FUTURE MIGRATION SCENARIOS FOR EUROPE

Working Paper

Global Scenario Narratives

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Contents

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1. Introduction

Over the past decades, international migration has become by far the most important force behind European population change: without migration, the population in Europe would have been declining already since the mid-1990s. With this development, the importance of migration as a social and political concern has intensified significantly, and migration has become a highly debated topic in Europe and the rest of the world. Although in many EU countries migrants fill existing and emerging gaps in the labour force, and therefore tend to have a positive impact on the economic development of these countries, there seems to be a growing fear that the current levels of migration are unsustainable.

As international migration has major implications for societies and economies, forward looking analyses of migration are valuable tools for many domains of policy making. The two most often used approaches are forecasts and scenarios (for an overview, see Sohst, Tjaden, de Valk, & Melde, 2020). While forecasts aim to provide the most likely quantitative estimates of future migration, scenario studies aim to provide internally consistent, systematic, and plausible descriptions of future migration developments. As such, migration scenarios can be used to evaluate current practices, to simulate the impact of different future policy measures, or to illustrate possible future developments (Vezzoli, Bonfiglio, & de Haas, 2017).

As quantitative analyses inevitably omit important features of the real world and cannot deliver full conclusions on unpredictable trends, migration projections may be most useful when combined with a qualitative scenario exercise (OECD, 2016; Sohst et al., 2020). However, while the number of migration scenario studies has rapidly increased since the turn of the century, the literature provides limited directions on how to incorporate insights from mostly qualitative narratives in quantitative projections. What is more, migration dynamics are very complex, given that they are driven by developments in the demographic, economic, technological, social, political and environmental domain. How global challenges in each domain will evolve is influenced by interrelations and feedback mechanisms between domains and characterized by a high level of uncertainty. To deal with such complexity, prior migration scenario studies have often distinguished four scenarios along two axes, resulting in a comprehensible yet limited number of imagined futures.

The aim of this report is to build further on this growing literature on migration scenarios, paying close attention to the main insights of previous studies while also exploring new ways to formulate migration scenarios that allow for greater flexibility in the domains and developments covered. To make optimal use of the available knowledge, **Chapter 2** provides an inventory of existing migration scenarios. We describe the main assumptions, outcomes, and narratives from previous studies to gain a comprehensive yet concise overview of developments that have been considered crucial for the future of migration. We end this part by discussing some main limitations in the approach of existing migration scenario studies. In **Chapter 3** we subsequently investigate how these limitations can be addressed by integrating insights from previous migration scenarios with insights from other study disciplines. Based on this exercise, we formulate a new strategy for building migration scenarios which uses insights from an expert study. **Chapter 4** presents the outcomes of our expert study, which will service as point of a departure in formulating the FUME migration scenarios. The scenarios themselves will be presented in a subsequent deliverable (D3.4). In **Chapter 5** we conclude with a brief recapitulation of our main findings and its implications for future migration scenarios.

2. Inventory of existing migration scenario studies

Regarding the future of migration, we can distinguish between two types of uncertainties. First, *contextual uncertainties* concern the direction in which the social, economic, cultural, and political factors that drive migration are likely to evolve in the future. Second, *model uncertainties* are related to the impact of these drivers on the volume, direction and nature of migration (de Haas, Vargas-Silva, & Vezzoli, 2010). Scenario methodologies stress the need to address both types of uncertainties simultaneously, thereby offering an alternative and complementary approach to quantitative projections. Although migration scenarios are a relatively new approach, European and international actors like the European Commission, the OECD, national governments, and academic institutions all have undertaken migration scenario exercises over the past decade (Sohst et al., 2020). This increased popularity points towards a growing awareness that future migration is unlikely to follow the exact patterns of the past.

Based on the emerging literature, in the following sections we discuss the main contextual and model uncertainties with regards to the future of migration. Subsection 2.1 discusses contextual certainties and uncertainties in six domains: demography, economy, technology, society, governance, and environment. Section 2.2 addresses the impact of global pandemics and migration systems as additional factors that may explain (dis)continuities in migration patterns. Section 2.3 describes the importance of migrant characteristics as a source of model uncertainty. Section 2.4 highlights some important interconnections between the elements raised in the previous sections. Section 2.5 describes the main migration scenario narratives distinguished in previous scenario studies. With section 2.6 we end our overview of existing migration scenario studies by discussing some limitations of the approach used in much of the previous literature.

2.1 (Un)certainties across domains

In imagining the future of migration, scenario studies build on the identification of key dimensions that drive people to migrate today, and how these dimensions could change in the future. In this report, it is not our aim to provide an extensive list of the drivers of migration, nor an overview of main research findings on such drivers. For this purpose, more complete studies and reports are already available (see for instance FUME deliverable D3.1: Report on Drivers of International Migration). Instead, we aim to discuss the main certainties and uncertainties regarding future developments in six domains that may impact migration: demography, economy, technology, society, governance, and environment. Each of these developments are considered to be important building blocks for the development of migration scenarios.

Demography

Demographic factors such as population growth and population age structure are often mentioned in the literature as influencing the size and direction of migration flows. However, in the development of scenarios, researchers tend to focus more on uncertain rather than certain factors. Future demographic trends are considered as relatively certain, as they partly depend on current population structures. In addition, one could argue that the impacts of demographic factors on migration are mainly indirect, as they are largely mediated through economic and political factors (De Haas et al., 2019). For instance, high fertility rates of the past may increase emigration in the future because young population structures potentially put pressure on local labour markets. While demographic trends for these reasons tend to take a less central place in scenario development, they still form a crucial element of the broader context in which migration occurs.

According to population projections, the growth rate of the European population will gradually decline over the next 30 years, as the expected number of deaths over this period is larger than the expected number of births (e.g., Rees, van der Gaag, de Beer, & Heins, 2012; Szczepanikova & Van Criekinge, 2018). We can further anticipate increases in the size of the elderly population in Europe as the large post-war baby boom cohorts will all be 65 years and older by 2030. The size of the working age population may decrease, which may lead to vacancies and a higher demand for labour migrants. In sharp contrast with these demographic trends, many developing countries, particularly sub-Saharan Africa and South Asia, are expected to show historically high population growth over the next 15 years (e.g., Mixed Migration Centre, 2019).

As the majority of people who move tend to be young adults, population growth is typically associated with increased migration pressures (e.g., Czaika & Reinprecht, 2020). For the future, the strongest labour migration pressures are hence expected from sub-Saharan African and Middle Eastern countries due to the so-called 'youth bulge' (OECD, 2016). A large share of these migrants is expected to move to Europe due to persistently large gaps in income and well-being, as well as the impact of migrant networks. Although it is difficult to predict precise numbers, it seems very likely that the share of individuals with a migration background in European societies will be higher in 2050 than it is now. More uncertain is the background of these individuals, as the countries of origin of this population have become more diverse over the past years.

In the short to medium run, it appears likely that international migration will be largely shaped by the demographic and economic trends currently observed, resulting in the relative certainties listed above. At the same time, we should be careful not to exaggerate the "certainty element" in demographics. Patterns of demographic transition in the past have shown unexpected slowdowns of fertility decline (de Haas, 2011). Changes in educational attainments and labour force participation in European countries could reduce the impact of population ageing on the size of the active population (Marois, Sabourin, & Bélanger, 2019). Furthermore, economic growth and educational progress in developing countries has the potential to slow down population growth in these countries (Thu Hien, Docquier, Maurel, & Schaus, 2018).

Economy

Economic development, in Europe and elsewhere, is one of the most frequently mentioned dimensions in migration scenarios, reflecting the belief of experts that differences in living standards and income potential will continue to drive migration to Europe. Since the 2000s the economies of emerging and developing counties have grown faster than that of advanced countries, and this shifting wealth has led to good progress in improving livelihoods. However, economic growth in developed countries has slowed down after its peak in 2009, and while wages have been growing faster in developing countries than in advanced economies, they are on average still more than three times lower (OECD, 2016). In turn, migration from developing countries is typically expected to continue in the near future, because of persisting economic and well-being gaps with developed countries. Still, several scenarios address the possibility that rising economies in other parts of the world, Asia in particular, may become more attractive destinations than Europe in the future (e.g., EASO, 2019).

In the migration literature, the relationship between emigration rates and level of development is often portrayed as a 'hump' or inversed U-shape (e.g., De Haas, 2010; Martin & Taylor, 1996). That is, under conditions of low economic development, individuals often lack the capability to migrate, whereas particularly high levels of economic development tend to decrease individuals' migration aspirations. In migration scenarios, economic convergence towards developed countries is often associated with lower migration pressures, due to reduced population growth and lower youth unemployment in developing countries. However, and in line with literature on the 'migration hump', economic growth and a rising middle class in these countries, together with rising rates of educational attainment may initially increase migration due to higher aspirations and capabilities for migration (Mixed Migration Centre, 2019).

Technology

Some scenario studies pay special attention to technological developments of the future (e.g., scenario 'Technopoly' (Friedrich-Ebert-Stiftung (FES) et al., 2017). While advancing technology appears a relative certainty, it is unclear how technological developments will affect our (work) lives (Szczepanikova & Van Criekinge, 2018). Processes of automation in European destinations may lower the demand for low-skilled labour and may increase the pressure on unemployed low-skilled migrants to return. Expanding global tech hubs may attract highly skilled people from all over the world, causing a shift in the skill-composition of migration flows. However, technological developments may also reduce the need for job-related relocation if more work can be performed virtually. As another element of uncertainty, it remains to be seen whether technological advances will deepen existing inequalities between (world) regions or will in fact present an opportunity for leapfrogging in developing countries. Finally, automation in developing countries may result in higher unemployment rates, thereby increasing migration aspirations in these countries, yet may also provide new opportunities for economic growth, educational progress, and social development.

Besides indirect impacts through employment and economic development, technological advances may also have a direct impact on migration processes. Modern communication technologies have undoubtedly changed the ways in which social networks act in relation to migration: they allow migrants to maintain strong social ties in their country of origin and help to build new weak ties to organize and facilitate the migration project (Dekker & Engbersen, 2014; Gillespie et al., 2016; Sanchez, 2017). When growing numbers of people gain access to sophisticated communication technologies, there is the potential for migration flows to increase in the future. At the same time, innovative surveillance technology may also be applied to optimize national border controls, and may reduce (irregular) migration (Friedrich-Ebert-Stiftung (FES) et al., 2017).

Society

In several scenario studies, social development is included to describe domestic factors related to social peace, cohesion, and capacity for immigrant integration. The impact of social development on migration can be assessed from the perspective of either the country of origin or destination. From the perspective of the origin country, it has been argued that democratic reforms, along with other developments, could lead to lower levels of emigration towards Europe (de Haas, 2011; Sánchez-Montijano, Kaya, & Sökmen, 2018). What is more, social reforms in countries of origin may not only lower emigration rates but may also lead former emigrants to return.

As a societal factor in destination countries, multiple studies have considered public opinion towards migration as a crucial element, for instance whether migrants are seen more as an asset or a liability (Friedrich-Ebert-Stiftung (FES) et al., 2017). A focus on this element appears a more recent trend, which seems related to the rise of populist parties across Europe (Sohst et al., 2020). The link between public opinion and migration seems to work both ways, as increased immigration in the societal discourse has been associated with growing pressures on welfare systems and labour markets or increased risk of conflicts, this way triggering anti-immigrant sentiments in destination countries (OECD, 2009).

Governance

The degree of international cooperation and governance is one of the most prominent dimensions in migration scenarios. While several studies have put particular emphasis on European integration in relation to migration, more cooperation is not necessarily related to lower immigration from outside the EU, as EU governments may become increasingly reliant on non-Western migrants to regulate shortages in their domestic labour markets (Lachmanová & Drbohlav, 2004). At the same time, global agreements not necessarily result in increased or facilitated migration. As Szczepanikova and Van Criekinge (2018) explain: "By 2030, there could also be enough momentum for a joint push to reinterpret international law in order to facilitate containment of migrants and refugees and to speed up their returns to countries of origin or transit". Thus, rather than regulating the number of migrants, international cooperation is believed to be fundamental in creating an orderly and more efficient migration process (Betts & Kainz, 2017). However, most experts deem it unlikely that individual states will easily give up the power to implement their own migration policies in favour of a common harmonized policy (Lachmanová & Drbohlav, 2004).

Scenarios including a migration policy dimension have considered different aspects of such policies: the degree of restrictiveness, the level of selectivity in terms of which migrant groups are targeted and allowed to enter, or the level at which policies are formulated (national or international). At the same time, it has been argued that less than half of all movements can be directly controlled by migration policies (Szczepanikova & Van Criekinge, 2018). Due structural push and pull factors, certain countries likely remain popular destinations for migrants, even when more restrictive migration regimes are put in place (Castles, 2004; Czaika & De Haas, 2013; Thielemann, 2004). In addition, measures based on border controls often ignore that most irregular migrants do not illegally cross a border, but regularly enter a country and overstay their visa (Paparusso, 2016).

Although not directly related to migration, measures in other policy domains have been mentioned to improve the benefits of migration for all parties involved (OECD, 2016). In countries of origin, examples of such policy objectives concern lowering the costs of remittances and channelling them towards productive investments, bringing diasporas into development initiatives, or attracting and reintegrating emigrants. In receiving countries, relevant measures include improving labour markets, stimulating integration, reducing the size of the informal sector, protecting immigrants' rights, and designing strategies to change public attitudes on immigration.

Environment

While the scientific argument for climate change is increasingly confident, its consequences for human population distribution are rather unclear and unpredictable (e.g, Brown, 2008). The connection between the environment and migration has been discussed in various and sometimes conflicting ways, which shows the difficulty of identifying all potential impacts of environmental change on migration. GO-Science (2011) for instance describes a scenario wherein environmental change is "equally likely to make migration less possible as more probable".

In terms of climate change, a distinction has been made between long-term climate processes (e.g., sea level rise) and climate events (e.g., storms or floods). Climate events form more acute reasons for people in critical areas to leave their homes. Yet the people most likely to experience the negative consequences of such events typically have less choice to move, as they tend to have fewer resources to do so. Climate events thus may have a significant impact on the number of displaced persons, yet are often expected to result in short-distance moves rather than increased immigration towards Europe (Brown, 2008; de Haas, 2011). More gradual climate processes affecting food security and the availability of water, on the other hand, may change seasonal migration patterns over longer distances. However, since the motives for migration in these cases also have an economic component (i.e., the search for better living conditions), previous studies struggled to disentangle the impact of environmental changes from economic impacts.

More than other drivers of international migration, environmental and climate change seem inherently linked to the geographic context (Black et al., 2011). In particular, it seems likely that the burden of providing for climate migrants will be largely borne by the poorest countries where the most vulnerable populations are concentrated, especially when their livelihoods mainly depend on agriculture (Hoffmann, Dimitrova, Muttarak, Cuaresma, & Peisker, 2020). Changed patterns of rainfall would have very serious impacts for food security in sub-Saharan Africa, whereas South and East Asia are most vulnerable to a rising sea level as a large share of their populations lives in low-lying areas. Especially in the Indian sub-continent, parts of China and the Andes, melting glaciers will increase the risk of flooding during the wet season and reduce water supplies in the dry season.

The impact of environmental change on future migration outcomes largely depends on how individuals, households and governments perceive and respond to these changes. Rather than focusing on a direct impact of environmental change on mobility, some scholars have therefore recommended to identify what factors drive and influence particular migration flows, and subsequently estimate how sensitive these drivers are to environmental change (Szczepanikova & Van Criekinge, 2018). The identification of so-called 'trapped populations', that is, those people who are at high risk of exposure to environmental threats without having the means to move away, represents another relevant endeavour (Hoffmann et al., 2020; Szczepanikova & Van Criekinge, 2018).

2.2 (Dis)continuity in migration

While migration scenario studies tend to focus on processes of more or less gradual change in each of the six domains listed above, we should also be aware of disruptive events that may cause sudden change regarding the future of migration. Below, we address the impact of pandemics as an example of such unforeseen, high-impact events. However, and somewhat contradictory, we also need to consider the role of historical migration systems which continue to direct migration flows along traditional corridors, even in a world that is rapidly changing. The second paragraph therefore addresses the role of migration systems.

Pandemics

The global outbreak of Covid-19 in 2020 has demonstrated how unforeseen events like a pandemic can have a significant impact on international migration and has raised the importance of considering health aspects in evaluating future migration scenarios. One of the first measures adopted by many countries in response to the Covid-19 pandemic has been the closing of national borders and, in effect, a tightening of the immigration procedures. Furthermore, the Covid-19 pandemic seems to have altered the positive social perception of mobility, as well as the idea of Europe as safe and secure destination. While the impact of Covid-19 on migrants and international migration flows may be of a temporary nature, recent developments have clearly shown how future shocks have the potential to change the international migration context rapidly and dramatically.

Especially in the short term, health epidemics can be expected to impede internal and international mobility (Mixed Migration Centre, 2019). Yet also in the medium to long term, more people may choose to stay in their place of origin. Pandemics are further likely to have a long-lasting impact on national and global economies, and may deepen existing regional disparities, as the burden of the crisis is unequally distributed. Especially the least developed countries are vulnerable to disease outbreaks due to poor sanitary conditions and frequent population movement (Mixed Migration Centre, 2019). Furthermore, people undertaking irregular migration, and hence not abiding by public health protocols, are extremely vulnerable to contracting a communicable disease and/or spreading it (Mixed Migration Centre, 2019). Population displacement also undermines the provision of medical care and vaccination programs, making infectious diseases harder to deal with and more deadly (Brown, 2008; ECDC, 2015).

Migration systems

Although various developments can be expected to shape the future of migration, the importance of traditional migration routes should not be underestimated (Brown, 2008). Even in the context of new, rising economies, pre-existing paths and the presence of migrant networks reduce the costs of migration to specific destinations, thereby reinforcing established migration corridors (OECD, 2016). In turn, it is often claimed that once started, migratory movements become self-sustainable and alter the economic and social context in which migratory projects are carried out (e.g., Castles, de Haas, & Miller, 2014; Heering, Van Der Erf, & Van Wissen, 2004). Böckenförde and Braune (2018) even state that "once a migration pattern has set in, it takes a catastrophe to change it".

According to Massey and colleagues (1994), international migration systems consist of a core receiving region – a country or group of countries – and a set of specific sending countries, which are connected by historical, economic or political links. Due to such migration systems, intercontinental migration is likely to follow pre-existing paths and old colonial relationships. Thus, to give an example, also in the future the United Kingdom may remain an obvious destination for Pakistanis and West Indians, France for potential migrants from Francophone West Africa and Australia and New Zealand for some groups in the South Pacific (Brown, 2008).

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2.3 Characteristics of migration flows

Model uncertainties about the future of migration not just concern possible changes in the number of migrants, but also the composition of migration flows. Regarding the latter element, previous scenario studies have raised two questions: 1) from which countries do migrants come; and 2) what is their main motive for migration? In terms of migration motive, a distinction is often made between labour migration and forced migration. For both motives, it is typically expected that part of the migrants is accompanied or followed by family migrants. Based on migration motive, migrants are expected to differ in for instance their labour force participation, use of social services and length of stay (Barrett, Kahanec, Zimmermann, & Maître, 2013). Yet beyond migration motive, other migrant characteristics are crucial to consider, such as skill level, gender, and length of stay.

Skill composition

In the migration literature, it is typically assumed that the higher educated are more likely to migrate internationally, since the geographical scope of their labour markets is larger and international demand for them is high (e.g., Boeri, Brücker, Docquier, & Rapoport, 2012; Migali & Scipioni, 2018). Higher levels of education further strongly relate to people's desire to migrate due to the combination of increased financial resources, greater aspirations, and a lack of adequate employment in the origin country (Kirwin & Anderson, 2018). Yet while highly educated people may already have the means to migrate, new opportunities provided by high and sustained growth in developing countries may especially increase migration among those without a tertiary degree (OECD, 2016; Schewel & Fransen, 2018), thereby changing the skill composition of migration flows.

Across different scenarios, a growing selectiveness in migration policies is expected in the future, with employers gaining a stronger voice as advocates for selective immigration and integration programs. However, since policies that aim to attract and retain high-skilled migrants have largely converged across OECD countries, other factors may eventually determine the locational choices of high-skilled migrants (Szczepanikova & Van Criekinge, 2018). Furthermore, as high-skilled individuals may be able to obtain an acceptable income even in their home countries, their migration decisions could be influenced to a great extent by non-economic factors, such as career opportunities, family policies or a better quality of life in general (Mihăilă, 2019).

Gender balance

Gender is another potentially important, yet often ignored aspect when thinking about the future of migration. The use of migration as a coping mechanism may have specific gendered impacts, given that "women, as a group, are poorer and less powerful than men" (Brown, 2008). Traditionally, migration has therefore been mostly considered a male process. However, more recent studies have also highlighted migration processes in which women are the main decision-makers (Docquier, Lowell, & Marfouk, 2009; Dumont, Martin, & Spielvogel, 2007). Moreover, considering the ageing of European populations, a growing demand for workers in the health and elderly care sector may alter the gender composition of future migration flows (Boyd & Grieco, 2003). Thus, gender equality (or the lack thereof), traditional gender roles and their transformation may become increasingly important factors in determining future migration patterns.

Temporality of migration

While information on short-term and circular mobility is often missing in migration statistics, these dynamics are important elements of how people actually move (Szczepanikova & Van Criekinge, 2018). The openness of borders seems related to migrants' length of stay in the country of destination. For instance, in the context of freedom of movement within the EU, temporary and circular forms of mobility have become much more prevalent (de Jong, Van Mol, & de Valk, 2020). As migration policies become more open, people may take up temporary assignments in neighbouring countries while keeping their country of origin as their home base. Such temporary moves are crucial to consider, as return and circular migration form important drivers of development in origin countries (OECD, 2016). Forced migration on the other hand is often associated with a longer duration of stay: the vast majority of internally displaced people and refugees live in protracted situations that last for years and even decades (UNHCR, 2020).

2.4 Interconnections and outcomes

While forecasts generally concentrate on drivers at the micro and meso levels to quantify their individual impact on migration patterns, scenarios emphasize the context in which migration happens, and explore how changes in this context and interactions between individual drivers influence migration patterns. Below, we discuss some of the main interconnections and outcomes mentioned in previous literature.

Demographic change and competition for labour

In a context of persisting gaps with developed countries in terms of wages and well-being, population growth and environmental changes, migration pressures in developing countries are likely to increase. At the same time, societies in Europe and Asia may become increasingly reliant on immigrants to fill gaps in their aging workforce. Under such conditions, it can be expected that new strategies to attract migrants will be devised as global competition for labour intensifies, notably for top talent, highly qualified and semi-skilled individuals, and perhaps even for unskilled workers (Szczepanikova & Van Criekinge, 2018).

Economic and political stability

Economic growth in developing countries may accelerate the demographic transition, which could slow down population growth in these countries. Economic hardship and high youth unemployment on the other hand may prompt social discontent, which could ultimately lead to political instability, conflict, and displacement. Under these circumstances a downwards spiral may set in, as political stability is essential for sustainable development and economic growth. In destination countries, economic downturn may trigger increased anti-immigrant sentiments, and decrease support for more lenient migration policies.

Vulnerability to climate change

Climate change is often considered to be closely connected to economic growth: high global growth is typically associated with high CO_2 and greenhouse gas emissions (United Kingdom Government Office for Science, 2011). At the same time, national and individual wealth can be considered important indicators of vulnerability to climate change (Black et al., 2011; Borderon et al., 2019). Especially when climate stresses coincide with economic or social stresses, the potential for forced migration from rural areas increases significantly. In other words, non-climatic drivers that put vulnerable people in a marginal situation are key when studying the impact of climate change on migration. Climate change could further accelerate brain drain, as it is typically those with larger reserves of financial and social capital who are able to move away.

Conflicts and anti-immigrant sentiment

Continued conflict or insecurity in some parts of the world may lead to an association between mobility and security threats. Furthermore, incontrollable forced migration may trigger a breakdown in solidarity within the EU. Such processes could negatively affect attitudes toward migrants and refugees in some parts of Europe, particularly those receiving large numbers of displaced individuals coming from conflict areas. For a positive evaluation of migration, scenario studies therefore emphasize the importance of a strong political will by all major powers to engage in international and regional cooperation to prevent, manage and resolve conflicts.

Cooperation on migration and beyond

While national governments may strive to lower immigration rates by means of more restrictive migration policies and increased border controls, migration scenario studies typically associate such measures with increases in the illegal character of migration, and a more vulnerable position of migrants. Instead, various studies stress that migration policies likely yield the most favourable outcomes for both individual migrants and societies at large through international cooperation. International collaboration is further considered crucial to achieve social development goals, as well as successful interventions to address climate change. However, to establish such inclusive multilateral cooperation more equal partnerships with third countries are deemed necessary, which highlights economic convergence as a necessary first step.

2.5 Migration scenario narratives

While it appears likely that demographic and economic developments, technological advances, shifting global power relations or environmental change will alter the patterns of migration as we know them today, the previous parts have demonstrated how a multitude of different futures is still plausible. Based on this consideration, one might expect to find a wide variety of migration scenarios in previous literature. However, an inventory of existing migration scenarios reveals that various studies have distinguished a rather similar set of narratives. To illustrate this claim, in the next part, we describe five recurring types of narratives obtained and synthesized from prominent migration scenario studies.

Unilateralism and economic divergence

See scenarios 'World on Fire' (Friedrich-Ebert-Stiftung (FES), Global Future, & IOM, 2017), 'Shocks, inequality and control' (Szczepanikova & Van Criekinge, 2018), 'Isolationism, crisis and inequality' (Acostamadiedo et al., 2020), 'Conflicting relationship' (Böckenförde & Braune, 2018), 'Back to the future: a perfect storm' (Ariely et al., 2011), 'Scenario C' (United Kingdom Government Office for Science, 2011)

Brief description

Several scenario studies incorporate one particularly gloomy picture, characterized by political turmoil and conflicts, economic downturn, and reduced attention to the sustainable development goals. Despite technological progress, large economic gaps between Europe, Africa, Latin-America, and Asia persist. Social inequalities are on the rise and cause social unrest. The relevance of international organizations is fading. Scenarios of this sort are often associated with various kinds of disruptions, including the impact of fast technological developments. The OECD (2016), for example, describe a scenario where a small portion of the people in developed countries capture the wealth created by automated processes, while the rest of the population make a living in a very marginal economy. As the automation process in many developing countries has been much slower, these countries are no longer competitive, even in low-cost, low value-added sectors. The lack of opportunities for people to improve their lives is fuelling conflict. A lack of international cooperation and solidarity with those affected by environmental pressures has worsened the consequences of environmental challenges. Pandemics are more frequent and severe as appropriate medication cannot be accessed.

Consequences for migration

This type of scenario is generally associated with an increase in forced migration, whereas migration for the purpose of work or study decreases as crossing national borders has become less lucrative and safe. The share of global migration from developing countries to advanced economies is further decreasing due to limited resources to turn migration aspirations into action. Consequently, this type of scenario has been associated with labour shortages in Eastern Europe, as well as shortages of workers in the health sector. Rather than a coherent migration policy, political actions to manage migration mainly take the shape of damage control, responding to accumulating repercussions of disruptive events somewhere in the world. As a response to the unfavourable developments, the European Union further restricts the channels of legal migration into the EU. In effect, some of the population flows turn irregular.

Unilateralism and economic convergence

See scenarios 'My country first!' (Friedrich-Ebert-Stiftung (FES) et al., 2017), 'Slow growth and fragmentation' (Szczepanikova & Van Criekinge, 2018), 'SSP3: Fragmentation/Stalled Social Development' (Lutz et al., 2018), 'Fragmentation and shifting wealth' (Acostamadiedo et al., 2020), 'Decoupled Destinies' and/or 'Globalization falters' (OECD, 2009), 'Scenario A' (United Kingdom Government Office for Science, 2011)

Brief description

In this type of scenario, economic convergence between OECD and non-OECD countries continues, yet at a slower pace. Modest economic growth in the developing world is not matched with social progress, and many countries struggle to maintain living standards for rapidly growing populations. A rising number of unemployed young people living in socially volatile areas are looking for opportunities elsewhere, giving way to rising inequality, xenophobia and isolationism in Europe and the neighbourhood. European growth has slowed after the exit of some member states from the EU, and global economic weight has further shifted towards the emerging world. Countries pursue their own interests with little coordination with others, and protectionism is on the rise. The emphasis on security comes at the expense of international development. Global cooperation efforts are fragmented. New but small global commitments to reduce greenhouse gas emissions and to diminish climate change have been reached but are insufficient to resolve the main environmental issues.

Consequences for migration

Under this type of scenario, reduced migration to Europe is expected as a result of European countries becoming less attractive destinations for non-Western immigrants, on the one hand due to increased anti-immigrant sentiments and less favourable political regulations for migration, and on the other hand due to increased opportunities in rising economies in Asia and Africa. Despite their demographic challenges, ageing European societies mainly perceive mass immigration as a threat to their welfare systems and cultural identities rather than as an opportunity. These views translate into highly restrictive, more selective migration policies and their strict enforcement, and reduced support to developing countries. Only immigrants who are considered as economically useful can enter to fill specific labour market or skill gaps. African countries respond to this situation by strengthening partnerships with non-EU countries. Outside interventions that trigger economic take-off in traditional origin regions eventually lower the need for migration through significant new employment opportunities in these parts of the world. Globally, the share of migrants in the world population has not increased much because of selective policies in most countries, although this share varies by region. The actual number of migrants, however, has increased in line with global population growth. Without more encompassing migration policies and agreements, and with increasing migration pressures, irregular migration has increased.

Continuation/Middle-of-the-road

See scenarios 'Unequal relationship' (Böckenförde & Braune, 2018), 'SSP2: Continuation/Medium Population' (Lutz, Goujon, KC, Stonawski, & Stilianakis, 2018), 'More of the same' (Ariely, Warnes, Bijak, & Landesman, 2011)

Brief description

In the middle-of-the-road scenario, the trends typical of recent decades continue, with some progress towards achieving development goals, reductions in resource and energy intensity, and slowly decreasing fossil fuel dependency. Development of low-income countries is uneven, with some countries making good progress, while others make less. The scenario anticipates that fertility, mortality, and education follow a medium pathway, which can be seen as most likely from today's perspective.

Consequences for migration

In the short run, the gradual convergence of the economic situation in the developing world towards developed world standards will lead to increased migration pressure, since the aspirations of many citizens of developing countries will increase faster than the possibilities of their fulfilment. European efforts to fight irregular migration remain without meaningful effect or even aggravated the influx of irregular migration. Consequently, both in the short and the longer term, the EU member states will continue to see similar or increasing levels of illegal migration into the EU through the traditional illegal transit routes from North Africa, Turkey and the Balkans. In the longer term, migration pressures may reduce as the economic condition in developing countries improves.

Multilateralism and economic divergence

See scenarios 'Crisis with collaboration' (Szczepanikova & Van Criekinge, 2018), 'Economic divergence, crisis and attempt for cooperation' (Acostamadiedo, Sohst, Tjaden, Groenewold, & de Valk, 2020), 'Scenario D' (United Kingdom Government Office for Science, 2011)

Brief description

In this type of scenario, major economic setbacks are expected, yet combined with a strong desire for multilateral and inclusive international and regional governance. The worst effects of such a global economic crisis are felt in developing and emerging countries. As Europe quickly recovers from the crisis, inequality between EU member states is reduced and tensions are limited while the gap with emerging nations and least developed countries grows. In Africa, Latin America and Asia, the crisis has created patches of instability. The EU collaborates with these regions to deal with economic instability in sending countries.

Consequences for migration

Under this type of scenario, youth unemployment remains high in developing countries while the ageing population in EU countries creates a need for labour migration for specific skills. Increasing poverty in the developing world has led to increased migration pressures, but less people have the money to pay for migration. Collaboration between countries of origin and destination allows for some progress in global migration management, with a clear distinction between common policies for regular migration and those on irregular migration. Mutually beneficial trade agreements play a crucial role to ensure cooperation. The EU implements selective skills-based immigration schemes.

Multilateralism and economic convergence

See scenarios 'Opening roads' (Friedrich-Ebert-Stiftung (FES) et al., 2017), 'Equal relationship' (Böckenförde & Braune, 2018), 'Inclusive growth' (Szczepanikova & Van Criekinge, 2018), 'SSP1: Sustainability/Rapid Social Development' (Lutz et al., 2018), 'International cooperation and inclusive economic growth' (Acostamadiedo et al., 2020), 'Progress for all' (OECD, 2009), 'Borders Eurotopia' (Ariely et al., 2011), 'Scenario B' (United Kingdom Government Office for Science, 2011)

Brief description

One of the commonalities of scenarios with the most positive outlook for the future is a development towards reduced inequalities between world regions. Economic growth facilitates greater collaboration between sending and receiving countries, drives up the demand for labour and enables countries to invest in infrastructure and green technology. A new global mind-set emerges that sets out to achieve universal and sustainable development. Educational and health investments accelerate the demographic transition, leading to a relatively low world population. Such global economic convergence towards higher-income countries requires economic, political, and social changes in developing countries that pave the way to a more self-reliant development path, as well as a diversification of their economic partners.

Consequences for migration

As countries strive for inclusive governance towards a fair distribution of wealth, migration is welcome and regulated, orderly and regular. There is strong demand and competition for skilled and unskilled labour across the OECD and developing economies, resulting in a high circular flow of migrants. Based on the principle of mutual respect and a win-win partnership, political actors review their migration agreements to facilitate the safe mobility of people. These developments result in a significant reduction of irregular migration. Growth in emigration rates from emerging economies like China and India has slowed as these countries reached upper-middle or high-income status. At the same time, emigration rates from low-income countries increase as more people have the resources for migration due to rising incomes. The migration pressure in traditional high-income countries remains high and societies become more culturally heterogeneous, potentially leading to political tensions.

2.6 Limits of previous migration scenario studies

In contrast to quantitative models used in migration forecasts, scenario methodologies do not require the measuring and quantifying of the drivers of migration. In turn, scenarios are better suited to consider the type of structural drivers which can be challenging to measure, such as environmental change and global power balances. While this feature clearly illustrates the added value of scenario studies, the same feature complicates the use of the narratives obtained through scenario methodologies as input in quantitative models. Admittedly, it is also not the aim of scenario studies to provide quantitative predictions on the future of migration. Rather, migration scenarios aim to explore the eventuality of significant changes in the broader context within which migration takes place (de Haas et al., 2010; Vezzoli, Bonfiglio, & de Haas, 2017). Yet in practice, the impact of such changes on the size and composition of future migration flows constitute crucial information for researchers, policymakers, and practitioners. The disconnect between the two approaches hence forms an important limitation for studies that wish to combine quantitative projections with insights from scenario studies.

As a further limitation, and while scenario studies do wish to capture the complexity and uncertainty of the future of migration, Section 2.5 has shown how various scenario studies derived rather comparable migration scenario narratives. We can explain this overlap from two features of previous work. First, due to the increased availability of migration scenarios, not every new study has built its own scenarios from scratch. The report by EU Policy Lab (Szczepanikova & Van Criekinge, 2018) for instance draws from three previous migration scenario exercises carried out by the OECD (2016), the United Kingdom Government Office for Science (2011) and the Global Migration Futures project (Vezzoli et al., 2017). Other studies have used the SSP scenarios as formulated by Lutz and colleagues (2018) as their point of departure (e.g., Thu Hien et al., 2018). Yet as a second explanation, a common approach in migration scenario studies has been to develop four alternative scenarios along two different axes. For the axes, dimensions are chosen that have a very high level of uncertainty, and at the same time are very important in predicting the future of migration (Szczepanikova & Van Criekinge, 2018). In this endeavour, two global developments are often believed to be the most influential in setting the course for future migration: (1) the degree to which countries cooperate on an international level; (2) the degree to which economic development reduces inequalities across regions (Sohst et al., 2020). In many migration scenario studies it is these two dimensions that are placed along the axes to derive different scenarios (e.g., Acostamadiedo et al., 2020; OECD, 2016; Szczepanikova & Van Criekinge, 2018; United Kingdom Government Office for Science, 2011). By frequently selecting the same two dimensions, different studies have formulated rather similar scenarios.

While the two dimensions facilitate a comparison of different narratives relative to each other, the four resulting scenarios should not be mistaken for ideal types. When we – based on a close reading of the narratives – locate the scenarios along the two axes (see Figure 2.1), we observe that most of them are positioned along the diagonal from unilateralism combined with economic divergence to multilateralism combined with economic convergence. This distribution mainly follows from the absence of scenarios that propose strong economic convergence combined with low international cooperation on the one hand (quadrant I), and strong economic divergence combined with high international cooperation on the other hand (quadrant IV). While theoretical possibilities, these combinations are in practice highly implausible. After all, it is hard to imagine a future where global economic disparities are overcome while countries become more and more focused on their own successes. In a similar vein, it seems highly unlikely that optimal international cooperation can be achieved in a context of increased economic inequality, as economic hardship is typically associated with social and political unrest, conflict, and crises. In other words, international cooperation of some sort seems needed to bridge the gap between richer and poorer regions, while some economic stability is essential for effective international cooperation. Related to these considerations, narratives of the type 'unilateralism and economic convergence' (quadrant I) often expect economic convergence between regions to result from reduced economic dominance of Europe, while narratives of the type 'multilateralism and economic convergence' (quadrant II) describe economic convergence as the result of increased wealth in developing countries.

The uneven distribution of the scenarios across the dimensions has important consequences for the use and interpretation of such migration scenarios, as becomes clear from a recent study conducted within the Cross Migration project (Acostamadiedo et al., 2020). In this project, experts were asked by means of a Delphi survey to indicate which scenario they deemed most probable, as well as the number of migrants associated with

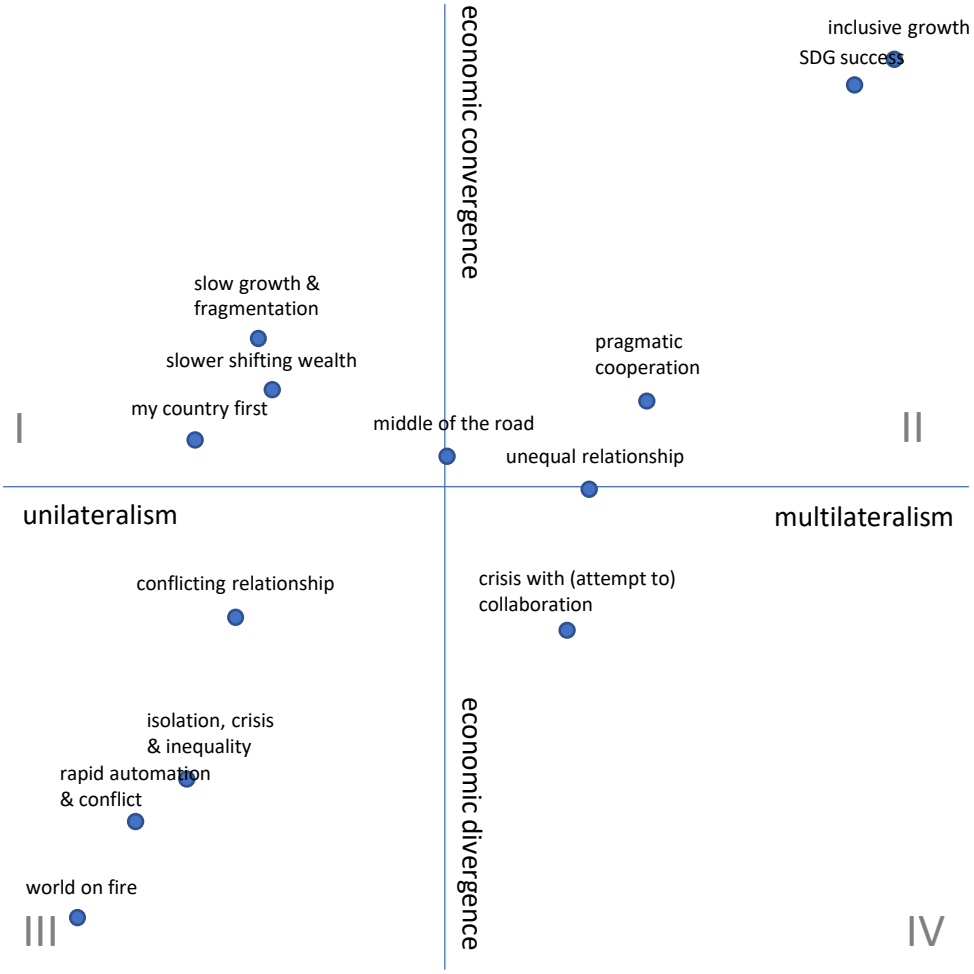
Picture: Unsplash.com

each scenario. Results of the study show how experts considered the scenario combining unilateralism and economic convergence (quadrant I) the most probable. What is more, under this scenario, experts expected the smallest increases in international migration, resulting in similar levels of migration compared to 2017. Such outcomes may come as a surprise given that previous reports and models on future migration typically expected strong increases in international migration (e.g., OECD, 2016; Thu Hien et al., 2018). However, we may be able to better understand these findings when considering the position of the narratives along the two axes (see Figure 2.1).

As the ideal type combining very strong economic convergence with very low international cooperation is unlikely to occur, scenarios that fall within quadrant I are placed closer to what can be described as the 'middle of the road scenario', which largely expects a continuation of the trends observed over recent decades. As shown in the Delphi survey conducted by Lachmanová and Drbohlav (2004), experts are typically hesitant to make predictions on international migration over a longer time span, especially regarding the number of migrants, and tend to resort to future scenarios that anticipate more modest changes compared to the current situation. This tendency may explain why experts deemed the 'slow growth and fragmentation' scenario (quadrant I) the most likely in the Cross Migration Delphi survey, and the scenario 'international cooperation and inclusive economic growth' (quadrant II) the least likely. The rather modest deviation of the 'slow growth and fragmentation' scenario from the 'middle of the road'-type of scenario may further explain why only modest changes in the number of migrants were predicted.

While the literature has recognized that the two main dimensions of the scenario framework are not independent (de Haas, 2011; Friedrich-Ebert-Stiftung (FES) et al., 2017), this example illustrates how in practice the implications of this interconnection are insufficiently acknowledged when evaluating the obtained scenarios. What is more, by placing economic convergence and international cooperation along the two axes, previous literature has paid less attention to developments in other domains, as well as their interactions and feedback loops. Building further on the insights from previous migration scenario studies, as well as their limitations, in Chapter 3 we aim at drawing the contours of a new method for building migration scenarios.

Figure 2.1 Schematic representation of the migration scenarios distinguished in previous literature



3. An alternative approach to scenario building

While the increased use of scenario methodologies is a relatively recent development in the migration literature, other study disciplines, like the biological sciences, have a much longer tradition of scenario building. In this chapter we aim to derive insights from this body of knowledge to address the limitations of prior migration scenario studies. In Section 3.1 we contrast the steps encountered in scenario building exercises in the migration literature with a scenario methodology found in biological studies. Integrating insights from both literatures, Section 3.2 introduces a new approach for migration scenario building.

3.1 Scenario building processes: insights from biological studies

As described in Chapter 2, migration scenario studies typically start with identifying a set of different futures – often based on two axes – followed by a description of main developments that would result in such futures. While migration scenario studies typically do not aim at quantifying the impact of each scenario on future migration flows, some recent studies have tried to link migration scenarios with quantitative projections. For example, KC and Lutz (2017) have offered a quantification of migration scenarios in the context of their population projections corresponding to the Shared Socio-Economic Pathways (SSP), a set of narratives depicting socio-economic changes in the context of climate change. The migration component of these projections covered a low, medium and high variant, which were matched to different SSP scenarios. The medium migration variant referred to a continuation of recent trends, while the low and high migration variant referred to levels that were respectively 50 percent below and above the medium variant. In such an approach, the migration levels associated with each scenario depend on the general implications of the storyline, while no explicit connection is made between specific elements of each scenario and how these may lead to higher or lower future migration levels. As a further limitation, and while migration scenario studies have acknowledged that developments in different domains may influence each other, the methodological approach often used to formulate migration scenarios provides limited possibilities to address such interrelations in a systematic way.

To address these limitations we can learn from scenario building methods found in other disciplines, in particular the influential study of Sala and colleagues (2000) in the biological sciences. In this study, the authors combine experts' assessments of the quantitative and qualitative changes in drivers of biodiversity to elaborate a set of three scenarios of change in global biodiversity to the year 2100. These scenarios were massively referred to in later research, with several articles either re-using the approach or proposing modifications (see De Chazal & Rounsevell, 2009 for a review).

Sala and colleagues (2000) take the following path for producing scenarios of biodiversity. First, the authors identify a list of the main drivers of change in future biodiversity (land use, climate, nitrogen deposition, biotic exchange, atmospheric CO_2), and ask experts to indicate, on a scale from 1 to 5, the extent to which they believe that each of these drivers will change in the future.[1] Next, experts are asked to indicate on the same scale how much of an impact they believe each driver will have on biodiversity.

[1] The use of a strictly positive scale is appropriate because it is widely agreed that these drivers will change in one direction only, although the extent of change is uncertain.

In a subsequent step, results from step one and step two are combined to provide the relative effect of each driver on biodiversity. A final step of the approach aims at allowing for interactions between drivers when building migration scenarios. In the study by Sala and colleagues, this step is conducted at the end of the scenario building process, after drivers are combined, and consists in proposing alternate scenarios (i.e., scenarios with interactions) with regards to a neutral variant (i.e., without interactions).

Unlike previous migration scenarios studies, the approach of Sala and colleagues does not ask experts to estimate the outcomes of each scenario, but to quantify the scenarios at their basis, that is, the main drivers of change. This in contrast to migration scenarios, which so far have been mainly quantified in the very last step of the process. Quantifying the elements that form the base of scenarios instead of their outcomes provides the advantage that scenarios are quantified in a less arbitrary and more systematic fashion. For a clear overview, Table 3.1 describes the common steps of scenario building in migration studies and the biological sciences, as well as our proposed approach.

Table 3.1 Steps of scenariobuilding in migration studies, biological sciences and our proposed method.

Step	Migration studies	Biological sciences	Proposed method
1.	Relevant drivers are identified	Relevant drivers are identified	Relevant drivers are identified
2.	The two most impactful and uncertain drivers are selected[E]	The amount of change expected in each driver is assessed[E]	Pathways of change in each driver are determined
3.	Narratives are developed which reflect the intersection between the two most impactful and uncertain drivers and how they might evolve[E]	The impact of each driver on the outcome of interest is assessed[E]	The impact of change in each driver on the outcome of interest is assessed[E]
4.	Optionally: quantities are assigned to the different narratives	Results from step two and step three are combined to provide the relative effect of each driver on the outcome of interest	The impact of change in each drivers on the other drivers is assessed[E]
5.		Effects in each driver are combined to provide a scenario regarding the expected change in drivers and their impact on the outcome of interest	Results from step four and five are combined to provide the effect of change in each driver on the outcome of interest, taking into account interactions between drivers
6.		Alternate scenarios are designed that allow for interactions between drivers	Effects of change in each driver are combined to provide a scenario of expected change in drivers and their impact on the outcome of interest

[E] Indicates the possible use of expert knowledge

3.2 A new scenario building process for migration studies

Incorporating insights from both disciplines, we propose a new method for migration scenario building. For concreteness, we use an example to describe our proposed method, which illustrates each step in reference to migration from less developed countries to European destinations.

Step 1: Identification of relevant migration domains

Based on an inventory of existing migration scenarios, in the first part of this report we identified six domains that have been considered crucial for the future of migration, and as such form important building blocks in scenario development: demography, economy, technology, society, governance and climate change. Changes in each domain can be expected to directly affect the size and composition of future migration flows, yet may also influence or depend on developments in the other five domains.

Step 2: Identification of pathways of change in six domains

As a second step, we identify important developments in each of the domains of step 1 which may influence future migration from less developed countries of origin to European destinations. Based on the literature presented in Chapter 2, for each domain we formulate two contrasting pathways of change for both Europe and less developed countries (see box 3.1). These alternative futures reflect situations that clearly differ from the present situation while still being plausible. As such they do not reflect the whole range of possible futures, but nevertheless cover a large range. Table 3.2 presents an overview of the considered changes.

Driver 1: Demography

EUROPE

Future A: Faster aging. Total fertility rates slightly decrease in comparison to their 2020 levels. Meanwhile, life expectancy starts increasing again. The result of these two trends is a stronger than anticipated process of population aging.

Future B: Slower aging. Total fertility rates gradually increase in comparison to their 2020 levels, reaching two children per woman in many countries. Meanwhile, increases in life expectancy continue to slow down and stop completely by 2050. Population aging continues but dependency ratios become more stable during the second half of the century.

LESS DEVELOPED COUNTRIES

Future A: Accelerated transition. Fertility rates in Asian, Latin-American and North-African countries continue to decline and reach levels similar to what is currently observed in Europe. In Sub-Saharan Africa, fertility rates approach replacement levels by 2050. Life expectancy steadily increases in Asian, Latin-American and North-African countries and at an accelerated pace in Sub-Saharan Africa, causing a shift towards an older population structure.

Future B: Stalled transition. Fertility rates in Asian, Latin-American and African countries remain above those observed in Europe. Increases in life expectancy are weak across less developed countries. In many countries the population continues to grow – especially in Sub-Saharan Africa – and the population structure remains young.

Driver 2: Society

EUROPE
Future A: Increased tolerance. Younger generations increasingly recognize the value of migrants and see migration as a form of cultural enrichment. Acts of xenophobia and discrimination become more isolated.

Future B: Decreased tolerance. There is an increasingly widespread sentiment in Europe that migration should be reduced to a minimum. Encouraged by nationalism, acts of xenophobia and discrimination become more common.

LESS DEVELOPED COUNTRIES
Future A: Increased secularism. Despite persistent variation between them, countries follow a general trend towards more secularism. Some countries that had a state religion become secular. Younger generations increasingly value self-realization and become less family-oriented over time.

Future B: Increased conservatism. Rates of religious affiliation continue at similar levels over time and affect the majority of the population in many countries. Countries that had a state religion in 2020 continue to do so in 2050. The family and community are highly valued and affect all spheres of life. A re-evaluation of the national and cultural heritage causes stronger opposition to American and European values.

Drivers 3: Governance

EUROPE
Future A: More cooperation. European countries eventually agree on a single European policy on migration. Cooperation with neighboring countries like Turkey improves, leading to a better management of migration in general and asylum demands in particular.

Future B: Less cooperation. Negotiations regarding a single European migration policy are stalled, and countries increasingly work independently to manage migration at their borders. Meanwhile tensions arise between European countries concerning free movement of persons inside the Schengen area. The European Union fails to rally all countries at one discussion table and bilateral agreements are reached instead.

LESS DEVELOPED COUNTRIES
Future A: Increased stability. The Syrian war has definitely come to an end, the political situation in Iraq, Mali and other African and Asian countries has stabilized. Terrorist organizations have become less influential and few new conflicts arise.

Future B: Decreased stability. The apparent stabilization of the late 2010s does not last long as new uprisings start to take place in different parts of the world during the 2020s and 2030s. Some are caused by people wanting more democratic and transparent institutions, similar to the Arab Spring of 2011, while others are linked to jihadi ambitions to form proto-states.

Driver 4: Economy

EUROPE
Future A: Economic growth. Despite labor shortages in specific sectors, economic growth continues in European countries thanks to increases in productivity. Wages are high and unemployment rates remain low. The demand for labor remains strong throughout Europe until 2050.

Future B: Economic stagnation. Labor shortages initially continue and, coupled with the closure of many businesses in the context of the Covid-19 pandemic, lead to an important economic slowdown in Europe. Large companies transfer their activities to less developed countries where labor is more abundant and increasingly qualified. Unemployment rates gradually start increasing again and labor shortages slowly resorb to the 2050 horizon.

LESS DEVELOPED COUNTRIES
Future A: Economic growth. Less developed countries increasingly benefit from globalization. Their financial sector experiences strong growth, and large companies hire workers at increasingly higher wages. Meanwhile, new legislations help reducing the share of informal, insecure jobs.

Future B: Economic stagnation. Less developed countries increasingly become victims of globalization. Competition between countries to attract businesses contributes to keeping wages low. Governments fail to propose legislations that would provide workers with more security and the informal sector continues to be the main source of employment in many countries.

Driver 5: Technology

EUROPE
Future A: Technological boom. Digital technology becomes widespread in all sectors of activity by 2050 and artificial intelligence is routinely relied upon in many sectors such as healthcare, manufacturing and agriculture. The increased use of automation in the industry causes a shift in labor demand toward more qualified workers.

Future B: Technological slump. The use of digital technology has progressed compared to 2020 but is still not widespread. Most sectors of industry still rely on suboptimal technology to resolve many problems and investments in research and development have declined compared to 2020.

LESS DEVELOPED COUNTRIES
Future A: Technological boom. In developing countries, investments from China and the more developed world lead to an increased use of information and communication technologies, as well as automation in industries and businesses. This increased use of technology is supported by strong increases in educational attainment to the 2050 horizon.

Future B: Technological slump. Although a few countries like China manage to catch up, the technological gap between less and more developed countries has widened since 2020. While some investments are made, levels of educational attainment do not increase in a sustained way and fail to support the adoption of more optimal technologies in industries and businesses.

Driver 6: Climate change

GLOBAL TRENDS

Future A: Mitigation. Countries take immediate and effective actions towards reducing their CO_2 emissions, which start decreasing globally by the end of the 2020s. In 2050 the earth is warmer by one degree, and although extreme meteorological events continue to be more frequent, the negative impact of global warming on humans and livelihoods stays manageable.

Future B: Intensification. Current efforts toward using cleaner sources of energy come to a halt and countries continue to rely on fossil fuels. Global temperatures are two degrees higher in 2050 compared to pre-industrial levels. Grave consequences are already felt by humans due to the rise of sea levels, decrease in agricultural output, loss of ecological services, and the increased frequency of extreme meteorological events.

Table 3.2 Overvier of factors and associated changes, by type of country

	Europe		Less developed countries	
Domain	Future A	Future B	Future A	Future B
Demography	Faster ageing	Slower ageing	Accelerated transition	Stalled transition
Society	Increased tolerance	Decreased tolerance	Increased secularism	Increased conservatism
Governance	More cooperation	Less cooperation	Increased stability	Decreased stability
Economy	Economic growth	Economic stagnation	Economic growth	Economic stagnation
Technology	Technological boom	Technological slump	Technological boom	Technological slump
Climate change	Mitigation	Intensification	Mitigation	Intensification

Step 3: Quantification of the impact alternate futures on migration

Alternate futures in each of the six domains have the potential to cause more or less migration in the future. The interest thus lies in quantifying the strength of the change that each alternate future might bring about. In step 3, expert opinion is therefore sought regarding the demand for migrants in Europe, and the pressure to migrate from less developed countries. We choose to concentrate on migration pressure and demand rather than the size of migration flows to avoid that responses are constrained by considerations about the ability to migrate in sending countries, or the openness to migrants in European destination countries.

For each cell in Table 2, experts are asked to either rate the expected impact of both futures on the demand in Europe for migrants from less developed countries (left-hand columns), or on the pressure in less developed countries to migrate to Europe (right-hand columns). Experts are asked to rate each alternate future on a 5-point Likert scale ranging from a strong increase (value=2) to a strong decrease (value=-2). The use of an ordinal scale was preferred to continuous numbers of migrants, as the latter approach has been shown to lead to large variance in experts' assessments (Acostamadiedo et al., 2020). Table 3.3 portrays an example of what the responses may look like.

Table 3.3 Example: Expert assessment of the impact of alternate futures on the demand for migrants

Domain	Future	Demand for migrants in Europe	Value
Demography	Faster aging	Strong increase	2
	Slower aging	No change	0
Society	Increased tolerance	Strong increase	2
	Decreased tolerance	Moderate decrease	-1
Governance	More cooperation	Moderate increase	1
	Less cooperation	Moderate decrease	-1
Economy	Economic growth	Strong increase	2
	Economic stagnation	Moderate decrease	-1
Technology	Technological boom	Moderate decrease	-1
	Technological slump	No change	0
Climate change	Mitigation	No change	0
	Intensification	Moderate decrease	-1

Step 4: Assessment of interactions between domains

Being able to determine the direct impact of different drivers on migration offers guidance on what to expect in terms of migration pressure or demand following certain events or decisions. Importantly, however, one should not lose sight of the potential interactions that might exist between drivers. For example, one might expect that economic growth in European countries may form a strong incentive for migration from less developed countries to Europe. However, economic growth might also lead to increased automation, which might reduce the number of available jobs and hence the demand for migrants. To account for such interactions between drivers, in the next step, experts are presented with two matrices of drivers and their plausible futures. Based on these tables, experts are asked to indicate how change in each driver might bring about change in each of the other drivers. For example, experts are asked whether they expect accelerated aging in receiving countries to increase, decrease, or not significantly affect the level of tolerance towards migrants. By identifying how change in one domain may impact change in the other domains, and subsequently combining the results, we are able to determine the impact of each driver under different alternate futures.

Table 3.4 Example: Assessment of interactions between drivers

Driver	Future	Demography			Society			Governance			Economy			Technology			Environment		
		Aging			Tolerance			Cooperation			Economic			Technological			Global warming		
		Faster	Slower	No impact	Increased	Decreased	No impact	More	Less	No impact	Growth	Stagnation	No impact	Boom	Slump	No impact	Mitigation	Faster	No impact
Demography	A) Faster aging				✓			✓			✓				✓		✓		
	B) Slower aging																		
Society	A) Increased tolerance																		
	B) Decreased tolerance																		
Governance	A) More cooperation																		
	B) Less cooperation																		
Economy	A) Economic growth																		
	B) Economic stagnation																		
Technology	A) Technological boom																		
	B) Technological slump																		
Environment	A) Mitigation																		
	B) Faster global warming																		

Step 5: Estimating future migration levels taking into account interactions between drivers

Step 5 combines the results from steps 3 and 4 to provide estimates of future migration levels resulting from alternate futures in each domain, taking into account the possible interactions with the other five domains. In the example portrayed in Table 3.4, for instance, it is expected that faster aging will lead to increased tolerance of immigrants, more international cooperation, decreased economic growth, a technological slump, and slower global warming (see Table 3.4). In Table 3.3, each of these outcomes has been assigned values of change in migration of 2, 1, -1, 0 and 0, while population aging itself received a value of 2. Summing up, we obtain a value of 4 for the future "Accelerated aging" in the domain Demography. By repeating this exercise for each future in each domain, we gain insight into the direct and indirect impact of each future on migration (see the Appendix for a technical description of how steps 2 and 3 are combined).

Step 6: Combination of drivers into consistent narratives

As a final step, based on the results of the expert study, unique, internally consistent narratives can be formulated by choosing one pathway of change in each domain. For instance, we may consider a future with faster population aging, increased tolerance towards migrants, more cooperation between national governments, increased economic growth, a technological boom and an intensification of climate change. For this combination, expert scores from our example add up to a value of 18, which can be interpreted as a strong demand for migrants in European countries. A similar exercise can be performed to estimate the migration pressure in less developed countries, which may align (i.e., less developed countries experiencing increased migration pressure) or contrast with (i.e., less developed countries experiencing decreased migration pressure) the demand for migrants in Europe. This last step of formulating the migration scenario narratives will be executed in FUME deliverable D3.4.

Concluding remarks

To sum up, the proposed method goes beyond traditional migration scenario building methods by acknowledging that there is a large number of ways in which drivers can be combined with each other to create scenarios, thereby breaking away from the traditional two dimensional approach described in Chapter 2. As scenarios are quantified based on the drivers that compose them, each different scenario will in principle result in a different quantification of migration. This way of quantifying scenarios is less arbitrary than previous methods found in the literature, where high, medium and low pathways are assigned to migration scenarios only after the scenarios were built. A further advantage of our approach consists of its systematic way of determining the impact of – direct and indirect – change in specific domains on total migration. We consider this important as stakeholders generally wish to grasp how the policies or interventions they design may influence the future of migration.

Picture: Unsplash.com

4. Outcomes from the expert study

To build migration scenarios as outlined in Chapter 3, expert opinion was sought by means of a digital questionnaire regarding the demand for migrants in receiving countries, and the pressure to migrate in sending countries. As the receiving countries, we consider the member states of the European Union together with Iceland, Norway, Switzerland and the United Kingdom. As the sending countries, we consider all other countries except Canada, the United States, Israel, Australia, New Zealand, Japan and South Korea. For sake of simplicity, we refer to this group as less developed countries. Changes in migratory pressure and demand are assessed between the years 2019 and 2050, and in comparison to the period preceding the COVID-19 pandemic.

4.1 Data collection

The target group of the study consisted of scientific researchers working in European demographic research centers and university departments, and specializing in migration. An initial list of 39 experts was drafted based on the authors' network, and member lists of professional platforms like Population Europe and the IMISCOE network. Each expert was invited individually by email to participate in the study. The approached experts were also asked to provide names of others to contact in case they could not partake in the study themselves, which allowed to add seven more experts to the initial list. Experts who agreed to participate in the study received the survey in pdf format and were invited to return the completed questionnaire to the researchers by email.

In the first part of the questionnaire, experts were asked to rank the six drivers (demography, economy, society, governance, technology and climate change) according to their degree of familiarity with each of these drivers. The survey continued with a description of the six drivers and their corresponding alternate futures as described in Chapter 3 (see Table 4.1 for a brief overview). For five of the six drivers, separate futures were formulated with respect to the situation in Europe and less developed countries, whereas for the sixth driver – climate change – global changes were described. After reading the description of one of the drivers and the associated alternate futures, experts were asked to indicate for both futures the expected impact on migration pressure or demand on a 5-point Likert scale (-2= strong decrease; -1= moderate decrease; 0= continuation; 1= moderate increase; 2= strong increase). A Likert scale was used to ensure standardized responses, as the use of continuous scales capturing migration rates was shown to result in very high degrees of variation in previous research (Acostamadiedo et al., 2020). Experts were asked to assess the impact of each alternate future on migration under the assumption that the influence of other factors remained constant over time. They were given the opportunity to motivate their answers by means of text boxes directly below each assessment.

In the final part of the survey, experts were presented with two matrices of drivers and their plausible futures. On the basis of these tables, experts were asked to indicate how change in each driver might bring about change in each of the other drivers. For example, they were asked whether accelerated aging in Europe would lead to an increase or a decrease in the level of tolerance towards migrants, or whether it would not have a significant effect. Experts were asked to assess the impact of change in each driver on the other drivers considering one direction at the time, as the impacts may be unidirectional or bidirectional. The full questionnaire including the description of the drivers and their alternate futures, as well as the tables used to probe experts' judgement, are provided in the Appendix.

As a pilot study the survey was first administrated to a small subset (n=3) of the target group, to ensure that the drivers and the corresponding futures were well-defined, and that the tasks were correctly understood. While in person meeting could have generated useful discussion about the proposed drivers and the way they might change in the future, it was decided to operate completely remotely due to the COVID-19 pandemic. After final alterations based on feedback from the pilot study, the official data collection took place between March 4 2021 and April 17 2021. Of the 39 approached experts, 18 (46%) agreed to participate in the study. The returned questionnaires were stored and analyzed anonymously.

Table 4.1 Overview of domains and corresponding futures for European and less developed countries

	European countries		Less developed countries	
Domain	Future A	Future B	Future A	Future B
Demography	Faster ageing	Slower ageing	Accelerated transition	Stalled transition
Society	Increased tolerance	Decreased tolerance	Increased secularism	Increased conservatism
Governance	More cooperation	Less cooperation	Increased stability	Decreased stability
Economy	Economic growth	Economic stagnation	Economic growth	Economic stagnation
Technology	Technological boom	Technological slump	Technological boom	Technological slump
Climate change	Mitigation	Intensification	Mitigation	Intensification

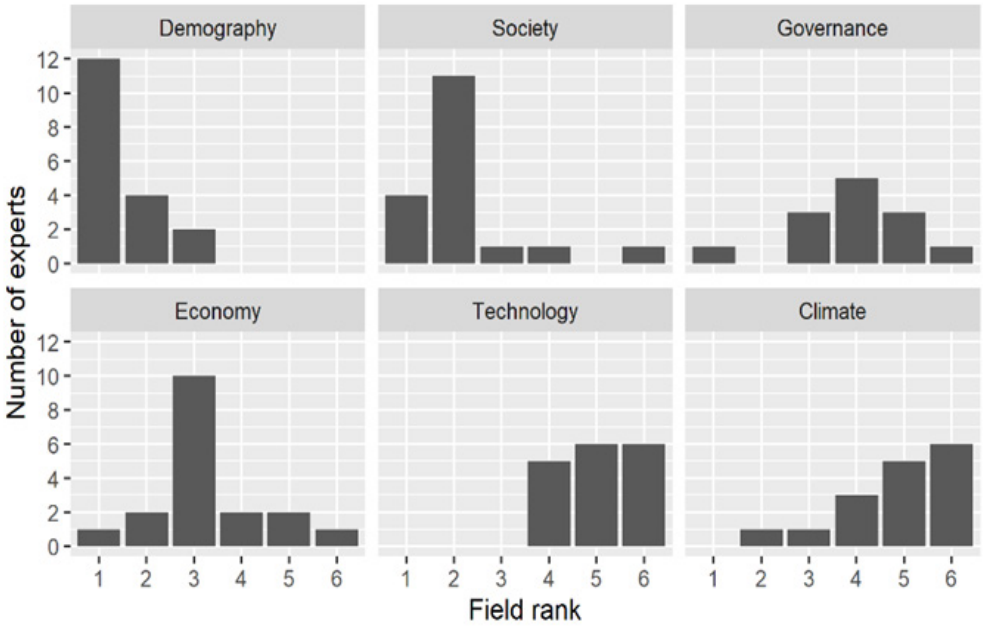
4.2 Descriptive statistics on the expert sample

Table 4.2 breaks down the expert count by country of professional affiliation. Experts from nine different countries were included, with the highest number based in the Netherlands. Figure 4.1 shows the number of times experts in the sample chose a certain field as the one they felt most experienced with (rank 1) to least experienced with (rank 6). Most experts identified "Demography" as their main field of expertise, "Society" as second and "Economy" as third. Compared to these three domains, experts on average indicated to be less familiar in the fields "Governance", "Technology" and "Climate".

Table 4.2 Expert counts by country of professional affiliation

Country	Count
Germany	2
Netherlands	6
France	1
Belgium	2
Spain	2
Finland	1
Poland	2
Estonia	1
Switzerland	1

Figure 4.1 Experts assignment of own fields of expertise



4.3 Results

Direct impact of change in the six drivers on migration

Figure 4.2 summarizes the experts' assessments of the impact of the alternate futures in each driver on migratory demand and pressure (see step 3 in Chapter 3). Results are presented for both contexts separately, where the left column contains results for Europe and the right one those for developing countries. Each row presents one of the futures in one of the six drivers. Answers are averaged among all respondents and are presented alongside their standard deviations. Values between -0.5 and 0.5 can be interpreted as denoting little expected change due to a specific driver, values between 0.5 and 1.5 as denoting a significant but moderate increase in migration pressure/demand, whereas values above 1.5 as denoting a strong increase. Values between -0.5 and -1.5 and below -1.5 can be interpreted the same way, but denoting a decrease.

As appears from Figure 4.2, the futures "Faster ageing" (future A, Demography) and "Economic growth" (future A, Economy) are expected to cause the largest increases in the demand for migrants in Europe. The futures "Decreased stability" (future B, Governance), "Intensification" (future B, Climate change) and "Stalled transition" (future B, Demography) are expected to lead to the largest increases in the pressure to migrate from developing countries. Below, we describe the distribution of experts' answers for each domain separately based on figure A2 in the Appendix, as well as the written motivations provided by some experts with their answers.

Demography

Context	Future	Direct impact on migration (SE)	Impact on other drivers (SE)
Europe	A: Faster aging	1.22 (0.55)	0.48 (0.61)
Europe	B: Slower aging	-0.11 (0.83)	0.32 (0.50)
Less developed	A: Accelerated transition	-0.11 (1.08)	0.77 (0.65)
Less developed	B: Stalled transition	1.00 (0.77)	0.67 (0.64)

Regarding the alternate futures for demography in Europe, experts generally seem to agree that faster aging (future A) will lead to higher labour demand in Europe, in turn leading to a greater demand for migrant workers. However, one of the experts argues that the demand for migrants in Europe will likely be constrained by political considerations and opposition to immigration. According to another expert, it should be noted that the scenario with faster aging (future A) is more probable than the one with slower aging (future B), which is generally associated with similar or decreased demand for migrants in Europe.

Regarding the futures for demography in less developed countries, stalled demographic transition (future B) is mostly associated with increased pressure to migrate to Europe. One expert argues that the pace of demographic transition in less developed countries will not directly alter the percentage of emigrants within the population, yet as the population will grow faster in case of a stalled transition, developed countries will nevertheless receive a greater number of immigrants under this scenario. Another expert reasons that stalled transition is likely linked to a collapse in development in less developed countries, which in turn may lead to crises and increased migration pressure. The expected impacts of a faster demographic transition (Future A) appear somewhat more mixed. Most experts either predicted similar migration pressure in case of accelerated transition, or a moderate to strong decrease.

Society

Context	Future	Direct impact on migration (SE)	Impact on other drivers (SE)
Europe	A: Increased tolerance	0.61 (0.61)	0.37 (0.44)
Europe	B: Decreased tolerance	-0.72 (0.75)	0.29 (0.41)
Less developed	A: Increased secularism	0.17 (0.79)	0.66 (0.42)
Less developed	B: Increased conservatism	-0.06 (0.64)	0.59 (0.50)

Regarding the futures in the societal domain, increased tolerance of migration in Europe (future A) is associated with a moderate to strong increase in the demand for migrants, whereas decreased tolerance (future B) is associated with a moderate decrease. One of the experts argues that even in case of opposition to migration, many sectors of the economy will simply need migrant workers due to labour shortages. According to this respondent, decreased tolerance would therefore at most have a temporary effect, whereas increased tolerance would not alter the demand for migrants much. Contrarily, another expert reasons that increased tolerance may foster a small increase in the demand for migrants in Europe, due to increased interest in other cultures. On the other hand, decreased tolerance because of increased xenophobia and nationalistic sentiments might lead to a strong decrease in the demand. According to this expert, decreased tolerance can be expected to have a stronger negative effect on the demand for migrants in Europe than increased tolerance would have a positive effect.

Regarding the impact of increased secularism (future A) versus conservatism (future B) on the pressure to migrate from less developed countries, the answers of our respondents are rather mixed. One of the experts explains to have selected a continuation of current trends, not because the changes related to these societal changes are considered inconsequential for migration pressure, but because diverging mechanisms may occur which work in both directions. Contrarily, another expert explicitly mentions to consider this factor as irrelevant for migration pressure. A third expert argues that both scenarios may lead to a moderate decrease in the migration pressure towards Europe: in case of increased secularism (future A), young people may feel safer in their own country and more willing to stay, whereas in case of increased conservatism (future B), conflicted relations with the United States and Europe together with more traditional values may discourage individuals to migrate to Europe.

Governance

Context	Future	Direct impact on migration (SE)	Impact on other drivers (SE)
Europe	A: More cooperation	0.29 (0.77)	0.55 (0.48)
Europe	B: Less cooperation	0.06 (0.54)	0.47 (0.46)
Less developed	A: Increased stability	-0.89 (0.58)	0.72 (0.51)
Less developed	B: Decreased stability	1.17 (0.71)	0.72 (0.42)

Regarding increased (future A) or decreased cooperation (future B) between national governments in Europe, a large share of the experts expressed to expect no direct impact on the demand for migrants. Some experts motivated their answer stating that they perceive this factor to have an effect on how easily migrants can legally enter European countries, yet not on the demand per se.

Regarding the level of political stability in developing countries, increased stability (future A) was mostly associated with a moderate to strong decrease in migration pressure to Europe, whereas decreased stability (future B) was generally expected to have the opposite effect. Two experts motivated their answers stating that future conflicts in developing countries may increase the number of refugees, yet that a large share of them will most likely end up in neighboring countries rather than in Europe.

Economy

Context	Future	Direct impact on migration (SE)	Impact on other drivers (SE)
Europe	A: Economic growth	1.17 (0.71)	0.75 (0.56)
Europe	B: Economic stagnation	-0.83 (0.71)	0.61 (0.59)
Less developed	A: Economic growth	-0.56 (1.15)	0.89 (0.56)
Less developed	B: Economic stagnation	0.83 (0.86)	0.72 (0.57)

In Europe, economic growth (future A) is expected to have a profound impact on the demand for migrants from less developed countries by increasing the availability of jobs. Economic stagnation (future B) or production processes being transferred to less developed countries on the other hand are expected to reduce the demand for migrants in Europe.

A majority of experts predicted economic growth (future A) in less developed countries to result in a moderate to strong decrease in migration pressure in these countries, yet the answers here were quite mixed. One expert argues that economic growth in less developed countries may transform low-income countries into middle-income countries, which potentially generate more emigrants to Europe. Yet according to another expert, increased opportunities closer to home may also increase the willingness to stay and work in the country of birth or neighboring countries, rather than to migrate to Europe. Addressing both mechanisms, a third expert argues that economic growth may enable more migration from the poorest countries, whereas it may turn several middle-income countries into countries of immigration. Economic stagnation (future B) was mainly associated with increased migration pressure to Europe. However, one expert argues that although economic stagnation in less developed countries may trigger emigration, especially from countries that already have diasporas in Europe, economic hardship is also likely to disable the poorest people to migrate.

Technology

Context	Future	Direct impact on migration (SE)	Impact on other drivers (SE)
Europe	A: Technological boom	-0.50 (0.86)	0.53 (0.45)
Europe	B: Technological slump	0.22 (0.65)	0.34 (0.44)
Less developed	A: Technological boom	-0.06 (1.16)	0.65 (0.57)
Less developed	B: Technological slump	0.33 (0.69)	0.46 (0.53)

Regarding the futures for technology in Europe, a technological boom (future A) was mainly associated with a moderate decrease in the demand for migrants from less developed countries, as processes of automation may help reduce certain labour shortages. One expert reasons that the need for high-skilled migrants will grow in case of a technological boom, yet that migrants from less developed countries may not be able to fill these gaps in the labour market. However, another expert argues that the application of technology in some sectors (e.g. care, personal services, health, education) has its limits, implying that some (migrant) labour demand is likely to continue in case of a technological boom. According to our expert sample, a technological slump (future B) may not alter the demand for migrants in Europe much. Some expected a moderate increase in labour demand compared to current levels, as there would still be a need for low-skilled workers in certain industries.

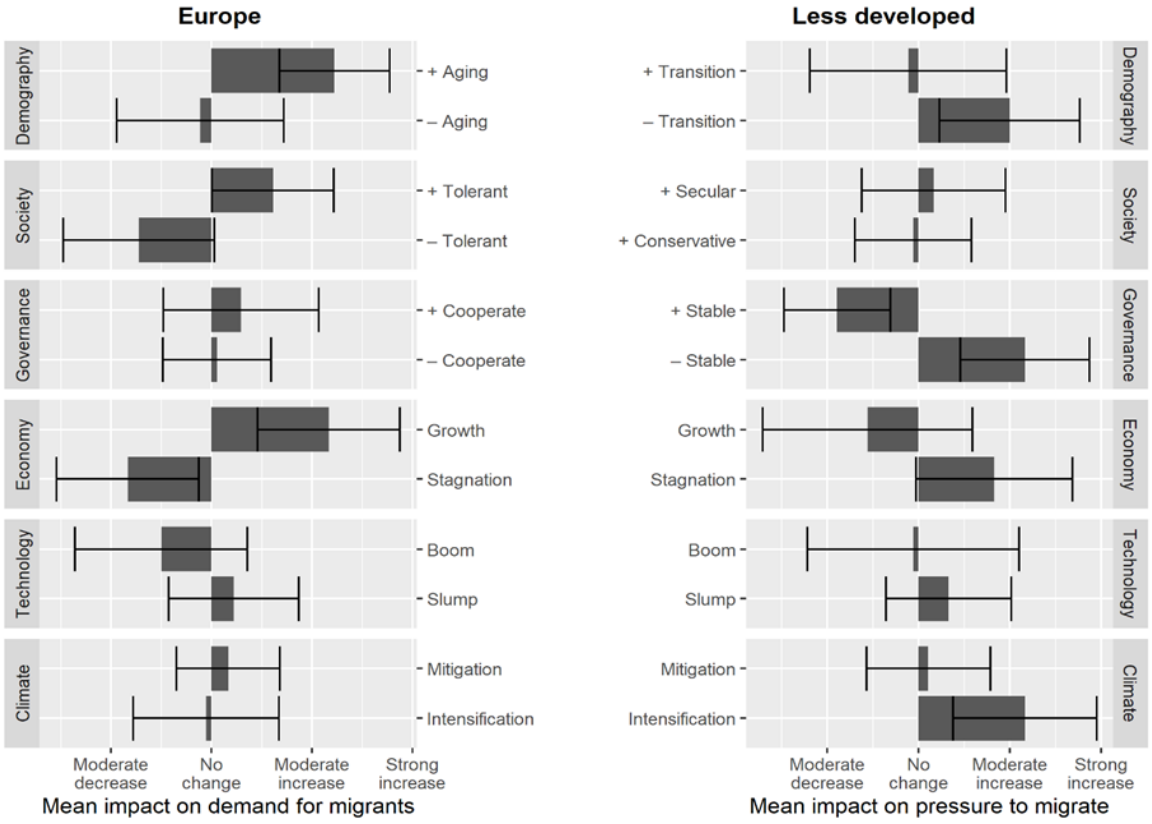
Experts appeared to hold different views regarding the impact of a technological boom (future A) on the migration pressure in developing countries. One expert reasons that a strong increase in educational attainment may result in more (circular) migration to Europe among skilled workers in less developed countries. However, another one argues that a technological boom in China and other Asian or African countries may redirect migrations flows from Europe to such countries, and hence could result in a moderate decrease in the migration pressure towards Europe. A technological slump (future B) in the same countries was mostly associated with a continuation of current migration trends, or a moderate increase in the migration pressure.

Climate change

Context	Future	Direct impact on migration (SE)	Impact on other drivers (SE)
Europe	A: Mitigation	0.17 (0.51)	0.40 (0.63)
Europe	B: Intensification	-0.06 (0.73)	0.55 (0.73)
Less developed	A: Mitigation	0.11 (0.68)	0.33 (0.54)
Less developed	B: Intensification	1.17 (0.79)	0.57 (0.53)

Most of our respondents expected the pace of global warming to have little impact on the demand for migrants in Europe, although some expected an intensification (future B) to decrease the demand for migrants in Europe. In less developed countries, on the other hand, most experts predicted Intensification (future B) to lead to increased migration pressure. Still, several experts also mentioned that climate refugees are more likely to end up in neighbouring countries, as they lack the means to migrate to Europe. One expert even stated that only a worst-case scenario, with increased desertification or flooding in countries in the tropical area of the world, might cause increased migration pressure towards Europe. A mitigation of climate change (future A) was mainly expected to result in a continuation of current migration pressure in less developed countries.

Figure 4.2 Exspert's assesment of the impact of change in each driver on migration demand and pressure [A]



[A] The full bars represent mean assessments among all experts, the error bars the associated standard deviation

Impact of change in each driver on the other drivers

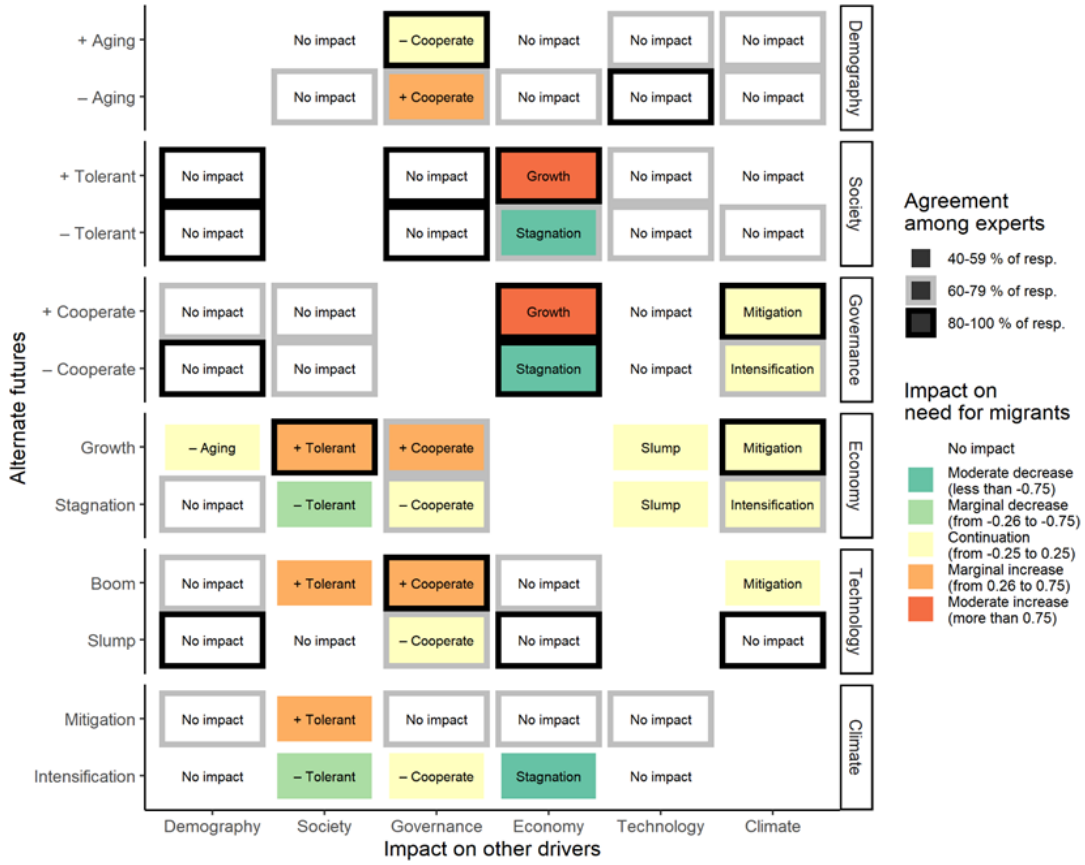
To assess possible interactions between drivers, in the final part of the questionnaire, experts were asked to indicate for each driver to what extent they expected the futures in this driver to cause change in any of the other five drivers (see step 4 in Chapter 3).

Figure 4.3 and Figure 4.4 present an overview of the experts' assessment of how each future in each driver might impact the other five drivers. In essence, these figures portray the most frequently selected answer by experts in our sample to the question "Do you expect that future A/B in driver X will lead to future A, future B or no significant change in driver Y?". The figures also provide information about the degree of agreement among experts regarding the direction of these impacts. While these figures only show the one future that was selected the most often, figures A3 and A4 in the appendix show the full detail of the frequencies with which each future was selected by the experts.

Starting with European countries (Figure 4.3), concerning the impacts about which experts agreed the most, the strongest impacts of change are expected with regards to the level of international cooperation, and the level of tolerance towards migrants. When we look at the impact of different futures on other drivers, we observe that the highest level of expert agreement is most frequently reached for combinations where no significant impact was expected. Still, some relevant impacts are identified. Economic growth (Economy, future A) is expected to mitigate climate change (Climate change, future A), and to increase tolerance towards migrants (Society, future A). Increased tolerance towards migrants was further expected to result in economic growth, indicating that expects predicted the causality between these factors to work in both directions. Increased international cooperation (Governance, future A) was expected to lead to economic growth (Economy, future A), whereas decreased cooperation (Governance, future B) would lead to economic stagnation in Europe (Economy, future B). Experts further expected increased international cooperation (Governance, future A) to mitigate global warming (Climate change, future A). Faster population aging (Demography, future A) was expected to decrease international cooperation (Governance, future B). Finally, a technological boom (Technology, future A) was expected to favor increased international cooperation (Governance, future A). The experts in the sample appeared to agree the least on the impact of climate change on other drivers.

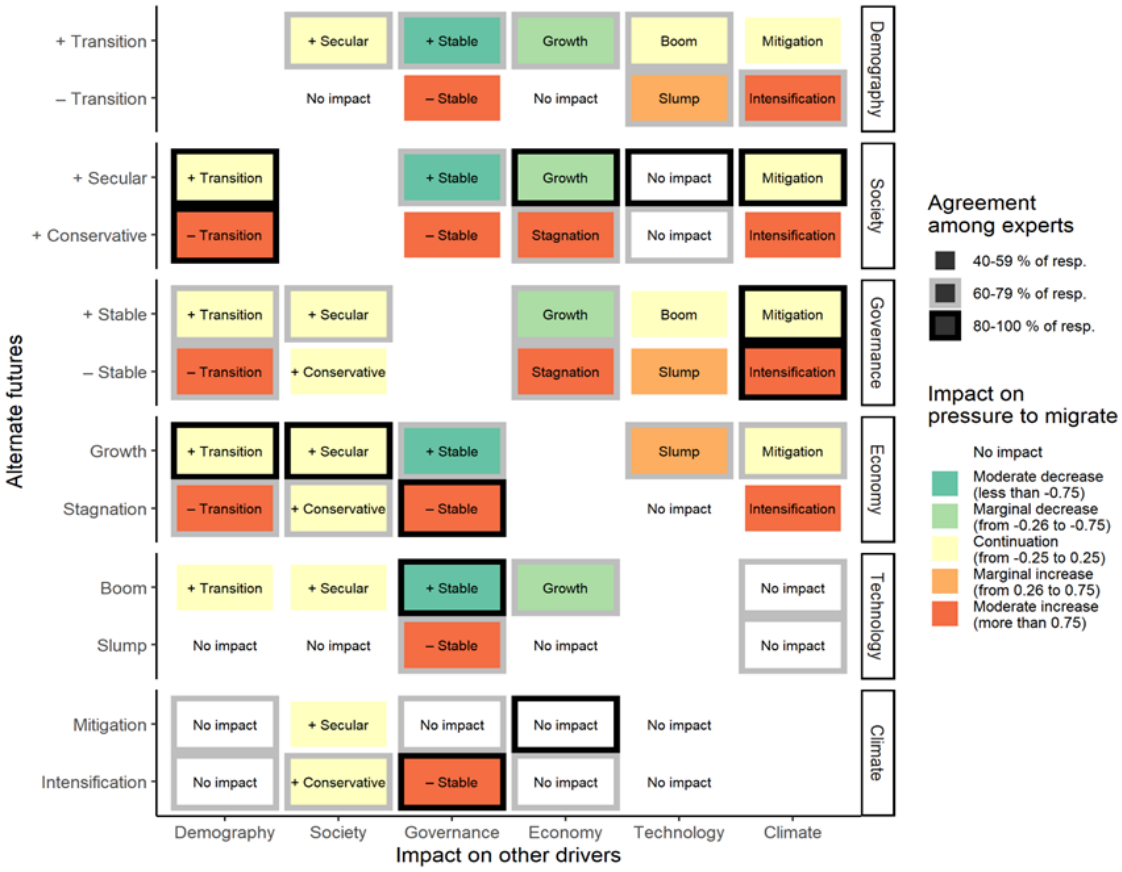
Figure 4.5 presents the overview of experts' assessment of the impact of change in less developed countries. As compared to the European context, alternate futures are more often expected to have a significant impact on the other drivers. A high level of agreement between experts was reached regarding futures in the societal domain. Specifically, our respondents expected increased secularization (Society, future A) to cause a mitigation of global warming (Climate change, future A), an accelerated demographic transition (Demography, Future A), and economic growth (Economy, future A). Increased conservatism (Society, future B) on the other hand was expected to result in a stalled demographic transition (Demography, future B). The experts expect change in the level of political stability in less developed countries to have a significant impact on global warming, with more stability (Governance, future A) leading to mitigation (Climate change, Future A), and less stability (Governance, future B) leading to an intensification of global warming (Climate change, Future B). In the economical domain, economic growth in less developed countries (Economy, future A) was expected to result in a faster demographic transition (Demography, future A) and increased secularization (Society, future A), whereas economic stagnation (Economy, future B) was expected to cause political instability (Governance, future B). Experts further expected a technological boom (Technology, future A) in less developed countries to lead to more political stability (Governance, future A), whereas intensified climate change (Climate change, future B) was predicted to lead to more political unrest in less developed countries (Governance, future B). For a few combinations of drivers, experts agreed that no significant impact could be expected. More specifically, no significant impact was expected of a future of mitigated climate change (Climate change, future A) on economic growth (Economy, future A) in less developing countries, and no impact of increased secularism (Society, future A) on a technological boom (Technology, future A). In general, the lowest degree of agreement between experts was observed in the demographic domain.

Figure 4.3 Overview of impact of alternate futures on other drivers and the resulting impact on the demand for migrants to Europe, with levels of agreement among experts[A]



[A] Rows represent alternate futures (left y-axis) in each driver (right y-axis), columns represent the impacted drivers. The direction of the impact is indicated in boxes which reflect the most commonly chosen answer among experts. Different levels of darkness of the frame around each box indicate the proportion of respondents who chose the indicated direction of impact. Colors show the size of the impact on migration of each future indicated in the boxes, averaged among all experts.

Figure 4.3 Overview of impact of alternate futures on other drivers and the resulting impact on the pressure to migrante from less developed countries to Europe, with levels of agreement among experts[A]



[A] Rows represent alternate futures (left y axis) in each driver (right y axis), columns represent the impacted drivers. The direction of the impact is indicated in boxes which reflect the most commonly chosen answer among experts. Different levels of darkness of the frame around each box indicate the proportion of respondents who chose the indicated direction of impact. Colors show the size of the impact on migration of each future indicated in the boxes, averaged among all experts.

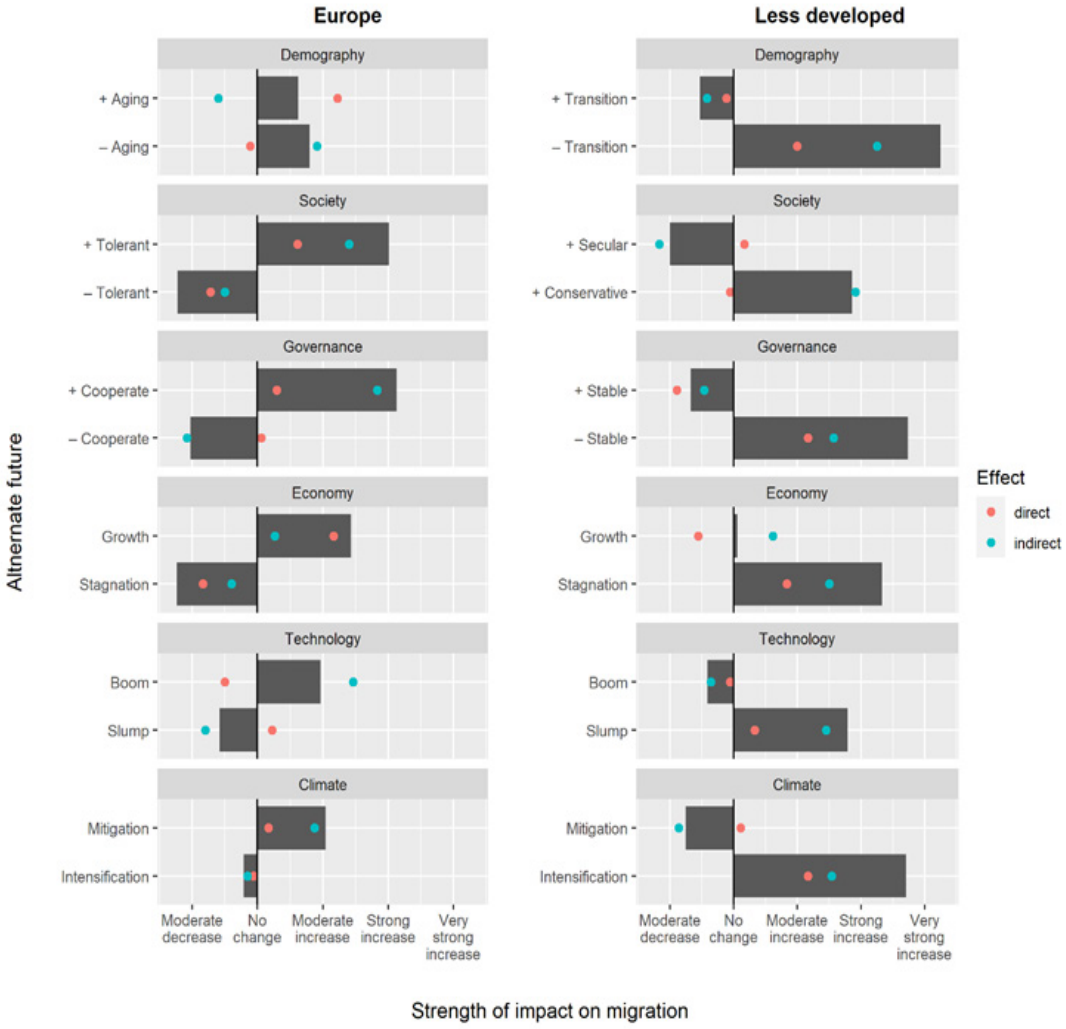
4.4 Accounting for indirect effects

As demonstrated above, the alternate futures in each driver may not only lead to direct changes in migration pressure or demand, but may also cause changes in each of the other five drivers, this way indirectly affecting migration. Thus, through their impact on other drivers, alternate futures may induce different changes in migration flows than when considered in isolation. Figure 4.5 shows the impact of such indirect effects, by summing up the expected impact of each future on the other five drivers, and multiplying this score with the expected impact of these drivers on migration pressure or demand (for more information on our approach, see step 5 in Chapter 3).

For instance, experts in our sample predicted economic stagnation in less developed countries to result in a stalled demographic transition, political instability and intensified global warming. Considered in isolation, economic stagnation was associated with a moderate increase in the pressure to migrate from less developed countries. However, a stalled demographic transition, political instability and intensified global warming were each also associated with increased migration pressures. Taken together, the direct and indirect impacts of economic stagnation may result in a strong increase in the migration pressure in less developed countries.
Concerning the demand for migrants in Europe, experts generally reached little agreement on significant interconnections between drivers (see Figure 4.3). Still, several futures with the strongest impacts on the demand for migrants mainly obtained this status because of indirect effect. Increased tolerance of migrants and increased international cooperation, for instance, are both associated with a strong increase in the demand for migrants in Europe, mainly because of their expected impact on economic growth. For other futures, the indirect effects counteracted the direct effects. In Europe, for instance, faster population was associated with a moderate increase in the demand for migrants, yet when taking indirect effects are taken into account, a small negative impact was predicted for this future.

For each driver in less developed countries, future B has the most potential to increase the pressure to migrate. Yet the figure also shows how in each domain this pattern is mainly driven by interactions between drivers. For example, experts generally expected that "Increased conservatism" (future B, Society) would have a small, negative direct effect on the pressure to migrate. However, they also expected this future to be associated with "Stalled transition" (future B, Demography), "Economic stagnation" (future B, Economy), and "Decreased stability" (future B, Governance), which are all expected to increase the pressure to migrate. Taking these indirect effects into account, the score of "Increased conservatism" on the pressure to migrate from less developed countries to Europe exceeds a value of 2, which indicates a strong increase. This pattern further indicates that, in the context of less developed countries, developments in different domains appear highly linked, and should be considered as such when formulating migration scenarios.

Figure 4.5 Impact on migrants of each alternate future in each driver, with and without interactions with other drivers, in Europe and less developed countries[A]



[A] The dots represent direct and indirect effects, the bars the sum of the two.

5. Conclusion

In demographic forecasting, international migration forms the most difficult component to predict. Part of this difficulty stems from the large uncertainty regarding the way that main drivers of migration will evolve in the future, as well as the complex interactions between them. To address these difficulties, scenario approaches are increasingly being used to discuss the future of migration. In these approaches, storylines are developed that describe distinct future pathways of change in a given set of drivers, and offer different views on the implications for migration. Yet while useful for stimulating forward thinking, previous scenario approaches seldom allowed to determine the strength of the influence of different drivers, and how they may reinforce or cancel out each other.

In Chapter 2 of this report, we presented an overview of existing migration scenarios from the literature. As this overview demonstrated, previous studies often distinguished four scenarios using two axes: (1) economic development, ranging from economic convergence to economic divergence; (2) international cooperation, ranging from unilateralism to multilateralism. Yet, like we showed by positioning existing scenarios alongside these two axes based on a close reading of their narratives, most scenarios were located on the diagonal from unilateralism with economic divergence to multilateralism with economic convergence (see figure 2.1). This distribution resulted from the absence of scenarios that combined strong economic convergence with low international cooperation on the one hand, and strong economic divergence with high international cooperation on the other. In other words, while often portrayed as independent dimensions in previous migration scenario studies, in practice economic development and international cooperation seem to some extent interconnected. After all, it is hard to picture a future where global economic disparities are overcome while countries become more and more focused on their own successes.

Such interconnectedness between the drivers of international migration, and the disability of previous migration scenario building exercises to deal with it in a systematic way, formed a main motivation to develop a new strategy for migration scenario building. In Chapter 3 we outlined the principles of our strategy, which introduced insights from other disciplines with a long tradition of scenario building. As a first step, we identified drivers in six domains that previous studies considered crucial for the future of migration, and as such form important building blocks in scenario development: demography, economy, technology, society, governance and climate change. In a next step, for each domain, we formulated two contrasting pathways of change (or 'alternate futures') for both sending and receiving countries. Third, by means of a survey, expert opinion was sought regarding the impact of the alternate futures on the demand for migrants in receiving countries, and the pressure to migrate in sending countries. Fourth, the expert sample was asked to identify potential interactions between the six drivers.

In Chapter 4, the results of the expert study were presented. According to our expert sample, economic growth and faster population aging can be expected to cause the largest increases in the demand for migrants in Europe. Decreased political stability, an intensification of climate change and stalled demographic transition were expected to lead to the largest increases in the migration pressure in developing countries. These findings indicate that global developments like global warming may cause asymmetric outcomes in terms of migration pressure in less developed countries and demand for migrants in Europe. Moreover, the findings show that, across regions, different drivers may be crucial for the future of migration, depending on whether these regions concern sending or receiving contexts. This insight is crucial when formulating migration scenarios, as previous studies often considered similar factors as the main drivers of change in future migration flows in both sending and receiving countries. Interestingly, experts in our sample overall expected the largest changes in migration to result from developments in sending countries, rather than from developments in Europe as a receiving context.

Yet perhaps the most important insight from the expert study concerns the interconnectedness between drivers. In Europe, more cooperation between national governments is expected to lead to economic growth, which in turn would have a strong positive impact on migration. Decreased international cooperation on the other hand is expected to cause a stagnation of economic growth, which in turn was predicted to lead to a decreased demand for migrant workers. Thus, confirming our observations from Chapter 2, our expert sample agreed that international cooperation and economic development should not be treated as independent dimensions influencing the future of migration, but that they are highly intertwined and should be considered as such when formulating migration scenarios. This outcome highlights the importance of formulating new migration scenarios which take interconnections between drivers into account to derive more consistent, coherent and insightful narratives.

The interconnection between economic growth and international cooperation in Europe was not the only link experts agreed on. For instance, economic growth in less developed countries was predicted to set in motion a process of secularization, which in turn was expected to result in an accelerated demographic transition, slower global warming and further economic growth. For some drivers, the causality appeared to run both ways. For instance, in less developed countries, an intensification of climate change was expected to result in political instability, and vice versa. In Europe, economic growth was seen as both a driver and an outcome of increased tolerance of migrants. For other drivers, causal relations were expected in one direction only. For instance, population aging was expected to reduce international cooperation while a technological boom was expected to increase it, yet no significant impact was expected of international cooperation on population aging or technological development. Such findings on the interconnections between drivers thus not only provide valuable insight on relevant and plausible combinations of future developments in different domains, but also help in formulating causal pathways from the present to the future.

Based on results from the expert study, it is possible to estimate how alternate futures in each domain may affect future migration levels while taking into account the possible interactions with the other five domains. In Chapter 4, we presented an overview of the direct and indirect effects of several plausible developments on the future of migration. In Europe, the level of economic growth was expected to have the largest direct impact on the demand for migrants, whereas the level of tolerance towards migrants and international cooperation were expected to influence the demand for migrants mostly indirectly, and especially through the assumed impact on economic growth. In the context of less developed countries, the strongest increases in the pressure to migrate were mainly predicted to result from a combination of unfavourable developments in each of the six domains. As a next step, based on these outcomes, unique, internally consistent narratives can be formulated by combining pathways of change from each domain. These scenarios will be presented in a subsequent deliverable (D3.4).

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Appendix

A1. Notation for combining results from steps 3 and 4

Step 5 consists in combining results from steps 3 and 4 to provide estimates of future migration levels resulting from changes in each driver, taking into account the possible interactions with the other five drivers. Let us denote the drivers and their associated directions of change d11, d12, d21, d22, …, d61, d62 where the first subscript refers to one of the six drivers and the second subscript refers to one of two directions of change. In step 3, each driver and its two associated directions of change are assigned a migration quantity q11, q12, …, q62. In step 4, each driver and its two associated directions of change are matched with directions of change in the other five drivers, resulting in the 12 x 6 matrix

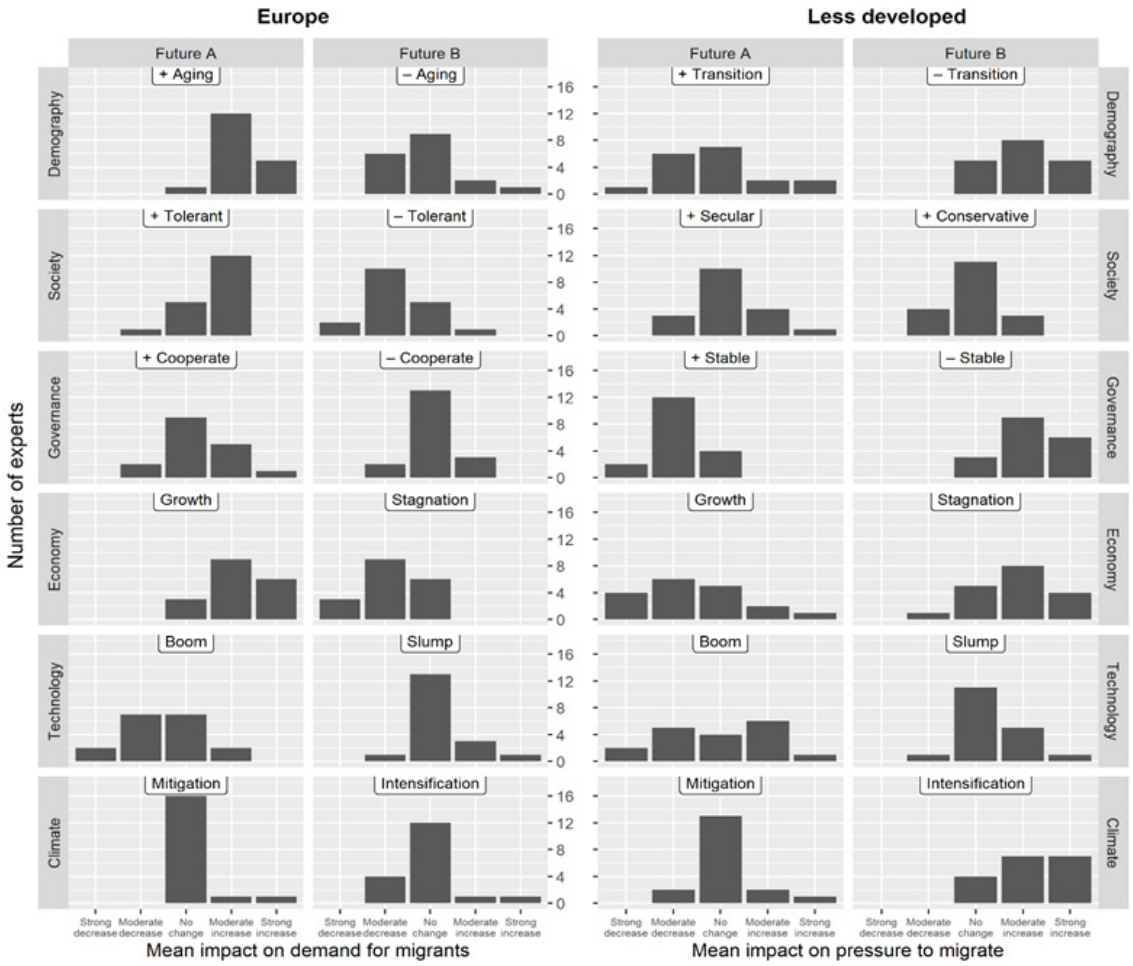
$$\begin{bmatrix} d_{11}\, d_{2j} & \dots & d_{6j} \\ d_{12} d_{2j} & \dots & d_{6j} \\ \dots & & \dots \\ d_{62} d_{2j} & \dots & d_{6j} \end{bmatrix}$$

In step 5, each element in the matrix is mapped to its corresponding value identified in step 3, resulting in the matrix of values

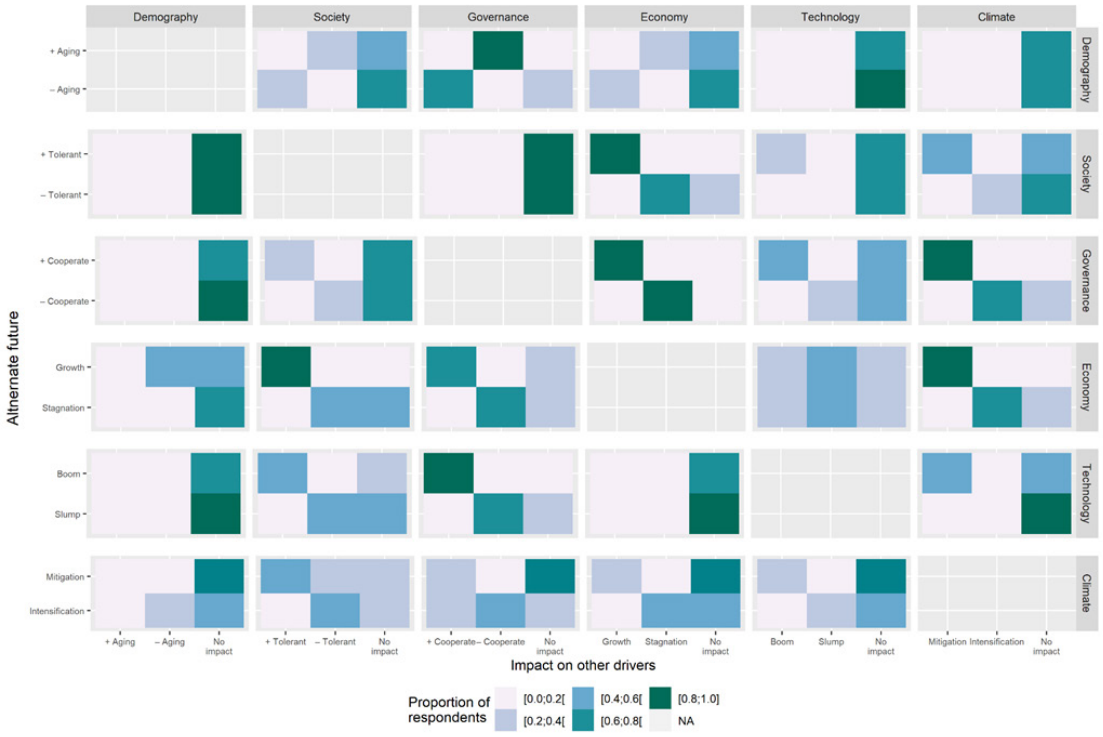
$$\begin{bmatrix} d_{11}\, d_{2j} & \dots & d_{6j} \\ d_{12} d_{2j} & \dots & d_{6j} \\ \dots & & \dots \\ d_{62} d_{2j} & \dots & d_{6j} \end{bmatrix}$$

The sum of each row provides the impact of driver di and its direction of change j (column one of the first matrix) on future migration, taking into account the interaction between drivers.

A2. Experts' assessment of the impact of change in different drivers on the pressure to migrate from developing countries (left panel) and the demand for migrants in Europe (right panel)

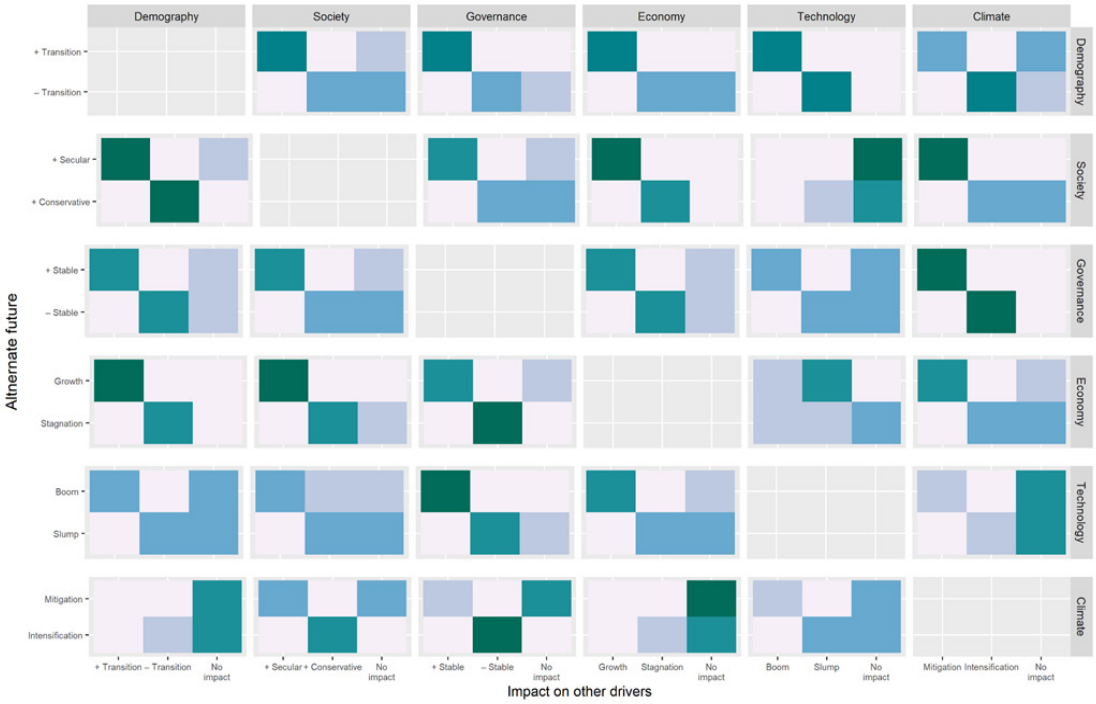


A3. Impact of change in each driver on other drivers, European countries[A]



[A] Colors translate the number of experts (discrete categories, see legend) that considered that change in a given driver (y axis) would impact another driver in a given way (x axis)

A4. Impact of change in each driver on other drivers, less developed countries[A]



[A] Colors translate the number of experts (discrete categories, see legend in figure A3) that considered that change in a given driver (y axis) would impact another driver in a given way (x axis)