Strengthening the Governance of the Swedish Skills System

Output 5

Analysis of opportunities for improvement in the skills data infrastructure in Sweden

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ARBETSFÖRMEDLINGEN SWEDISH PUBLIC EMPLOYMENT SERVICE

MYh Swedish National Agency for Higher Vocational Education

Swedish Council for Higher Education

UKÄ SWEDISH HIGHER EDUCATION AUTHORITY

Skolverket

Swedish Agency for Economic and Regional Growth

The Swedish ESF Council

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Introduction

As skills systems continue to evolve and become more complex, managing data and information becomes a key policy issue. A well-developed infrastructure for the collection, exchange and dissemination of skills data enables better design of skills policies. This, in turn, supports improved employability, skills use, productivity and competitiveness (OECD, 2019[1]).

In recent decades, huge strides have been made in the collection of data on labour demand and supply, skills needs, competency development and mismatch in the labour market. New technology and analytical techniques offer rich insight on a range of issues of relevance to the governance of skills systems, including the determinants of learning and employment trajectories, labour market transitions, and future skills needs (OECD, 2020[2]). Skills assessment and anticipation exercises have become particularly important, as global megatrends, not least the twin digital and green transition, drive structural changes in the economy, labour market and skills requirements of many OECD countries (ILO, 2017[3]; OECD, 2016[4]).

Accurate, timely and relevant Labour Market Information (LMI) is not only important in supporting evidence-based policy making, but in guiding the educational and occupational choices of learners. Embedding information on employment prospects, earnings, skills requirements and other features of work in different occupations within careers guidance can help steer individuals towards courses and careers that offer good employment prospects and align with their interests, aptitudes and abilities. At a macro-level, better aligning education and training decisions with labour market demand can help to reduce skills mismatches and shortages (Hofer, Zhivkovikj and Smyth, 2020[5]).

At the EU level, the European Skill Agenda,[1] in its Action 2, considers that improving the skills intelligence is the basis for up- and reskilling, mentioning “graduate tracking surveys and administrative data matching, artificial intelligence and big data analysis”. The European strategy for data[2] aims to create a single market for data that will ensure Europe’s global competitiveness and data sovereignty. The EU is currently undertaking work to develop and deploy a secure and trusted data space for skills (a Common European skills data space).

Strengthening the skills data infrastructure will therefore be central to Sweden’s efforts to ensure an agile and responsive skills supply, that supports improved job and education matching and careers guidance. Building integrated information systems is the third pillar underpinning strong skills governance arrangements, as identified by the OECD (see Figure 1).

[1]European Commission, Communication: European Skills Agenda for sustainable competitiveness, social fairness and resilience, COM/2020/274 final.

[2] European Commission, Communication: A European strategy for data, COM/2020/66 final.

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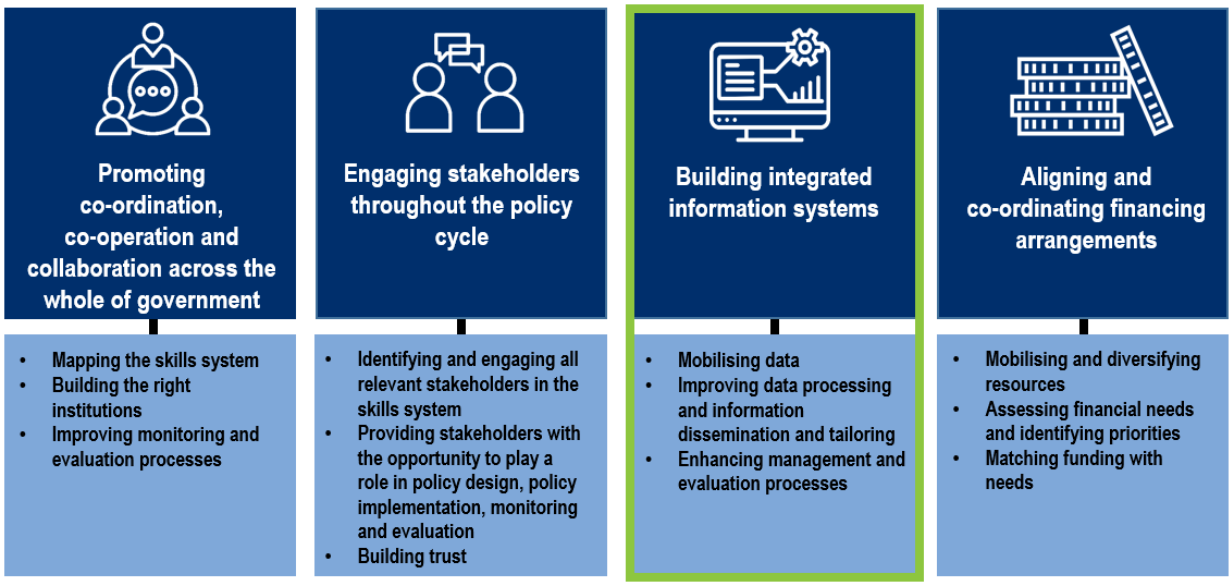
Figure 1. Four key building blocks of strong skills governance arrangements



Source: Elaboration on OECD (2019[1]), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, https://dx.doi.org/10.1787/9789264313835-en.

Sweden is taking active steps to support the development and management of an integrated skills data infrastructure. In the Summer of 2021, the Government tasked eight national agencies – the Swedish Public Employment Service (*Arbetsförmedlingen)*, the Swedish National Agency for Education *(Skolverket)*, the Swedish National Agency for Higher Vocational Education *(Myndigheten för Yrkeshögskolan, MYH),* the Swedish Research Council (*Vetenskapsrådet)*, the Swedish Council for Higher Education (*Universitets- och högskolerådet, UHR)*, Statistics Sweden (*Statistiska Centralbyrån, SCB), the* Agency for digital Government *(Myndigheten för digital förvaltning, Digg)* and Vinnova *(Verket för Innovationssystem)* – to work together to develop a coherent data infrastructure for competence provision and lifelong learning (KLL). The task was structured around six sub-tasks: developing common concepts; developing secure methods for handling individual data; developing a national database for publicly funded education; making available data on all qualifications in the Swedish qualifications framework; sharing data for strengthened innovation power; and developing proposals for the development and management of the agencies' cohesive data infrastructure in future. The overarching goal of these sub-tasks was to strengthen the conditions for government agencies and other actors to create and provide digital services that strengthen the position of individuals in the labour market while meeting the private and public sector's skills needs (Regeringsbeslut, 2021[6]). The final report from the task was published in January 2024, setting out progress made against the sub-tasks and providing recommendations for ongoing work in a range of areas (discussed further below).

The analysis in this report seeks to inform Sweden's ongoing efforts to enhance the skills data infrastructure. It constitutes Output 5 of the project *"Strengthening the Governance of the Swedish Skills System",* developed in co-operation with the European Commission through the Technical Support Instrument (see Box 1 below).

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Box 1. This report in the context of the wider project

During 2023-2025, the OECD and the European Commission are collaborating with seven Swedish governmental agencies (Swedish National Agency for Higher Vocational Education, Swedish Council for Higher Education, Swedish Higher Education Authority, Swedish National Agency for Education, Swedish Agency for Economic and Regional Growth and the Council for the European Social Fund in Sweden) with the objective of supporting Sweden to strengthen the governance of its skills system. Further details about the project background, relevance and key outputs and activities can be found on the project website.

This report begins with an overview of the Swedish skills data infrastructure, the key actors and their roles and responsibilities, key sources of skills data, and mechanisms to support dissemination and use. Subsequently, it examines three opportunities for strengthening the skills data infrastructure:

- Opportunity 1: Building a more user-orientated skills data infrastructure.
- Opportunity 2: Strengthening strategic co-ordination and collaboration across the skills data infrastructure.
- Opportunity 3: Improving understanding and co-ordination of Sweden's engagement with EU-wide skills data initiatives.

This document is based on desktop analysis undertaken by the OECD, complemented by inputs from numerous Swedish governmental actors and stakeholders. In December 2023, the OECD developed a background questionnaire to help map the Swedish skills data infrastructure and identify preliminary opportunities for improvement, which was filled out by 7 governmental actors and stakeholders. In February 2024, the OECD organised a virtual fact-finding workshop with more than 40 stakeholders, where further information was collected. Before and after the workshop, the OECD also held 10 virtual meetings with relevant actors to gather further information on the workings of the Swedish skills data infrastructure and key opportunities for improvement. In April, a dedicated meeting was organised with the European Commission's DG CNECT and DG EMPL to contextualise the Swedish efforts with the broader EU policy agenda.

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Mapping of Sweden's skills data infrastructure

Establishing a comprehensive and coherent skills data[3] infrastructure[4] is complex. There are, for example, a multiplicity of different datasets, spanning education across life stages (early years, primary, secondary and tertiary education and adult learning) and employment, and ongoing efforts to digitalise unstructured data, link datasets and develop systems that can capture learning and labour market transitions and outcomes. There is also a multiplicity of end-users – students, careers professionals, education and training institutions, workers, employers, policymakers – who require different types of information, at different levels of aggregation, presented in different ways. The increased mobility of both workers and learners gives greater weight to internationally comparable data and the ability of information systems[5] to support data sharing across countries (OECD, 2019[1]).

Well-functioning information systems require strong governance and adequate funding, with clear designation of responsibilities, accountability mechanisms and policies and procedures that support collaboration and information exchange while safeguarding data and building trust amongst stakeholders (OECD, 2020[2]).

This section provides a mapping of the skills data infrastructure in Sweden. It starts by giving an overview of the Swedish skills data infrastructure, before outlining the key roles and responsibilities of different actors across the skills data infrastructure. It then presents an analysis of the key sources of data on skills demand, supply and mismatch and the mechanisms used to disseminate data, so that it is put to effective use to inform policy design and decision making.

Overview of the Swedish skills data infrastructure

As is the case in other countries, the roles and responsibilities for the collection, analysis and dissemination of skills data in Sweden are distributed across a large number of actors, including different government agencies, levels of government and non-government stakeholders such as education and training

[3] Skills data refers to quantitative (statistics) or qualitative (e.g., input from stakeholders) information on the supply and demand for skills in the economy and society; skills alignment, surplus and shortage; competence provision and lifelong learning; learning outcomes; skills use; changing skills needs etc.

[4] Skills data infrastructure is defined by the 2021 Government Task as the conditions for making available data and digital information about education and the labour market, where different actors, both within the public sector and externally, can collaborate and share data, conceptual structures, and specifications in order to be able to create new services useful for skills provision and lifelong learning.

[5] Information systems collect and manage the data and information that government and other stakeholders produce, analyse and disseminate, to ensure that policy makers, firms, individuals and others have access to accurate, timely, detailed and tailored information to inform decision-making.

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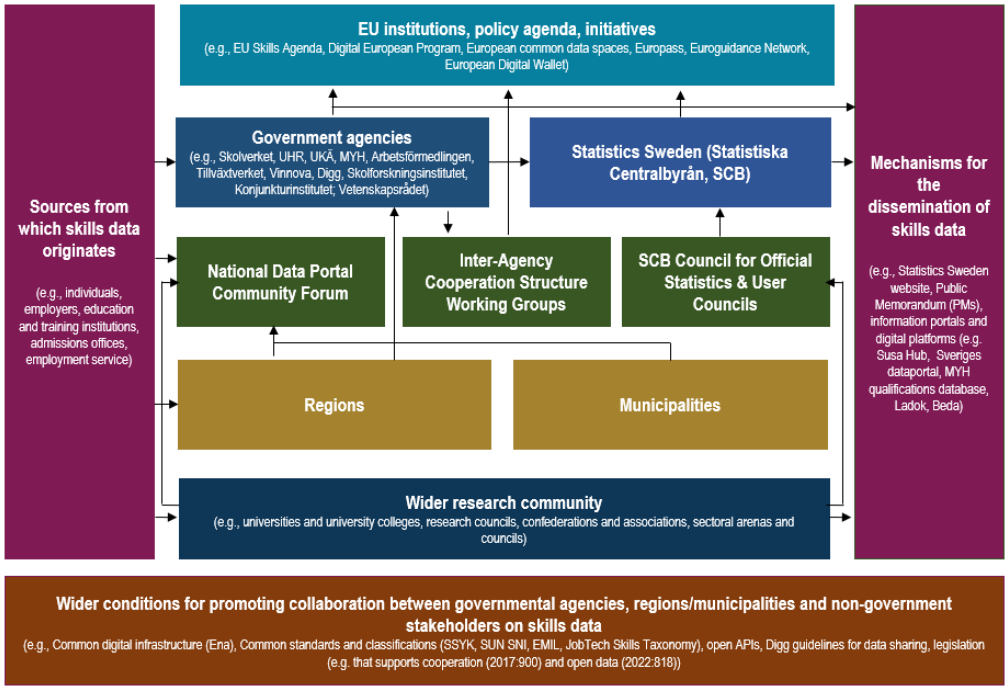
providers, employers and research organisations. Figure 2 provides a simplified mapping of the skills data infrastructure in Sweden.

Figure 2. Overview of Sweden's skills data infrastructure



Source: Compilation by the OECD based on publicly available information. Different colours are used to distinguish between different actors, denoting national government agencies (blue), sub-national government (dark yellow), wider (including non-Governmental) stakeholders (dark blue); and actors at the EU level (turquoise). Dark purple identifies inputs and outputs from the skills data infrastructure, dark green denotes co-ordination mechanisms and dark brown references underlying conditions that influence co-ordination within Sweden's skills data infrastructure.

Roles and responsibilities in the Swedish skills data infrastructure

Ministries and governmental agencies

In Sweden, a large number of government agencies, operating under several different Ministries, are responsible for different types of skills data related to education at different levels and the labour market. These agencies collect and process data that originates from a range of sources; exchange information with other government agencies; publish official statistics and wider analyses; and provide data inputs to national and international information portals and digital platforms (see Table 1).

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Table 1. Key governmental agencies with responsibilities for skills data

Ministry	Agency	Roles and responsibilities
Ministry of Finance	Statistics Sweden (SCB) (*Statistiska Centralbyrån*)	Responsible for official statistics and for other government statistics. SCB develops, produces, and disseminates a wide range of statistics spanning the economy, labour market, education and adult learning. In addition, SCB co-ordinates the system for the official statistics in Sweden. For example, SCB has access to, and produces statistics that can be used for analyses and forecasts about education and the labour market.
Ministry of Employment	Swedish Public Employment Service (PES) *(Arbetsförmedlingen)*	Responsible for the job-matching of the unemployed with potential jobs, and the provision of active labour market policies, including re/upskilling for the unemployed. The PES is also responsible for undertaking skills analyses and forecasts, in co-operation with the regions, and led the implementation of the 2021 Government Task to develop a coherent skills data infrastructure in Sweden.
Ministry of Education and Research	Swedish National Agency for Higher Vocational Education *(Myndigheten för Yrkeshögskolan, MYH)*	Responsible for higher vocational education (HVE) and ensuring that HVE meets labour market needs. Allocates government grants, conducts reviews and produces statistics on HVE, including statistical annual reports and area analysis reports. Serving as national co-ordination point for the EQF – the European Qualifications Framework – and provides the qualification database which is making data available on all qualifications in the Swedish qualifications framework.
Ministry of Education and Research	Swedish National Agency for Education *(Skolverket)*	Oversees publicly organised education from pre-primary to upper-secondary level (both academic and vocational), as well as adult learning. Prepares regulations, develops curricula and national tests, produces statistics and conducts evaluations and co-ordinates Sweden's participation in international education surveys. Serves as a national reference centre providing information about vocational education in Sweden.
Ministry of Education and Research	Swedish Higher Education Authority *(Universitetskanslersämbetet, UKÄ)*	Oversees higher education in Sweden, including assuring quality of higher education, monitoring of compliance with laws and regulations among universities and university colleges, and providing statistics and data on higher education.
Ministry of Education and Research	Swedish Council for Higher Education *(Universitets- och högskolerådet, UHR)*	Provides information about higher education to potential applicants, manages admissions to most higher education programmes in Sweden, and develops the Swedish Scholastic Aptitude Test. Conducts analysis of admissions statistics and responsible for the management of several key IT systems in higher education.
Ministry of Climate and Enterprise	Swedish Agency for Economic and Regional Growth *(Tillväxtverket)*	Promotes competitiveness and growth of Swedish companies and the development of Swedish regions. Offers access to knowledge, networks and financing for companies. Oversees and provides financing via two EU funds - the European Regional Development Fund and the Just Transition Fund. Provides statistics and analysis on business, regional development and tourism, including surveys on business conditions and entrepreneurship. The agency is also responsible for the management and development of the regional matching indicators.
Ministry of Finance	National Institute of Economic Research (*Konjunkturinstitutet*)	The National Institute of Economic Research (NIER) is a government agency operating under the Ministry of Finance. NIER performs analyses and forecasts of the Swedish and international economy as a basis for economic policy in Sweden and conducts related research.
Ministry of Education and Research	Swedish Institute for Educational Research (*Skolforskningsinstitutet*)	Compiles and funds research on teaching and learning methods in pre-schools, schools and in the area of adult learning to enable teachers, trainers and other teaching professionals to effectively plan, carry out and evaluate teaching.
Ministry of Finance	Agency for digital Government *(Myndigheten för digital förvaltning, Digg)*	Co-ordinates and supports the digitalisation of public administration; responsible for Sweden's digital infrastructure; promotes and analyses the digitalisation of society; and helps the government make well-informed decisions. Responsible for Sweden's national data portal. Jointly appointed (alongside Statistics Sweden) as responsible agencies in Sweden under the the European Data Governance Act.
Ministry of Climate and Enterprise	Vinnova (Verket för Innovationssystem)	Vinnova is Sweden's innovation agency. Their mission is to strengthen Sweden's innovative capacity and contribute to sustainable growth. They work to ensure that Sweden is an innovative force in a sustainable world. In 2019-2022, Vinnova co-ordinated the Strategic Cooperation Programme on

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Ministry	Agency	Roles and responsibilities
		Skills Supply and Life-long Learning *(Samverkansprogrammet Kompetensförsörjning och livslångt lärande).*
Ministry of Education and Research	The Swedish Board of Student Finance (Centrala studiestödsnämnden, CSN)	The Swedish Board of Student Finance (CSN) is the government agency that manages Swedish student finance, i.e. grants and loans for studies. CSN is responsible for official statistics describing student financing, including data on student grants and loans, study allowance and apprenticeship allowance, education entry grants, student loan debts, loan repayments, debt cancellations.

Source: Compilation by the OECD based on publicly available information and information shared by Sweden.

The Swedish National Agency for Education (*Skolverket*), for example, is responsible for the national database SUSA-navet, which collects data on all publicly funded education (municipal and private providers) from compulsory school to higher education and universities. The agency also conducts research and evaluation and co-ordinates Sweden's participation in international education surveys, including OECD's Programme for International Student Assessment (PISA).

The Swedish Council for Higher Education (*Universitets- och högskolerådet, UHR*) compiles data from Sweden's Universities and University Colleges, publishing admissions statistics and providing information on higher education programmes to potential applicants. UHR also have data on foreign qualifications since the agency evaluates foreign qualifications in order to provide support for people looking for work in Sweden. UHR is responsible for the national grade database Beda, which collects degrees and final grades from upper secondary education.

The Swedish Higher Education Authority (*Universitetskanslersämbetet, UKÄ*) publishes annual status reports on the picture of the higher education sector based on statistical data reported by the higher education institutions.

The Swedish National Agency for Higher Vocational Education (*Myndigheten för Yrkeshögskolan, MYH)* provides statistical annual reports on the picture of higher vocational education and development of validation of prior learning, while also analysing labour market needs for different sectors or subject disciplines. MYH is also serving as a national co-ordination point for the EQF – the European Qualifications Framework – and provides the qualification database which is making data available on all qualifications in the Swedish qualifications framework.

The Swedish Public Employment Service (*Arbetsförmedlingen*) provides information on conditions and future prospects in the labour market, including activity statistics on jobseekers registered with the Employment Service, vacant jobs reported by employers, employment and occupational forecasts based on operational statistics, surveys and data-driven models. Arbetsförmedlingen is also responsible for a CV profile service for jobseekers where they can make use of their personal skills data. *JobTech Development,* an established unit within the Swedish Public Employment Service, is leading Sweden's efforts to establish an open platform for digital matching services, including making available data on job advertisements and developing a taxonomy for the labour market, mapped to the European classification of skills, competences, and occupations (ESCO, discussed further below).

Sweden's transition organisations also play an important role in the skills data infrastructure, drawing together a broad range of skills data to inform their advice and support for employees in transition and mid-career workers, including to study, find a new job or start a business. For instance, TRR has developed a forecast portal (*Prognosportalen*) which collects data, via APIs, from a range of sources, including labour market forecasts and occupational information from the Swedish Public Employment Service (*Arbetsförmedlingen*), information on publicly funded education from the Swedish National Agency for Education (*Skolverket*), salary statistics from Statistics Sweden (SCB) and information on the

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competencies required within different professions or developed through education from JobTech Development.

There are also several specialist research councils and institutes operating under a range of ministries, including the Swedish Institute for Educational Research (*Skolforskningsinstitute*t), the National Institute of Economic Research (*Konjunkturinstitutet*); the Swedish Research Council; (*Vetenskapsrådet*) the Swedish Research Council for Health, Working Life and Welfare (*FORTE*) and the Institute for Evaluation of Labour Market and Education Policy (*IFAU*), which develop and fund research on the Swedish economy, labour market, skills provision and lifelong learning.

Sweden recognises the opportunity that digitalisation presents for supporting a more coherent data infrastructure for skills and the potential for increased access to data, stronger conditions for information exchange and new digital services that promote better matching between skills provision and economic and societal needs. The Agency for Digital Government *(Myndigheten för digital förvaltning, Digg)* co-ordinates the digitalisation of public administration and is also responsible for Sweden's national data portal (discussed further below). *Vinnova*, Sweden's Innovation Agency, also supports innovation in the areas of technology and has been actively involved in initiatives to create common data spaces (see Opportunity 3).

Regions and municipalities

The multi-level skills system in Sweden and significant regional labour market differences makes important access to granular data on skills supply, demand, and mismatches in Sweden's 21 regions and 290 municipalities. Since 2019, all regions have responsibility for providing assessments of skills needs as part of their statutory duty for regional development. New legislation came into force in 2023 requiring regions to establish goals and priorities for regional skills supply and provide assessments of the county's skills needs in the public and private sectors in the short and long term. Municipalities must also co-operate on planning, sizing and offering education. This collaboration takes place through an agreement, where the collaborating municipalities form a primary collaboration area for education. The collaboration agreement covers planning, dimensioning, and provision of certain education in upper secondary school and municipal adult education at upper secondary level.

The Swedish Agency for Economic and Regional Growth (*Tillväxtverket*) maintains a regional analysis and forecasting system, database of regional statistics and develops regional matching indicators. The Swedish National Agency for Education (*Skolverket*) is tasked with producing regional planning documents to inform the provision of upper secondary education and analysts at the Swedish National Agency for Higher Vocational Education (*MYH*) work closely with the Swedish regions and industry trade bodies to align higher vocational education with labour market demand.

Non-governmental stakeholders

Sweden has a long history of close collaboration between government institutions and various other stakeholders that comprise the wider research community, including Universities and University Colleges, confederations of enterprises, professional associations and others (CEDEFOP, 2022[7]).

Statistics Sweden and the Public Employment Service maintain close contact with employers and employers' confederations, trade unions and education providers. The Confederation of Swedish Enterprise (*Svenskt Näringsliv*), Swedish Federation of Business Owners (*Företagarna*), Swedish Confederation of Professional Associations (*Sveriges akademikers centralorganisation, SACO*) and the Swedish Association of Local Authorities and Regions (*Sveriges Kommuner och Regioner, SKR*) each undertake regular surveys or research examining a range of labour market and skills issues. Where they

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exist, sector councils and arenas[6] also provide skills intelligence on the evolving skills needs, employment outlook, current and anticipated skills deficiencies in the industries they represent.

Key sources of data on skills supply, demand and mismatch

Sweden's skills data infrastructure (as described in the previous section) supports a well-developed portfolio of high-quality, timely skills data, spanning skills supply, demand and mismatch (see Table 2).

Sweden benefits from several large national databases, including national registers which capture the education, occupation and industry of employment of almost the entire Swedish population: the Education Register (UREG), the Vocational Register (YREG) and the Business Database (FDB). The administrative databases of a range of different institutions and government agencies are effectively used to produce statistics and analysis covering a wide range of relevant issues, including student enrolments, achievement and outcomes at different educational levels.

On the demand side, Statistics Sweden (*Statistiska Centralbyrån, SCB*) maintains the Labour Force Survey on an ongoing basis providing robust and internationally comparable data on labour market conditions. The Swedish Public Employment Service (*Arbetsförmedlingen*) produces quarterly Labour Market Situation reports and twice-yearly Labour Market Outlook reports, which draw on a combination of operational statistics, survey evidence and forecasts to provide knowledge about the situation and future prospects in the labour market to guide jobseekers towards education or match them with employers' recruitment needs.

Skills anticipation is an important element of advanced labour market information systems and Sweden is recognised as having a long history of skills assessment and forecasting (CEDEFOP, 2022[7]). SCB produces robust, model-driven employment projections and forecasts for education and the labour market, over different time horizons, on a rolling three-year basis. The National Institute for Economic Research (NIER) produces ad hoc research related to skills anticipation and assessment and runs monthly business surveys which examine employment strategies and possible labour shortages. *Arbetsförmedlingen* also produces short-term occupational forecasts and undertakes long-term occupational field analysis to assess skills needs in different professions. The Swedish National Agency for Higher Vocational Education (*Myndigheten för Yrkeshögskolan, MYH*) also has a statutory duty to analyse the labour market needs for higher vocational education, which it communicates through several analysis reports. The reports depict student enrolments and completions, anticipated demand over the next 3-5 years, regional demand for different sectors and aligned educational specialisations, drawing on research produced by actors such as employers' confederations, Statistics Sweden (SCB), *Arbetsförmedlingen* and other actors producing data on skills and labour demand in Sweden. The Swedish Agency for Economic and Regional Growth *(Tillväxtverket)* Regional analysis and forecasting system (Raps) also features a model system which provides baseline forecasts and alternative scenarios at a regional level.

Sweden has also developed a range of statistical information to examine the extent to which the skills being developed in the education system are well aligned to the needs of the labour market. For instance, the *Ladok consortium* – a consortium of 40 universities and the Swedish Board of Student Finance which manage the *Ladok* educational administration system – has developed an advanced statistical tool that links data from several of Sweden's registers to allow users to examine graduate outcomes and destinations. *SCB's* longstanding Labour Market Tendency survey examines skills alignment, surplus and

[6] In Sweden, councils are typically formal bodies appointed by the government (with certain exceptions, such as the Regional skills councils). Arenas are less formal platforms/groups convened by the agencies for the purposes of collaboration, co-operation and co-ordination with stakeholders.

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shortage in different fields. Regional Matching Indicators produced by *SCB* and *Tillväxtverket* then examine alignment between education and occupational demand for regions.

Table 2. Overview of key sources of data on skills demand, supply and mismatch in Sweden

Name	Information provided	Responsible actor(s)
Official Statistics of Sweden	Provides a wide range of statistics on the economy, labour market and education, including data on employment, unemployment, the workforce, wages, the work environment, higher education, higher vocational education, graduate outcomes, adult education. This includes data based on administrative data, surveys, employment projections, trends and forecasts for education and the labour market.	Statistics Sweden (*Statistiska Centralbyrån*)
Demand for labour and skills		
Labour Force Survey	The statistics describe labour market developments for the Swedish population aged 15-74. The LFS shows the number and percentage of employed and unemployed persons respectively, per month, quarter and year. It is the only source of continuous data on total unemployment and represents the official unemployment rate.	Statistics Sweden (*Statistiska Centralbyrån*)
Employment projections	Forecast calculates the future trend in the number of gainfully employed persons and number of hours worked and what the changes mean for the future dependency ratio. The forecast is made about every three years and has a time horizon of 20 to 25 years.	Statistics Sweden (*Statistiska Centralbyrån*)
Trends and forecasts for education and labour market	Long-term forecasts of the supply and demand for labour for different educational groups, updated every three years. Forecasts are based on studying flows through the education system and labour market as well changes in educational requirements in different parts of the economy.	Statistics Sweden (*Statistiska Centralbyrån*)
Activity Statistics	Provides data on jobseekers (registered with the Employment Service), the number of vacant jobs (recruitment needs reported by employers).	Swedish Public Employment Service (*Arbetsförmedlingen*)
Jobads	On their platform the unit Jobtech, at the Swedish Public Employment Service, make available job ads, as well as a taxonomy for the labour market and other open solutions for digital matching services.	Swedish Public Employment Service (*Arbetsförmedlingen*)
Labour Market Situation and Outlook reports	Quarterly Labour Market Situation reports and twice-yearly Labour Market Outlook reports, which draw on operational statistics, survey evidence and forecasts to provide analysis of labour market conditions, trends in employment and recruitment, labour shortages, wages trends and business and employment outlook.	Swedish Public Employment Service (*Arbetsförmedlingen*)
Vacant jobs and recruitment needs survey	Arbetsförmedlingen has collaborated with SCB to produce a joint survey that will be included in the official labor market statistics. In 2024, Statistics Sweden will start collecting the survey, which will contain questions similar to those found in the Arbetsförmedlingen's previous forecast survey and SCB produkter – Konjukturstatitsik.	Swedish Public Employment Service (*Arbetsförmedlingen*) and Statistics Sweden (*Statistiska Centralbyrån*)
Occupational forecasts	Provide a 5-year outlook for employment in different occupations, including the regional distribution of opportunities, based on the Swedish Public Employment Service's activity statistics and surveys and register statistics from Statistics Sweden (SCB).	Swedish Public Employment Service (*Arbetsförmedlingen*)
Long-term Occupational field analysis	Utilise the Employment Agency's occupational forecasts to provide an assessment of long-term national skills needs in different professional fields.	Swedish Public Employment Service (*Arbetsförmedlingen*)
Area Analysis Reports	Analysis reports depicts student enrolments and completions from higher vocational education and establishment in the labour market, anticipated demand over the next 3-5 years, regional demand for different sectors and aligned educational specialisations. The analysis includes data from the Employment Agency's (Arbetsförmedlingen's) occupational forecasts, long-term occupational field analysis and research undertaken by industry trade bodies as well as data and reports from other actors, such as Statistics Sweden (SCB), and other actors producing data on skills and labour demand in Sweden.	Swedish National Agency for Higher Vocational Education *(Myndigheten för Yrkeshögskolan, MYH)*
Regional Analysis and Forecasting System (RAPS & RIS)	The Regional Analysis and Forecasting System (RAPS) is a tool for regional planning. RAPS is based on a database of regional statistics (RIS) covering a number of areas that are important for regional development, including structural and development variables, regional simulations and impact assessments.	Swedish Agency for Economic and Regional Growth *(Tillväxtverket)*
Supply of labour and skills		
Education Statistics	Provides statistics on pupils and staff in pre-school, primary and upper secondary schools, as well as data on course grades, continued studies and establishment in the labour market. Also provides regional planning documents, data from international surveys and wider publications on topics such as industry collaboration, work-based learning, study and career guidance.	Swedish National Agency for Education *(Skolverket)*

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Name	Information provided	Responsible actor(s)
Higher Education Statistics	Provides a comprehensive picture of the higher education sector through annual status reports, based on statistical data regularly reported by the higher education institutions to Statistics Sweden and UKÄ. The report addresses what has happened in the past year and includes longer-term trends and international comparisons. UKÄ also collects data on applicants and students admitted to higher education; employees in higher education; financial statistics on higher education institutions; international student mobility; student completion and graduates at first, second and third cycle.	Swedish Higher Education Authority *(Universitetskanslersämbetet, UKÄ)*
Higher Vocational Education Statistics	Statistical annual reports are carried out annually on behalf of the government and provide a picture of the situation and development within the forms of education for which the authority is responsible, including: Higher vocational education; art and culture courses and courses with supervision only; and interpreter training in public education.	Swedish National Agency for Higher Vocational Education *(Myndigheten för Yrkeshögskolan, MYH)*
Skills alignment and mismatches		
Background and Foreground data	Statistical tool that retrieves data from several different registers to track students before, during and after their studies. This includes data on outcomes and destinations, enabling users to examine the industry that different graduates end up in, what job they have, income and more.	Ladok Consortium
Labour Market Tendency Survey	Annual employer survey, which provides information on the extent to which employer are experiencing balanced supply, surplus or shortages of employees with specific educational background and how this varies depending on the characteristics of employers (e.g. sector). The 2024 survey will, however, be replaced by a new Job Openings and Recruitment needs survey.	Statistics Sweden (*Statistiska Centralbyrån*)
Regional matching indicators	Regional matching indicators including aggregate matching education and occupation, matching for different groups (gender, age, country of birth) and wider regional statistics e.g., on job inflows.	Statistics Sweden *(Statistiska Centralbyrån)* and Swedish Agency for Economic and Regional Growth *(Tillväxtverket)*

Source: Compilation by the OECD based on publicly available information and information shared by Sweden.

Mechanisms for the dissemination of skills data

Sweden disseminates skills data through a range of different mechanisms (Table 3). All national statistics are published on the Statistics Sweden website (www.scb.se), as well as through a range of Public Memorandums (PMs), reports and the SCB Statistical Database.

Other national agencies have developed various digital platforms for sharing public information with policy makers, the research community and end-users such as employers, education providers, careers guidance professionals, jobseekers and learners.

Table 3. Mechanisms for disseminating and sharing skills data in Sweden

Name	Description	Responsible actor
Public Memorandums and reports	All national statistics are published as public memorandums and stakeholders across the skills data infrastructure publish data as statistical releases or research reports	Various
Statistical Database	Interactive data platform that allows users to produce customised tables based on national statistics and download statistical files in different formats.	Statistics Sweden (Statistiska Centralbyrån)
Jobtech Platform	The Jobtech Platform makes available data on job advertisements, a taxonomy for the labour market and other open solutions for digital matching services.	Swedish Public Employment Service (*Arbetsförmedlingen*)
Sveriges dataportal (Sweden's National Data Portal)	Gathers and shares data for re-use to make it easier for users to find and explore it across sectors and domains. The portal only contains information about datasets, i.e. metadata. The actual datasets are retrieved via links for download	Agency for Digital Government *(Myndigheten för digital förvaltning, Digg)*

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Name	Description	Responsible actor
yrkeshogskolan.se (“Higher Vocational Education Platform”)	Digital platform that provides information about programs, courses and other opportunities within higher vocational education (HVE).	Swedish National Agency for Higher Vocational Education *(Myndigheten för Yrkeshögskolan, MYH)*
The Swedish National Qualification Database	The database currently includes basic data on qualifications (SeQF, EQF level, content of the qualification in the form of learning outcomes, SSYK and/or SUN code, validity period, who is responsible for the qualification, etc.), as well as a user interface to search for qualifications hosted on the MYH website and an open API published on the data portal.	Swedish National Agency for Higher Vocational Education *(Myndigheten för Yrkeshögskolan, MYH)*
Platsbanken (“National Jobbank”) ()	A searchable database of vacant jobs in Sweden	Swedish Public Employment Service (*Arbetsförmedlingen*)
Yrken och framtid (”Professions and Future”) ()	Provides various information about occupations and career forecasts to identify future prospects for different professions	Swedish Public Employment Service (*Arbetsförmedlingen*)
Utbildningsguiden (”The Education Guide”)	Provides information and guidance for individuals, enabling users to find and compare education offers at different levels, calculate their merit value or find occupations that may suit their interests and competencies	Swedish National Agency for Education (Skolverket)
Studera.nu ("Study.now”)	Allows users to find and compare university programmes courses and admission statistics on those.	University and Higher Education Council (UHR)
Uhr.se/statistik	Allows users to search admission statistics regarding higher education.	University and Higher Education Council (UHR)
Folkhogskola.nu (“Folkhögskola.now”)	Allows users to search for courses provided at Sweden's folk high schools	Folkhögskola.nu

Source: Compilation by the OECD based on publicly available information and information shared by Sweden.

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Opportunities for strengthening Sweden's skills data infrastructure

This section describes three main opportunities that were selected for Sweden to strengthen the skills data infrastructure. The selection is based on desk research, discussions with the project Advisory Group and engagement with a broad range of stakeholders (e.g. government agencies, employers and employer representative bodies, educational establishments, research institutes, social partners) during bilateral interviews and the virtual workshop.

Throughout these discussions, stakeholders recognised the breadth of the topic, the wide range of issues that might be relevant and the significant work already underway, not least related to the 2021 Government Task. As a result, this report seeks to identify those opportunities that are most important and relevant for Sweden's specific context and supportive and additive to current efforts to build a coherent skills data infrastructure for competency development and lifelong learning. The research identifies three such opportunities:

- Opportunity 1: Building a more user-orientated skills data infrastructure.
- Opportunity 2: Strengthening strategic co-ordination and collaboration across the skills data infrastructure.
- Opportunity 3: Improving understanding and co-ordination of Sweden's engagement with EU-wide skills data initiatives.

Opportunity 1: Building a more user-orientated skills data infrastructure

Background

Sweden continues to work to further strengthen its well-developed portfolio of high-quality, timely skills data. The 2021 Government Task entailed several sub tasks to this end, including strengthening the data infrastructure for lifelong learning through further development of the Swedish National Agency for Higher Vocational Education (MYH) qualifications database and extending the information included in the Susa Hub (see Box 2 below).

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Box 2. Recent measures to enhance the availability and quality of skills data in Sweden

Developing the MYH Qualification database

As part of the 2021 Government Task, the Swedish National Agency for Higher Vocational Education (MYH) was tasked with developing a qualifications database that can manage information both about qualifications and components of qualifications (e.g. learning outcomes, sub-qualifications and classifications). The database has been developed and currently includes basic data on qualifications (SeQF, EQF level, content of the qualification in the form of learning outcomes, SSYK and/or SUN code, validity period, who is responsible for the qualification, etc.), as well as user interface to search for qualifications hosted on the MYH website and an open API published on the data portal. The database currently includes information on non-formal qualifications and HVE qualifications. Future work envisaged includes qualifications from primary school, secondary education and higher education. Data on qualifications is uploaded from the database to the Europass platform through QDR[7] and uses ELM as standard.

Expanding the Susa Hub

The Susa[8] Hub aims to provide a single source of information on all state-funded education, from school to university education, for learners. Susa is a collaboration between various actors, led by the National Agency for Education (*Skolverket*), connected to the services of UHR, MYH, folk high schools, various providers of upper secondary education and adult training (*komvux*), where data is automatically retrieved on a daily basis. Susa data is available to everyone, including public and private actors, who can build websites, apps and other services based on its content.

The 2021 Government Task worked to further extend the information included in the Susa Hub, including police education and labour market training, and to extend the communication and marketing of the Susa Hub. Future work envisaged includes: continuing to strive to include all publicly funded professional programmes and continuing education; more comprehensive information on study paths in upper secondary education; and to ensure comprehensive data on focus of upper secondary education. There is also a need for ongoing active participation in the Swedish learning standard (EMIL) and to consider alignment with the EU's European Learning Model (ELM).

Source: Skolverket **(2023[8])**, *About the Susa Hub*, www.skolverket.se/om-oss/oppna-data/utbildningar-som-oppen-data/om-susa-navet and Arbetsförmedlingen **(2024[9])**, *Mission to develop a cohesive data infrastructure for competence provision and lifelong learning: Final Report,* https://arbetsformedlingen.se/download/18.70846b5318d40100840663/uppdrag-att-utveckla-en-sammanhallen-datainfrastruktur-for-kompetensf%C3%B6rs%C3%B6rjning-och-livslangt-larande-slutredovisning.pdf

Improving data sharing – between Government agencies and with wider actors in the skills data infrastructure – has also been a key area of focus and an important part of Sweden's National Data Strategy (Regeringsbeslut, 2021[10]). Sweden benefits from strong conditions for data sharing.[9] Co-operation between government agencies is regulated by Administrative Law (2017:900) and Sweden has new laws that require the public sector to make available data for re-use, especially in the form of open data (2022:818). Sweden has a common digital infrastructure (Ena), which includes a range of building

[7] https://europass.europa.eu/en/what-qualifications-dataset-register-qdr.

[8] Susa stands for "Samverkan Utbildningsinformation Skolverket – Arbetsförmedlingen" (Collaboration on Education Information Skolverket - Arbetsförmedlingen).

[9] "Data sharing" refers to the provision of data by the data holder, on a voluntary basis. It includes the re-use of data based on commercial and non-commercial conditional data-sharing agreements, as well as open data.

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blocks in areas such as digital services, information exchange, information management and trust and security. Sweden also has a range of taxonomies that promote common concepts and semantics that in turn enable data matching and promote interoperability[10] between systems and support the customisation of digital services.

Sweden's Dataportal, managed by *Digg*, is a platform that makes visible data from various agencies and organisations in Sweden. While the management and distribution of datasets are decentralised to their respective agencies, the Dataportal provides a central location for metadata describing the respective authority's data sets, Application Programming Interfaces (APIs), conceptual structures and specifications. The 2021 Government Task included work to ensure that all data sources relevant to skills provision and lifelong learning, and their various concepts, codes and specifications, are searchable via the Dataportal.

The Government Task also included wider efforts to strengthen the conditions for data sharing. The Semantics project has begun work on developing common concepts or translation keys between existing conceptual structures, which will enable the development of services for validation, matching and guidance. The Swedish Public Employment Service has also led an exploration of secure methods for handling individual data, building on an earlier Government Task led by Digg exploring secure and efficient electronic information exchange in the public sector. While the solution initially considered was ruled out during the exploration process, the sub-task identified a range of important learnings to guide future work in this area, including the need to choose established technology which could complement Sweden's existing digital infrastructure (Ena) and to monitor ongoing initiatives at the EU level (discussed further in Opportunity 3 below).

Analysis

Despite recent efforts, there is scope to further strengthen the collection, exchange and dissemination of skills data in Sweden and to sharpen focus on increasing the value of skills data for end-users. This was seen to offer a number of potential benefits, as set out in Figure 3. The potential benefits of better aligning skills data to user needs below.

First, Sweden can strengthen its skills data in a range of areas. Where data is provided on a voluntary (rather than mandatory) basis, resultant datasets are only partial in their coverage and/or are not comprehensive. Consulted stakeholders highlighted a need for more granular data on the tasks and skills needs within occupations to better inform job seekers of the skills needed by employers and the transferability of their skills to new professions. The availability of local labour market information is more limited and the availability of digital guidance can vary between municipalities. Ongoing work on the MYH Database and Susa hub is also important, to establish comprehensive national databases of all state-funded education and qualifications in the formal education system. Similarly, the inclusion of Certificate and Diploma supplements within Europass will strengthen information and improve international transparency on the knowledge and skills acquired through vocational training qualifications, better connecting learning outcomes with skills. However, there remain differences between the conceptual structures that are used to organise information and classify data on education (SeQF, SUN) and the labour market (SSYK, SNI) as well as with European classification of skills, qualifications, and occupations (ESCO) create a divide between information on education and the labour market and act to inhibit data.

[10] Interoperability refers to the ability of different digital services to work together and communicate with one another. The European Interoperability Framework identifies four layers to interoperability: Legal interoperability (e.g. the extent to which laws or regulations enable effective information exchange); organisational interoperability (e.g. co-operation between different authorities or agencies to support effective co-ordination of activities and sharing of data); semantic interoperability (common concepts or standardised categorisation of data elements); and technical interoperability (the specifications, services and protocols that enable systems and services to communicate and connect with one another) (European Commission, 2017[17]).

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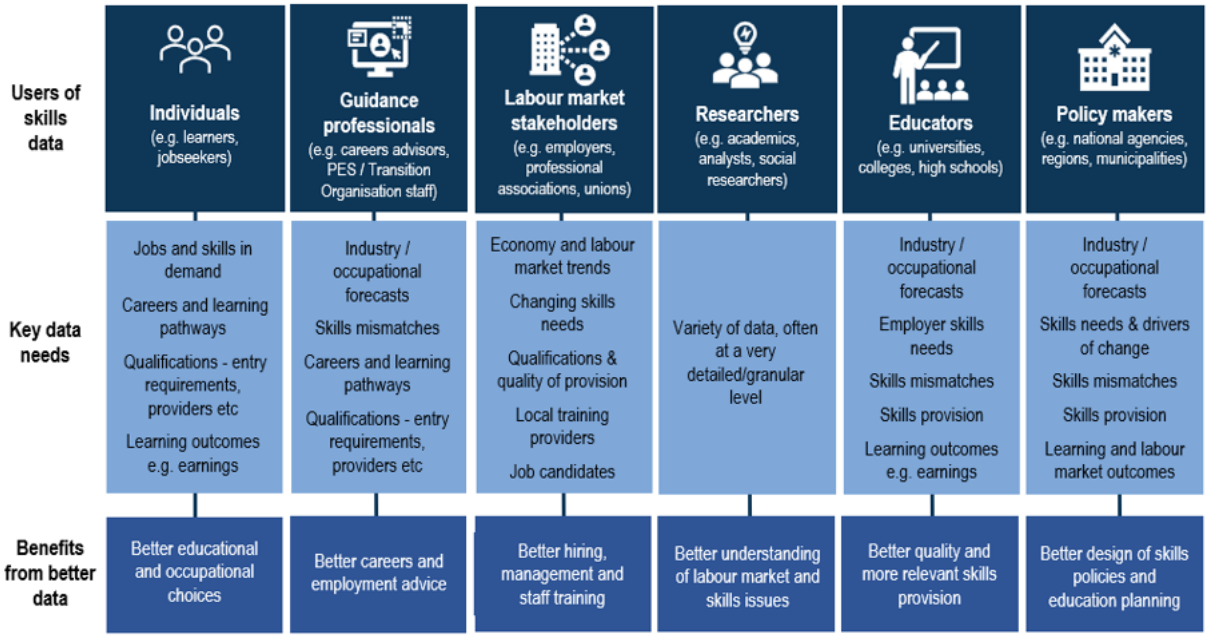
Figure 3. The potential benefits of better aligning skills data to user needs



Second, reforms to date have tended to focus on what advancements could be made given the data available, rather than the advancements needed to improve the relevance and value of data for end users. Building a more user-orientated skills data infrastructure was therefore seen as a key priority for Sweden. This would see stakeholders across the skills data infrastructure working collaboratively to examine the collective value of different datasets for their intended users, starting with the different needs of users and evaluating the extent to which these were being met by the datasets available. This was seen as important in prioritising resources towards those activities that would deliver greatest value for end-users.

Third, there is scope to enhance the relevance, navigability and customisation of skills information for users. For example, there are several alternative sources of labour market projections, underpinned by different forecasting methodologies, which can prove challenging for stakeholders in the skills data infrastructure that are dependent on this insight to inform service delivery, such as the transition organisations. With the regions playing a more central role in the dimensioning of skills supply, there is a need to examine the adequacy and accessibility of more granular, regional skills data. Further, there are a range of different data portals that aim to provide information to support the learning or career choices of individuals, including Skolverket's *Utbildningsguiden* ("The Training Guide", The Folk high schools *searchable database*; MYH's *yrkeshogskolan.se* ("Higher Vocational Training platform"); the University and Higher Education Council (UHR)'s *studera.nu* ("Study now platform") or various resources available from the Public Employment Service. Despite existing mechanisms for engaging with the wider research community and expert users of skills data (discussed further in Opportunity 2 below), Sweden needs stronger mechanisms for engaging with different user groups, including individuals, careers guidance professionals, education providers and transition organisations, to understand their needs for skills data in decision-making or service delivery and to identify how to improve the availability and user-friendliness of skills data.

Fourth, consulted stakeholders recognised the importance of continuing work to strengthen the conditions for data sharing in Sweden. This includes efforts to develop common concepts, translation keys and secure methods for transferring personal data. However, it is necessary to complement activities that seek to address technical obstacles with measures that strengthen the culture of data sharing between national agencies and with other actors in the skills data infrastructure, including the private sector. While the

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exploratory work undertaken as part of the 2021 Government Task was reported to have improved knowledge of the technical issues and experience of the techniques needed to overcome them amongst those involved, consulted stakeholders emphasised the need to widen and deepen understanding and confidence in sharing data more widely across Government. This included a stronger appreciation for the different types of data, allowances and limits to sharing this information, legally compliant and secure methods for information exchange that mitigate the risks of data sharing, and the value that could be derived for end-users in taking a more active approach to sharing data, including both restricted access to personal or sensitive data and as open data.

Opportunity 2: Strengthening strategic co-ordination and collaboration across the skills data infrastructure

Background

The governance of the skills data infrastructure in Sweden (as set out in the Mapping section) is complex, with responsibilities spread across multiple government agencies, levels of government and non-governmental stakeholders. While this is the case in many OECD countries, this complexity places strong emphasis on strong management and organisation of constituent parts of the system that supports the collection, sharing, dissemination of skills data.

Countries with well-developed labour market intelligence systems demonstrate a number of common features, including: strong legal frameworks; clear designation of roles and responsibilities; explicit focus on the needs of stakeholders and end-users; shared visions, strategies and work plans for the development of information systems, supported by long-term funding; and mechanisms that support collaboration and co-operation between institutions at a strategic and operational level. This, in turn, delivers a range of benefits, including improving the quality, coherence and value of skills data, promoting greater efficiency in its production, driving innovation through the pooling and sharing of data and strengthening the translation of information into intelligence that can inform policymaking (Barnes et al., 2023[11]).

In Sweden, national agencies have considerable organisational independence, and this extends to skills data. Despite being highly decentralised, the national statistical system in Sweden has been acknowledged for its high levels of trust and widespread culture of dialogue (European Commission, 2021[12]).

There exists a range of mechanisms for promoting co-ordination and collaboration between different actors in Sweden's skills data infrastructure. Statistics Sweden (*Statistiska Centralbyrån, SCB*) is tasked with co-ordinating the system for official statistics, providing advice and support and promoting co-operation between the agencies responsible for national statistics. It operates wider co-ordinating mechanisms, including the Council for Official Statistics, the Scientific Council and a range of User Councils, including for education statistics and labour market statistics. These Councils bring together a wider range of actors in the skills data infrastructure and complement wider mechanisms for promoting collaboration on issues relating to skills data, such as the Working Groups on analysis of skills data and forecasting and integrating EU skills tools and initiatives into the Swedish skills system established under the Inter-agency skills co-operation structure (*Myndighetssamverkan för kompetensförsörjning, MSV*) and the National Dataportal Community Forum, which supports the sharing of information between creators and users of skills data and digital services (see in dark green in Figure 1 above and Table 4 below).

Swedish Government provides an additional steer to promote co-operation between agencies in a range of areas relating to skills data. For example, The Swedish National Agency for Higher Vocational Education (*MYH*) has been tasked through their ordinance (*förordningar*) to co-operate with Swedish Education Agency (*Skolverket*), the Swedish Schools Inspectorate (*Skolinspektionen*) and the Swedish Council for

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Higher Education (*UHR*) in applying various EU tools to support the development of vocational training and mobility.

Table 4. Mechanisms to support co-ordination between different actors in Sweden's skills data infrastructure

Name	Description	Responsible agency
Inter-Agency Cooperation Structure (MSV)	Established as part of the 2022 Government Task to contribute to a well-functioning skills supply, bringing together seven governmental agencies: Swedish National Agency for Higher Vocational Education, Swedish Public Employment Service, Swedish Council for Higher Education, Swedish Higher Education Authority, Swedish National Agency for Education, Swedish Agency for Economic and Regional Growth, and the Council for the European Social Fund in Sweden; the Swedish National Council of Adult Education and Vinnova. There are eight working groups with different thematic focus, including for analysis of skills data and forecasting; and EU Initiatives.	The Swedish National Agency for Higher Vocational Education (*Myndigheten för Yrkeshögskolan, MYH*) is responsible for the administrative co-ordination of the MSV according to MYH's appropriation directive for 2024
SAM Forum	A website for all agencies responsible for statistics, which serves as one of the tools for co-ordinating official statistics. The SAM-Forum includes information about the agencies responsible for statistics (SAM), the regulations governing statistical activities, various aids and templates, documents, and minutes from meetings of the Council for Official Statistics and its working groups, as well as information about international co-operation.	Statistics Sweden (*Statistiska Centralbyrån*)
Council of Official Statistics	The Council is an advisory body set up to deal with matters of principle concerning the availability, quality, and usefulness of official statistics, as well as facilitating the response process for data providers. The Council works to improve co-operation between the statistical agencies, and to develop and manage a statistics network.	Statistics Sweden (*Statistiska Centralbyrån*)
User Councils	User councils aim to create a system of organised user contacts to continually provide Statistics Sweden with knowledge about the new and changing needs for statistics and to obtain the views of key users regarding changes in the statistics. There are currently 11 user councils, including for labour market statistics and education statistics.	Statistics Sweden (*Statistiska Centralbyrån*)
Sweden's Data Portal Community Forum	The forum on Sweden's data portal aims at dialogue and exchange of experience in matters relating to open and data-driven innovation and development.	Agency for Digital Government *(Myndigheten för digital förvaltning, Digg)*

Source: Compilation by the OECD based on publicly available information and information shared by Sweden.

The 2021 Government Task sought to support the development and management of an integrated data infrastructure for competence provision and lifelong learning (KLL) in Sweden. The Task required eight national agencies (*Arbetsförmedlingen*, *Skolverket*, *Myndigheten för Yrkeshögskolan*, *Vetenskapsrådet*, *Universitets- och högskolerådet*, *Statistiska Centralbyrån*, *Myndigheten för digital förvaltning*, *Vinnova*) to work collaboratively in delivering its six sub-tasks.[11] The Government mandate also stated that the agencies must jointly submit a proposal for how the long-term development and management of a cohesive data infrastructure for KLL should be organised, including identifying which agency or agencies are best suited to co-ordinate management and development of the skills data infrastructure (Regeringsbeslut, 2021[6]).

In the final report from the Government Task, the Agencies concluded that appointing a single agency responsible for promoting the management and sharing of data on competency development and lifelong learning would not promote the conditions for a coherent data infrastructure. Instead, the Agencies made a series of proposals, for individual agencies and for a collaboration between agencies:

[11] Further information on the 2021 Government task can be found in the final report and associated webinar.

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- **Individual agencies** prioritise data sharing to a greater extent than at present. This should include being able to demonstrate the prioritisation and resource allocation for the development of their data in their business planning; promoting the use, processing and reuse of data (including as open data); working to make data searchable, accessible, compatible and useable via Sweden's data portal and communicate digital resources via the Data Portal's community forum; and participating in the joint administration digital infrastructure for information (Ena).
- **Agency Collaboration** for Competence Supply and Lifelong Learning is to operationalised through a ***'forum'*** for co-ordination around common needs and activities concerning data. This forum would be 'instruction-driven', thus enabling long-term agreements and commitments and would also enable wider collaborations with other agencies, businesses and organisations. The report identifies several working groups within the Inter-agency skills co-operation structure (MSV) for competence provision and lifelong learning where work on the data infrastructure could be appropriate, including Analysis, EU initiatives, and Validation and Guidance. It also suggests that alternatively a new group responsible for the data infrastructure be established. At the time of writing, further plans for this Forum are under development.

Analysis

Sweden benefits from a range of mechanisms to promote co-ordination between different actors in the skills data infrastructure, such as via the Analysis Working Group within the MSV or through SCB's User Councils. The 2021 Government Task has further strengthened collaboration between the national agencies involved and has made clear the benefits of collaboration, where experiences are exchanged, and common issues are addressed. Nevertheless, there remains scope to strengthen strategic co-ordination and collaboration across the skills data infrastructure in a range of areas.

First, the system of Government in Sweden leads national agencies to prioritise resources towards delivering on appropriation directives (*regleringsbrev*) and government tasks (*uppdrag*) from the Government. Given national agencies responsible for the production and dissemination of skills data report to several different Ministries (as detailed in the Mapping section above) this was thought to promote silo-based working and a focus on skills data and digital resources needed by individual agencies in delivering their day-to-day operations. In addition to the need for stronger prioritisation and resource allocation for the management, sharing, use and reuse of skills data (as envisaged in the final report of the 2021 Government Task), there needs to be greater transparency in the plans of national agencies as they pertain to skills data and digital services and stronger incentives for national agencies to find, understand and utilise the data of other agencies or to consider how other actors may wish to use their data.

Second, with the 2021 Government Task now complete, there are concerns that the momentum gained in recent years might be lost, slowing progress in a range of important areas, such as improvements to the quality and comprehensiveness of skills data and the technical foundations that support data sharing. A defining challenge relates to the governance structures that will promote ongoing co-ordination and collaboration between different actors to develop and manage a coherent skills data infrastructure. Positioning this function within the existing structure of the MSV – with the establishment of the new MSV Data infrastructure working group offers benefits. For example, this could create a stronger link between the data needs of policy makers and other agencies working to promote a well-functioning supply of skills and the work programme of the group working to strengthen Sweden's skills data infrastructure. However, at the time of writing, the membership and work plan for the new Data infrastructure working group is still evolving and hence it is unclear whether this will provide a suitable structure for the long-term development and management of the skills data infrastructure. It will be important for the work programme to be developed through a consultative process and to be sufficiently wide-ranging and strategic in focus, building on the definition and vision of a coherent skills data infrastructure developed by stakeholders during the 2021 Government Task. Consulted stakeholders emphasised the need for greater clarity in the

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outcomes this would support and the conditions for achieving these. This would then provide the basis for a long-term, shared strategic plan for strengthening Sweden's skills data infrastructure, that will fully exploit the value of Sweden's data assets, for different user groups (as discussed in Opportunity 1), and for the economy and society at large.

A third question relates to the membership of the potential co-ordination and collaboration structure with the mandate for skills data. The membership of the new MSV Data infrastructure working group remains relatively limited, with the first meetings including the Swedish Council for Higher Education (*UHR),* Swedish National Agency for Higher Vocational Education (*MYH*), Swedish National Agency for Education (*Skolverket*), Swedish Public Employment Service (*Arbetsförmedlingen*) and Sunet. However, MYH's 2024 appropriation directive directed at the MSV (as mentioned above) states that the agencies must work to ensure that other relevant actors at national and regional level are given the opportunity to contribute to the collaboration for a well-functioning skills supply. While the working group seeks open dialogue with stakeholders through Digg's Community Forum and publishes all documentation on Arbetsförmedlingen's GitLab, it will also be important that steps are taken to widen the membership of the working group and to promote active engagement with other actors in the skills data infrastructure, not least SCB, the Swedish Research Council, other research councils, universities, regions, wider members of the research community, and sector councils and other arenas (where they exist, such as the National Arena for Skills Supply). The private sector is an important actor in the skills data infrastructure and the 2021 Government Task has emphasised the benefits of strong collaboration between public and private sector actors. Promoting greater dialogue and collaboration with actors outside of the data infrastructure for KLL is also seen as important, to further develop digital guidance and matching services by including wider information important for individual and region-based decision-making (e.g. transport, childcare, housing etc).

Fourth, there are outstanding questions concerning the delivery of the priorities identified by the potential governance structure in charge of skills data. Lessons from the execution of the 2021 Government Task highlight the importance of bringing together subject matter experts, drawn from across the skills data infrastructure, particularly when addressing technical issues. Additionally, those involved in the recent Task emphasised the importance of clearly specifying, planning and adequately resourcing these activities.

Opportunity 3: Improving understanding and co-ordination of Sweden's engagement with EU-wide skills data initiatives

Background

Sweden's efforts to promote a coherent skills data infrastructure sit within the wider EU agenda for skills and digital transformation. In 2020, the European Commission launched the European Agenda for Skills, comprised of 12 flagship actions to enable individuals and businesses to develop more and better skills and drive the twin green and digital transitions. Action 2 concerns strengthening skills intelligence, where embedding robust skills data into national skills strategies and training and education systems supports skills supply that is relevant to the needs of the labour market. The action includes a range of measures, including developing an online platform of real-time information on skills intelligence (Cedefop Skills-OVATE), presenting skills information tailored to the needs of individuals in Europass, an EU-wide platform which enables individuals across Europe to develop CVs, search for courses and jobs across Europe.

There have also been EU-wide initiatives to promote common concepts and a shared language around skills across Europe. The European Skills, Competences, Qualifications and Occupations (ESCO) classification, for example, identifies and categorises skills, competences, qualifications and occupations relevant for the EU labour market and education and training, while the European Learning Model (ELM) aims to a single language describing formal and non-formal learning (see Box 3).

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Sweden is actively involved in many of these initiatives. For example, there is alignment between Sweden's classification systems and those that exist at a European level. SUSA hub and the MYH qualifications database also supply data to the Europass platform, following EU-standards and the Europass portal is searchable in Swedish.

Work underway as part of the European Strategy for Data and Program for a Digital Europe (DIGITAL) is also relevant to Sweden's efforts to promote data sharing and the interoperability of systems. This has included a number of legislative reforms, such as the Data Act (2024), Interoperable Europe Act (2024) and Data Governance Act (2022), which provide the necessary legal provisions to facilitate data sharing, promote trust and develop connected public services for businesses and citizens. Statistics Sweden (*Statistiska Centralbyrån*) and the Agency for digital Government (DIGG) have been appointed as responsible agencies in Sweden under the the European Data Governance Act.

One particularly notable example are developments around common data spaces in strategic economic sectors and domains of public interest. Data spaces differ from open data portals in that they provide the secure infrastructure for a multitude of stakeholders to share their data, under conditions that they themselves stipulate. As such, they aim to promote the sharing and accessing skills data for innovation purposes, supporting the development of new data-driven services, for example for validation, matching and guidance. In the skills space, the European Commission has funded the EDGE Skills Project and DS4Skills project under the Digital Europe Programme (see Box 4).

Box 3. Initiatives to strengthen the skills data infrastructure across the European Union

Cedefop Skills-OVATE

Skills-OVATE offers detailed information on the jobs and skills employers demand based on online job advertisements (OJAs) in 28 European countries. Users can access information based on millions of OJAs collected from thousands of sources, including private job portals, public employment service portals, recruitment agencies, online newspapers and corporate websites. Data is presented for the last four available quarters and is updated four times a year. Yearly averages are provided for key variables thus supporting both up-to-date information and trend analysis. Skills OVATE provides information on occupations (based on ISCO-08), skills (ESCO or O*Net) and regions (NUTS-2).

ESCO

ESCO is the multilingual classification of European Skills, Competences, Qualifications and Occupations. The ESCO classification identifies and categorises skills, competences, qualifications and occupations relevant for the EU labour market and education and training. It systematically shows the relationships between the different concepts.

Europass

Europass is an EU-wide platform that provides a range of skills information and resources for individuals. This includes tools to develop CVs, build a digital profile capturing skills, qualifications and experience; search for courses and search for jobs across the EU. Europass digital credentials provide a trusted, secure framework for recognising foreign qualifications across the EU. A key aim of Europass is to improve the transparency and comparability of the qualifications of European citizens and enable their mobility in accessing opportunities across Europe.

European Learning Model

The European Learning Model (ELM) was developed by the European Commission with the aim to provide a framework for describing formal and non-formal learning opportunities, qualifications,

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accreditation and credentials, and to facilitate faster credential recognition and greater mobility of citizens on the European labour market. The ELM is multilingual, and fully aligned with existing open frameworks and standards, including the European Qualifications Framework for Lifelong Learning (EQF) and the European Classification of Skills, Competences, Qualifications and Occupations (ESCO). The ELM aims to address disparities in the way that nations describe learning, creating a single vocabulary that will support the recognition of qualifications and digital credentials across Europe and open up new possibilities for skills data exchange and interoperability.

Source: Cedefop (2024[13]), *Skills-OVATE*, www.cedefop.europa.eu/en/tools/skills-online-vacancies; European Union (2024[14]), *About Europass*, https://europa.eu/europass/en/about-europass; European Union (2023[15]), *Launch of the European Learning Model*, https://europa.eu/europass/en/news/launch-european-learning-model.

Box 4. Common European Skills Data Space

To harness the value of data for the benefit of the European economy and society, the European Data Strategy set out plans to establish Common European Data Spaces in a number of strategic fields, including health, agriculture, manufacturing, energy, mobility, financial, public administration and skills. The intent is that these data spaces will be interconnected to form the single market for data.

The Common European Data Spaces will enable data from across the EU to be made available and exchanged in a trustworthy and secure manner. The Data Spaces will have a number of features, including: being open for participation by all organisations and individuals; having a secure infrastructure to pool, access, share, process, and use data; with well-defined and trustworthy data governance mechanisms. A distinct feature of the Data Spaces is that data holders will determine the conditions through which their data is shared, including granting access to data and defining how it may be used. The Data Spaces are expected to provide a safe and reliable framework for the sharing of data for innovation purposes, supporting the development of new data-driven products and services in the EU.

While all European data spaces will share a common data infrastructures and governance frameworks and the European Commission provides a range of wider support, stakeholders in each distinct sector drive the evolution of data spaces. In the area of skills, two initiatives are relevant:

The EDGE Skills Project was initiated to develop and deploy a cloud to edge infrastructure for education and skills capable of connecting services and data, enabling decentralised data sharing and making the data space infrastructure widely accessible. This project aims to create innovative building blocks to enable this decentralised infrastructure and helps to finance sectoral use cases, demonstrating their value in solving real issues organisations and people face.

Data Space for Skills (DS4Skills) with the completion of a 1-year preparatory phase (2022-23) which sought to prepare the ground for the development of an open and trusted European Data Space for Skills. This initial phase featured a number of work packages, to define relevant data sources and map existing platforms and projects; and develop a blueprint for the deployment of this data space in the future, with various conceptual approaches and options as well as specific use cases. The European Commission has since issued an open call for the deployment of the Data Space for Skills, which will develop a secure infrastructure and governance frameworks to enable skills data from across the EU to be shared in a secure and trust-worthy manner, promoting innovation and the development of new data-driven products and services.

Source: European Commission (2024[16]), *Common European Data Spaces*, https://digital-strategy.ec.europa.eu/en/policies/data-spaces.

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Analysis

Sweden collaborates on a range of EU initiatives. Sweden's National Data Strategy prioritises Sweden's engagement with European common data areas, as important mechanisms for improving data access, data sharing and co-operation. Further, the EU perspective was explicitly integrated into the implementation of the 2021 Government Task to develop a coherent data infrastructure, for example in work to develop common concepts and standards for data exchange. Despite this, there remains scope to improve understanding and co-ordination of Sweden's engagement with EU-wide skills data initiatives, as part of Sweden's wider commitment and activity within the framework for the EU's Skills Agenda and the European Strategy for Data in a range of areas.

First, there is a need to strengthen understanding of different EU-wide initiatives. While stakeholders at the virtual workshop considered Sweden's participation in EU initiatives to be important, and rated this highly during the interactive polling, further discussions reveal that many stakeholders have a lack of understanding of the various initiatives at the European level, what they aim to achieve, how they relate to one another and why they are relevant to work being progressed to strengthen the skills data infrastructure in Sweden. Stakeholders also report a need for greater clarity in the extent to which other agencies and wider actors are engaging with EU initiatives, to support greater co-ordination of Sweden's involvement in EU projects.

Second, there is a need to strengthen the case for Sweden's engagement in EU-wide initiatives. EU initiatives are addressing many of the same challenges that Sweden faces in promoting a coherent data infrastructure for skills supply. For instance, the European Learning Model (referenced in Box 3 above) is seeking to address disparities in the way learning, qualifications and credentials are described, as a basis to support data sharing and interoperability of systems - something identified as a priority in Sweden too. Further, ongoing work on Common European Data Spaces for skills is developing use cases, governance frameworks and infrastructure to promote data sharing for innovation – another objective of Sweden's 2021 Government task. Also, Sweden's own efforts to develop common concepts and translation keys and to examine methods for the secure transfer of sensitive data provide valuable learnings for other European nations with similar endeavours. More active participation could, therefore, promote shared problem solving and foster innovation in addressing the obstacles to effective and impactful sharing of skills data. However, consulted stakeholders suggested that often such initiatives were deemed as largely technical exercises and the potential benefits to Sweden of deep and sustained engagement is not always clear. Ongoing work being led by Arbetsförmedlingen and Vinnova in developing use cases and drawing learnings from Data Spaces in other sectors (e.g. in Health) will therefore be important in promoting stronger engagement amongst Swedish stakeholders. There is also a need for greater transparency in the processes through which different agencies prioritise and assign resources towards different EU skills data initiatives.

Third, despite engagement with EU initiatives being identified as a key priority by Swedish Government, some national agencies report a lack of dedicated resources as a barrier to more active participation in EU skills data initiatives. Different budgets and capacities of government agencies was seen as a key factor. Without clear directives and/or tasks from the Government, resources are often allocated to the day-to-day activities of the organisation and engagement with wider activities, such as EU initiatives, was enabled through the allocation of short-term funding and/or the discretionary efforts of staff, which serve to undermine the potential for Sweden to engage on a significant and sustained basis.

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