

Chapter 4

Scenarios for future livelihoods

This chapter explores a range of possible futures for livelihoods. It uses a foresight approach to develop five alternative scenarios for the future which build on some of the trends outlined in Chapter 3. The five scenario storylines look forward to 2030: three are crisis scenarios, while two are more positive; all are possible based on current trends. Scenario 1 describes a world in which rapid automation and ageing populations in the developed world lead to dramatic jobless growth. Scenario 2 imagines the impact of widespread drought in those developing regions already struggling to employ a large share of young people. Scenario 3 envisages the impact on livelihoods of another major global financial crisis. Scenario 4 takes a more optimistic perspective to describe a world in which technology is a positive force for jobs, education and solutions to cope with environmental challenges. Scenario 5 explores a world in which jobless growth encourages people to value social well-being over economic growth and to develop creative ways of making a living. All the scenarios raise a wealth of policy options and possibilities for building inclusiveness and resilience into future livelihoods.

Key messages

- Imagining alternative scenarios can help widen the perspective on possible futures for livelihoods and related policy implications.
- Several emerging trends threaten to challenge progress on livelihoods (outlined in Chapter 3). Envisaging five alternative scenarios for the interaction among some of these trends reveals a range of actions required to create resilience in the face of potential crises.
- Of the five possible futures developed, three are dire – involving massive population movements, inequality, poverty and citizen unrest – while two involve vibrant societies that possess the skills, creativity and flexibility to thrive and stave off global crises. Which scenario triumphs depends on the building blocks laid down today.
- The visioning exercises underline the need to work towards more inclusive and resilient livelihoods. This will require bold action:
 - to do more at the global level to try to prevent some of these scenarios from occurring
 - to rethink how education and skills building are delivered
 - to develop more effective taxation policies and income redistribution approaches to combat inequality and invest in social inclusion
 - to create more flexible and adaptive labour approaches to respond to technical change, to capitalise on people’s mobility and other forces that reflect the dynamism of societies
 - to build resilience and adaptability from the ground up – from individuals up to entire societies.

The outlook for livelihoods will continue to be shaped by an increasingly diverse array of actors; by the interplay of the various trends discussed in the previous chapter, plus some new ones; and by the effectiveness and coherence of domestic and international policy intervention.

In this context of complexity, pluralism and unpredictability, conventional policy approaches involving quantitative forecast-based planning can result in uncertainty, which in turn can be used to justify inaction. Forecasting cannot anticipate disruption or novel situations and does little to help develop or explore longer-term developments that might be fundamentally different from the business-as-usual outlook.

This chapter instead uses a scenario approach to develop five possible livelihood landscapes for the world in 2030. The scenarios are based on OECD economic forecasts, but include some of the emerging trends outlined in Chapter 3. The chapter explains first why scenarios can be a powerful approach for policy makers. It then outlines the five scenarios in turn, along with their policy implications.

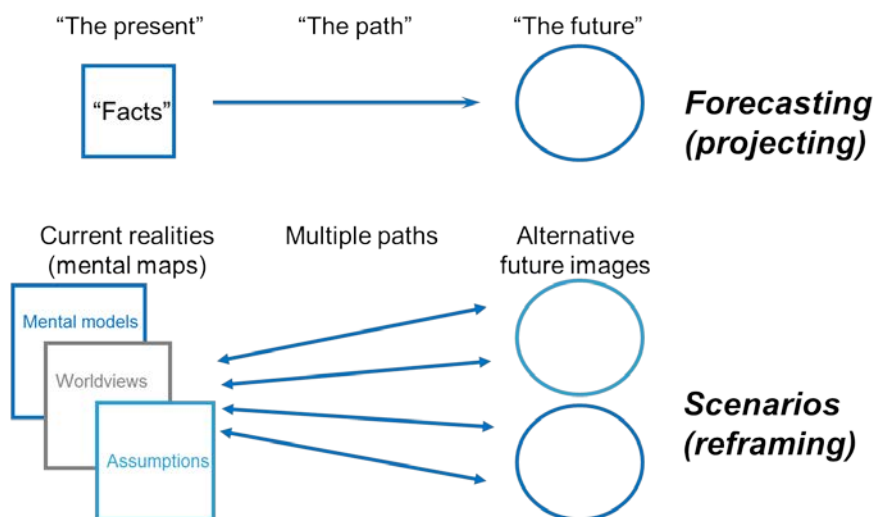
Scenarios can help anticipate the future in an unpredictable world

Stories of the future can be developed using a variety of methods. In this chapter, a scenario is not the same as a baseline projection developed in econometric forecasting. Scenario-based approaches involve more open thinking to develop stories about the future

and then use these to make sense of a puzzling and messy situation. Scenarios differ from forecasts in three ways (Figure 4.1):

1. While scenarios often use data-based research for their content, they are not constructed by extrapolating present trends into the future. Instead they explore how and why “bends” might bend or break and redirect attention to weak signals emanating from new and emerging trends.
2. Scenarios always come in sets of two, three or more plausible stories. This encourages and enables thinking outside the box. This helps avoid delaying action until there is enough evidence to predict the next crisis. Scenarios are designed to encourage constructive engagement with uncertainty in order to avoid missed opportunities and blind spots.
3. Scenarios are user and use-specific. Scenario work is not an end but a means within a wider intervention. The power of scenarios is realised in the depth and quality of the strategic conversation enabled in the development and use of the scenarios.

Figure 4.1. Scenarios are not forecasts



Among the many subtle by-products of engaging with scenarios is a greater sense of confidence about an uncertain future. This confidence is quite different from the feeling of security that arises from accepting a single predicted future as “true”. It is related, instead, to a faster, more flexible and reflective sense of the future that contributes, in turn, to a capacity for agility and resilience – getting ahead of connected challenges by imagining different potential paths.

Thinking about scenarios can help people talk to each other

Scenarios enable and enhance the quality of strategic dialogue on extremely complex, contentious issues. Where there is deep disagreement, a wide-ranging, open, and honest discussion is almost impossible under normal circumstances. However, a team of people from many different perspectives can create scenarios together in a neutral and safe future space. This enables disagreement to be managed as an asset and promotes collaboration even when there is no easy agreement on policy positions. Often, in the process of sharing

and co-creating stories, those who hold an opposing position begin to understand the other point of view and to see possible opportunities for collaboration. A well-known example of a fruitful collaboration occurred in a scenario project undertaken during the post-apartheid transition in South Africa in the early 1990s (Box 4.1).

In a research setting or culture of experts, scenario-based dialogues can be an effective way of enabling interesting, interdisciplinary insights and identifying assumptions that have become so engrained that they are no longer questioned. As in any discipline-based culture or professional field, experts can become blind to their own mental models. To enable more interdisciplinary and collaborative work, scenarios offer a method of research that encourages thinking outside the accepted model.

Box 4.1. How scenarios helped to shape the political transition in South Africa

The South African scenarios were developed to help the country transition from apartheid. At the time there was intense pressure for rapid land reform and other profound changes in the economic life of the country. The scenario team brought together representatives from all parts of the deeply divided South African political spectrum. The team came up with four scenarios, none of which represented a future anyone initially wanted. One of the scenarios represented a rapid reorganisation of the economy, including extensive financial system reforms – but the team agreed that the most plausible outcome of such rapid reforms would be a fiscal crisis. The scenario was called “Icarus” after the mythological boy with wings who flew too close to the sun. Another scenario – which eventually emerged as a desired future – was a measured approach to reforming the economic system to allow the government to be sustainable. This scenario was called “Flight of the Flamingos”, because while flamingos take off slowly, they take off together.

In the decades following this exercise, the two scenarios that generated the most discussion – “Icarus” and “Flight of the Flamingos” – were alluded to in national news media, sermons, and government discussions. The scenario exercise had helped provide a common language for a transformative vision of the future. And in creating the four scenarios, the diverse team established a level of trust.

Source: Kahane, A. (2012), *Transformative Scenario Planning: Working Together to Change the Future*, Berrett-Koehler Publishers, California, www.bkconnection.com/books/title/transformative-scenario-planning.

There are various ways of envisaging the future

For developing the scenarios in this book, the first step was to select a baseline. We chose the OECD’s baseline projection for long-term growth and development to 2060 (Braconier, Nicoletti and Westmore, 2014). This sets the stage for five variants, but with the shorter time horizon of 2030. The OECD projection predicts continued, although slower, economic growth around the globe (Box 4.2 and for more detail see Annex 4.A1).

The implications of these projections include that countries can improve growth prospects by implementing policies with four goals: (1) accelerating global integration (including encouraging migration flows); (2) making institutions more resilient to shocks (e.g. demographic ones); (3) curbing pollution and mitigating (or adapting to) climate change; and (4) making the most of the knowledge economy, which will be the main driver of growth in the future (Braconier, Nicoletti and Westmore, 2014).

Box 4.2. OECD economic projections to 2060

Analysis in *Policy Challenges for the Next 50 Years* (Braconier, Nicoletti and Westmore, 2014) suggests that there will be a gradual convergence of per capita incomes between developed and developing economies, while the economic balance will continue to shift towards emerging economies. However, the growth outlook for the global economy is mediocre compared to the past, with large uncertainties surrounding productivity. While growth will be more sustained in emerging economies than in the OECD, it will slow as countries catch up with higher-income countries. Ageing will depress growth everywhere, and in OECD countries a reduction in immigration may further harm growth. It may also be curbed by the worsening impact of environmental degradation, especially in Asia, largely due to the effects of climate change, which are likely to affect these countries earlier than expected (see Annex 4.A1).

Alternative pathways of the future can be considered

In light of the discussions in Chapter 3 about emerging trends affecting livelihoods, a set of alternative pathways of the future can be considered. Incorporating these emerging trends in the analysis will complement OECD's baseline projection and help to enhance the anticipation capability and to develop possible policy actions. These include another major financial crisis or medium-term environmental impacts such as longer droughts. Additionally, the uncertainty about the outcomes of trends and their interactions suggests complementing the baseline projections with alternative, possible outcomes. These include:

- The chance of other major financial crises is possible. Recent discussions and literature clearly point to this continued risk (for example, see Wolf, 2014).
- Possible social disruptions at the national or regional level are likely, in reaction to increased inequality around the world and cuts in government social programmes.
- Major geopolitical disturbances or global conflicts can be envisaged. Recent tensions surrounding the Ukraine crisis and continued conflicts in the Middle-East clearly point to this threat.
- Protectionist tendencies during the last crisis indicate that fragmentation remains a possibility.
- Political economy dynamics – such as resistance to reforms and reluctance of governments to press for them – make the reduction of expenditures to balance budgets in some OECD countries unlikely.
- Some of the recent literature shows that productivity around the world could get another boost and increased automation may challenge the future of jobs (Brynjolfsson and McAfee, 2014).
- Increased competition for talent may lead to very different future migration trends. For example, emerging youth bulges in some regions, such as sub-Saharan Africa or South Asia, may be taken into account when thinking about future migration trends.
- Local and regional impacts of climate change, such as droughts or floods, are may affect livelihoods in the coming decades.

Five possible scenarios to broaden the policy dialogue

By developing new scenarios which reflect some of the trends identified in Chapter 3, we can obtain a broader perspective on relevant policy areas. The key trends considered are:¹

1. The ageing trends in developed and some emerging economies; and youth bulges in Africa, South Asia as well as the MENA region.
2. The trend towards automation and jobless growth, as well as technological advances that underpin new forms of growth e.g. green growth, self-generated work and the shared economy.
3. The increasing occurrence of droughts induced by climate change.
4. Persistent financial fragilities that trigger a new global financial crisis.

We have developed five partial alternative variants (three negative or dystopian scenarios and two utopian) by focusing on these trends.² The scenarios are not fully developed; they are simply suggestions for how the future might look. They are partial for the following reasons:

- Each scenario only combines a couple of emerging trends; they ignore some other relevant trends. They do so in order to highlight specific aspects, and to avoid getting lost in too many unmanageable possible interactions.
- Some of the emerging trends are particularly relevant for some regions (e.g. youth bulges in sub-Saharan Africa, Middle East and South Asia). Therefore, the storylines developed do not always have the same relevance in other geographic regions.
- Several different scenarios may occur in parallel in different parts of the world.

For each scenario we also identify some policy actions which may be needed to either avoid the worst effects (for the three crisis/dystopian scenarios) or else to bring about the positive utopian outcomes. They offer an opportunity for further dialogue among key stakeholders involving public and private entities. They also help develop the policy priorities discussed in the next chapter.

Scenario 1: “Automated North”

Automation proceeds faster than expected and affects ageing societies in particular

This scenario is particularly relevant for all countries with ageing populations: mainly the advanced economies and some emerging economies (especially China).

Automation in advanced economies and some emerging countries becomes omnipresent; jobs in most sectors are increasingly taken over by robots and artificial intelligence systems. Economic growth in those economies is largely jobless. Automation does not only replace lower-skilled jobs (in transportation/logistics, production and administration), but also high-skilled activities (including jobs in management, science and engineering, the arts, and the legal and medical fields).³ For example, solving a legal case or diagnosis based on a patient’s symptoms can increasingly be done using “big data” – applying powerful computer programmes to very large data sets.

The process of automation is very fast; faster than previous technological revolutions which have also altered the jobs landscape. Therefore, most people whose jobs are replaced by robots or artificial intelligence fail to adapt fast enough and find it difficult to secure their livelihoods. Some new jobs do emerge for people with new ideas, but there are not enough new jobs to allow everyone to be employed. New demand for traditionally produced goods and services emerges (e.g. traditionally produced agricultural goods or restaurants where dishes are cooked by a human), which leads to a re-emergence of some jobs even for mid-level skills. But again, many people are left without jobs even if they are highly skilled.

Inequality increases faster than expected. People whose livelihoods are under pressure will increasingly protest against the government. Social tensions and disruptions increase. Tensions are particularly strong in those countries with high structural unemployment (as in Greece and Spain after the global economic crisis of 2008/09). Increased automation makes these tensions even more fundamental.

Automation is fastest in ageing societies, where economic growth remains possible even despite the smaller working age population. The need for massive immigration inflows to secure growth is fading quickly. In fact, with fewer jobs available to nationals, pressure is growing to increase barriers to immigration in developed countries.

The problem of financing pension and other social security systems becomes a yet more fundamental challenge for all these economies. With less fiscal revenue due to fewer people with waged income and at the same time more people in need of social security support (both old and working age people), government debt accumulates unabated and becomes unmanageable.

In many developing countries, the automation process is much slower, meaning that these countries are no longer competitive, even in low-cost, low-value added sectors. Many activities that had been off-shored are now taken back to developed country firms (in all sectors: agriculture, manufacturing and services). Nevertheless, there might still be room for traditional economic activities conducted by humans in developing countries. Goods and services produced by people in these economies will be used to serve the emerging domestic consumer markets as well as those in neighbouring countries.

Only a few talented persons from developing countries can seek a better life in advanced countries because of those countries' tightened migration regimes in response to changing trends of public opinion.⁴ Larger-scale migration occurs mainly within regional blocs of developing countries.

Key policy implications

How realistic is this scenario? It is certainly not pure fiction; Chapter 3 demonstrates that some of these trends are already in play.

The policy implications of this scenario are about adaptation rather than prevention, given that automation and ageing are already occurring. What policies at the global, regional, national and local level are needed to help individuals secure their livelihoods?

- *A new form of redistribution is needed.* In a jobless world, income redistribution becomes crucial. People need to have income to buy goods and services. Otherwise, even the robots and artificial intelligence systems come to a standstill. Jobless growth without appropriate redistribution will lead to rising inequality and increasing social disruption. A system of guaranteed income for all requires

serious consideration. At the very least, a social protection system is needed which compensates all those people without jobs. Yet pension and other social security systems in those countries most affected by jobless growth are already under pressure. Current systems are largely based on taxing wage incomes. In a context of jobless growth, extending social security systems without a drastic paradigm change for generating more state revenues is not viable.

- *Globally co-ordinated capital taxation policies could be necessary.* The dilemmas of income redistribution raised above suggest that countries may need to tax capital income (both profits and property) more strongly. However, capital is mobile and can soon be shifted to other countries where capital income taxes are lower or inexistent. To address this challenge, taxation policies would need to be co-ordinated globally.
- *The pressure on the free movement of goods, services and labour may increase rapidly.* Under this scenario, the continued free movement of goods and services becomes less likely. Developing countries, which are losing economic opportunities due to increased re-shoring of international firms with their origins in developed countries, may try to secure their domestic and regional markets by an introduction of new protectionist barriers and securing business opportunities by participating in regional blocs. Developed countries, on the other hand – where the automation process is fastest – may increase barriers to international migration. Policy makers around the globe must think carefully about how to avoid a global economic slowdown due to increased barriers to trade and migration. What would be an appropriate global trading system under these circumstances?
- *Adaptability and flexibility in skills and interests will need to be fostered.* Such an approach would allow people to cope with the rapid changes. Education systems must accommodate these emerging needs and life-long learning systems will need to be developed. Continuous ICT-enabled learning remains highly important. Much of this knowledge can be acquired individually. Communities and countries need to provide the infrastructure and space for this type of learning, including virtual interactions.
- *Communities need to develop new social norms.* As available jobs decline, people will increasingly engage in unpaid activities (leisure, social media, sharing economy, voluntary work, etc.). Communities will be challenged to develop new social norms, in which being in paid work is no longer a requirement for social respect.

Scenario 2: “Droughts and joblessness in the South”

Droughts become widespread and challenge the resilience of livelihoods, particularly in regions with a large share of young people

This scenario is particularly relevant for regions with emerging youth bulges such as sub-Saharan Africa, North Africa, Middle East and South Asia. Many of these regions are already struggling to create productive employment opportunities for their people. In some of these countries, many livelihoods are still based on subsistence farming.

Securing livelihoods in these regions becomes yet more challenging in this scenario as climate change leads to more frequent and longer droughts (already occurring – see

Chapter 3). Subsistence livelihoods that are already threatened will be challenged yet more fundamentally. Subsistence farming becomes almost impossible. Larger scale farming is also seriously challenged. Famines become the norm, not only for small-scale farmers but also for poor people in urban areas, as food prices skyrocket.

While droughts also become more widespread in many developed regions (including the United States and Southern Europe), these regions are expected to manage the situation through new technologies such as desalination of seawater and infrastructure to transport water over long distances. By 2030, other environmental challenges such as rising sea levels are not expected to challenge livelihoods yet on a large scale, but this is likely to become a more serious problem some decades later.

Droughts combined with a large share of jobless young people increase migration. Migration initially takes place within countries as many rural people whose livelihoods are threatened seek a better life in the cities. However, international migration also increases once cities' absorption limits are reached.

The outcome of this scenario is greater inequality. Guaranteeing equal opportunities for all becomes more challenging. Social disruption increases. The pace of change – including the emerging youth bulges as well as longer and stronger periods of droughts – is very fast. Countries, communities and individuals are unlikely to be able to adapt livelihoods or support mechanisms fast enough.

Key policy implications

How realistic is this scenario? Youth bulges are already an issue in many countries, and as little action has been taken to mitigate climate change, current trends indicate that widespread droughts will occur in the next 15 years (Chapter 3). It is unclear, however, how devastating or long the droughts will actually be and how often they will occur. It is also an open question as to what extent countries will be able to adapt to these fast-changing environmental challenges. Can countries, communities and individuals in these developing countries find new ways to create jobs for their youthful populations and make a living, despite the added burden of drought?

As for Scenario 1, the policy implications of this scenario are more about adaptation than prevention. What policies at the global, regional, national and local level will help individuals secure their livelihood in the future?

- *International agreements on water sharing need to be strengthened.* Currently, agreements on water sharing (e.g. between China, which has headwaters for major river systems in Asia, and the countries downstream) are neither sufficient nor sustainable enough to ensure more balanced water management during drought periods (Ambec, Dinar and McKinney, 2013). This increases the risk that countries will hoard water, which may become a source of major conflicts.
- *Strategies for water access need to be developed.* Developing countries with coastlines should tap into global knowledge on water desalination and attract investors to help develop desalination parks. Increasingly, international financial institutions such as the World Bank and the Asian Development Bank may support developing countries in such initiatives (World Bank, 2012). The situation for land-locked countries is more challenging. These countries need to urgently develop alliances with countries with access to the sea so that they are ready to meet future water challenges.

- *Developing countries need to adapt to drought.* Developing countries with large youth bulges and at risk of drought need to develop and implement plans for the large-scale relocation of people and for more drought-resistant agriculture. Recent agricultural research and support could help farmers adapt to the new local climatic conditions. New drought-resilient crops and agricultural methods may also help to sustain livelihoods in those places.
- *Internal and international migration needs to be managed to avoid “slumification”.* Urban policies which promote “secondary cities” or “eco-cities” could help to better manage internal migration pressures. Such cities can absorb people who can no longer make a living as small-scale farmers, but would need to create a niche for new jobs, potentially in service sector industries. For international migration, resettlement agreements between countries and within regions and states could be envisaged (e.g. 2001 agreement between New Zealand and Tuvalu to resettle islanders – see Shen and Binns, 2010). However, such agreements are unlikely to be viable for the expected large-scale population movements likely under this scenario.

Scenario 3: “Global financial crash”

A major new financial crisis triggers the collapse of the global trading system and a shift to protectionism

This scenario would affect the entire world, although the origin of the global financial crisis is assumed to be in the emerging economies, meaning especially big challenges for them.

A housing bubble in China and some other emerging countries bursts. Commodity prices continue to fall rapidly, creating significant challenges for currency stability in countries reliant on commodity exports, such as the Russian Federation, Brazil, many African countries, and Australia and Canada. Alternatively high levels of corporate debt in the developing world become unsustainable and lead to a large financial crisis and capital outflows from developing countries which create problems for their balance of payments and debt repayments.

Even though the crisis starts in the developing world it has strong effects on financial markets in developed countries because of their great exposure in these countries and because of their fragile and overleveraged financial markets (Wolf, 2014).

The financial disruptions trigger a major global economic crisis, affecting trade, investment and consumption around the globe. Protectionist pressure re-emerges, as during the 2008 crisis. This time, however, governments face more difficulty in bailing out financial institutions and investors because of their still weak fiscal positions. They are therefore unable to protect domestic jobs and sectors.

Regional blocs and new geopolitical alliances emerge and the global trading system becomes more fragmented. The Arab world unites to help countries in particular difficulty, such as Egypt, with high rates of poverty and no oil resources. Resource-rich countries (notably the United Arab Emirates) are particularly badly hit by the global economic depression and the break-up of the global trade regime.

The European Union experiences increasing tensions, with disagreements among countries on the best way to react to the financial crisis, and panic that affects several

banking systems. The European Central Bank does not have sufficient reserves to counteract the problems in the EU financial sector. Some countries leave the euro, creating a division within the European system and exacerbating the financial crisis.

Protectionism does not help to avoid social disruption and governments fail to address increasing inequality. Expectations of the emerging middle classes remain unmet. In developed and developing countries alike, many people's livelihoods come under pressure. Opposition to government and social riots increase, along with poverty rates. A large share of the billion people living just above the USD 1.25 a day poverty line falls back in poverty, and many vulnerable low-income households in developed countries are also badly affected. Developed countries find it difficult to deal with the new fiscal costs of bailing out their financial sectors as well as providing social protection to the most vulnerable citizens.

Key policy implications

How realistic is this scenario? Existing signs of financial sector imbalances in the emerging world and the continued fragility of the developed country financial system make this a very plausible scenario – one which could become a reality much earlier than 2030.

Policy implications involve both prevention and adaptation. While a detailed discussion of the necessary preventive financial measures is beyond the scope of this book, key actions include:

- *Strengthening global and regional framework conditions* and avoiding unhealthy financial activities.
- *Increasing co-ordination among the global financial institutions* so that they can respond to a crisis decisively. Greater mobility of financial resources among the central banks, the IMF, the World Bank and regional development banks would be an important outcome.
- *Agreements across countries* to focus on international reserve currencies, exchange rate management, and printing of money.
- *Ensuring a proper place for emerging countries* within the global financial system, which will almost certainly include the BRIICS by 2030.

While some preventive measures have been put in place since the last financial crisis, more are needed and they need to be adopted globally. The urgency with which governments must address these issues cannot be underestimated. The sustainability of government operations depends on citizens' trust in government. Another global financial crisis which affects people's livelihoods and increases inequality would damage trust in government even more fundamentally.

However, as the major global financial reform issues are unlikely to be addressed in time, it is important to focus on those policies that help cushion individuals and communities from major financial and economic crises, such as:

- *Banking structures that disconnect local banks from the global financial system.*
- *The development of local currencies* that also disconnect local economies from the global economy. This would be both an important adaptive and preventive measure (see Chapter 5).

- *The organisation of sound economic barter systems.* Barter involves the direct exchange of goods or services for other goods or services without the use of money. It is usually bilateral, but may be multilateral (i.e., mediated through barter organisations). Such systems usually exist in parallel to monetary systems in most developed countries, though to a very limited extent. Barter usually replaces money as the method of exchange in times of monetary crisis, such as when the currency may be either unstable (e.g. hyperinflation or a deflationary spiral) or simply unavailable for conducting commerce.
- *The establishment of self-financing community-based groups* (peer-to-peer lending groups) to make participants more resilient to major disruptions in the interconnected global financial system.
- *Improving technology to improve the assessment of financial risks.* Technological advancements give small investors many more choices, and data transparency allows pension funds to assess risk and the underlying soundness of countries and companies in which they might invest.

Scenario 4: “Regenerative economies”

Technological innovations create enough new jobs for most people and economic activity becomes sustainable based on renewable energy

This utopian scenario could apply to all regions of the world. However, the speed of change is faster in advanced and emerging countries than in low-income countries. The main attributes of this scenario are fast technological advancement creating many new jobs and solutions for today’s biggest challenges to humanity, particularly the greening of economic activity.

Innovative technology creates new products and services at a rapid pace. Many new fields flourish, including renewable energy, cyber-security, environmental resilient engineering, robot-enhanced service jobs, and jobs requiring high skills in nanotechnology and biotechnology. One of the most lucrative and innovative new technological applications may be 3D food printing from chemicals that allows nourishment to be delivered on demand anywhere. Productivity in the world’s knowledge economies continues to increase at a fast pace.

As the real economy becomes a virtual economy, many sectors undergo a transformation. Technological innovation in agriculture, for example, results in a rural-to-urban migration in many developing countries. To avoid this migration resulting in overcrowded city slums, developing countries follow China’s lead in creating planned, medium-sized cities with energy-efficient infrastructure, allowing for sustainable urbanisation.

The greening of economic activity happens in many ways and in many forms. A circular economy develops through the systematic recycling of natural resources used in production and consumption processes. Green cities with retrofitted energy-efficient buildings, low-energy transport modes (such as bus rapid transit), etc. allow significant energy savings. Solar energy becomes a major power source, thanks to advances in fuel-cell technology and capacitor storage. Water use is much better managed, thanks to IT-based monitoring techniques. Agriculture is transformed through genetic modification, new nutrients matched to local soil conditions, hydroponic cultures, satellite and drone

monitoring, etc. Local small-scale farming flourishes, reducing long-distance transport of goods and carbon emissions.

Improved ICTs mean that national borders and distances become less relevant. Markets become more international than ever before. State measures to avoid international competition become obsolete because they cannot be introduced fast enough to cope with the pace of technological change. Geographical and cultural differences begin to only be expressed in arts and crafts. By 2030, the world has one single integrated economy.

There will be many more high-tech jobs for highly skilled people than there are skilled people to fill them. Countries reshape their education systems so that people can perform in this fast developing knowledge economy. Training is available freely (online) or at low costs for all age groups under this scenario.

The challenge is not the existence of jobs, but the availability of educated people to fill them. The competition for skilled workers intensifies. Human capital becomes a critical asset. Rapidly developing countries need human capital, which many cannot build up fast enough internally through conventional brick and mortar universities. They have to rely more on information technology enhanced learning such as massive open online courses, cyber learning, and virtual universities where the challenge will be to assure quality. The competition for talent becomes a race for researchers and students – the ability to attract international talent becomes a key asset.

Most young people do not invest in one field in which they will work the rest of their lives; instead they move from specialisation to specialisation, learning narrowly focused skill sets for application in larger, computer-designed contexts. The old paradigm of education followed by a career is replaced by a series of individualised lifelong certification training programmes.

With such an intense focus on high-tech skills training, educational inequality becomes more important than income inequality. Avoiding greater educational inequality is a challenge, as not all people are suited to become workers in a purely knowledge economy. Unskilled workers without up-to-date technological training may find fewer opportunities. And older workers may lose their jobs when they do not keep up to date with new technology. On the other hand, older workers can choose to be retrained because educational programmes are offered at low cost and regardless of age.

For certain people, social security systems are still needed. But such systems are more affordable for nation states under this scenario. The core reason is that more people choose to work rather than to live on benefits as job opportunities are exciting and financially more attractive. Also, people choose to work until they are older because pensions are less attractive than working longer.

Key policy implications

How realistic is this scenario? The signs are already there in parts of Asia (China and Korea), Europe (particularly in Northern European countries) and North America (several US states), in the form of very proactive technology and green growth strategies. The increasing pace at which the world is becoming integrated would, thanks to improved ICTs, make this scenario relevant for all countries in the world. However, it is very uncertain whether technology will really create enough new jobs.

The policies to support a shift in this direction are not about securing livelihoods, but about improving livelihoods around the globe sustainably. While they can be accelerated by global or national state initiatives, the importance of technology in this scenario means that many of the actions can also be taken by private actors, foundations and public-private partnerships:

- *Reshaping education systems around the globe to build flexible technological skills.* Beyond the basic education, the most crucial assets will be cognitive, flexible skills with a very strong focus on the latest technologies. People of all ages will need to have the opportunity and incentives for continuous retraining.
- *Matching skills to the global labour market.* A new global system is required which can match the skills needed by the labour market with those available anywhere in the world. Big data analytics can help create such a system, which could be developed by private or public initiatives.
- *Ensuring the right conditions to attract and retain talent.* Countries that have traditionally benefitted from the immigration of highly skilled workers, mainly OECD countries, will likely need more proactive policies to attract and retain them because of intense competition for talent driven by rising demand and opportunities in emerging economies. Governments, but also companies, will be challenged by the fact that it is no longer enough to attract or retain talent by providing good salaries. Other quality of life factors will become more relevant, such as quality of social institutions and schools, networks, infrastructure, air quality and congestion; for instance, many multinationals are finding it harder to get staff to work in Beijing because of the city’s pollution levels (Douglass and Edelstein, 2009). Also, foreign talent may increasingly be encouraged to work for firms through tax incentives, opportunities to develop skills and careers within or outside companies or even an arrival bonus (Saez, 2014; Florida, 2006; Fishman, 1998). Governments or companies themselves can initiate such incentives.
- *Ensuring equality:* In the very fast changing technology world of this scenario, education becomes the main driver of inequalities and a significant number of people risk being left behind, if they do not adapt quickly and deeply enough. It is therefore key to provide efficient social security systems offering systematic guarantee support to all who are temporarily unemployed, in the form of financial aid coupled with intense training facilities. This applies in particular to the young people entering the labour markets. In developing countries with emerging youth bulges, the transitions into a knowledge economy are even more challenging, particularly as ICT infrastructure development may not be fast enough to make sure that all people have access to online platforms, allowing them to become knowledge workers. In those countries, a priority may therefore be to establish equal opportunities in access to modern educational systems and tools.

Scenario 5: “Creative societies”

Diverse local experiments and initiatives focus on individual resilience and social well-being.

This is a world in which technology-induced joblessness increases in developed and developing economies alike. Big projects – including big environmental projects – are

beyond the reach of most governments, leaving individual communities to make a virtue of necessity by becoming more resilient. Societies evolve towards new ways of living and working, in which individuals and communities are the key actors of change.

Meanwhile, the IT revolution changes the way the economy functions, via phenomena such as 3D printing technology, the “Internet of things” and massive online open courses (MOOCs). This transforms exchanges between people, transport, logistics, consumption of energy, and reduces the cost of production, ushering in a new form of economy based on collaborative approaches – and undermining traditional capitalism (Rifkin 2014).

In this entrepreneurial economy, individuals are much more autonomous and independent of institutions and organisations. Young people do not follow a career-ladder job path, focusing instead on meaningful work and work-life balance, with income supplements in rich countries to assure at least minimal levels of livelihoods for all. These supplements are made possible because governments have stopped increasing transfer payments – funding for health, welfare, and pensions remains relatively static.

In this scenario everyone is an entrepreneur because in the absence of secure full-time employment, it is individuals who must put together a portfolio of work made up of part-time jobs, shared work with colleagues, and other innovative approaches. Companies outsource work in discrete projects, so workers may sometimes be engaged in several projects at one time followed by a period during which they have no paid employment. This flexibility is not so easy for older workers, however, but they are helped to adjust through income support and online training, which is available to all. In addition, flexible retirement-age policies encourage older people to continue to engage in occasional projects. Community-based, multigenerational work projects become increasingly popular.

This portfolio lifestyle is made possible by three important factors:

1. technology, which allows work from anywhere at any time
2. the adoption of minimum incomes in most developed countries, paid for by higher taxes on capital, rather than labour
3. new social attitudes in which young people are not so much interested in the consumer culture, but contribute to what might be called “the experience economy.”

In many ways, the world of creative societies is one of local experiments in well-being. And even at the national level, much more attention is paid to inclusive growth – growth plus well-being – rather than mere economic growth. In developed economies, city-corporate partnerships flourish and help finance green infrastructure. Most multinationals are active in communities – corporate reputation is tied closely to social responsibility.

Cities attempt circular economies and many other green initiatives, especially retrofitting of buildings and water conservation. A robust urban food movement develops with many urban community gardens. And public-private livelihood incubators flourish in most cities, providing job counselling, the matching of skills and opportunities, start-up financing, and individually tailored aid packages for young and old.

A great deal of technology-enabled creativity occurs in the service sector. In countries with ageing populations, new sensor technology and other devices enable young people to

monitor older people in their own homes. A rising interest in high quality care takes place in communities, which have become centres of new social experiments and locally focused agriculture, crafts, and work centres. Barter economies flourish as cash-strapped workers trade skills and services on a one-to-one basis. In this “Uber” world,⁵ people do odd jobs or offer “restaurants for a night” in their homes or take any number of other informal economy approaches to their livelihoods – all made easier through social media and proliferating mobile phone applications. People sell their services virtually – everyone is a “producer.”

The patchwork nature of support – grants for specific projects rather than policy initiatives for all – means that inequality emerges at the community level as well as at the individual and national levels. Positive feedback loops lead to the rich getting richer. Successful communities are like magnets, attracting people to live there because of the high quality of life.

In a world in which travel and leisure activities are valued above possessions, and “work-life” balance tilts towards the “life” side of the scale, rising inequality does not seem so burdensome. A livelihood means having the capacities to meet your needs and the context to exercise that capacity. In creative societies, the growing numbers of young people who are less consumer-oriented see work as an opportunity to contribute to society, not as an onerous necessity.

Key policy implications

How realistic is this scenario? At first glance, this scenario seems to be more plausible in richer countries, where most people have moved beyond basic subsistence. In low-income, developing countries people may not have the luxury to focus on anything other than immediate survival needs. However, this community-based, low-wage kind of living is already familiar to people in developing economies. To some extent, developed countries learn from developing and emerging economies, which, in many cases, have succeeded with experiments in social inclusiveness and adaptive, frugal innovation. Innovations can be “disruptive”, such as those developed in India in the late 2000s, aiming at “getting more from less for more people” (Mashelkar, 2009): fuel-efficient small cars like the Tata Nano; or new drugs based on traditional medicine. These innovations respond directly to the needs of the poorest people (and are known as “disruptive” because they can render industries and occupations obsolete).

While creative societies would take different paths in the developed and developing worlds, there are some similarities, some of which are already present: the rise of social entrepreneurs and the “social economy”; the rise of innovative finance and money in forms of micro credit, social impact bonds (see Chapter 5), or local currencies; investments in the “bottom of the pyramid” in the developing world; the diffusion of “frugal innovations”, etc. So while the scenario is already plausible, it is occurring on a small scale. A much wider scaling up would be necessary for it to have a significant impact.

Through their “frugal” ways of living, people in this scenario help to prevent major crises and tensions, as well as reduce their potential impacts. Key policy implications for achieving it include:

- *Transforming education:* In order to operate in a creative society, life skills in a broad sense are fundamental. Skills-for-life rather than jobs-for-life hold the key to the future of livelihoods. Individuals need a strong technical culture in order to

get by; they also need an entrepreneurial spirit with a grounding in management, commerce and finance; they need good interpersonal skills, and to understand that happiness can be achieved through frugality and creation rather than increased income, etc.

- *Overhauling legal, administrative and institutional frameworks* to create the necessary flexibility across many domains. Labour markets should be fully open, with no barriers to entrepreneurship, changing jobs, etc. Pension schemes should allow the easy accumulation and transfer of rights. Minimal social security systems should be accessible to all. Relations between central and local governments need to shift fundamentally towards greater decentralisation. Government policies should shift from social services for individuals to intermittent support to communities on a project-by-project basis. The economic and social strengths of communities need to be carefully monitored by governments, who have to ensure that their project-based funding goes to city initiatives that are likely to succeed.
- *Installing proactive and imaginative innovation and technology policies.* A stimulating culture of experimentation needs to be fostered. Research should focus on making the best use of technology for frugal and inclusive innovations, and ultra low-cost products for poor people. As governments will have limited funds and will not be able to engage in large-scale programmes, efficient schemes will be needed that mobilise the creativity and resources of the private sector, along with public and university research teams. This would not only be needed nationally, but also at the global level.
- *Compensating disadvantaged communities will be necessary.* Some communities will lack the social capital necessary to come together to solve problems and combat joblessness. Some budget transfers will probably be necessary from more resilient communities to those less well endowed in social and other capital, or to those particularly challenged by climate, economic or other trends. Which communities succeed and which fail is not necessarily a function of development – some poorer communities have more highly developed social capital than many of the old, industrialised communities.
- *Rising inequality will have to be tackled.* A minimum basic income is likely to be needed to allow everyone to survive even if they lack the creative skills required, to avoid deep inequalities.
- *Developing new ways of measuring progress.* In these creative and diverse societies, it is difficult to benchmark progress using average GDP, especially as multidimensional well-being is the goal. Boundaries between education, work, and retirement are blurred. Social needs vary, and labour market priorities and structures vary across regions, driving new patterns of technology adoption and new models of governance.

The scenarios translate into a wealth of policy options for secure livelihoods

This chapter set out to demonstrate that other approaches to analysing forward-looking policies are available to policy makers and other stakeholders. Pushing some hypotheses or stories to their extreme, even dramatic, limits helps open up the policy space to discuss new ideas, and more and different possibilities.

The scenarios described in this chapter imply that the future outlook for livelihoods can either be dire, or vibrant. Which one triumphs will largely depend on how prepared we are to face up to emerging trends and tackle them now through bold initiatives and innovative approaches. The scenarios reveal a range of opportunities: from rethinking how education and skills-building are delivered; to how more effective taxation policies and income redistribution approaches can combat inequality and invest in social inclusion; to how a more flexible and adaptive labour approach to technical change, to people's mobility and to other forces can reflect the dynamism of societies; and to how resilience and adaptability can be built from the ground up – from individuals up to entire societies.

Two key outcomes are common to all these policy options: the need to build inclusiveness and resilience. The next and final chapter focuses in on some priority actions at a range of levels for building inclusiveness and resilience into future livelihoods.

Notes

1. The scenarios do not include the possibilities of pandemics, terrorism and global conflicts. However, these risks are as relevant and real as others, as illustrated by the recent Ebola crisis in Africa; the recurrent terrorist attacks around the globe and recently in France; and the risk of a global geopolitical conflict emerging from the Ukraine crisis. They should be considered in future scenario work.
2. The scenario design emerged from the Bellagio meeting (see Box 1.1 in Chapter 1), as well as an OECD-wide workshop and discussions among this report's team of authors.
3. A possibility outlined by Frey and Osborne (2013).
4. Even now in several developed countries, such as Switzerland and France, public opinion has moved towards more restrictive migration policies (including for higher skilled workers), as people feel at risk of losing their jobs.
5. Uber is an app-based transportation network and taxi company headquartered in San Francisco, California, which operates in cities in many countries. The company uses a smartphone application to receive ride requests, and then sends these trip requests to their drivers. Customers use the app to request rides and track their reserved vehicle's location. Today the service is available in 53 countries and more than 200 cities worldwide. Since Uber's launch several other companies have emulated its business model, in a trend that has come to be referred to as "Uberification" (Wikipedia, 2015).

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Annex 4.A1.

OECD's forecasts to 2060 suggest a mediocre outlook for economic growth

Important elements of OECD's recent long-term projections concern the shift of the world economic balance, productivity growth, trade and integration, climate change and environmental degradation, inequalities, education, ageing societies, migration and fiscal pressures. Key conclusions for these areas are summarised below:

A major **shift of economic balance** occurs towards emerging economies in general, and Asia in particular, from 37% of global GDP in 2012 to 61% in 2060. Economic growth continues to lift masses of people out of poverty, integrating them into the world economy. However, the growth outlook for the global economy is mediocre compared to the past, with large uncertainties surrounding productivity. While growth is more sustained in emerging economies than in the OECD, it is slowing down due as countries catch up with each other.

Productivity growth slows in countries that were previously growing rapidly, as productivity and GDP per capita converge with those of developed countries. Improvements in efficiency and innovation will become a major factor of growth in GDP per capita in all types of economies, whatever their development level. Productivity improvements reflect innovation, propelled by rising investments in knowledge-based capital assets such as R&D, employee skills, organisational know-how, databases, design, brands and various forms of intellectual property.

Global integration continues as transport costs keep falling and trade barriers are lowered in line with existing trade agreements. The pace of integration slows, however, due to possible new trade barriers, transaction costs and regulatory obstacles. While world exports in relation to GDP tripled between 1950 and 1998, increases are now expected to be around 60% between 2010 and 2060, although regional variations are large.

Trade, like the economy, becomes concentrated in Asia. OECD countries' share of world trade is estimated to fall from 50% in 2012 to 25% in 2060. Specialisation patterns continue to evolve and global value added chains develop further. China and other Asian countries continue to specialise in electronics and increasingly in services, while manufacturing shrinks in the OECD. Increased trade integration accelerates the pace of international technology diffusion, further improving efficiency and innovation. This is particularly important for countries that are technologically underdeveloped. Furthermore, increased cross-country interdependence will help spread the impacts of shocks, but will also make the global economy more vulnerable to imbalances.

The impact of climate change is expected to lower world GDP between 0.7% and 2.3% by 2060. Impacts will vary, but will be greatest in South and Southeast Asia, at 5% of GDP. Some other regions may actually benefit from higher agricultural productivity, improved terms of trade and in some cases stronger net demand for tourism. Falling

agricultural productivity, and capital and land losses from sea level rise, are the main reasons for GDP losses.

Inequalities continue to worsen, reaching current US levels across the OECD. Rising capital incomes drive rising disparities in household income, reflecting the replacement of medium-skilled jobs by technology and increase polarisation. Global current account imbalances start to build up again and fiscal and structural reforms need to be pursued.

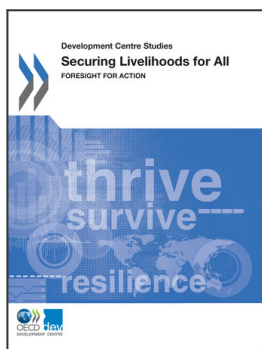
Average levels of educational attainment improve, but progress slows as countries catch up with the leaders. With growing inequality between low and high-income earners, incentives for tertiary education are increased. However, funding constraints, rising costs and insufficient abilities of the stock of potential entrants into tertiary education is holding back the number of people with tertiary education.

Ageing depresses growth in advanced and large emerging countries including China, Brazil, and Russia. The share of population has already peaked in the OECD, will reach a turning point in 2025 in China, and is expected to rise until 2060 in India.

As emerging economies catch up with OECD countries, **the economic incentives for immigration to the OECD are reduced. Net emigration of economic migrants from OECD countries is expected between 2010 and 2060.** Slower inflows of high-skilled immigration, due to rapid wage growth in traditional “source” countries, will combine with outflows of low-skilled migrants to have a significant impact on the labour force and GDP across the OECD. For example, the expected decline in migrants could lower potential labour by as much as 20% in the euro area and 15% in the US by 2060.

Fiscal pressures build up, driven by high debt levels, unsustainable pension systems, and rising costs of health and education. Fiscal gaps are more than 10% of GDP for the majority of OECD countries. Emerging countries like China and Brazil also face similar fiscal pressures, which combine with demographic pressures. In the BRIICS, total health and long-term care expenditures are expected to double to 5% by 2060. Fiscal pressures will widen account imbalances. It is, however, expected that governments will be able to reduce government debts to 60% of GDP by 2030.

Source: Braconier, H., G. Nicoletti and B. Westmore (2014), *Policy Challenges for the Next 50 Years*, OECD Economic Policy Papers, No. 9, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz18gs5fckf-en>.



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