

Approaches to anticipating skills for the future of work

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Executive Summary

This report, jointly prepared by the ILO and OECD for the G20 Employment Working Group in June 2018, addresses the persistent challenge of skills mismatch and shortages across G20 economies and examines how countries anticipate and respond to evolving skill needs. The authors argue that while most G20 countries have some form of skills assessment and anticipation system, significant gaps remain in translating collected information into effective policy action. Key evidence is drawn from a joint ILO-OECD-Cedefop-ETF stakeholder survey of 13 G20 countries, which documents the prevalence of employer surveys, sectoral analyses, and quantitative forecasting models, as well as barriers such as insufficient stakeholder coordination, poor dissemination, and inadequate disaggregation of results. Country-level examples from Canada, Germany, France, Australia, the United States, Brazil, Russia, Italy, and Korea illustrate varied institutional approaches. The report concludes by proposing a set of actionable principles for effective skills anticipation systems, emphasising clear objectives, stakeholder engagement, inter-ministerial coordination, robust labour market information infrastructure, and alignment of outputs to policy needs.

Key Insights

1. Skill mismatch imposes costs at individual, firm, and macroeconomic levels — including reduced wages, lower productivity, higher structural unemployment, and constrained technology adoption — making anticipation systems economically significant.
2. The most commonly used skills anticipation methods across G20 countries are employer surveys (85%), sector studies (77%), and surveys of workers or graduates (77%), with quantitative forecasting models used by just over half of surveyed countries.
3. The principal barriers to translating skills needs assessments into policy action are insufficient disaggregation of results, lack of stakeholder consultation during exercises, and inadequate consideration of labour supply and demand dynamics — not methodological quality alone.

Practical Takeaways

- Combining quantitative forecasting with qualitative foresight and stakeholder engagement — as practiced in Korea, Brazil's SENAI model, and Germany — compensates for the individual limitations of each method and produces more policy-relevant outputs.
- Big data and real-time online vacancy analysis offer promising supplementary tools for timely skills intelligence, but carry significant biases in sectoral, occupational, and geographic coverage that limit their standalone reliability.

Frameworks Mentioned

Delphi Method — A structured qualitative forecasting approach using iterative expert opinion surveys to reach consensus on future skills needs.

Computable General Equilibrium (CGE) Models — Quantitative economic modelling approach used to analyse underlying reasons for changes in skills demand across sectors.

Input-Output (IO) Tables — Simplified quantitative modelling approach used particularly in developing countries to assess how demand-side shocks influence employment and skills demand.

Hermin Model — A simplified structural macroeconomic model developed by Bradley (2000) designed for emerging economies with limited statistical data, covering four main sectors and both supply and demand sides.

E3M3 Model — Cedefop's multi-sectoral macroeconomic model used to produce pan-European employment projections by sector, occupational cluster, and country.

Critical Analysis

Strengths: The report draws on a systematic multi-agency stakeholder survey across 13 G20 countries, providing comparative empirical grounding rather than relying solely on case anecdotes. The taxonomy of anticipation methods with explicit advantages and disadvantages adds analytical transparency. The inclusion of both quantitative and qualitative approaches, as well as emerging big data tools, reflects methodological comprehensiveness. **Limitations:** The policy principles presented are largely normative and aspirational, derived from observed good practices rather than rigorously evaluated causal evidence of effectiveness. Country examples are illustrative rather than randomly selected or systematically evaluated. The report acknowledges that even countries with well-developed systems struggle to use information in policy making, but does not deeply interrogate why institutional and political barriers persist. **Biases:** As a joint ILO-OECD product prepared for a G20 presidency agenda, the report reflects an intergovernmental consensus orientation that may smooth over significant institutional diversity and political economy constraints. The framing consistently favours expanding and improving anticipation systems, with limited critical examination of cases where such systems have failed or produced counterproductive policy responses.

Organizational Practice

The report documents multiple national-level institutional practices: Canada's Canadian Occupational Projection System (COPS) producing 10-year biennial occupational forecasts; the US Bureau of Labor Statistics Employment Projections programme issuing 10-year forecasts every two years; Germany's BIBB-IAB-Qualification and Occupational Fields long-term forecasts complemented by short-term apprenticeship planning exercises; Cedefop's pan-European E3M3 model producing EU-wide and member-state projections; Brazil's SENAI integrated foresight model combining sectoral quantitative and qualitative methods since 2001; France's inter-ministerial Prospective des Métiers et des Qualifications exercise; Italy's Excelsior Project providing annual one-year employment forecasts by sector and occupation; Korea's multi-horizon forecasting aligned to national strategic development plans; and Australia's Industry Skill Forecasts as qualitative sectoral snapshots led by social partners.

Strategic Implications

The report's findings point toward a trend of hybridisation in skills anticipation — combining traditional quantitative modelling with qualitative foresight and increasingly with real-time big data analytics. The persistent gap between data collection and policy utilisation across G20 economies suggests that institutional coordination capacity, rather than methodological sophistication alone, is a binding constraint in skills governance. The emphasis on sectoral bodies and tripartite dialogue as the most effective channels for aligning training supply with labour demand indicates that decentralised, stakeholder-embedded anticipation architectures are gaining traction over purely centralised statistical approaches. The emerging use of online vacancy data and machine learning for real-time skills intelligence represents a potential disruption to established forecast cycles, though representativeness concerns remain unresolved.

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