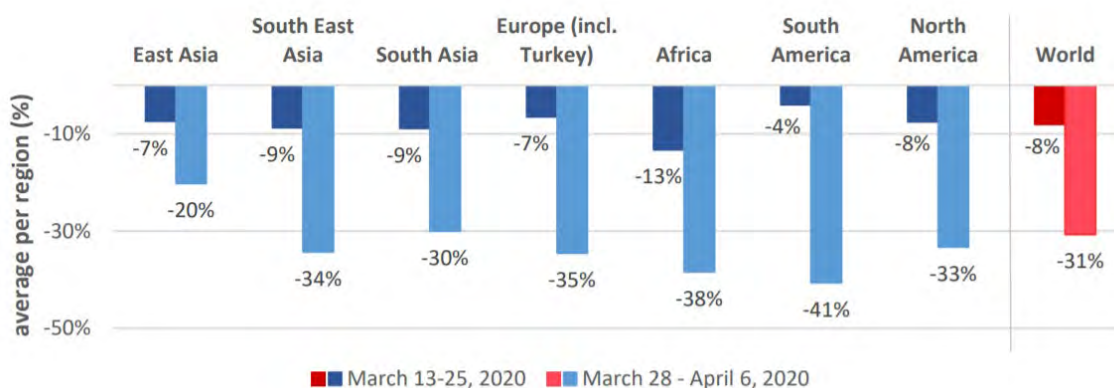
Figure 32. COVID-19 impact on global textile manufacturers' current orders

Source: (IMTF, 2020)

Current policy review

World Trade Organization quota elimination

The Multifibre Arrangement and the successor Agreement on Textiles and Clothing were World Trade Organization agreements dictating the use of market distortions in global textile trade (WTO, 2020). These



agreements expired on January 1, 2005, characterised by phasing out the use of import quotas. This event

contributed to an immediate increase in worldwide textile imports, particularly from China and India, establishing the conditions in which fast-fashion could rapidly expand (UNTCD, 2007).

OECD Due Diligence Guidelines

The OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector are procedural recommendations for textile manufacturers to avoid and address potential negative impacts of their activities (OECD, 2018, “Due Diligence”). The Guidance helps manufacturers implement the due diligence recommendations contained in the OECD Guidelines for Multinational Enterprises, and are characterised by (OECD, 2018, “Due Diligence”; OECD, 2011, “Responsible Business Conduct”):

- Development through a multi-stakeholder process with in-depth engagement from OECD and non-OECD countries, representatives from business, trade unions and civil society;
- Non-binding principles for responsible business conduct in a global context;
- The only multilaterally agreed and comprehensive code of responsible business conduct that governments have committed to promoting.

World Bank EHS Guidelines

The World Bank Group Environmental, Health, and Safety (EHS) General Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (World Bank, 2007, “General Guidelines”). The EHS Guidelines are paired with industry-specific EHS Guidelines (in the context of this paper) for Textile Manufacturing (World Bank, 2007, “Textile Manufacturing”). The Guidelines are applied when one or more members of the World Bank Group are involved in a project, providing comprehensive standards for a wide range of employment and environmental factors, and are characterised by (World Bank, 2007, “Textile Manufacturing”):

- Performance levels and measures that are normally acceptable to the World Bank Group;
- Performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs;
- When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent.

Policy recommendation

This paper recommends establishing an international Minimum Standard Framework for Textile Manufacturing [Framework], in which customs duties are applied to imported textile goods which do not meet pre-determined environmental standards. The aim of the Framework is to create environmentally sustainable universal baselines for textile manufacturing.

The flow of manufactured textile goods is largely from developing and emerging countries (export), to developed countries (import) (see Figure 1, page 3 ‘Overview’). Although developed countries typically have stricter environmental regulations than developing and emerging countries (Yale, 2018), imported goods undercut these regulations and effectively create a ‘backdoor’ approach to domestic markets.

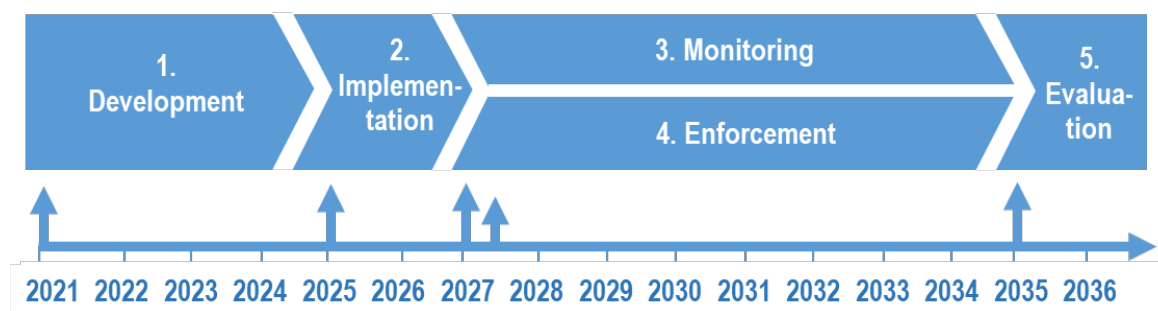
Customs duties on imported textile goods, relevant to minimum manufacturing standards, effectively close this ‘backdoor’ import approach to developed countries. Utilisation of customs duties shifts the responsibility of environmental protection from the manufacturer to the importer, as the disincentive to pollute shifts from weak supply-side regulation (Yale, 2018) to stringent demand-side enforcement.

As per page 6 (‘Current policy review’), there is currently no international agreement on minimum standards in textile manufacturing, and existing policy is largely country-specific and uncoordinated. The OECD’s

institutional knowledge learnt from the BEPS Framework will be applied to effectively launch and expand this Framework (OECD, 2016, “BEPS”).

The Minimum Standard Framework incorporates five stages: development, implementation, monitoring, enforcement, and evaluation. Figure 4 details the timeline of the Minimum Standard Framework in a 15 Year Plan:

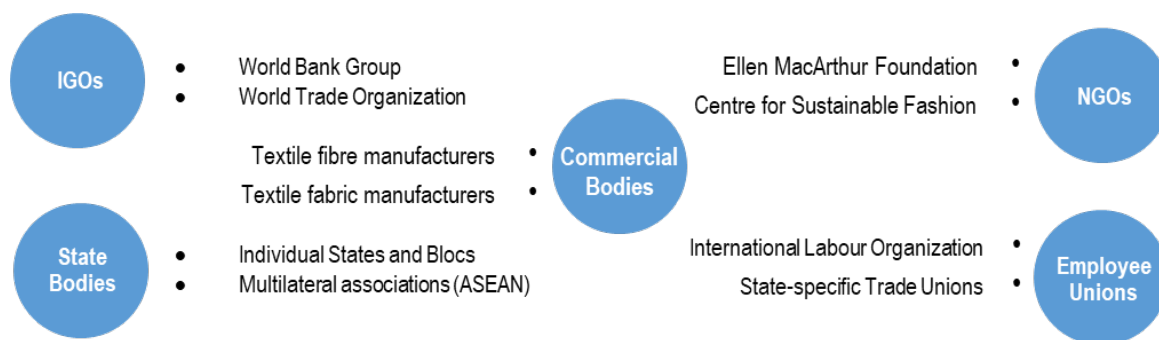
Figure 33. Minimum Standard Framework 15 Year Plan



1. Development

The Minimum Standard Framework is based upon technical reference indicators similar to the World Bank EHS Guidelines (2007, “Textile Manufacturing”) and OECD Due Diligence Guidelines (2018). The indicators will be determined with input from a broad range of stakeholders, including those in Figure 5:

Figure 34. Development stakeholder input



The technical reference indicators will be grouped into four broad environmental groups: resource usage, chemical usage, pollution, and wastage. Each specific indicator will have a realistic ‘best practice’ benchmark, and a tariff equivalent for breaches. Table 1 illustrates an example of 6 specific indicators, benchmarks, and tariffs per kilo of cotton grown.

Table 1. Example of technical reference indicators per kilo of cotton grown

Environmental Indicator	Benchmark	Tariff
Water consumption	3,000L per kilo of fibre	€0.00001 per excess litre

Wastewater discharge	1,000L per kilo of fibre	€0.00001 per excess litre
Banned chemicals	No banned chemicals used	€0.00005 per litre used
Renewable energy	50% total energy usage	€0.0001 per point under benchmark
CO ² emissions	2kg CO ² per kilo of fibre	€0.0001 per excess kg
Microplastic discharge	50mg per kilo of fibre	€0.0001 per excess 100mg

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For example, two scenarios are compared:

4. A kilo of cotton grown with 2,950L of water, 900L of wastewater discharged, no banned chemicals used, 55% total energy usage renewable, 0.5kg CO₂ emitted, and 1mg microplastic discharge, will face an import tariff of €0.00 (see Table 1).
5. A kilo of cotton growth with 9,750L of water, 4,550L of wastewater discharged, 10L of banned chemicals used, no renewable energy, 20kg of CO₂ emitted, and 350mg of microplastic discharge, will face a tariff of €0.1403 (see Table 1).

Per Figure 4 (page 7, 'Policy recommendation'), the development stage will last 4 years from 2021-2024.

2. Implementation

The Minimum Standard Framework is a voluntary, non-binding commitment for individual countries to implement. The Framework will be developed and centralised by the OECD, providing advice and support to countries for the implementation process. Similar to the OECD/G20 Inclusive Framework on BEPS, the OECD will act as a central body which administers the Minimum Standard Framework, and assists countries in implementing the Standards (OECD, 2016, "BEPS"):

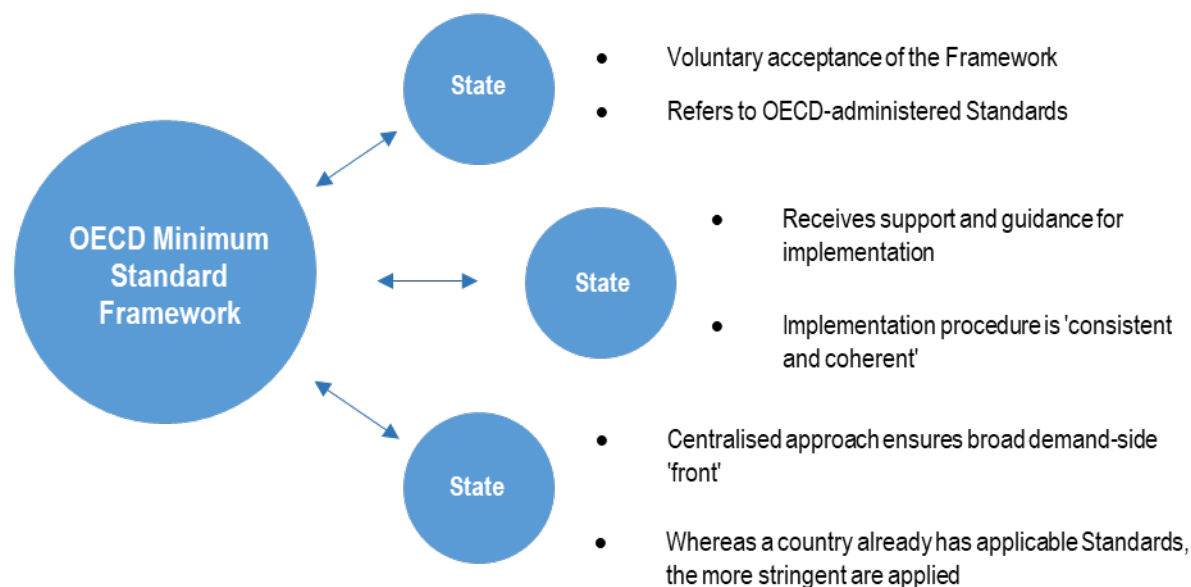
"[OECD] work is being carried out to support all countries interested in implementing and applying the rules in a consistent and coherent manner, particularly those for which capacity building is an important issue" (OECD, 2016, "BEPS").

The OECD will promote the Minimum Standard Framework and encourage as many countries as possible to join, as participation increases lead to demand-side pressure on textile manufacturers to conform to the standards. If a country voluntarily chooses to implement the standard, the commitment will be non-binding, and it will enforced under country jurisdiction.

As the Minimum Standard Framework relies on coherency and consistency, the OECD will ensure the common Standards are clearly defined and simple to implement. It is important countries do not deviate below the Standards, which risks diluting the Framework's inclusivity and alienating the participating countries. Figure 6 summarises the relationship between the OECD and the participating countries.

As per Figure 4 (see 'Policy recommendation') the implementation stage will last 2 years from 2025 – 2026.

Figure 35. Implementation process overview



3. Monitoring

The Minimum Standard Framework relies on accurate and current data to evaluate manufacturing firm's performance relevant to the environmental indicators. The data must be accurate to ensure correct customs duties are applied, and the data must be current to fully reflect a firm's infrastructure and operating status.

Maintaining an accurate and current database is complex. Keeping consistent statistics on a broad range of indicators from firms across the world is neither time- nor cost-efficient.

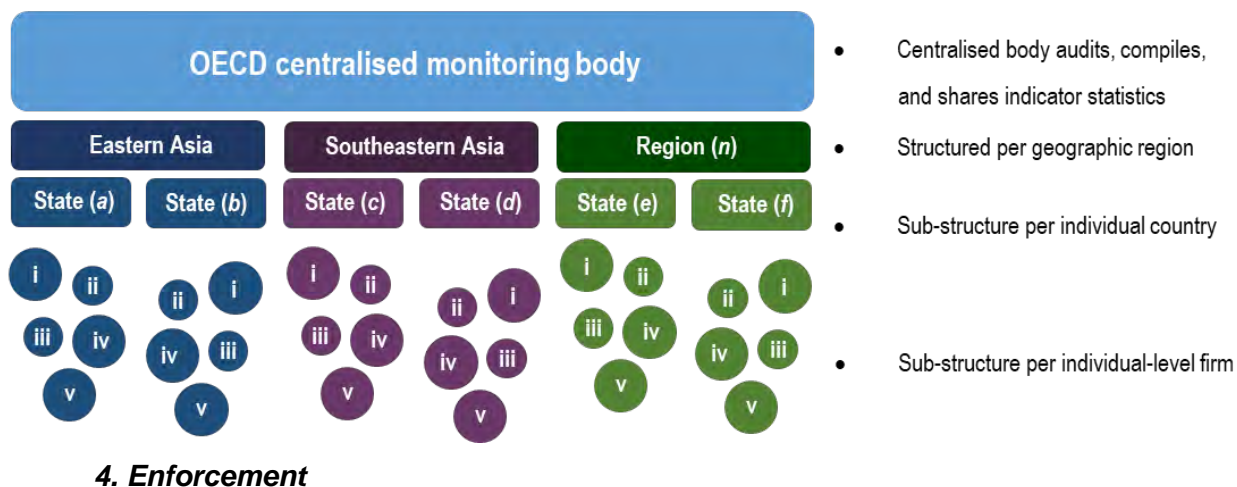
Therefore, it is recommended the OECD establish a centralised body in partnership with PARIS21 (2020) to evaluate, store, and share data relating to firms performance relevant to the environmental indicators. The centralised body will be financed from a 30% proportion of the customs duties revenue raised by participating countries (see page 11, 'Enforcement').

Figure 7 illustrates a recommended structure for a centralised monitoring body. The database will be structured in three tiers: region, country, and then individual-level firm. Utilising PARIS21's institutional knowledge (2020) will ensure coherent database organisation, and allow for specialised monitoring teams per stratification. The monitoring process follows three principles:

6. Firm-level reporting: Each firm that exports textile goods to participating countries must self-report their environmental indicator performance.
7. Auditing: The OECD will audit the firms to ensure accuracy. This will be done either on Missions or contracted to specialised firms in the relevant manufacturer's country.
8. Annual updating: All firm data will be updated annually in staggered months per country. Annual updates ensure manufacturers have time to invest into improved infrastructure, while remaining cost-efficient for the OECD.

As per Figure 4, the monitoring/enforcement stage will last 8 years from 2027 – 2034.

Figure 36. Recommended monitoring body structure



To ensure manufacturing firms are incentivised to improve their performance relative to the environmental indicators, customs duties will be applied upon import to goods which do not meet the standards. This shifts responsibility from the manufacturer to the importer, as the disincentive to pollute shifts from weak supply-side regulation to stringent demand-side enforcement.

The customs duties applied to the goods will be determined in relation to the manufacturer's environmental indicator performance. For example, as discussed on page 8 ('Development') for each litre of water used to grow one kilo of cotton that is above the 3,000L benchmark, a tariff of €0.00001 is applied. The tariff will be denominated in the Euro, and converted using the spot exchange rate upon import.

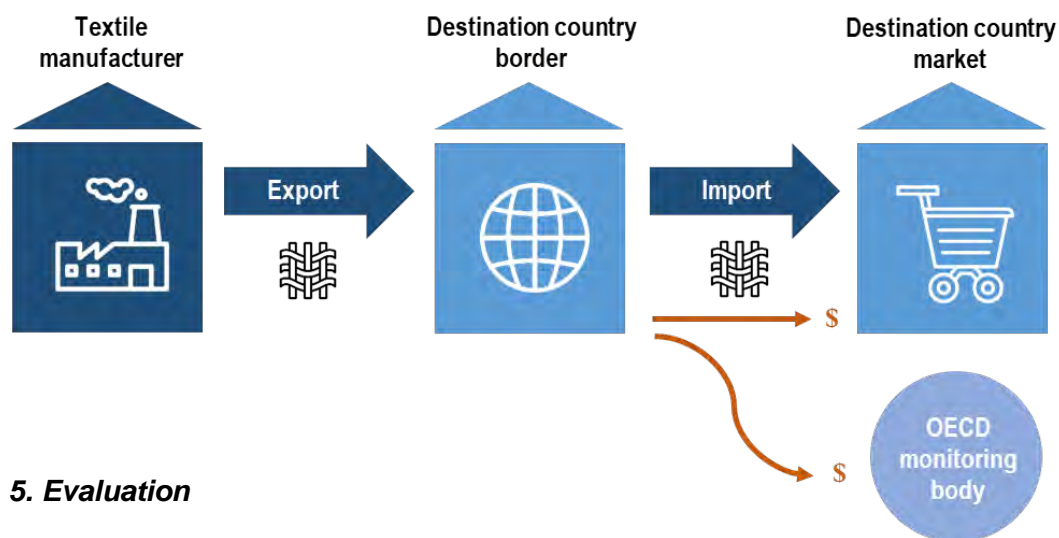
The Minimum Standards will be enforced by each participating importing country. Although the OECD maintains the centralised database, countries do not cede sovereignty at any point.

70% of the revenue raised from the customs duties will remain with the destination country. 30% of the revenue raised from the customs duties will be reallocated to finance the OECD monitoring body (see page 10, 'Monitoring').

The enforcement stage will undergo systematic, annual evaluation. Aspects for evaluation will be technical and proactive, and aim to improve the overall effectivity of the policy. This is distinguished from a proceeding comprehensive evaluation stage (see page 12, 'Evaluation'). As per Figure 4 (see page 7, 'Policy recommendation'), the monitoring/enforcement stage will last 8 years from 2027 – 2034.

Figure 8 demonstrates the enforcement process, including the textile export/import process, the application of customs duties, and the flow of customs duties revenue.

Figure 37. Enforcement process overview



5. Evaluation

The Minimum Standard Framework will be subject to a comprehensive evaluation proceeding the monitoring/enforcement stage. Specific areas for comprehensive evaluation will include:

9. Standards strength: are the Standards effectively and strongly influencing global environmental outcomes?
10. Implementation scope: are enough countries participating in the policy? What is the most effective way to encourage more international agreement and participation?
11. Monitoring effectiveness: is the monitoring process accurately realising current improvements to manufacturing processes?
12. Unintended consequences: is the policy creating unforeseen repercussions which hinder its fundamental aim or the UN Sustainable Development Goals (2015)?

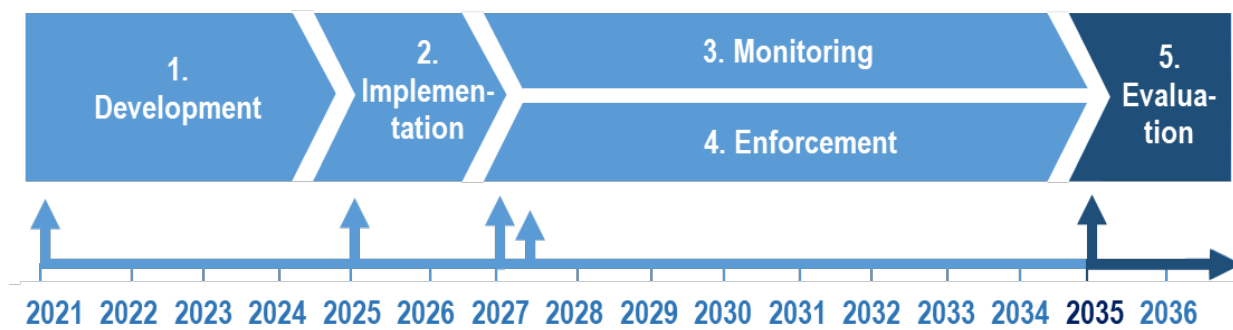
This evaluation stage is distinguished from systematic, regular evaluation throughout the monitoring/enforcement period. While the Minimum Standard Framework will have an embedded culture of technical, proactive improvements, this evaluation stage will focus on a fundamental analysis of the Frameworks effectivity using data collected from the previous 8 years.

After the evaluation stage is complete, the policy will either (with reference to Figure 9):

13. Reroute to a development (1) stage, by reflecting on past experiences and amending the policy where necessary;
14. Reroute to a monitoring/enforcement (3/4) stage, and continue adhering to the policy with minimal need for amendments.

As per Figure 9, the evaluation stage will last 1 year during 2035.

Figure 38. Evaluation as part of the 15 Year Plan



Limitations

Labour market impact

Textile manufacturing employees are commonly low-skilled, low paid, and suffer from poor working conditions (ILO, 2020). It can be reasonably envisioned that the impact of import tariffs will be most directly felt through reductions in wages and working conditions of the manufacturing employees, particularly in developing economies. The correlation between the imposition of import tariffs and the strength of the labour market threatens to compromise the UN Sustainable Development Goals (2015).

Monitoring complexity

It will be difficult to monitor and compile statistics on firm's environmental performance. With reference to firms in developing countries and remote locations, these firms may have underdeveloped infrastructure and lack an ability to self-report. The institutional knowledge of PARIS21 (2020) will be applied, but further external auditing may be costly and struggle to accurately gauge each firm's performance.

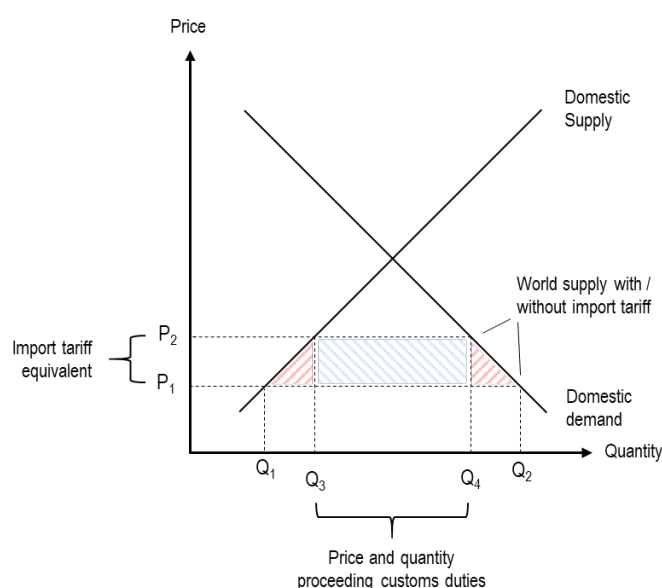
Market distortion

Utilising customs duties to influence the supply and manufacture of imported goods distorts the economic free-market. Consumer demand will be unnaturally influenced by artificial factors (import tariffs), potentially developing inefficient domestic industries and creating deadweight loss. As per Figure 10, an import tariff of $(P_2 - P_1)$ creates a deadweight loss (highlighted red) of $(Q_1 - Q_3)$ and $(Q_2 - Q_4)$, simultaneously decreasing consumer- and producer-surplus. Excessive market distortion may receive political criticism due to its protectionist nature and deter participation in the Minimum Standard Framework.

Imported inflation

Applying customs duties to imported textile goods will lead to price increases, leading to imported inflation. As per Figure 10, an import tariff equivalent to $(P_2 - P_1)$ increases prices from the global equilibrium of P_1 , to the artificially high domestic equilibrium P_2 . Imported inflation may deter countries from participating in the Minimum Standard Framework due to economic concerns.

Figure 39. Import tariff economic impact



References

- Ellen MacArthur Foundation. (2017). *A new textiles economy: Redesigning fashion's future*. Retrieved from <http://www.ellenmacarthurfoundation.org/publications>
- Financial Times. (2020). *Can fast fashion's \$2.5tn supply chain be stitched back together?* Retrieved on 28 May 2020 from <https://www.ft.com/content/62dc687e-d15f-46e7-96df-ed7d00f8ca55>
- Flaticon. (2020). *Search for icons and packs*. Retrieved from <https://www.flaticon.com/search>
- International Labour Organization. (2020). *Textiles, clothing, leather and footwear sector*. Retrieved from <https://www.ilo.org/global/industries-and-sectors/textiles-clothing-leather-footwear/lang--en/index.htm>
- International Textile Manufacturers Federation. (2020). *2nd ITMF-Survey about the Impact of the Corona-Pandemic on the Global Textile Industry [Press Release]*. Retrieved from <https://www.itmf.org/images/dl/press-releases/2020/Corona-Survey-2nd-2020.04.06-Press%20Release-FINAL.pdf>
- Organisation for Economic Co-operation and Development. (2011). *Responsible Business Conduct: OECD Guidelines for Multinational Enterprises*. Retrieved from <https://mneguidelines.oecd.org/mneguidelines/>
- Organisation for Economic Co-operation and Development. (2016). *About: BEPS*. Retrieved from <https://www.oecd.org/tax/beps/about/>
- Organisation for Economic Co-operation and Development. (2018). *OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector*. Retrieved from https://www.oecd-ilibrary.org/governance/oecd-due-diligence-guidance-for-responsible-supply-chains-in-the-garment-and-footwear-sector_9789264290587-en
- Organisation for Economic Co-operation and Development. (2020). *How can fashion brands mitigate the negative impacts of the COVID-19 pandemic on garment workers?* Retrieved on 27 May 2020 from <https://oecdonthellevel.com/2020/04/15/how-can-fashion-brands-mitigate-the-negative-impacts-of-the-covid-19-pandemic-on-garment-workers/>
- PARIS21. (2020). *About PARIS21*. Retrieved 26 May 2020 from <https://paris21.org/about-paris21>
- UN Comtrade. (2019). *UN Comtrade Query Result: Selected classification: SITC Rev.3. Selected commodities: 84 (CLOTHING AND ACCESSORIES). Selected reporters: All. Selected years: 2019. Selected partners: All. Selected trade flows: All.*

[Retrieved 28 May 2020, from https://comtrade.un.org/db/dqBasicQueryResults.aspx?px=S3&cc=84&y=2019](https://comtrade.un.org/db/dqBasicQueryResults.aspx?px=S3&cc=84&y=2019)

UN News. (2019). *UN launches drive to highlight environmental cost of staying fashionable*. Retrieved on 26 May 2020 from <https://news.un.org/en/story/2019/03/1035161>

United Nations Conference on Trade and Development. (2007). *Trade in Textiles And Clothing: Assuring Development Gains in a Rapidly Changing Environment*. Retrieved from https://unctad.org/en/Docs/ditctncd20069_en.pdf

United Nations. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. Retrieved from <https://sustainabledevelopment.un.org/post2015/transformingourworld>

World Bank. (2007). *Environmental, health, and safety guidelines for textile manufacturing (English)*. IFC E&S. Washington, D.C. : World Bank Group.

<http://documents.worldbank.org/curated/en/705551491557757327/Environmental-health-and-safety-guidelines-for-textile-manufacturing>

World Bank. (2007). *General EHS Guidelines: Introduction*. IFC E&S. Washington, D.C. : World Bank Group. <http://documents.worldbank.org/curated/en/157871484635724258/pdf/112110-WP-Final-General-EHS-Guidelines.pdf>

World Integrated Trade Solution. (2018). *World Textiles and Clothing exports and imports By Country and Region 2018*. Retrieved from

https://wits.worldbank.org/CountryProfile/en/Country/WLD/Year/2018/TradeFlow/EXPIMP/Partner/all/Product/50-63_TextCloth

World Trade Organization. (2020). *Textiles: back in the mainstream*. Retrieved on 22 May 2020 from

https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm5_e.htm

Yale Center for Environmental Law & Policy. (2018). *2018 EPI Results*. Retrieved on 3 June 2020, from <https://epi.yale.edu/epi-topline>

Youth and COVID-19: Response, recovery and resilience

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The COVID-19 global health emergency and its economic and social impacts have disrupted nearly all aspects of life for all groups in society. People of different ages, however, are experiencing its effects in different ways.

For young people, and especially for vulnerable youth, the COVID-19 crisis poses considerable risks in the fields of education, employment, mental health and disposable income. Moreover, while youth and future generations will shoulder much of the long-term economic and social consequences of the crisis, their well-being may be superseded by short-term economic and equity considerations.

To avoid exacerbating intergenerational inequalities and to involve young people in building societal resilience, governments need to anticipate the impact of mitigation and recovery measures across different age groups, by applying effective governance mechanisms.

Based on survey findings from 90 youth organisations from 48 countries, this policy brief outlines practical measures governments can take to design inclusive and fair recovery measures that leave no one behind.

* This paper has been published as an OECD COVID-19 policy responses [Youth and COVID-19: Response, recovery and resilience](https://www.oecd.org/coronavirus/en/) on the OECD digital hub: <http://www.oecd.org/coronavirus/en/>.