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Futures Studies and the Study of Migration: Analytical Frameworks and Methodological Possibilities

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Abstract

Amid accelerating technological change, environmental instability, demographic shifts, and geopolitical volatility, migration scholarship increasingly confronts deep uncertainty that challenges retrospective explanations and short-term projections. This review positions futures studies as a coherent, interdisciplinary field that explores multiple possible futures and examines how present actions shape long-term trajectories. Drawing on a systematic survey of futures literature and its migration applications, the paper clarifies the analytical foundations of futures studies. It then maps key methodologies such as horizon scanning, Delphi, scenario planning, visioning, backcasting, causal layered analysis, and narrative foresight. The review further examines how these approaches complement forecasting by addressing structural uncertainty, nonlinear dynamics, and contested values in migration governance. Finally, it offers a comparative framework distinguishing open-ended interpretive approaches from structured analytic methods, with guidance on method selection aligned to research aims (exploratory, anticipatory, evaluative) and decision contexts (policy design, strategic planning, community engagement). Our analysis reveals that futures studies can move migration research beyond reactive forecasting toward anticipatory, participatory, and ethically grounded strategies that embed plural realities and migrant agency. We conclude by calling for migration scholarship to adopt futures methodologies that not only explore what is likely, but also what is possible, desirable, and just, ensuring that research informs inclusive, forward-looking policy under conditions of profound uncertainty.

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1. Introduction: Why Futures Studies Matter

Across the social sciences and policy domains, the future has increasingly become a focal point of inquiry. Accelerating technological change, environmental instability, demographic transformation, and geopolitical volatility have heightened uncertainty about long-term trajectories (Maru et al., 2025). This has exposed the limitations of analytical approaches that primarily rely on retrospective explanations or short-term projections. In this context, futures studies have emerged as a distinct interdisciplinary field concerned not with predicting what will happen, but with systematically exploring how different futures might unfold and how present-day actions can shape long-term possibilities. Futures studies provide conceptual and methodological tools for engaging with uncertainty as an inherent condition of social life rather than a technical problem to be resolved (Magruk, 2025). This field emphasizes the openness of social systems, the plurality of possible futures, and the roles of human agency, values, and imagination in shaping social trajectories (Bell, 2003; Voros, 2017).

Various sectors, including government, public policy, business, economics, technology, engineering, and management, utilize futures studies. Despite its relevance to domains characterized by complexity and long-term change, futures studies remain unevenly integrated across many areas of social research. Migration research serves as a notable example. Much of the existing migration research is oriented toward explaining past movements or projecting near-term trends, relying on forecasting approaches that assume relative stability in underlying relationships. However, there is currently a disconnect between the complex, mixed, and constantly evolving nature of migration flows and the new global migration governance framework, which aims to impose clarity, certainty, regularity, and order (Maru et al., 2025). In contexts characterized by structural uncertainty, nonlinear dynamics, and conflicting values, maintaining these assumptions is becoming increasingly challenging. Futures methodologies offer expansive approaches for predicting and speculating about the future, considering both well-known megatrends and less recognizable potential game-changers (OECD, 2020). This literature review positions futures studies as a coherent analytical field and examines its methodological repertoire in depth. By centring futures studies as a field of inquiry and treating migration as a site of application, the review aims to demonstrate how futures-oriented approaches can facilitate more reflexive, anticipatory, and normatively explicit research in contexts of profound uncertainty.

The review unfolds in four main stages. First, it outlines the analytical and epistemological foundations of futures studies, clarifying its core concepts. Second, it develops a structured discussion of key futures methodologies. Third, the review specifically addresses migration research, examining how futures methodologies can complement existing studies in this field. Finally, it provides a comparative overview that distinguishes between open-ended, interpretive futures approaches and more structured analytic methods, clarifying when and for what research aims each is most appropriate.

2. Futures Studies as an Analytical Field

2.1. Defining Futures Studies

Futures Studies is an interdisciplinary field that systematically explores possible, plausible, and preferable futures. It is often referred to as futures research or prognostics, and those who work in this field are often referred to as futurists (Bell, 1996). Instead of predicting a single future

trajectory, the field of futures studies emphasizes the existence of multiple futures and acknowledges the inherent uncertainty in projections (Puglisi, 2001).

The field investigates how societies envision and shape the future, employing various approaches that focus on anticipation, human agency, and the long-term consequences of current decisions. In futures scholarship, anticipation and human agency are recognized as distinct yet complementary concepts. Anticipation involves using imagined futures to inform present-day thinking, while human agency pertains to the intentional ability of individuals to make choices and take actions toward their desired goals (Armanto, 2024).

Futurists create scenarios to assist individuals and organizations in evaluating strategies, identifying opportunities, and adapting to challenges (Coates, 1996). Additionally, speculative and futurism movements enhance this work by envisioning desirable futures.

2.2. Core Characteristics:

Futures studies share several core analytical commitments. First, they emphasize the plurality of futures, distinguishing between possible futures, which may include novelty and discontinuity; plausible futures, constrained by existing knowledge and structures; and preferable futures based on normative judgments about desired outcomes (Bell, 2003; Voros, 2017). This differentiation encourages analysts to separate feasibility from desirability, acknowledging that any future representation reflects specific assumptions and values (Puglisi, 2001). Second, futures studies regard uncertainty as fundamental rather than exceptional. Rather than attempting to reduce uncertainty through prediction, these methodologies explore various forms of uncertainty, including epistemic uncertainty from incomplete knowledge and aleatory uncertainty tied to contingency and human agency (Bijak & Czaika, 2023). This perspective shifts focus from prediction to preparedness, learning, and adaptability. Third, futures studies foreground human agency and choice, asserting that futures are shaped by decisions, imaginaries, and collective action (de Haas, 2021). Anticipatory knowledge empowers individuals and institutions to act in the present with an awareness of long-term implications, even without certainty (Bell, 2003). Finally, futures studies are inherently normative. By engaging with preferable futures, they raise important questions about values, power, and legitimacy. Scholars in this field emphasize the importance of clearly articulating their values and examining which visions of the future are privileged or marginalized (Inayatullah, 2008; Hichert & Schultz, 2024).

2.3. Historical Development and Intellectual Traditions

Concepts of time and the future are present in every known society (Bell, 1996). However, the establishment of futures studies as a distinct field began in the mid-twentieth century, influenced by post–World War II reconstruction, Cold War geopolitics, and increasing concerns about technological advancements.

Curry (2021) analyzes the history of future-oriented practices and distinguishes between two strands of scenario practice and their associated methods. The first strand of futures research is the North American positivist tradition, linked to military strategy and systems analysis, starting with RAND in 1946 and extending to institutions like the Department of Defense and the Global Business Network (GBN) in the 1990s. This strand has developed methods such as scenario writing, systems modeling, technological forecasting, and the Delphi technique, focusing on strategic planning under uncertainty based on rational decision-making (Hichert and Schultz,

2024, p. 331). In contrast, the European approach is intertwined with philosophical and social sciences, originally addressing ethical questions and peace-making post-World War II. Key figures include Gaston Berger (1957), Johann Galtung (1967), Warren Ziegler (1978), and Elise Boulding (1989), contributing to innovations such as Causal Layered Analysis, and visioning. This strand has also fostered related initiatives like the Seeds of the Good Anthropocene[1] and emerging methods in design and experiential futures (Hichert and Schultz, 2024, p. 331).

Furthermore, from a cultural standpoint, futurist movements have had a significant impact on the arts and culture in both the 20th and 21st centuries. Notable examples include Afrofuturism[2] and Indigenous Futurism[3]. These movements utilize science fiction, fantasy, and art to challenge oppression and envision diverse futures, often drawing on ancestral knowledge. Afrofuturism, for example, has transitioned from a speculative artistic movement into a critical practice that questions the negative portrayals of Africa and individuals of African descent (Babalola, Adesoji, and Akpomuje, Paul, 2025, p. 108).

Throughout the history of futures studies, methods have evolved from a focus on forecasting and prediction to more flexible, participatory, and varied approaches (Khakee, 1999; Immordino et al. 2025). Researchers and policy-makers alike increasingly recognise the importance of engaging diverse perspectives in global migration research (Escribà-Folch et al., 2022; Hurxthal, 2024; Kosec & Carrillo, 2025; Sritharan et al., 2025).Ultimately, all futures studies methods are still in use for various purposes, applied to a broad range of issues and often integrated into new processes and procedures (Coyle, Crawshay, and Sutton, 1994; Hichert and Schultz, 2024).

2.4. Futures studies methodologies

Futures Studies employs a wide range of methods drawn from the humanities, social sciences, and sciences, as Bell notes: “the scientific, scholarly, and rhetorical methods of any discipline… might be – and sometimes are – used by futurists” (Bell, 2003, p. 241). Common techniques include Time Series Analysis, Delphi, Simulation, Global Modeling, and Environmental Scanning, some adapted from other fields and others, like Delphi, developed specifically for futures research (Puglisi, 2001). Method choice depends on research goals, context, and resources rather than inherent superiority.

Futures methods literature spans two domains: academic scholarship, which emphasizes epistemology, and practitioner-oriented “gray literature,” which focuses on usability (Hichert & Schultz, 2024). Foundational compendia such as *Futures Research Methodology* (Glenn & Gordon, 2009), the APF Methods Anthology (Curry, 2015), and *The Knowledge Base of Futures Studies* (Slaughter & Hines, 2020) illustrate this pluralism. Across these frameworks, a recurring insight is that methods are not interchangeable; selection should reflect analytical purpose,

[1] https://goodanthropocenes.net/

[2] Mark Dery coined the term “Afrofuturism” in 1993 in his interview article “Black to the Future” According to Babalola and Akpomuje, “Afrofuturism challenges the notion that African futures are elsewhere and in later time but instead situated them in the lived experiences, communal organizing, and quotidian practices of Africans that depict hope, joy, resistance” (108).

[3] Grace Dillon introduced the concept of Indigenous Futurism, drawing inspiration from Afrofuturism, to characterize creative works that focus on Indigenous communities and incorporate their traditional wisdom within a futuristic context (Bratland, 2021).

uncertainty type, time horizon[4], stakeholder context, and resources (Popper, 2008). Robust inquiry often combines methods into portfolios rather than relying on a single technique (Magruk, 2011).

Popper warns against choosing methods based on fashion or convenience, advocating a question-driven approach: start with what the inquiry seeks to achieve, whose perspectives matter, and what uncertainties are at stake (Hichert & Schultz, 2024). This reinforces that futures methodologies are context-sensitive tools, not one-size-fits-all. To support this, toolkits from organizations such as IFTF, California 100, and the School of International Futures help practitioners select appropriate methods (Hichert & Schultz, 2024, p. 333).

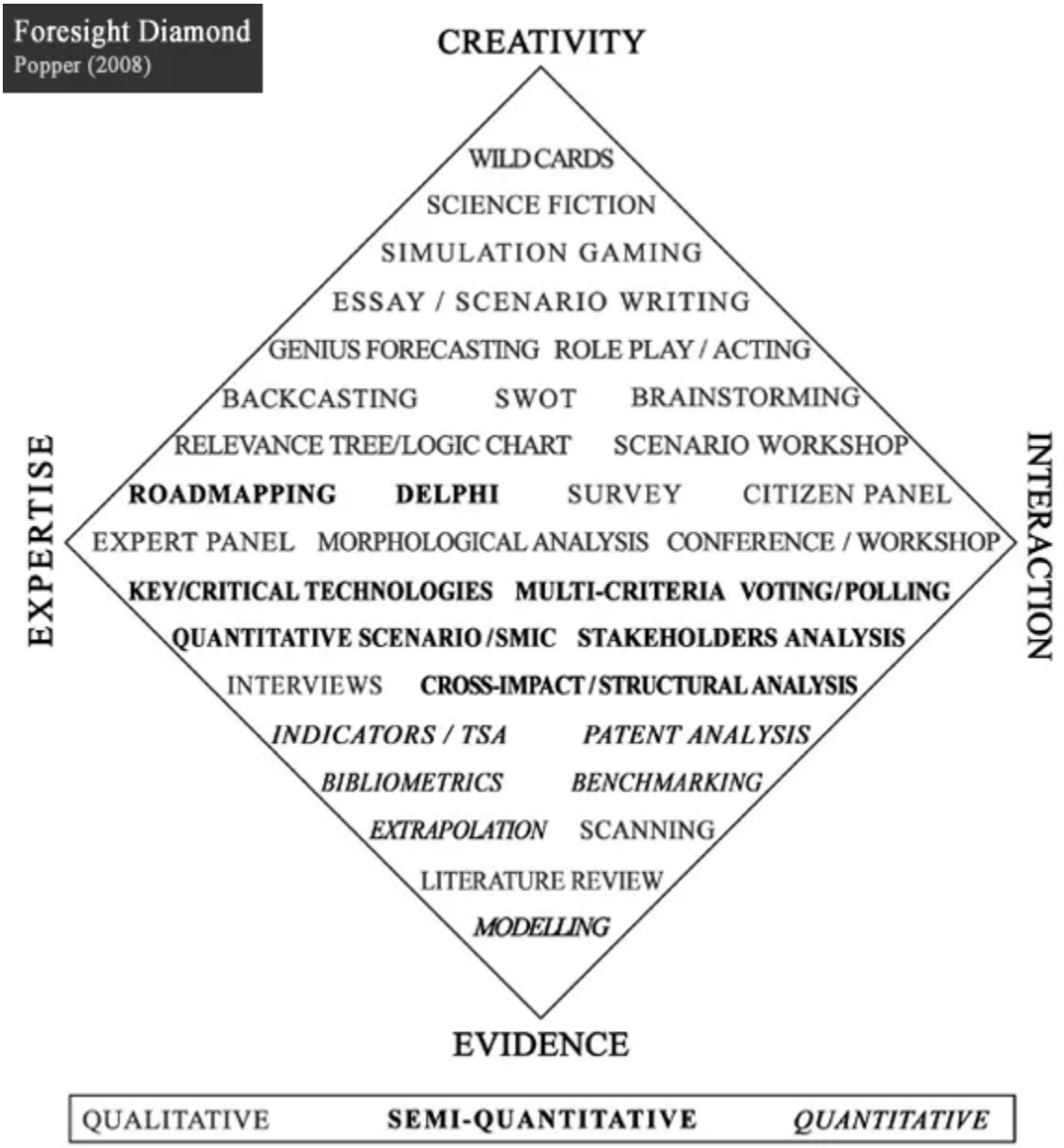
2.5. Classification of methods

Futures studies employ diverse methods to address uncertainty and varied research purposes. This section focuses on conceptual frameworks that classify these methods rather than practical selection principles. Poli (2018) advocates for futures-specific taxonomies, distinguishing approaches by how they engage with the future: (1) present-focused, (2) linking past/present to future (alpha), and (3) backcasting from future to present (beta). He proposes a core toolbox—including causal layered analysis, scenarios, environmental scanning, Three Horizons, visioning, and backcasting—to strengthen methodological identity and futures literacy.

Popper's foresight diamond (2008) offers another organizing principle, mapping methods along two axes: creativity versus evidence and expertise versus interaction. This framework differentiates individual analytical approaches from participatory processes that leverage collective intelligence (**Figure 1**).

[4] In future studies, a time horizon refers to the specific period (such as 10, 20, or 50 years) that researchers focus on to explore possibilities, develop strategies, or make predictions (Brier, 2005)

Figure 1: Popper's foresight diamond



Futures research spans quantitative techniques (e.g., trend analysis, modelling) and qualitative approaches (e.g., scenario planning, visioning), as well as explorative, normative, participatory, imaginative, and critical methods (Puglisi, 2001; Inayatullah, 2007; Voros, 2017). Quantitative methods emphasize numerical rigour, while qualitative approaches integrate judgment and speculation. Explorative studies examine plausible futures based on current trends, whereas normative studies aim to shape desired futures. Participatory methods engage stakeholders to enhance relevance, while imaginative and critical approaches interrogate assumptions and worldviews. Distinctions also exist between structured and unstructured processes, and between hard and soft methods (Bell, 1996).

These classifications are reflected in applied research. For example, Sohst, de Valk, and Melde (2020), in their systematic review of migration studies, distinguish between migration forecasts and migration scenarios. Forecasts use quantitative models to estimate future migration flows, while scenarios adopt qualitative, narrative-based approaches to explore multiple possibilities and foster flexible thinking. This illustrates how method choice depends on whether the goal is predictive precision or exploratory insight.

To navigate this diversity, scholars propose conceptual frameworks. Voros (2006) differentiates surface-level trend analysis from deeper approaches that explore myths and metaphors. Poli (2018) emphasizes the ontology of anticipation, arguing that futures methods should be classified by how explicitly they treat the future as an open, constructed domain. This review now turns to key methods without adhering to any single classification scheme.

3. Key Futures Methods: Purposes and Applications

Futures studies use current knowledge and logical inference to explore how present trends might unfold, examining possible (might happen), probable (likely to happen), and preferable (should happen) futures (Bell,1996). Although the future cannot be known with certainty, we can still envision alternative paths that could emerge from today's realities. Within this field, forecasting and foresight are core approaches. While they were once treated as interchangeable, they differ in important ways. This section will explore various forecasting and foresight methods, as well as other tools used to examine potential future scenarios. It is structured to lead the reader from quantitative, data-driven approaches for anticipating the future to qualitative, exploratory, and participatory foresight methods. The organization moves systematically from techniques that project trends forward to those that envision alternative futures, providing a comprehensive understanding of the tools available for future-oriented research.

3.1. Forecasting methods

Forecasting is a method for predicting future events or conditions by analyzing patterns and trends in historical and current data. It uses mathematical techniques and statistical models to generate predictions (Caballar & Stryker). The primary aim is to assess probabilities in stable systems, often resulting in point estimates or ranges based on continuity assumptions. By projecting past data forward, forecasting helps users understand present conditions and make predictions about the future, typically offering upper and lower limits. However, when systems undergo significant changes, it is important to verify whether the underlying assumptions remain valid.

In public policy, forecasting is used to estimate future conditions based on historical trends and statistical models. This is particularly relevant in migration research, which predicts migration

flows, population sizes, and labour market needs (Bijak, 2011). Forecasting methods are shifting from static approaches to dynamic, data-rich models. For example, the HumMingBird project's DynENet framework uses machine learning to enhance asylum forecasts by integrating real-time Earth observation and GDELT data. This allows for responsive policy adaptation to economic stress, political instability, or environmental hazards, making migration forecasting a continuous and adaptive decision-making tool (Qi et al., 2024).

Forecasting helps with short-to medium-term planning but struggles with structural uncertainty and rapid social change. In migration, forecasts are unreliable because they rely on incomplete data and many heterogeneous drivers, and their reliability drops when politics or aspirations shift (Arango, 2000; Brücker & Siliverstovs, 2006; de Valk et al., 2022; Fontana et al., 2025). During the COVID-19 pandemic, forecasters across disciplines were reminded how difficult it was to predict and prepare for major shocks. In migration forecasting, the crisis showed that disruptions can significantly affect international mobility, altering and even reversing established global trends and patterns (Sardoschau, 2020). 3.1.1

3.1.1. Predictive modelling

Predictive modelling is a statistical technique that uses historical data to forecast future events. It creates a mathematical model using relevant input variables to generate predictions for better decision-making. This technique is utilized across various industries for tasks such as fraud detection, customer segmentation, disease diagnosis, and stock price prediction. By examining both historical and current data, predictive models help organizations make informed decisions, identify opportunities, minimize risks, and optimize resources (NetSuite; Qlik). An example of predictive modelling is the Mixed Migration project funded by the Danish Research Council. This project develops and tests a predictive model using surveys conducted with individuals involved in mixed migration flows in East Africa, as well as over 11,000 participants worldwide. By analyzing interrelated datasets and applying machine learning techniques, the project aims to create new tools for analyzing mixed migration patterns (DRC) (Sardoschau, 2020).

3.1.2. Bayesian statistical modelling

Bayesian statistics is a method for statistical inference based on Bayes' theorem, which updates the probability of a hypothesis as new data is available. This approach is valuable for Bayesian forecasting, especially when data is limited, hierarchical, or requires sequential updates, leading to its increased use in machine learning, epidemiology, econometrics, and marketing (Nobel, n..d.; Sardoschau, 2020). In migration studies, Bayesian methods address challenges like volatility and data scarcity that hinder traditional forecasting. Hierarchical and autoregressive Bayesian models enable better uncertainty quantification and allow researchers to leverage information across countries when national data is weak. For instance, Azose and Raftery's global hierarchical model (2015) improves long-term migration projections by pooling data from 197 countries, while Bijak and Wiśniowski (2016) illustrate how expert-elicited priors enhance short-term forecasts. Most Bayesian migration forecasting models rely on historical patterns, minimizing data requirements and assumptions about the future. However, this limits their ability to incorporate key migration drivers, such as policy changes or economic shocks, which can restrict their effectiveness in accounting for structural shifts or emerging disruptions (Sardoschau, 2020).

3.1.3. Gravity models

Gravity models are a class of quantitative models that explain the movement of people or goods between locations by drawing an analogy to Newtonian gravity. Research in this area began with Tinbergen in 1962 as an application of social physics and gained further interest in migration-related issues due to the increasing availability of data (Beine, Bertoli, and Fernández-Huertas Moraga, 2016). The underlying intuition behind the model is that larger masses attract each other with a force proportional to the sum of their masses, while distance tends to repel them (Sardoschau, 2020, pp.20).

In the context of trade, the gravity relationship has been identified with GDP, indicating that the higher the GDP of two countries, the more they engage in trade. Conversely, greater distance tends to reduce trade flows (Head and Mayer, 2018). Similarly, in migration studies, data show that countries that are more appealing to migrants, as indicated by higher GDP, experience increased migration flows. On the other hand, physical distance is associated with lower migration flows (Sardoschau, 2020). Gravity models assume that migration flows increase with the "mass" or size of both the origin and destination areas, while decreasing with distance or other separations. These models focus on the factors influencing migration, incorporating environmental, political, social, microeconomic, macroeconomic, and geographic variables. This approach allows for more nuanced hypotheses regarding the drivers of migration flows, but it also requires extensive data and necessitates strong assumptions about how these factors will evolve over time. In practice, gravity models identify the elements that shaped historical migration patterns and project their future trajectories to predict changes in migration behaviours (Sardoschau, 2020).

3.1.4. Structural equation models (SEMs)

Structural equation models (SEMs) are statistical frameworks that estimate multiple, theoretically specified relationships, both directional and reciprocal, within a single integrated system. They differ from gravity models by testing how variables interact simultaneously rather than one equation at a time. This flexibility makes SEMs well-suited to uncovering causal mechanisms in complex settings but also requires substantially larger sample sizes, often several hundred to several thousand observations, along with strong structural assumptions that can introduce bias when misspecified (Sardoschau, 2020). Recent applications in the migration literature illustrate both the potential and limitations of SEM-based forecasting. Dao et al. (2018) develop a global SEM linking migration to wage disparities, amenities, migration costs, skill heterogeneity, and production technologies. Their model incorporates feedback effects such as migration inflows altering labor supply and thereby wage differentials, relationships that cannot be captured in simple regression models. Through calibration and backcasting, Dao et al. show that their SEM reproduces historical bilateral migration patterns and enables long-term projections under different demographic and policy scenarios (Sardoschau, 2020).

3.1.5. The Delphi technique

The Delphi method is a structured communication technique originally developed by the RAND Corporation in 1964 to forecast the impact of technology on warfare. It involves gathering expert opinions through multiple rounds of anonymous questionnaires, with the goal of achieving consensus or identifying areas of disagreement while minimizing the influence of dominant individuals or group pressure. Over time, the Delphi method has evolved into several variants,

including classical Delphi, Real-Time Delphi (RTD), policy Delphi, fuzzy Delphi, and exploratory Delphi, each tailored to different research needs such as consensus-building or exploring dissent. Real-Time Delphi (RTD), pioneered by Theodore Gordon in 2009 and used by The Millennium Project, allows continuous expert input via an online questionnaire, updating results in real time. This encourages participants to refine their responses based on group dynamics (Nhokovedzo). Participants complete an online questionnaire, with real-time updates of both numerical and qualitative results as responses come in. They can revisit the survey anytime to see their answers alongside the group's evolving perspectives, allowing them to revise their inputs based on collective feedback (The Millennium Project, 2026). Future-oriented research often combines Delphi results with scenario analytics or horizon scanning to

Developing models for technology and innovation over the next 5 to 10 years is essential. Futures methodologies, such as horizon scanning and Delphi processes, assist in identifying emerging risks and weak signals that may not be evident in traditional datasets, yet have significant implications for mobility systems. Weak signals are often defined as early indicators of potential, albeit unverified, changes or as initial signs of emerging issues that typically lack visibility (Gilmore et al., 2023). These can include early indicators of climate-induced displacement, shifts in public attitudes toward migration, or technological advancements affecting recruitment and border management. By integrating such anticipatory practices, migration research can shift from crisis response to proactive governance.

3.1.6. Trend Analysis

Trend analysis focuses on recording and predicting future behaviours based on past data, rather than finding out why those behaviours occurred. Trend analysis is primarily descriptive, though it can support simple forecasting (e.g., projecting a linear trend forward). The process starts with collecting quantitative data over a specific period, which is then analyzed to find patterns. Makridakis and Wheelwright (1989) identify four main types of patterns: horizontal (where data remains stable over time, showing no trend), trend (where a clear increase or decrease can be seen), cyclical (where regular variations occur), and seasonal (where changes relate to specific seasons or days). This model relies on historical data and can help decision-makers understand their environment and how it might change. However, it does not consider how different decisions could impact that environment, as it is based only on past data. Trend analysis is not only a forecasting method; it also serves as a strategic foresight tool that examines changes in society, the economy, and technology. Its goal becomes to identify developments early, assess their potential impact, and make informed decisions based on this analysis (Institute for Innovation and Technology, n.d.).

3.1. Foresight methods

Foresight differs from forecasting in that it does not aim to predict outcomes, but to explore how futures might unfold across a range of plausible alternatives. Its purpose is to support preparedness, strategic learning, and adaptive decision-making under conditions of persistent uncertainty. Foresight draws on systems thinking and integrates multiple methods, including horizon scanning, scenario development, and participatory workshops (Khakee, 1999; Miller, 2018; Immordino et al. 2025). Rather than seeking to predict what will happen, foresight is concerned with exploring how the future could unfold across a range of plausible alternatives. Its purpose is to examine the forces shaping a system, the ways those forces may interact over time, and the challenges and opportunities that could arise as a result. By situating current decisions

within a broader landscape of possible futures, foresight provides a strategic context for policy development, long-term planning, and vision-building. This orientation makes foresight particularly valuable for complex policy domains, where uncertainty is not a temporary obstacle to be reduced but a persistent condition that must be navigated (Policy Horizons Canada).

In practice, foresight is used to support anticipatory governance by enabling organizations to prepare for emerging issues rather than reacting to past conditions (OECD, 2022). Governments and other forward-looking institutions use foresight to inform policy design, strategic decision-making, and evaluation processes by considering how problems may evolve. The longer temporal horizon associated with foresight allows institutions to identify early signals of change, test the resilience of strategies under different future conditions, and reduce the risk of unintended consequences. Importantly, the objective of foresight is not accuracy in prediction but robustness in strategy, ensuring that policies remain viable across multiple plausible futures (UNDP, 2022).

Recent migration scholarship has increasingly recognized the limits of relying on forecasting alone for anticipating future mobility dynamics (Ashkapova & Zulfiu Alili, 2025). Migration governance requires a broader anticipatory toolkit that combines forecasting with foresight approaches capable of engaging uncertainty, structural change, and contested policy objectives (Fontana et al., 2025). Migration systems are shaped by interacting demographic, environmental, technological, and political processes that unfold across different temporal horizons, making purely trend-based projections insufficient for long-term decision-making. In addition, migration relates to human agency and human behaviour that is inherently hard to predict. In this context, foresight methods are presented not as replacements for forecasting but as complementary approaches that enable policymakers to explore how migration futures may evolve under conditions of disruption, surprise, and normative contestation (Fontana et al., 2025).

Fontana et al. (2025) place foresight within a growing ecosystem of anticipatory practices related to migration policy. This includes techniques such as horizon scanning, scenario development, and early-warning systems. However, they caution against using these tools without critical evaluation. Rather than guaranteeing accurate predictions, anticipatory approaches are designed to enhance preparedness, facilitate strategic learning, and promote institutional reflexivity. Formal foresight methods have been developed to provide systematic and rigorous frameworks for futures exploration. Many of these methods originated in technological forecasting or business strategy, but they have increasingly been adapted for public policy contexts. One such example is horizon scanning as practiced within government. In Canada, Policy Horizons Canada, the federal centre of excellence in foresight, uses horizon scanning to systematically identify emerging trends, weak signals, and potential disruptions relevant to public policy. This approach exemplifies applied foresight by combining structured analysis with participatory processes (Khakee, 1999; Immordino et al. 2025) to explore how social, technological, economic, and environmental changes may interact over time.

Overall, foresight provides a complementary approach to forecasting by shifting attention from prediction to preparedness. When applied rigorously, it enables policymakers and researchers to engage uncertainty constructively, connect present decisions to long-term implications, and develop strategies that remain effective under changing future conditions.

3.1.1. Horizon Scanning

Horizon scanning is a core foresight practice, which includes the systematic identification of emerging trends, weak signals, and potential disruptions (Cuhls, 2019; Wintle et al., 2020).

Scanning widens situational awareness by directing attention to developments that may not yet be prominent but could have significant future impacts. Organizing heuristics such as STEEP (Social-Technological-Environmental-Economic-Political factors) or PEST (Political, Economic, Social, and Technological factors) frameworks are often used to structure scanning across social, technological, economic, environmental, and political dimensions. These frameworks do not constitute futures methods in themselves but function as analytical aids that ensure broad and systematic coverage of drivers shaping future change.

Effective scanning provides the evidence needed for insightful foresight, which then explores how these weak signals interact with the system, potentially creating surprises. Horizon scanning is commonly employed in strategic planning and policy development to anticipate and prepare for future challenges and possibilities. It is important to note that many individuals and organizations focus their scanning efforts on the expected future. This includes high-probability, high-impact developments that could disrupt their operations, which are often covered in the media and part of ongoing public and policy discussions (Policy Horizons Canada, 2024). While organizations are generally effective at addressing these issues, they often overlook developments perceived as low-probability or unknown, even though these could have significant impacts.

In migration research, foresight and horizon scanning are increasingly recognized as complements to forecasting, particularly in policy contexts concerned with long-term governance (Fransen & de Haas, 2022). However, their use remains uneven and often constrained by predictive logics. Futures studies emphasize that foresight is most effective when embedded as an ongoing analytical capacity rather than deployed as a one-off exercise.

Policy Horizons Canada utilizes the Horizon Foresight Method to tackle emerging challenges in Canadian society and the complexities and uncertainties surrounding the future, affected by climate change, socio-economic shifts, and geopolitical tensions. This initiative includes environmental scanning, trend analysis, scenario building, strategic implications, and action planning (Policy Horizons Canada, 2024).

3.1.2. Environmental scanning

Environmental scanning is a method aimed at gathering background information to forecast or develop scenarios. Unlike horizon scanning, which seeks out "weak signals" and emerging trends to anticipate long-term disruptions (5 to 20 years or more), environmental scanning focuses on current and near-term factors (1 to 5 years) for immediate strategic adaptation. This makes environmental scanning more forward-looking and often utilized in government foresight.

The primary objective of environmental scanning is to provide the necessary knowledge to define key survey areas and select relevant issues. The process enables data collection, identifies past and present trends pertinent to the survey, and estimates the potential values of indicators associated with specific events. Moreover, it establishes criteria relevant to the organization, allowing individuals to discern valuable information, knowledge, and insights from the multitude of daily "signals" (Slaughter, 1999, p. 442).

3.1.3. Scenario Planning

Scenarios are narratives or stories that illustrate how the future might unfold based on the interaction of various driving forces and uncertainties. They serve as powerful tools for exploring

a range of possible futures and their implications (Voros, 2017). Scenario planning can also be referred to as scenario-building or scenario-writing. While scenario planning is often considered a single tool, the literature shows that there are significant variations in the approaches used. van Notten, Rotmans, van Asselt, and Rothman (2003) define scenarios as "...descriptions of possible futures that reflect different perspectives on the past, present, and future." Bishop, Hines, and Collins (2007) point out that while a strict definition would limit “scenarios” to narrative accounts of alternative futures, in practice a broader, more inclusive use dominates: scenarios can portray possible futures in any medium—whether as narratives, evocative visuals, prototypes, improvisational performances, or outputs from systems models (Curry & Schultz, 2009). Notably, Curry and Schultz (2009) demonstrate that applying different scenario methods to the same issue and data can produce substantially different results. The scenario-building process typically involves identifying key variables and uncertainties, creating narrative stories around these elements, and analyzing the potential outcomes. (Curry & Schultz, 2009; Amer, Daim, & Jetter, 2013).

3.1.3.1. Application in Migration Studies

In migration research, scenarios have been used to explore potential future pressures or governance challenges. David de Smalen and Ides Nicaise (2024) designed a scenario-based study to assess how big data can inform migration analysis and policy (de Smalen & Nicaise, 2024). The exercise used iterative, participatory scenario-building to explore plausible EU migration futures for 2035 rather than predict exact outcomes. Three scenarios were constructed to stress-test migration flows, policy responses, and measurement approaches, especially the usefulness of big data. They found that traditional data cannot track migration in real time, that cooperation across the EU and internationally will be essential, and that big data can support more inclusive integration policies. They recommended securing access to metadata from social media and telecom companies and developing big-data tools for early-warning systems, migrant integration, and monitoring public attitudes to enable proactive, evidence-based policy (de Smalen & Nicaise, 2024).

Another example is the *Tomorrow’s World of Migration and Mobility* (2017), which exemplifies how scenario building is used to study migration: a multi-stakeholder, 18-month initiative (IOM, Friedrich-Ebert-Stiftung, Global Futures) run in 2016–2017 to explore plausible migration futures to 2030 beyond short-term crisis frames and unreliable linear forecasts. Four independent teams composed of civil society, academia, migrants, and participants from multiple regions developed contrasting scenarios through workshops, webinars, and interviews: My Country First! (extensive borders, reduced mobility), World on Fire (state collapse, survival migration), Opening Roads (inclusive, sustainable development recognizing migration’s benefits), and Technopoly (IT-planned/controlled systems with lower demand for migrant labour). Instead of making predictions or promoting a single institutional vision, the publication used narrative scenarios to test policies under uncertainty, treating the future as varied and unpredictable, and helping policymakers prepare for mixed, overlapping outcomes (Friedrich-Ebert-Stiftung, Global Future, & IOM, 2017).

3.3 Visioning

Visioning is a futures studies method focused on creating desirable futures grounded in shared values, ethics, and collective aspirations. Unlike scenarios, which explore plausible outcomes, visioning emphasizes what should happen and seeks to guide present decisions and strategic

actions. Typically conducted through workshops, narrative exercises, and design practices, it produces outputs such as vision statements, narratives, and visual representations of alternative social systems. Imaginative techniques, including guided envisioning, are often used to stimulate creative thinking (Curry, 2021).

Visioning aims to shape rather than predict futures, distinguishing it from forecasting. It fosters collective reflection and shared purpose (Curry, 2021). By engaging diverse participants, visioning harnesses collective knowledge for innovation and strategy. Research shows that collaborative visioning helps organizations anticipate change and formulate strategic intentions (Abrahamsen, Halinen, & Naudé, 2023).

Visioning is often paired with backcasting to connect aspirations with actionable plans. Structured processes typically include articulating goals, clarifying meanings, specifying indicators, immersive exercises, mapping constraints and opportunities, consensus building, and assigning strategies (Dugan, 2003; Boulding, 2003). These steps transform preferred futures into practical roadmaps, making visioning a powerful tool for strategic foresight and participatory governance.

3.4. Causal Layered Analysis (CLA)

Causal Layered Analysis (CLA), developed by Sohail Inayatullah, explores social issues across four depths to broaden present understanding rather than predict outcomes: litany (surface headlines and crisis talk), systemic causes (structures, policies, histories), worldviews/discourses (assumptions and perspectives), and myths/metaphors (deep stories that shape legitimacy) (Inayatullah, 1998, 2008). For example, a headline like “AI Will Take Over All Our Jobs” sits at the litany level, while deeper layers reveal the systems, ideologies, and metaphors (e.g., invasion/flood) that make certain futures seem natural and others unthinkable (Janus & Wallenborn, 2022).

By moving across layers, CLA explains why some solutions gain traction and others remain politically unfeasible, complementing traditional policy analysis by exposing how dominant framings stabilize particular futures (Inayatullah, 1998). It is widely used in futures studies, strategic foresight, and policy workshops on governance, education, and environmental change, often combined with scenario building and narrative foresight to challenge assumptions and craft alternatives (Inayatullah, 1998, 2008; Inayatullah, 2007; Milojević & Inayatullah, 2015).

CLA has been applied to research on refugees and borders. Inayatullah's work explores how migration is framed by narratives, institutional arrangements, and cultural myths (Inayatullah, 2008; 2013; 2015). His 2003 study on global migration identified various drivers, including economic structures and cultural ideologies, offering deeper insights for migration researchers. CLA's potential lies in uncovering the complex factors influencing migration decisions, which surface-level analyses might miss.

3.5. Backcasting

The past significantly influences future-oriented activities but often goes unnoticed by futures scholars and practitioners (Bendor et al., 2021). Backcasting is a strategic method that starts with a desirable future and works backward to identify the necessary steps to achieve it. Unlike forecasting, which relies on existing trends, backcasting emphasizes normative goals and the

actions required to reach them. Dortmans highlights its effectiveness in uncertain contexts with long time horizons, where forecasting may fall short (2005).

Backcasting aims to translate values and long-term aspirations into actionable pathways by identifying milestones, institutional changes, and decision points, thus connecting future visions with present policy choices. It encourages organizations to move beyond incremental adjustments toward more transformative futures while managing risks (Dortmans, 2005). As a crucial element of applied foresight in strategic planning, backcasting aids in identifying necessary milestones and partnerships for long-term development outcomes, as noted in the United Nations Development Programme (UNDP)'s foresight toolkit. This approach helps clarify the changes needed in the present and at intermediate stages to achieve envisioned futures, considering institutional capacity and governance constraints (UNDP, 2025). Dortmans (2005) argues that backcasting is a valuable tool for analyzing migration landscapes because it helps bridge the gap between desired futures and projected futures. By identifying intermediate states and transition pathways, backcasting enables organizations to plan strategically, anticipate decision points, and remain adaptable as new knowledge emerges.

3.6. Past-casting and Recasting

Bendor, Eriksson, and Pargman (2021) introduce past-casting and recasting as frameworks with which the past can be brought into futures studies.

3.1.4. Recasting

Recasting is a process that considers non-factual past events as points of divergence in history. These events could have led to alternative present situations and, consequently, different futures. A non-factual past event is a potential historical turning point that could have changed the present but did not occur (Bendor, Eriksson, and Pargman, 2021). While forecasting primarily examines future possibilities from the perspective of the present, recasting looks at future possibilities through the lens of the past. It aims to identify "roads not taken" that might have altered the current situation. In this way, recasting involves a twofold movement through time: first, it revisits a point in the past where a hypothetical change, guided by an "if" scenario, could have altered the course of reality. Then, it progresses forward to explore the potential consequences stemming from this changed starting point (Prendergast, 2019; Bendor, Eriksson, and Pargman, 2021).

3.1.5. Pastcasting

Pastcasting is the speculative exploration of potential pathways that could have led to an alternative, preferred, non-factual present. Each of these pathways represents a possible historical bifurcation point from which the present might have developed differently. Unlike forecasting and recasting, which project a range of potential outcomes from a single event or decision in the present or past, pastcasting operates similarly to backcasting. It works backwards from a preferred alternative present to identify a range of possible junction points and the consequent pathways (Bendor, Eriksson, and Pargman, 2021).

3.7. The Three Horizons framework

The Three Horizons framework was developed in *Three Horizons: The Patterning of Hope* (Sharpe, 2013). It conceptualizes systemic change as the interaction between three coexisting horizons rather than as a linear progression over time. Horizon One (H1) represents the dominant system in the present, including prevailing institutions, policies, and assumptions. Horizon Two (H2) captures emerging innovations, experiments, and transitional initiatives that seek to modify or challenge the dominant system. Horizon Three (H3) represents transformative future possibilities that embody fundamentally different values, logics, or ways of organizing social and political life (Sharpe et al., 2016). Crucially, the framework highlights that elements from all these horizons exist simultaneously, though they vary in prevalence (Legacy Leadership Lab).

The Three Horizons framework is increasingly used in migration foresight to help policymakers shift from reactive, crisis-driven approaches to more anticipatory and long-term strategies. It is well-suited for handling the uncertainties and complex drivers affecting migration governance. This framework allows for analysis of how current systems may become misaligned with future challenges and identifies emerging transitional arrangements and desirable alternative futures.

In North Macedonia, the framework supported the United Nations Development Programme (UNDP) in aligning foresight activities with the country's Migration Policy Resolution (2021–2025), facilitating a shift from reactive to proactive policy design. Demos Helsinki's "From Fortress to Foresight" applied the framework to European migration governance, categorizing dominant securitized approaches as Horizon One, emerging innovations as Horizon Two, and resilience-oriented long-term models as Horizon Three (Demos Helsinki, 2020). Overall, the Three Horizons framework effectively bridges immediate challenges and long-term goals, promoting more reflective and transformative migration governance approaches.

3.8. Roadmapping

A roadmap is a collaborative foresight process that establishes a comprehensive set of plans and strategies aimed at achieving future goals over a long-term horizon of 5 to 15 years. Unlike simple forecasts, roadmaps are developed through the collaboration of multidisciplinary experts and consider uncertainties and challenges alongside probable futures (Acceleration Studies Foundation). They complement other strategic planning methods, such as backcasting and the Three Horizons framework, by providing detailed timelines, actors, dependencies, and decision points. This approach fosters coordination by linking goals to milestones and responsibilities across various sectors, without assuming a single outcome. Additionally, design roadmapping, as described by Montgomery (2022), transforms speculative futures into structured pathways, allowing for exploration of how change occurs while remaining adaptable to uncertainties, creating frameworks that enable ongoing reflection and adjustment to evolving conditions.

In migration governance, roadmapping connects analyses of migration drivers to coordinated pathways, facilitating collective anticipation and policy coherence. Roadmapping serves as an effective tool for migration policy, linking long-term demographic and labour market trends to coordinated action. Ahlqvist, Valovirta, and Loikkanen (2012) highlight its participatory nature, integrating foresight and stakeholder engagement to align short-term actions with long-term goals. Gerdsri et al. (2022) show how environmental scanning and participatory scenario-

based roadmapping can create strategic roadmaps, which can similarly be applied to demographic, economic, and policy trends for future migration systems and infrastructure.

3.9. Future Wheels

The Futures Wheel, developed by Jerome C. Glenn in the 1970s, is a useful tool for visualizing and analyzing the consequences of change (Global Leaders Institute, 2024). This brainstorming technique helps assess the impacts of specific trends or events through a mind-mapping approach.

To construct a Futures Wheel, a trend or event is placed at the center of a page, with spokes drawn outward to represent primary impacts, followed by secondary and tertiary consequences (Visual Paradigm). Criticism is excluded to encourage idea building and capture significant surprises (Glenn & Gordon, 2009). Involving a diverse set of stakeholders enhances the identification of unintended outcomes (Hichert and Schultz, 2024, p. 342).

As a structured foresight method, the Futures Wheel aids in decision-making and strategic planning by facilitating holistic thinking about how one change can affect various domains. It systematically explores cascading consequences and clarifies downstream implications, making it particularly valuable in today's dynamic migration landscape and for analyzing trends and innovations.

4. Futures Studies and Migration Research

Migration is a longstanding and multidimensional human phenomenon shaped by economic, social, political, and environmental forces, and it continues to evolve alongside global transformations in mobility, governance, and opportunity. Against this backdrop, migration remains highly contested, and despite efforts to forge a common approach through the Global Compact on Refugees (GCR) and the Global Compact for Safe, Orderly and Regular Migration (GCM), there is still no shared vision of the future. Crucially, "migration and mobility are strongly influenced, 'shaped' by context, and only to a lesser degree are they 'shapers' of context" (Friedrich Ebert Stiftung, Global Future, & IOM, 2017). Policymakers and researchers have therefore spent decades trying to predict migration to anticipate and manage demographic change (de Valk et al., 2022). The need for timely, well-informed responses has only intensified as new crises and opportunities emerge (Rischke & Ruhnke, 2024). Yet, as Triandafyllidou (2022) argues, contemporary migration governance is often inscribed within a "risk society" paradigm that treats mobility as a problem to be anticipated and controlled, thereby encouraging crisis-driven forecasting efforts, such as those linked to the production of "risk scenarios" and the prediction of flow size and direction. This orientation can narrow governance to reactive management and undermine recognition of migration as a "messy," complex, uncertain, and partially improvisational phenomenon that cannot be fully predicted, regulated, or controlled (Triandafyllidou, 2022). Accordingly, this literature review treats forecasting as one tool among many, situating predictions within explicitly contextual analyses and using them to inform adaptable, forward-looking policy design.

Migration studies have incorporated quantitative and qualitative approaches, each importantly serving different yet often complementary purposes (Ghio et al., 2026). Qualitative methods allow researchers to ask individuals about their migration motivations, but can be too time-consuming and costly for broad application. In contrast, quantitative methods may lack

depth, but they enable the analysis of migration trends over larger areas and longer time periods (Ghio et al., 2026).

While forecasting remains important, futures studies expand the toolkit by offering methods that explore multiple plausible trajectories and embed ethical and participatory dimensions. Migration involves aspirations, imagined opportunities, and uncertainty (Carling & Collins, 2018; Niraula & Triandafyllidou, 2022), while policy reflects long-term commitments shaped by short-term pressures. Across drivers (climate, conflict, technology), patterns (voluntary/forced, internal/international), scales (micro to macro), actors (migrants, refugees, diaspora), governance (border regimes, integration), and impacts (social cohesion, rights, wellbeing), futures approaches help explore plausible ranges of change rather than single-point predictions (Schoemaker, 1995; OECD, 2020). Ethical considerations, such as representation, participation, and equity, remain central (UNDP, 2024; Bengston et al., 2024).

Using futures studies in migration means moving beyond one-track, deterministic predictions toward approaches that embrace complexity, uncertainty, and multiple possible paths. Migration emerges from the interplay of structural, political, environmental, and social forces as well as people's aspirations, imaginations, and capabilities (de Haas, 2021; Triandafyllidou, 2022). These factors vary across places and change over time, producing nonlinear effects and feedback loops that challenge standard forecasting. Futures studies offers concepts and methods to engage this complexity, helping migration research shift from mere extrapolation to anticipatory, reflective, and values aware inquiry. In methodological terms, scenario planning, Delphi, horizon scanning, backcasting, systems mapping, and stress testing provide complementary lenses that can be connected to existing migration methods—for example, using Delphi for expert elicitation in migration (Bijak & Wiśniowski, 2010; Wiśniowski & Bijak, 2009), coupling scenarios with agent based models (Hinsch & Bijak, 2021; Klabunde & Willekens, 2016), and linking horizon scanning with qualitative fieldwork and participatory sensemaking (UN Global Pulse, 2023; Erdmann & Kimpeler, 2023). Risk and uncertainty communication is central to this shift: futures work should distinguish between prediction and the exploration of possible, probable, and preferred futures (Bell, 1996), and should present plausible ranges rather than point estimates (Bishop, Hines, & Collins, 2007; Bradfield, Wright, Burt, Cairns, & van der Heijden, 2005).

The relevance of futures studies must also be situated within broader trends in migration scholarship. Contemporary migration research has increasingly moved away from static push–pull models[5] toward relational, processual, and multiscale approaches (de Haas, 2021; Triandafyllidou, 2022). Key trends include greater attention to migrant agency and aspirations, growing engagement with climate and environmental change, increased focus on governance and rights regimes, and heightened interest in narratives, imaginaries, and discursive framing (Gilmartin, 2008; IOM, 2024). At the same time, the field continues to grapple with policy demand for forecasts and risk assessments, particularly in contexts of displacement and crisis (World Bank, 2021; National Intelligence Council (NIC), 2021). Futures studies complements these trends by providing methods that can integrate agency, uncertainty, and normativity in systematic ways, aligning anticipatory analysis with the relational and multiscale character of migration processes (OECD, 2024; European Commission, Joint Research Centre (EU JRC), 2025).

Recent policy-oriented analyses underscore the urgency of this shift. The U.S. National Intelligence Council (National Intelligence Council (NIC), 2021), for example, identifies

[5] Push-pull models explain migration through origin "push" factors (poverty, conflict) and destination "pull" factors (jobs, freedom), often combined with gravity or AI-based methods; critics call for more dynamic, process-oriented approaches (Yu et al., 2025).

demographic change, climate risk, governance quality, technological transformation, and integration regimes as key forces shaping global migration futures. Crucially, these drivers do not operate independently. Climate impacts intersect with labour market restructuring, political instability, and demographic aging, while policy responses feed back into migratory aspirations and mobility strategies. Such complexity highlights the limits of forecasting approaches that assume stable relationships between variables and instead points to the need for futures-oriented methodologies capable of modelling multiple scenarios, stress testing policy choices, and informing adaptive governance (OECD, 2020; EU ESPAS, 2025). Future-oriented migration research, therefore, benefits from combining quantitative forecasting with qualitative foresight, drawing on interdisciplinary methods to navigate uncertainty and design resilient responses (OECD, 2019/2024; EU JRC, 2024).

A central contribution of futures studies to migration research lies in its capacity to address complexity without reducing it to simplified causal chains. Migration futures are shaped by structural drivers such as demographic aging, urbanization, economic inequality, and labor market segmentation; environmental pressures including climate change, biodiversity loss, and resource scarcity; political factors such as governance stability, rights regimes, and border enforcement; and cultural dimensions including identity, belonging, and imaginaries of mobility (International Organization for Migration (IOM), 2024; Intergovernmental Panel on Climate Change (IPCC), 2022; de Haas, 2021; Gilmartin, 2008). Futures studies provide methodological lenses for integrating these interacting dimensions through systems thinking, participatory inquiry, and scenario exploration (Khakee, 1999; Bishop et al., 2007). Rather than isolating single drivers, futures methodologies foreground interdependence and contingency, allowing researchers to explore how different configurations of forces might produce divergent migration trajectories—including trajectories across different patterns of migration (for example, displacement versus labor mobility) and across temporal horizons and scales (households, communities, and national or regional systems) (Bradfield et al., 2005; IOM, 2024).

Triandafyllidou et al. (2024) call for an empirical lens that portrays migration as a plural reality embedded within broader social change processes—a call futures methodologies can operationalize by integrating diverse lived experiences into anticipatory exercises. Participatory foresight workshops, for example, convene migrants, policymakers, civil society actors, and researchers to co-create scenarios reflecting both individual perspectives and institutional priorities, as demonstrated in anticipatory governance pilots (Demos Helsinki, 2023). This approach counters the abstraction common in migration modelling, grounding futures analysis in real-world social contexts (UN Global Pulse, 2023; OECD, 2020).

Migration futures are shaped by temporal mismatches: while policy cycles follow short electoral or budgetary terms, migration dynamics unfold over decades, resulting in reactive governance and path dependency (Pierson, 2000). Futures studies address this by positioning policy choices within extended temporal trajectories and evaluating their resilience across multiple scenarios. Techniques such as backcasting enable researchers to start from a desired future—such as inclusive mobility regimes—and work backward to identify the policy changes and institutional capacities needed. Scenario planning explores how shocks or governance decisions might interact over time, while policy stress testing assesses whether current frameworks can withstand systemic disruptions—like large-scale displacement or automation-driven labour shifts (OECD, 2020; EU JRC, 2024).

Risk analysis is critical to this work. In the context of migration, two types of uncertainty always exist: epistemic uncertainty, which can be reduced through improved data and modelling,

and aleatory uncertainty, which is inherently irreducible and arises from chance events and human actions (Bijak & Czaika, 2024). Aleatory uncertainty refers to objective randomness in processes and cannot be eliminated, while epistemic uncertainty stems from subjective gaps in knowledge and can be addressed. These two types of uncertainty can be analyzed either together or separately (Alleman, Coonce, & Price, 2018). By combining participatory approaches with rigorous analytical tools, we can incorporate multiple perspectives and tackle structural and temporal challenges effectively.

Applied foresight initiatives offer practical examples. The EU's Joint Research Centre, IOM, and the World Bank deploy scenario development, horizon scanning, and strategic foresight to investigate climate mobility, labour migration, and displacement (EU JRC, 2024; IOM, 2024; World Bank, 2021). Yet these efforts remain fragmented and uneven in methodological rigour. Strengthening alignment with migration scholarship and improving evaluation frameworks for scenario quality and impact would consolidate practice (Bishop et al., 2007; Bradfield et al., 2005). Recent methodological advances aim to fill this gap. Marcucci et al. (2025) introduce a taxonomy distinguishing experience-based, exploration-based, and expertise-based anticipatory methods; applied to migration research, this taxonomy provides a structured foundation for designing method portfolios that reflect migration's complexity and ethical implications (Triandafyllidou et al., 2024).

5. Comparing Futures Methodologies for Migration Research

The futures methods reviewed in section three can be broadly grouped into two complementary orientations: open-ended, interpretive methodologies and more structured, analytic approaches oriented toward scenario building, forecasting, and planning. While this distinction is necessarily schematic, it is analytically useful for clarifying how different futures methods serve different research aims.

Open-ended futures methodologies include approaches such as visioning, Causal Layered Analysis (CLA), participatory foresight, and anticipatory imagination. These methods are primarily exploratory and interpretive. Their central purpose is not to produce bounded representations of future outcomes, but to surface values, assumptions, narratives, and power relations that shape how futures are imagined and contested. By operating across multiple layers of meaning, including worldviews and metaphors, open-ended methods are particularly effective at engaging with the normative and cultural dimensions of migration. They allow researchers to examine how migrants, policymakers, and host societies imagine mobility, belonging, and settlement, and how these imaginaries influence both migration decisions and governance responses.

In migration research, such approaches are especially valuable when the aim is to understand aspirations, agency, and the future of mobility. Visioning exercises can foreground migrant perspectives that are often absent from policy-oriented analysis, while Causal Layered Analysis can interrogate dominant crisis narratives or securitized framings that constrain what migration futures are considered legitimate. These methods are well-suited to participatory research designs, critical inquiry, and contexts in which ethical reflection and inclusion are central concerns. Their strength lies in their capacity to open up the future as a space of deliberation, rather than closing it down through premature assumptions about feasibility or likelihood.

By contrast, structured futures methodologies such as scenario planning, backcasting, roadmapping, and certain forms of forecasting are designed to support strategic analysis and

decision-making. These approaches impose greater analytical structure by defining time horizons, variables, milestones, and causal pathways[6]. Rather than emphasizing interpretive openness, they focus on producing coherent representations of alternative futures that can inform planning, policy design, and institutional coordination. In migration studies, structured methods are often used to anticipate pressures on asylum systems, labour markets, or urban infrastructure, and to test the robustness of policies under different future conditions.

Structured approaches are particularly useful when research aims include policy stress-testing, strategic planning, or evaluation of long-term interventions. Scenario planning can help policymakers explore how migration systems might respond to combinations of demographic change, climate impacts, and political shifts. Backcasting and roadmapping translate normative goals such as rights-based mobility or inclusive integration into sequences of actionable steps, clarifying what would need to change across governance levels and timeframes. These methods are therefore well aligned with applied research contexts where decisions must be made under uncertainty and accountability requirements are high.

Importantly, the distinction between open-ended and structured approaches should not be understood as a hierarchy or a binary choice. Method selection should be guided by research purpose, type of uncertainty, stakeholder context, and desired outcomes (Hichert and Schultz, 2024). Open-ended methods are not inherently less rigorous, nor are structured methods inherently more policy relevant. Rather, they address different analytical questions. Open-ended approaches are better suited to exploring why certain futures are imagined, feared, or desired, while structured approaches are more effective for examining how particular futures might unfold and what interventions could shape them. Guajardo et al. (2025) observe a shift toward community-led, co-produced, decolonial research that treats migrants as active partners in study design, implementation, and dissemination.

Conversely, research aimed at informing policy design, institutional reform, or long-term planning requires structured methods that can link futures thinking to concrete decision-making processes. In many cases, the most robust migration futures research will combine both orientations, sequencing open-ended methods to surface values and assumptions before employing structured approaches to explore pathways, trade-offs, and implementation challenges.

Seen in this light, futures studies do not offer a single methodological template for migration research but a flexible repertoire of approaches that can be aligned with diverse aims. By explicitly distinguishing between open-ended and structured futures methodologies, migration scholars can make more deliberate and transparent choices about how to engage the future. Futures studies enhance migration research not by replacing existing methods, but by expanding the analytical space in which migration futures are imagined, debated, and governed.

6. Conclusion

This review has mapped the conceptual foundations and methodological contributions of futures studies to migration research, highlighting how future studies approaches can enhance migration research. First, by situating migration within long-term trajectories rather than short-term cycles,

[6] A causal pathways perspective on evaluation looks at how, why, and under what conditions change occurs or has occurred (Better Evaluation Knowledge).

futures studies address structural temporal mismatches that often lead to reactive governance and path dependency (Pierson, 2000). Second, by introducing methods such as backcasting, scenario planning, and policy stress testing, futures studies expand the analytical toolkit beyond forecasting, enabling exploration of multiple plausible, desirable, and ethically grounded futures (OECD, 2020; EU JRC, 2024).

Despite growing interest in migration foresight from organizations like the EU Joint Research Centre, IOM, and the World Bank (EU JRC, 2024; IOM, 2024; World Bank, 2021), current applications remain fragmented and uneven in their rigour. Strengthening conceptual alignment with migration scholarship and improving evaluation frameworks for scenario quality and impact are critical next steps (Bishop et al., 2007; Bradfield et al., 2005).

By combining participatory foresight approaches that embed migrant perspectives (Demos Helsinki, 2023; UN Global Pulse, 2023; OECD, 2020) with analytical tools that address uncertainty (Bijak & Czaika, 2024; Czaika et al., 2024; Marcucci et al., 2025), futures studies offer a coherent framework for addressing agency and long-term change. Taken together, these approaches demonstrate how futures studies can move migration research beyond reactive forecasting toward anticipatory, participatory, and ethically grounded strategies that align policy with long-term mobility dynamics. Building on this, futures studies not only shift the orientation of migration research but also provide a coherent analytical framework and a diverse set of methodologies for addressing uncertainty, agency, and long-term change (Pierson, 2000; OECD, 2020; Bijak & Czaika, 2024). This review has surveyed future methods and tools and highlighted how futures studies can broaden the methodological landscape of migration research by centring it as a field of inquiry and developing its analytical framework and methods (Marcucci et al., 2025; Triandafyllidou et al., 2024).

When futures methodologies are applied thoughtfully and in line with clearly defined research objectives, they allow migration scholars to explore not only what is likely to occur, but also what could happen, what is desired, and whose futures are being envisioned. In this way, futures studies contribute to a more anticipatory and analytically sound migration scholarship that addresses uncertainty without simplifying it into mere prediction (EU JRC, 2024; Demos Helsinki, 2023; Bijak & Czaika, 2024).

7. References

Abrahamsen, M. H., Halinen, A., & Naudé, P. (2023). The role of visioning in business network strategizing. *Journal of Business Research, 154*, 113334. https://doi.org/10.1016/j.jbusres.2022.113334

Acceleration Studies Foundation. (n.d.). Roadmapping: A collaborative foresight tool. https://www.accelerating.org/roadmapping [accelerating.org]

Ahlqvist, T., Valovirta, V., & Loikkanen, T. (2012). Innovation policy roadmapping as a systemic instrument for forward-looking policy design. *Science and Public Policy*, *39*(2), 178-190.Amer, M., Daim, T. U., & Jetter, A. (2013). A review of scenario planning. *Futures*, *46*, 23-40.Armanto, A. R. A. (2024). *Futures participation as anticipatory practice — what do futures workshops do?* European Journal of Futures Research, 12(3). https://doi.org/10.1186/s40309-024-00226-4

Alleman, G. B., Coonce, T. J., & Price, R. A. (2018). *What is risk? The Measurable News*. https://app.box.com/s/lrtnzdq0qk290mb7yg2p472xk3pdmka0

Ashkapova, V., & Zulfiu Alili, M. (2025). Embracing foresight in migration policy: A transformative journey toward anticipatory governance in North Macedonia. *Data & Policy, 7*, e67.

Azose, J. J., & Raftery, A. E. (2015). *Bayesian probabilistic projection of international migration*. Demography, 52, 1627–1650.

Babalola, Adesoji, and Akpomuje, Paul (2025). “The Possible Impossibilities of Home: Afrobeats and the Refusal of Unlivability.” *Public.* Pp105-116

Beine, M., Bertoli, S., & Fernández-Huertas Moraga, J. (2016). A practitioners’ guide to gravity models of international migration. *The World Economy, 39*, 496–512.

BetterEvaluation. (n.d.). Causal pathways. https://www.betterevaluation.org/methods-approaches/themes/causal-pathways

Bell, W. (1996). An overview of futures studies. *The knowledge base of futures studies: Foundations*, *1*, 28-56.

Bell, W. (2003). *Foundations of Futures Studies: Volume 1: Human Science for a New Era*. New Brunswick, NJ: Transaction Publishers.

Bendor, R., Eriksson, E., & Pargman, D. (2021). Looking backward to the future: On past-facing approaches to futuring. *Futures*, *125*, 102666.

Bengston, D. N., Mauno, T., & Hujala, T. (2024). Horizon scanning: a process for identifying emerging signals of change shaping the future of natural resources management. *Society & natural resources*, *37*(7), 1108-1115.

Bishop, P., Hines, A., & Collins, T. (2007). The current state of scenario development: An overview of techniques. *Technological Forecasting and Social Change, 74*(9), 1301–1319. https://doi.org/10.1016/j.techfore.2007.07.005

Bijak, J., & Wiśniowski, A. (2010). Bayesian forecasting of immigration to selected European countries by using expert knowledge. *Journal of the Royal Statistical Society Series A: Statistics in Society*, *173*(4), 775-796.

Bijak, J. (2011). Forecasting international migration: Selected theories, models, and methods. *Journal of Population Research, 28*(2–3), 135–164. https://doi.org/10.1007/s12546-011-9061-7

Bijak, J., & Czaika, M. (2023). Migration and uncertainty: Epistemic and aleatory dimensions. *Journal of Migration Studies*. Advance online publication.

Bishop, P., Hines, A., & Collins, T. (2007). The current state of scenario development: an overview of techniques. *foresight*, *9*(1), 5-25.

Boulding, E. (2003). *Visioning and future studies*. Beyond Intractability. https://www.beyondintractability.org/audiodisplay/boulding-e-3-future-studies2

Bradfield, R., Wright, G., Burt, G., Cairns, G., & Van Der Heijden, K. (2005). The origins and evolution of scenario techniques in long range business planning. *Futures*, *37*(8), 795-812.

Bratland, M. (2021). “Indigenous Futurism.” University of Alberta. https://news.library.ualberta.ca/blog/2021/07/07/indigenous-futurism/

Brier, D. J. (2005). Marking the future: a review of time horizons. *Futures*, *37*(8), 833-848.

Caballar, R. D., & Stryker, C. (n.d.). *What is forecasting?* IBM Think. https://www.ibm.com

California 100. (2023). Beyond strategic planning. A foresight tool kit for decision-makers. https:// california100.org/toolkit-decision-makers-announcement/

Carling, J., & Collins, F. L. (2018). Aspiration, desire and drivers of migration. *Journal of Ethnic and Migration Studies, 44*(6), 909–926. https://doi.org/10.1080/1369183X.2017.1384134

Coates, J. F., (1996), “An Overview of Futures Methods”, in Slaughter, R. H., (Ed.) *The Knowledge Base of Futures Studies*, DDM Media, Hawthorn, Victoria, Australia, pp. 56-75.

Columbia University Mailman School of Public Health. (n.d.). *What is Bayesian modeling?* https://www.publichealth.columbia.edu/news/what-bayesian-modeling

Community Foundations of Canada (CFC). (n.d.). IRP glossary. Retrieved from: https://www.communityfoundations.ca/investment -readiness-program-glossary/ H3Uni. (n.d.). Resource Library. International Futures Forum. Retrieved from: https://www.h3uni.org/project/learn2-threehorizons/

Cuhls, K. E. (2019). Horizon scanning in foresight: Why horizon scanning is only a part of the game. *Foresight and STI Governance, 13*(1), 19–29. https://doi.org/10.17323/2500-2597.2019.1.19.29

Curry, A., & Schultz, W. (2009). Roads less travelled: different methods, different futures. *Journal of Futures Studies*, *13*(4), 35-60.

Curry, A. (2015). *APF methods anthology*. Association of Professional Futurists.

Curry, A. (2021). The futures of futures. *Futures, 129*, 102740. https://doi.org/10.1016/j.futures.2021.102740

Czaika, M., & de Haas, H. (2014). The globalization of migration: Has the world become more migratory? *International Migration Review, 48*(2), 283–323. https://doi.org/10.1111/imre.12095

Danish Refugee Council (DRC). (n.d.). Seeing the future? The mixed migration foresight project. https://drc.ngo/about-us/partners-and-donors/private-sector-engagement/seeing-the-future-the-mixed-migration-foresight-project/ [drc.ngo]

Dao, T. H., Docquier, F., Maurel, M., & Schaus, P. (2018). *Global migration in the 20th and 21st centuries: The unstoppable force of demography* (hal-01743799).

Data4Migration. (2023). *Anticipating human mobility: Methods, data, and policy in forecasting and foresight* [Editorial].

de Haas, H. (2021). A theory of migration: The aspirations–capabilities framework. *Comparative Migration Studies, 9*, Article 8. https://doi.org/10.1186/s40878-020-00210-4

de Smalen, D., & Nicaise, I. (2024). *Testing the usefulness of big data: A scenario building exercise*. In I. Nicaise & T. Bircan (Eds.), *HumMingBird synthesis report (Deliverable 10.4)*. HumMingBird—H2020 Project. http://www.hummingbird-H2020.eu

Demos Helsinki. (2020). *From fortress to foresight: Turning migration governance inside out*.

Dery, M. (1993). Black to the future: Interviews with Samuel R. Delany, Greg Tate, and Tricia Rose. *South Atlantic Quarterly*, *92*(4), 735–778.

Dortmans, P. J. (2005). Forecasting, backcasting, migration landscapes and strategic planning maps. *Futures, 37*(4), 273–285. https://doi.org/10.1016/j.futures.2004.10.005

Dugan, M. A. (2003). *Envisioning*. Beyond Intractability. (Current implications added by H. Burgess, 2021). https://www.beyondintractability.org/essay/visioning

European Commission, Joint Research Centre (EU JRC). (n.d.). Strategic foresight in the EU. https://joint-research-centre.ec.europa.eu/strategic-foresight-eu_en

European Strategy and Policy Analysis System. (2025). Introduction | 2025 ESPAS conference. https://espas.eu/conference2025.html

Escribà-Folch, A., Jacobus, M., McNamee, L., Meseguer, C., Rosenberg, A. S., & Wright, J. (2022). *In dialogue: Perspectives on migration*. Princeton University Press.

Fontana, M., Belmonte, M., Bosco, C., Jusselme, D., Peters, A. M., Minora, U., & Verhulst, S. (2025). “Anticipating human mobility: Methods, data, and policy in forecasting and foresight”. *Data & Policy, 7*, e70.

Fransen, S., & de Haas, H. (2022). Anticipating migration futures: The role of scenarios and foresight. *Global Policy, 13*(S1), 12–25. https://doi.org/10.1111/1758-5899.13055

Friedrich-Ebert-Stiftung, Global Future, & International Organization for Migration (IOM). (2017). *Tomorrow's world of migration and mobility*. Geneva, Switzerland: FES, Global Future, IOM. https://www.iom.int/sites/g/files/tmzbdl2616/files/2018-07/Tomorrows-World-of-Migration-and-Mobility.pdf.

Gerdsri, N., Sivara, K., Chatunawarat, C., Jaroonjitsathian, S., & Tundulyasaree, K. (2022). Roadmap for future mobility development supporting Bangkok urban living in 2030. *Sustainability*, *14*(15), 9296.

Ghio, D., Hoyos-Hoyos, S., Liu, G., Kyeremeh, E., McLeman, R., Resch, G., & Mazalek, A. (2026). “Modeling the Spatial Interplay Between Migration and Environmental Conditions”. *Environmetrics*, 37(1), e70070.

Gilmartin, M. (2008). Migration, identity and belonging. *Geography Compass, 2*(6), 1837–1852. https://mural.maynoothuniversity.ie/id/eprint/8820/1/Gilmartin-2008-Geography_Compass.pdf

Gilmore, N., Koskinen, I., Burr, P., Obbard, E., Sproul, A., Konstantinou, G., ... & Bruce, A. (2023). Identifying weak signals to prepare for uncertainty in the energy sector. *Heliyon*, *9*(11).

Glenn, J. C., & Gordon, T. J. (2009). *Futures research methodology* (Version 3.0). Millennium Project.

Global Leaders Institute. (2024). Preparing for tomorrow: The futures wheel method. https://www.globalleadersinstitute.org/blog-post/preparing-for-tomorrow-the-futures-wheel-method/ [globallead...titute.org]

Head, K., & Mayer, T. (2018). Gravity equations: Workhorse, toolkit, and cookbook. In **DIW** (Ed.), *Income distribution in Germany: Real income on the rise since 1991 but more people with low incomes* (pp. 131–195).

Hichert, T., & Schultz, W. (2024). Futures studies methods. In R. Poli (Ed.), *Handbook of anticipation* (pp. 329–340). Springer.

Hurxthal, A. (2024). *What headlines don’t tell you about global migration, and what Stanford researchers can*. Stanford King Center on Global Development.

Immordino, P., Sà Machado, R., Hargreaves, S., Honsell, F., Lau, K., Pascut, S., Torres, I., Xiao, Y., Ziersch, A., & Zimmerman, C. (2025). Migration, Urbanism and Health: Moving Toward Systems-Informed Policy and Practice. *F1000Research*, *13*, 1344. https://doi.org/10.12688/f1000research.158252.2

Inayatullah, S. (2008). Six pillars: Futures thinking for transforming. *Foresight, 10*(1), 4–21. https://doi.org/10.1108/14636680810855991

Institute for the Future (IFTF). (2023). How to decide which foresight tools to use on a project. https:// www.iftf.org/insights/how-to-decide-which-foresight-tools-to-use-on-a-project/

Institute for Innovation and Technology. (n.d.). *Trend analysis: Recognizing and understanding changes at an early stage*. https://www.iit-berlin.de/en/trend-analysis-recognizing-and-understanding-changes-at-an-early-stage/

Janus, P. & Wallenborn, J. T. (2022). *Making sense of the future toolbox*. Alexander von Humboldt Institute for Internet and Society. https://www.hiig.de/publication/making-sense-of-the-future-toolbox/

Khakee, A. (1999), "Participatory Scenarios for Sustainable Development", Foresight, Vol. 1, No 3, pp. 229-240.

Kosec, K., & Carrillo, L. (2025). *Millions on the move: Bridging research and policy to address growing global challenges of displacement and migration*. International Food Policy Research Institute.

Legacy Leadership Lab. (n.d.). Three Horizons report (Version 3). University of Waterloo. https://uwaterloo.ca/legacy-leadership-lab/sites/default/files/uploads/documents/3_horizons_report_-_v3.pdf [uwaterloo.ca]

Magruk, A. (2011). Innovative classification of foresight methods. *Technological and Economic Development of Economy, 17*(4), 700–715. https://doi.org/10.3846/20294913.2011.649912

Magruk, A. (2025). Balancing Uncertainty, Knowledge, Futures and Social Constructs in Management of IoT Anticipatory Systems. *Foundations of Science*, *30*(4), 1103-1128.

Marcucci, S., Verhulst, S., & Cervantes, M. E. (2025). When forecasting and foresight meet data and innovation: Toward a taxonomy of anticipatory methods for migration policy. *Data & Policy, 7*, e24.

Maru, N., Nori, M., Scoones, I., Semplici, G., & Triandafyllidou, A. (2022). Embracing uncertainty: rethinking migration policy through pastoralists' experiences. *Comparative migration studies*, *10*(1), 5.

Miller, R. (2018). Transformative foresight. *Journal of Futures Studies, 22*(3), 1–14.

Milojević, I., & Inayatullah, S. (2015). Narrative foresight. *Futures*, *73*, 151–162. https://doi.org/10.1016/j.futures.2015.08.007

Montgomery, E. (2022). Design roadmapping: Guidebook for future foresight techniques. National Intelligence Council (NIC). (2021). *Global trends 2040: A more contested world*. NetSuite. (n.d.). Predictive modeling. Retrieved from https://www.netsuite.com/portal/resource/articles/financial-management/predictive-modeling.shtml

Nhokovedzo, S. A. (n.d.). Comparative Analysis of Delphi Method and Horizon Scanning.

Niraula, A., & Triandafyllidou, A. (2022). Highly skilled migrant decision-making under uncertainty: A literature review.

Noble, J. (n.d.). *What is Bayesian statistics?* IBM. https://www.ibm.com/think/topics/bayesian-statistics

Pierson, P. (2000). Increasing returns, path dependence, and the study of politics. *American political science review*, *94*(2), 251-267.

Policy Horizons Canada. (2024). *The horizon foresight method*. Government of Canada.

Popper, R. (2008). How are foresight methods selected? *Foresight, 10*(6), 62–89. https://doi.org/10.1108/14636680810918586

Puglisi, M. (2001). The study of the futures: an overview of futures studies methodologies. *Interdependency between agriculture and urbanization: conflicts on sustainable use of soil water. Bari: CIHEAM. Options Méditerranéennes, Série A. Séminaires Méditerranéens*, *44*, 439-463.

Qi, H., et al. (2024). *Forecasting and nowcasting migration* (Chapter 4). In I. Nicaise & T. Bircan (Eds.), *HumMingBird synthesis report (Deliverable 10.4)*. HumMingBird—H2020 Project. http://www.hummingbird-H2020.eu

Qlik. (n.d.). What is predictive modeling? Types and techniques. https://www.qlik.com/us/predictive-analytics/predictive-modeling [qlik.com]

RAND Corporation. (n.d.). “Delphi method.” Retrieved from https://www.rand.org/topics/delphi-method.html

Ruhnke, S., & Rischke, R. (2024). Predicting mobility aspirations in Lebanon and Turkey: a data-driven exploration using machine learning. *Data & Policy*, *6*, e47.

Sardoschau, S. (2020). The Future of Migration to Germany. *Assessing Methods in Migration Forecasting: DeZIM Project report–DPr*, *1*.

Schoemaker, P. J. (1995). Scenario planning: a tool for strategic thinking. *MIT Sloan Management Review*.

Sharpe, B. (2013). *Three Horizons: The Patterning of Hope*. Triarchy Pres.

Slaughter, R., & Hines, A. (2020). *The knowledge base of futures studies*. Association of Professional Futurists.

Sohst, R. R., de Valk, H., & Melde, S. (2020). The future of migration to Europe: a systematic review of the literature on migration scenarios and forecasts. *The Challenges Of Immigration In The European Union: Essays On Social Impacts And Future Outlooks*, 100.

Sritharan, N., Knight, R., & Marshall, K. (2025). *Why migration researchers often struggle to impact policy*. Migration Policy Institute. https://www.migrationpolicy.org/article/migration-researchers-survey

The Millennium Project. (2026). *Real-Time Delphi*. https://www.millennium-project.org/real-time-delphi/

Triandafyllidou, A., et al. (2023). Rethinking migration studies for 2050. *Journal of Immigrant & Refugee Studies, 22*(1), 1–21.

Triandafyllidou, A. (2022). The global governance of migration: Towards a 'messy' approach. *International Migration*, *60*(4), 19–27. https://doi.org/10.1111/imig.12931

United Nations Development Programme. (2021). *Migration policy resolution 2021–2025: North Macedonia*. UNDP.

United Nations Development Programme. (2025). *Foresight programme design: Causal layered analysis, backcasting, partnership design*.

Uribe Guajardo, M. G., Diab, J. L., Curry, G., Lamarque, M., Mazariego, J., Briozzo, E., ... & Cravero, K. (2025). Advancing Participatory Approaches in Global Migrant Research: A Roundtable Discussion. *Journal of immigrant and minority health*, 1-7.

van Notten, P., Rotmans, J., van Asselt, M., & Rothman, D. (2003). An updated scenario typology. *Futures, 35*(5), 423–443. https://doi.org/10.1016/S0016-3287(02)00090-3

Visual Paradigm. (n.d.). What is futures wheel? https://online.visual-paradigm.com/knowledge/decision-analysis/what-is-futures-wheel/ [online.vis...radigm.com]

Voros, J. (2006). Introducing a classification framework for prospective methods. *Foresight, 8*(2), 43–56. https://doi.org/10.1108/14636680610656374

Voros, J. (2017). Big futures: Transformational change in the long term. In R. Slaughter (Ed.), *The knowledge base of futures studies* (pp. 1–20). Association of Professional Futurists.

Wintle, B. C., Kennicutt II, M. C., & Sutherland, W. J. (2020). Scanning horizons in research, policy and practice. In W. J. Sutherland et al. (Eds.), *Conservation research, policy and practice* (pp. 29–47). Cambridge University Press.

Yu, M., Asif, M., Zhang, Q., Shahbaz, M., Ahmad, C. S., & Shahzad, M. F. (2025). Modeling migration intentions under environmental stress through push pull dynamics and policy effects. *Scientific Reports*, *15*(1), 41699.