



Starting Strong IV

Early Childhood Education and Care

Data Country Note

GERMANY

This Data Spotlight note on Early Childhood Education and Care (ECEC) provides a summary overview of ECEC policy inputs, outputs and outcomes in Germany. It uses data available within the OECD Secretariat — *Education at a Glance*, the Programme for International Student Assessment (PISA) and the OECD Family Database — to make comparisons between Germany's ECEC system and the systems in other OECD countries (see Box 1 for definition and comparability issues). This note complements the 2015 OECD publication *Starting Strong IV: Monitoring Quality in Early Childhood Education and Care*.

Key characteristics of ECEC in Germany:

Resources that are put in the ECEC system

- The share of gross domestic product (GDP) devoted to ECEC (ISCED 0) is similar to the OECD average (0.8% of GDP). The share of private funding for pre-primary education (ISCED 02) is somewhat above the OECD average (20.9% and 17.1% respectively).
- Annual expenditure per child in ECEC (ISCED 0) is above the OECD average (USD 10 542 and USD 8 618 respectively).
- In pre-primary education (ISCED 02), there are about 10 children per state-recognised educator¹ (*Erzieher/in*) in Germany, which is 4 children fewer per teacher than the OECD average of 14 children per educator, excluding the non-teaching staff, such as auxiliary staff.

Access and participation

- Germany has an extensive access to ECEC services: legal entitlement to ECEC is proposed to all children from age 1 to school entry. Despite this policy, participation of 0-2 year-olds in formal care is below the OECD average (29% and 33% respectively), but has increased notably in recent years (from 10.4% in 2003).
- Participation of 3-5 year-olds in pre-primary education (ISCED 02) is significantly above the OECD average (97% and 84% respectively).

Teacher's academic qualification and working conditions

- In most OECD countries, academic training leading to a Bachelor's degree is common among ECEC staff. In Germany, the qualification to become a state-recognised pre-primary educator takes three years of post-secondary vocational training. Prior to access to a vocational college for educator, students are required either a 2-year course as a childcare assistant (*Kinderpfleger/in*) or training and work experience in a related field. By contrast, all primary teachers in Germany have a Master degree.
- The annual number of hours in (direct) contact with children in Germany is well above the OECD average (1 482 and 1 005 hours per year respectively).

Monitoring Quality

- Monitoring of ECEC takes place at the local level in Germany. Challenges for monitoring quality persist as no national monitoring system is in place and common monitoring practices do not always consider the views of all stakeholders (see [Monitoring Quality in Early Childhood Education and Care Country Note: Germany](#)).

Student performance at age 15 by participation in pre-primary education

- The percentage of 15-year-olds in Germany who reported not attending pre-primary education in PISA 2012 was low (3.2% compared with 7.1% across the OECD). Notably, children from a lower socio-economic background and in socio-economically disadvantaged schools were less likely to have participated in pre-primary education. Nevertheless, the relationship between attending pre-primary education and mathematics performance of 15-year-olds is statistically significant in Germany and above the OECD average (42 and 31 score points, respectively).

Introduction

Participation in ECEC can have a positive effect on children's early learning and development, as well as on subsequent outcomes, such as academic success, labour market performance and socio-economic mobility. The benefits of ECEC on child outcomes, however, depend on high quality. Settings and programmes that have a high level of quality are positively associated with children's cognitive, social and behavioural development, with disadvantaged children benefitting significantly from high-quality settings (OECD, 2011; Gambaro et al., 2014). Policy outcomes are associated with both policy inputs and policy outputs.

For simplicity purposes, this note uses the term early childhood education and care (ECEC) to refer to arrangements providing care and education for children under compulsory school age. This term differs from those used by other sources in this note, including the ISCED 2011 classification (see Box 1 for the ISCED 2011 methodological distinction between childcare and pre-primary education). Because of these differences in definitions, caution is needed when comparing data presented here.

The note is structured in three sections:

- **Policy inputs:** This section presents indicators of the resources that are put into a system, such as the level and type of sources that finance ECEC, and the regulations of staff-child ratios to achieve outputs or a result.
- **Policy outputs:** This section covers indicators that are the result of policy inputs put in place, such as enrolment rates by age. Trend data is presented to examine the changes in early childhood education in recent years.
- **Policy outcomes:** This section covers indicators on the outcomes of children that are associated with both policy inputs and policy outputs. For example, indicators on student performance at age 15 by participation in pre-primary education (drawn from PISA 2012)

Section 1. Policy inputs

Organisation of early childhood education and care services

The organisation of ECEC services varies greatly from country to country in terms of structures, but also regarding the age of children attending different types of settings or the intensity of child participation in different settings). The German ECEC system is an integrated system that is under the auspices of the Federal Ministry of Family Affairs, Senior Citizens, Women and Youth (BMFSFJ). Educational goals apply to children aged 0 until end of primary school, and ECEC staff are trained to work with children aged 0 and above (older than school entry), e.g. in after-school centres. However, training has a focus on children aged from 0 to school entry (starting age of compulsory school varies between 5 and 6, depending on the *Länder* [federal states]). In Germany, the concepts *Bildung* (education), *Betreuung* (care) and *Erziehung* (upbringing) are deeply intertwined, and a holistic approach is always implemented in German ECEC services at ISCED level 0.

Generally, children aged 0-2 attend crèches, called *Krippen* (according to ISCED 2011 this educational level can be classified as ISCED 01), children aged 3 to school entry attend *Kindergarten* (according to ISCED 2011 this educational level can be classified as ISCED 02). A large number of children attend mixed-age childcare centres, referred to as *Kindertageseinrichtung mit Kindern aller Altersgruppen* (children aged 0-6) (according to ISCED 2011 this educational level can be classified as ISCED 0). Latest estimates indicate that over half of all ECEC centres in Germany (31 319 centre out of a total of 54 871) provide services for children of all age groups (German Federal Statistical Office 2016, Tab. 1). In their last year of kindergarten, most children attend pre-school classes in addition to attending their regular ECEC service or school kindergarten (OECD, 2016a).

Participation in ECEC services is partly supported by legal entitlements² to a place in ECEC and efforts to ensure free access, at least for some ages and selected population groups. Germany is among the few OECD countries (alongside Finland, Norway and Sweden) where there is a legal entitlement to ECEC (centre and home based) for all children aged from 1 to school entry. And some *Länder* offer free provision for certain age groups (OECD, 2015b).

Funding of early childhood education and care services

The level of governance responsible for early childhood education and care services differs according to the area concerned, and also across countries. In Germany, funding responsibilities are shared between state, regional (*Länder*) and local level (municipalities), whereas almost all other responsibilities are at the regional or local level (OECD, 2015a).

Box 1. Distinction between early childhood educational development and pre-primary education: The revised ISCED 2011 classification

There are many different ECEC systems and structures within OECD countries. Consequently, there is also a range of different approaches to identifying the boundary between early childhood education and childcare.

The International Standard Classification of Education (ISCED) defines internationally comparable levels of education. In ISCED 2011, level 0 covers early childhood education for all ages, including very young children. As the educational properties of ISCED 0 programmes can be difficult to assess directly, several criteria are used to come up with a technical definition. For a programme to be reported as ISCED level 0 it must have: adequate intentional educational properties; be delivered by qualified staff members; take place in an institutionalised setting; meet a minimum intensity/duration; and be targeted at children from age 0 until entry into ISCED level 1 (OECD, 2016).

Programmes classified at ISCED level 0 may be referred to in many ways nationally, for example: early childhood education and development, play school, reception, pre-primary, pre-school, *Kindergarten*, *Kita*, *Krippe* or *educación inicial*. For programmes provided in *crèches*, day-care centres, private homes, nurseries, *Tagespflege* or *guarderías*, it is important to ensure that they meet the ISCED level 0 classification criteria specified in ISCED 2011.

In ISCED 2011, programmes are sub-classified into two categories depending on age and the level of complexity of the educational content: early childhood educational development (ISCED 01) and pre-primary education (ISCED 02). ISCED 01 programmes are generally designed for children younger than 3 (OECD, 2016). This is a new category not covered by ISCED 1997. ISCED 02 is designed for children from age 3 years to the start of primary education. It corresponds exactly to level 0 in ISCED 1997.

The comparability of programmes at ISCED level 0 depends on each country's ability to report data according to the standard international definition. Early childhood programmes that are offered in some countries do not necessarily meet the criteria or definition of ISCED 01. This is the case of Belgium (except in the Flemish Community), the Czech Republic, France, Ireland, Italy, Japan, Luxembourg, the Netherlands, Poland, Portugal, the Slovak Republic, Switzerland and the United States. On the other hand, the coverage of ISCED 02 (pre-primary education) is larger, with 32 countries reporting data on enrolment rates at ages 3 and 4. Because of these differences, caution is needed when comparing available data on ISCED 01 drawn from Education at a Glance.

The definition of ECEC in the OECD's Starting Strong series differs from the ISCED 2011 definition. The OECD definition states that "the term early childhood education and care (ECEC) includes all arrangements providing care and education for children under compulsory school age, regardless of setting, funding, opening hours or programme content" (OECD, 2001). This means that settings considered an integral part of countries' ECEC systems, but not covered by the ISCED classification, still fall under the terminology of ECEC.

Data reported in *Education at a Glance 2016*, and presented here as ISCED level 0, use the ISCED 2011 classification (Figures 1, 2, 3 and 5). PISA 2012 uses the ISCED 1997 classification (Figure 6). The OECD Family Database definition of "formal" childcare among children aged 0-2 years includes centre-based services, organised day care, pre-school and professional child-minders (Figure 4). That is, it includes ISCED 01 and other registered ECEC services (Figure 4).

Sources: OECD (2016), *Education at a Glance 2016: OECD Indicators*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2016-en>; OECD (2001), *Starting Strong I: Early Childhood Education and Care*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264192829-en>.

Average expenditure on early childhood education and care as a percentage of GDP

The financial investment in ECEC settings and equipment is a key requirement for the development of good and high quality learning environments, and indicates that political priority is being given to the care and education of young children. Sustainable public funding is essential to recruit competent and qualified staff, ensure the quality of educational programmes, and promote their development.

In Germany, public and private expenditure on ECEC institutions (ISCED 0) represented 0.8% of GDP in 2013, the same as the average across OECD countries. Chile, Denmark, Iceland, Israel, Norway, Slovenia and Sweden spent 1.0% or more of their GDP on ECEC (ISCED 0) (OECD, 2016a, Table C2.3). Of the 0.8% of GDP spent in Germany, 0.5% is spent on pre-primary education (ISCED 02) and 0.3% on early childhood educational development (ISCED 01) (OECD, 2016a).

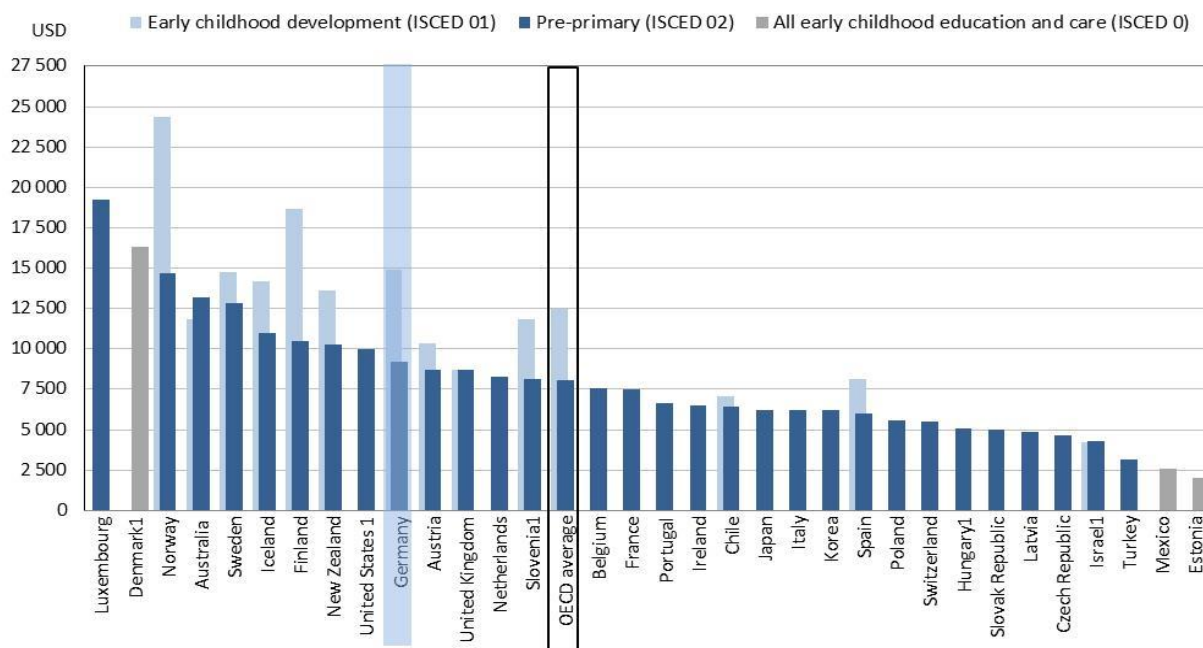
Expenditure per student in early childhood education and care is higher than the OECD average

Expenditure per student in pre-primary education (ISCED 02) in Germany was USD 9 167, somewhat higher than the OECD average of USD 8 070 in 2013. Similarly, expenditure per student in early childhood educational development (ISCED 01) in Germany was USD 14 866, which is higher than the average of USD 12 501 across OECD countries with available data (see Figure 1).

Cross-country differences in the share of GDP spending on ECEC (ISCED 0) and in expenditure per student at this level explain, at least partly, the differences in enrolment rates and in children to staff ratios between countries. For instance, countries with higher expenditure per student tend to have higher enrolment rates or/and lower children to staff ratio compared to the OECD average. The level of expenditure per student varies between countries depending on fees and cost of education, the level of wealth of the country, and the coverage by private ECEC structures.

Private funding's share of pre-primary education is somewhat above the OECD average

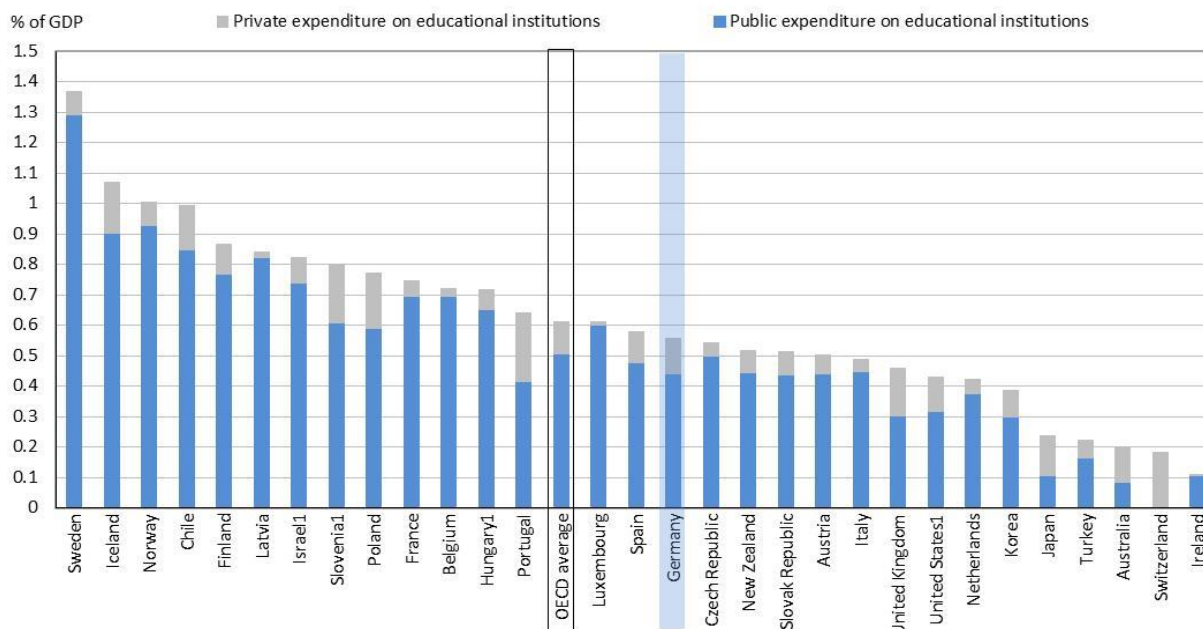
Early childhood education and care services (like all other levels of education) are also funded by private sources³, mainly through fees paid by parents. Limited comparable data regarding the services for young children in childcare mean that the extent of total private funding in childcare cannot be analysed. In Germany, private funding of pre-primary education (ISCED 02) represented 0.12% of GDP in 2013 (the OECD average is 0.11% of GDP), and 21% of the total funding of pre-primary education (ISCED 02), which is somewhat above the average proportion of private funding among OECD countries (17%) (Figure 2) (OECD 2016, Table C2.3).

Figure 1. Annual expenditure per student by educational institutions for all services (2013)

Notes: Countries are ranked in descending order of annual expenditure per student by educational institutions for pre-primary education.

1. Includes some expenditure on childcare.

Source: OECD (2016), Education at a Glance 2016: OECD Indicators, Table C2.3, <http://dx.doi.org/10.1787/888933398316>

Figure 2. Distribution of public and private expenditure on pre-primary educational institutions (2013)

Notes: Countries are ranked in descending order of public and private expenditure on educational institutions (2012).

1. Includes some expenditure on child care.

Source: OECD (2016), Education at a Glance 2016: OECD Indicators, Table C2.3, <http://dx.doi.org/10.1787/888933398316>.

Quality of early childhood education and care services

Curriculum frameworks can play a pivotal role in ensuring the quality of ECEC services. Mandatory curriculum frameworks are in place for the vast majority of settings in countries with available information, whereas Germany is one of the few countries where some *Länder* provide non-binding guidelines and recommendations. Many *Länder* have integrated curriculum frameworks that cover both ECEC and primary school aged children, which may foster the quality of ECEC services across age groups (OECD, 2015a, 2012).

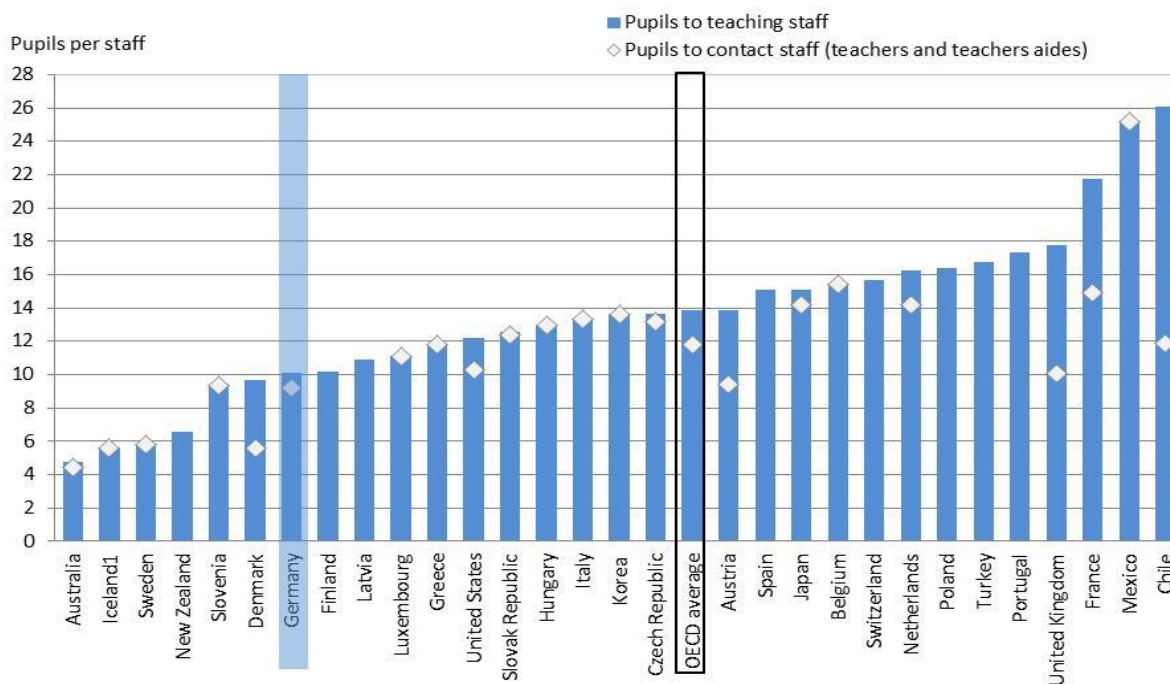
The number of children per staff is comparatively low in ECEC services

The child-to-staff ratio is an important indicator of the resources invested in early education and childcare, and also of the quality of these services. A low ratio of children to staff impacts staff working conditions, alongside other factors such as reasonable hours or workload and salary levels. These affect job satisfaction and staff retention, and through this, contribute to the quality of early childhood education and care services (OECD, 2011).

In some countries, regulations are in place regarding the maximum number of children per adult in childcare services. In Germany, the regulation varies between *Länder*, from fewer than 4 in North Rhine-Westphalia to 8 in Thuringia.⁴ The OECD average is seven per staff member (OECD, 2011).

In pre-primary education (ISCED 02) there are about 10 children per state-recognised educator in Germany, which is 4 children fewer per teaching staff than the OECD average of 14 children per teacher, excluding the non-teaching staff, such as auxiliary staff (OECD, 2016a, Table C2.2). Germany is among the OECD countries that have the smallest ratios, but the average ratio for Germany may hide larger variations across *Länder* (federal states).

Figure 3. Ratio of children-to-teaching staff in pre-primary education, 2014



Notes: Countries are ranked in descending order of the pupil-to-teaching-staff in pre-primary education.
1. Year of reference is 2013 instead of 2014.

Source: OECD (2016), *Education at a Glance 2016: OECD Indicators*, Table C2.2, <http://dx.doi.org/10.1787/888933398305>.

At the pre-primary level (ISCED 02), auxiliary staff (i.e. support staff for state-recognised educators in Germany) works directly with children. At this level, 8 OECD countries, including Germany, have reported better pupils-to-contact staff ratios (teaching and auxiliary staff) than ratios for teaching staff only (OECD average of 12 children per contact staff compared to 14 children per teaching staff). In Germany, there are 9 children per contact staff, compared to 10 children per state-recognised educating staff (see Figure 3). In early childhood educational development programmes (ISCED 01) there are 5 children per state-recognised educating staff and 5 children per contact staff in Germany (OECD, 2016a).

Pre-primary state-recognised educators have a lower level of formal qualification than most other OECD economies and the annual number of hours in (direct) contact with children is lower than the OECD average

In OECD countries, the duration of initial teacher training varies more in pre-primary education (ISCED 02) than at any other level of education: from two years for basic certification in Korea and Japan to five years in Austria, Chile, France, Iceland and Italy. In Germany, the qualification to become a state-recognised pre-primary educator (Erzieher/in) takes three years of post-secondary vocational training (OECD, 2014a, Table D6.1a). Prior to access to a vocational college for educator (Erzieher/in), students are required either a 2-year course as a childcare assistant (Kinderpfleger/in) or training and work experience in a related field (Rauschenbach and Riedel, 2015). Applicants also have to fulfil an entry requirement of either vocational training in the area of ECEC or a practical year in an ECEC setting. By contrast, primary teachers in Germany have all a master degree. In most other OECD countries, academic training leading to a Bachelor's degree is common among ECEC staff (OECD, 2015a).

In Germany, there are on average 39 weeks of direct contact with children in pre-primary education (ISCED 02), which is close to the OECD average of 40 weeks per year. However, the annual number of hours in direct contact with children in Germany is well above the average among OECD countries: pre-primary state-recognised educators annually spend 1 482 hours in the classroom, around 47% more than the OECD average of 1 005 hours (OECD, 2016a). Germany is one of the few countries (alongside Austria, the Czech Republic, Denmark and the Netherlands) where state-recognised educators' total annual statutory working time (e.g. the amount of time available for teaching but also for non-teaching activities such as lesson preparation, correction, in-service training and staff meetings), at school or elsewhere, is specified, but the allocation of time spent at school and time spent elsewhere is not (OECD, 2016a).

Monitoring of early childhood education and care settings is a common practice

While monitoring systems and practices vary widely, certain common trends can be observed. All 24 countries and jurisdictions surveyed for *Starting Strong IV: Monitoring Quality in Early Childhood Education and Care* monitor service and staff quality, but only 21 monitor child development and outcomes. In Germany, all of these different aspects are monitored, but with variations across settings and *Länder*. In child day care centres, service quality, curriculum implementation and child development or outcomes are monitored; however, there is no specific monitoring of staff quality. Some process aspects of staff quality are part of the monitoring schemes that assess overall service quality. In family day care, only staff quality is monitored (OECD, 2015a). This is discussed in further detail in Germany's country note on Monitoring Quality in ECEC (OECD, 2016b).

Section 2. Policy outputs

Participation in early childhood education and care services

Participation of 0-2 year-olds in formal childcare is lower than the OECD average but has increased in recent years.

In Germany in 2013, 29% of 0-2 year-olds participated in some form of formal ECEC⁵, such as centre-based services, or other forms of organised/registered ECEC like family day care (*Tagespflege*) or pre-school classes (*Vorklassen*) (ISCED 0 and registered child-minders). This participation rate is lower than the OECD average of 33%, but has almost tripled between 2003 and 2013 (from 10.4% in 2003). This increase in participation rates reflects the efforts Germany has made in recent years to help parents reconcile work and family life, with the aim of boosting fertility rates and hence offsetting demographic ageing (OECD, 2014b). Only Korea, Luxembourg and Norway experienced similar increases in the participation of the youngest children in formal care (see Figure 4). The increase in participation rates reflects the efforts.

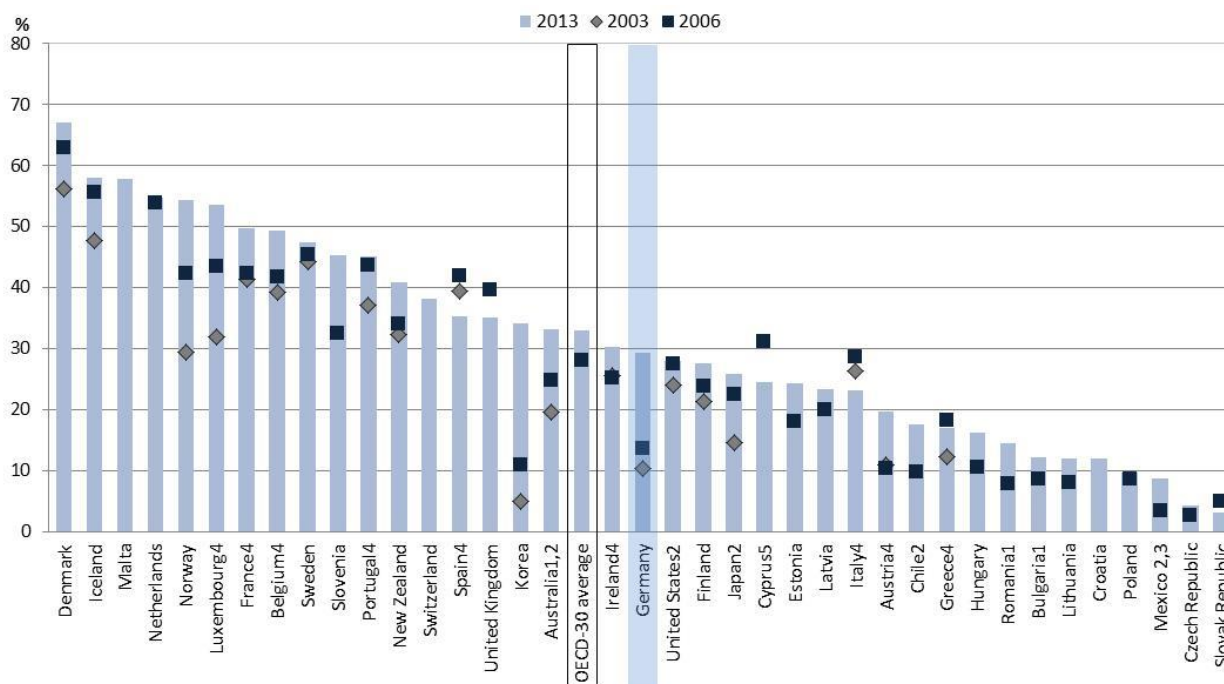
While participation rates by age provide a proxy of for how long children are enrolled in ECEC over their childhood (e.g. in years), they do not provide any information about the intensity of participation in childcare services, i.e. whether children participate only for a few hours per day or full-time. The intensity of participation varies considerably across countries. In Germany, a child attended ECEC for an average of 28 hours per week in 2013, which is two hours less than the 30 hours corresponding to full-time care. The full-time equivalent participation rate (adjusted for the intensity of use of childcare services) for 0-2 year-olds in formal childcare is the participation rate if all 0-2 year-olds that use formal childcare do so on a full-time basis.⁶ In Germany, the comparatively shorter average weekly hours in formal care, together with a below average participation rate, means that the full-time equivalent participation rate is only 28%, below the OECD average of 35%. In contrast, the exceptionally long average weekly hours in Portugal produce a full-time equivalent participation rate of almost 60%, despite a relatively moderate headcount participation rate of 45% (OECD, 2015b).

Widespread participation in early childhood education and care (ISCED 0)

Early childhood education and care (ISCED 0)⁷ is the first stage of organised instruction for many children and can, as such, play an important role in their development. While enrolment in these programmes is usually not mandatory and children can enter them at different ages, the majority of 3-4 year-olds in OECD countries are enrolled in early childhood education (mostly pre-primary education). On average across OECD countries, 71% of 3-year-olds and 86% of 4-year-olds attended ECEC programmes (ISCED 0) in 2014, although this varies widely across countries.

Germany is one of the 11 countries (alongside Belgium, Denmark, France, Iceland, Israel, Italy, Korea, Norway, Spain and Sweden) where at least 90% of 3 and 4 year-olds were enrolled in pre-primary programmes (ISCED 02). In Germany, 94% of 3-year-olds and 98% of 4-year-olds participate in pre-primary education (ISCED 02), which is well above the OECD average (see Figure 5). Most OECD countries achieve full enrolment in ECEC for 5-year-olds. The enrolment of 5-year-olds is also high in Germany, with 99% attending some form of ECEC (ISCED 02) (OECD, 2016a, Table C2.1).

Figure 4. Participation rates in formal childcare (ISCED 0 and other registered ECEC services) among 0-2 year-olds (2003, 2006, 2013)



Notes: Data reflect children in day-care centres and pre-school (both public and private) and those who are cared for by licensed child-minders. It excludes informal services provided by relatives, friends or neighbours regardless of whether or not the service is paid for.

Countries are ranked in descending order of the percentage of children under 3-years of age in formal childcare.

1. 2006 data for Australia refer to 2005, and for Bulgaria and Romania to 2007.

2. 2013 data for Japan refer to 2010, and for Australia, Chile, Mexico, and the United States to 2011.

3. Data do not include services provided by the private sector.

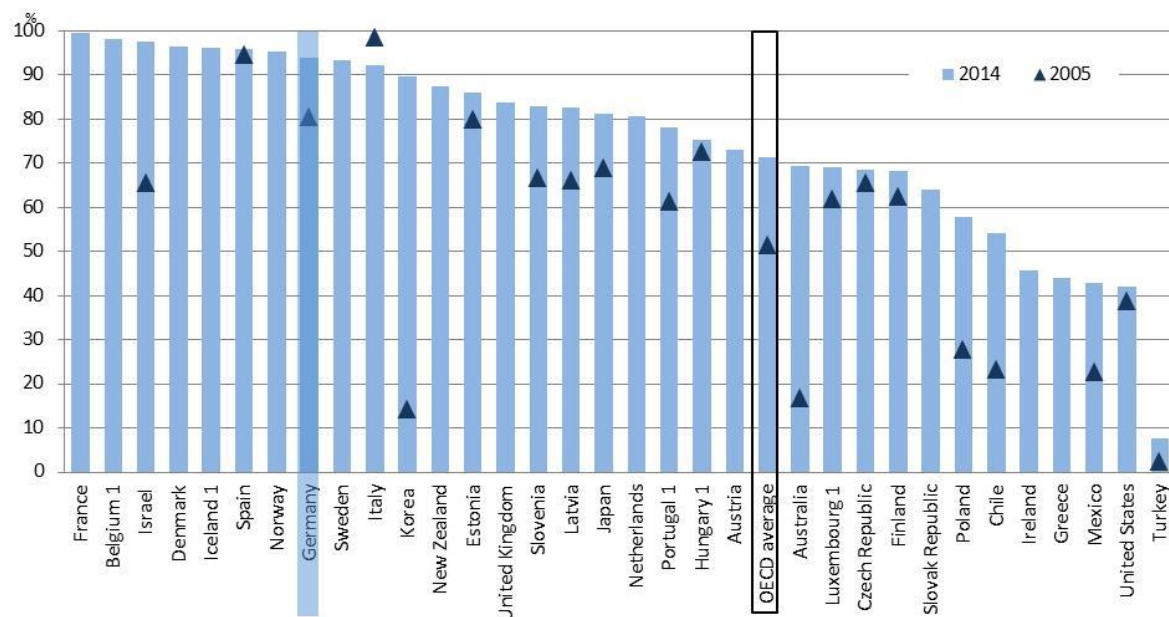
4. 2003 data for Austria, Belgium, Luxembourg, France, Greece, Ireland, Italy, Spain refers to 2004, and for Australia and the United States to 2002.

5. Note by Turkey: The information in this document with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Commission: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: OECD (2015b), OECD Family Database, Table PF3.2.A, www.oecd.org/social/family/database.

Figure 5. Enrolment rates at age 3 in early childhood education and care (2005 and 2014)



Notes: Countries are ranked in descending order of the enrolment rates of 3-year-olds in 2013.

1. Year of reference 2013 instead of 2014.

Source: OECD (2016), *Education at a Glance 2016: OECD Indicators*, Table C2.1, <http://dx.doi.org/10.1787888933398347>.

Early childhood education and care (ISCED 0), as well as primary and secondary education, is mostly organised in public institutions in OECD countries and, on average, 68% of pre-primary education children (ISCED 02, 3-5 year-olds) were enrolled in public institutions in 2014. Only in early childhood educational development programmes (ISCED 01, 0-2 year-olds) were there more children enrolled in private institutions (58%) than in public institutions (42%) in 2014. In Germany, the majority of pre-primary pupils are enrolled in government-dependent private institutions, often run by not-for-profit providers, and just over a third of pre-primary pupils attend a public setting. Similarly, in early childhood educational development programmes (ISCED 01), more German children are enrolled in non-profit and for-profit government-dependent private settings (73%) than in public ones. The share of German children attending government-dependent private settings in pre-primary programmes (ISCED 02) and in early childhood educational development programmes (ISCED 01) are both above the OECD average (OECD, 2016a, Table C2.2).

Section 3. Policy outcomes

The association between pre-primary education and 15-year-olds' mathematics performance is above the OECD average

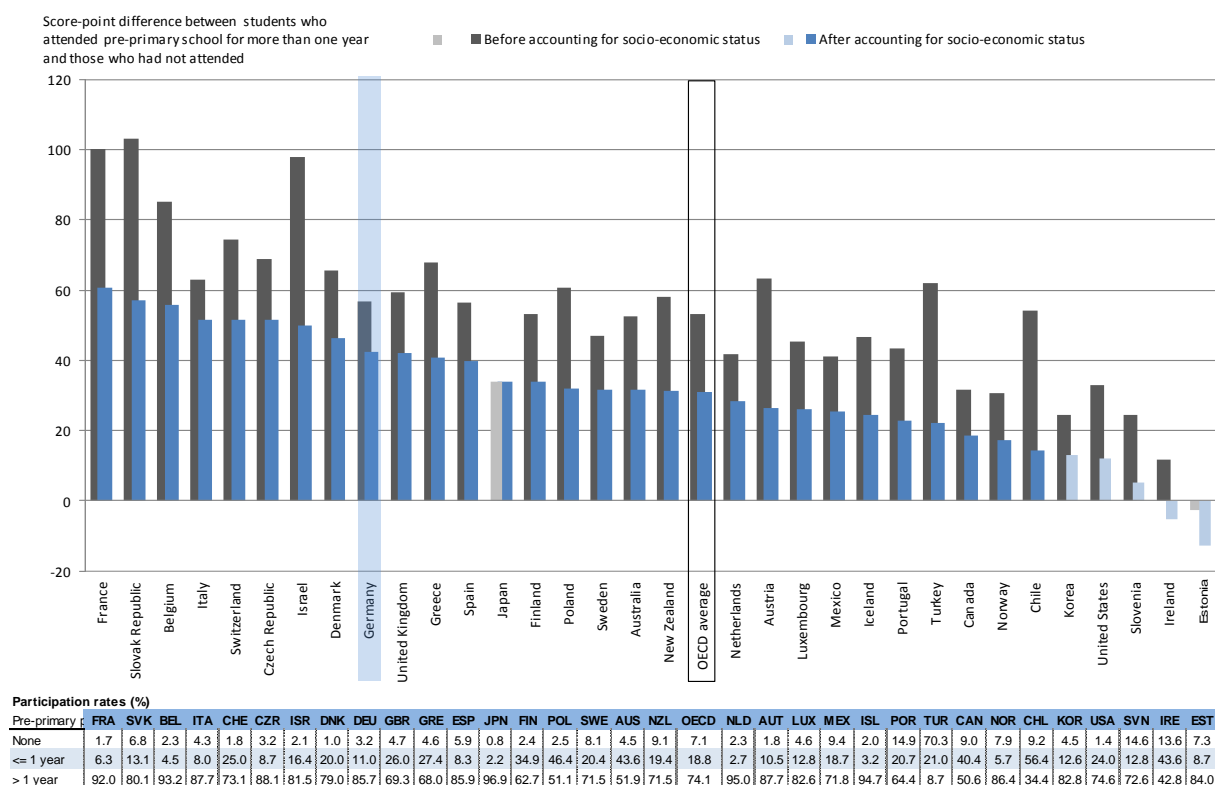
Research in neurosciences has shown that the brain sensitivity of highly important developmental areas, such as emotional control, social skills, language and numeracy, peak in the first three years of a child's life (Gambaro et al., 2014). These findings indicate that the first years of a child's life are crucial for their later development and learning. High quality ECEC can stimulate the development of these skills, which highlights the importance of early development programmes and their level of quality (OECD, 2006, 2011).

A strong start in education through ECEC is associated with higher performance in adolescence. PISA results show that 15-year-olds who attended a pre-primary education programme (ISCED 02) tended to perform better in mathematics than students who did not attend pre-primary education.

The percentage of 15-year-olds in Germany who reported not attending pre-primary education in PISA 2012 was low (3.2% compared with 7.1% across the OECD, see Figure 7). Notably, children from a lower socio-economic background and in socio-economically disadvantaged schools were less likely to have participated in pre-primary education. Nevertheless, the benefits associated with pre-primary education remain statistically significant even after accounting for students' socio-economic background. In Germany, the difference in PISA mathematics scores between 15-year-old students who had attended more than one year of pre-primary education and those who had not was 42 score points after accounting for socio-economic background – the equivalent of more than one year of formal schooling⁸ (above the OECD average difference of 31 score points) (see Figure 6).

PISA 2012 data also demonstrate that the correlation between enrolment in pre-primary education (ISCED 02)⁹ and performance at the age of 15 is generally stronger in education systems where participation in pre-primary education lasts more than one year, and the link is more pronounced in settings where the student-to-staff ratio and public expenditure per student are higher (OECD, 2013). In other words: input policies, such as the student-to-teaching-staff ratio, affect learning outcomes. Despite increased participation and public investment in early childhood education and care services in OECD countries, little comparative data exists to determine under what conditions ECEC services are most beneficial for children, and what aspects are the most beneficial to the child. The OECD is developing a study that will provide information on the factors that support quality and equity in the early years (see Box 2).

Figure 6. Difference in mathematics performance of 15-year-olds, by attendance in a pre-primary education programme (2012)



Notes: Score-point differences that are statistically significant are marked in a darker tone.

Countries and economies are ranked in descending order of the score-point difference in mathematics performance between students who reported that they had attended pre-primary education (ISCED 0) for more than one year and those who had not attended pre-primary education, after accounting for socio-economic status.

Participation rates in pre-primary education are drawn from reports of 15-year old students participating in PISA 2012.

Source: OECD (2013a), *PISA 2012 Results: Excellence through Equity (Volume II): Giving Every Student the Chance to Succeed*, Figure II.4.11, <http://dx.doi.org/10.1787/9789264201132-en>.

Box 2. The development of international data on quality in early education and care

The OECD programme of work on ECEC includes a series of projects to develop the extent of available data on ECEC. These include:

The TALIS Starting Strong Survey: is an international survey of ECEC staff and the quality of the learning and well-being environment in different ECEC settings across OECD member and non-member economies. The objective is to collect data on staff characteristics, pre-service and in-service education, pedagogical practices and beliefs, organisation and management, and working conditions to give countries an internationally framed assessment of what actually happens in their ECEC settings, i.e. the quality of the learning and well-being environment children experience (instrument development and pilot study in 2011/16, field trial in 2017, main study in 2018 and reporting in 2019).

The International Early Learning (for Child Well-being) Study seeks to provide reliable, comparative information on the social, emotional and cognitive development of children to assist countries to improve children's outcomes. It will measure children's early learning outcomes, at approximately five years of age, in the context of their ECEC experiences and home environments. The study will include a child assessment component as well as a parent questionnaire to gather information about the home learning environment. The study will be conducted in 3-6 countries from 2016 to 2019. Results on the study will be released in 2020.

A thematic study on transitions from ECEC to primary school will analyse country policies and practices in stimulating quality transitions from ECEC to primary education. This study will be based on existing literature and country background notes, which will form the basis of a comparative analytical report in 2017.

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NOTES

- 1 In Germany, the preferred term to refer to a pre-primary teacher is a state-recognised educator (*Erzieher/in*).
- 2 Universal legal entitlement refers to a statutory duty for ECEC providers to secure (publicly subsidised) ECEC provision for all children living in a catchment area whose parents, regardless of their employment, socio-economic or family status, require an ECEC place.
- 3 Private sources include households and other private entities, such as private businesses and non-profit organisations (e. g., religious organisations, charitable organisations, and business and labour associations).
- 4 Staff-child-ratios (Personalschlüssel in Kitas) for each Lander can be found at the Bertelsmann Ländermonitor website: www.laendermonitor.de.
- 5 The OECD Family Database definition of “formal” childcare among children aged 0-2 years includes centre-based services, organised day care, pre-school and professional child-minders.
- 6 The full time equivalent (FTE) participation rate is calculated as follows: FTE participation rate = participation rates for 0-2 year-olds in formal childcare * (average weekly hours for 0-2 year-olds in formal childcare/30).
- 7 Early childhood education and care refers to programmes classified as ISCED 01 (early childhood educational development) and ISCED 02 (pre-primary education) depending on the age of the child (see Box 1). In Germany, all 3-5 year-olds using ECEC were registered as attending an ISCED 02 programme (pre-primary).
- 8 39 score points in mathematics correspond to the equivalent of one year of formal schooling (OECD, 2013).
- 9 Pre-primary education in PISA 2012 refers to children from age 3 years to the start of primary education.

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Table 1. Summary of ECEC indicators, Germany and OECD average

Indicator	Germany	OECD average	Ref. year	Table	Source
Policy inputs					
Expenditure					
Total expenditure on early childhood educational development (ISCED 01) as a percentage of GDP (%)	0.3	0.2	2013	Table C2.3	OECD (2016)
Total expenditure on pre-primary education (ISCED 02) as a percentage of GDP (%)	0.6	0.6	2013	Table C2.3	OECD (2016)
Total expenditure on all early childhood education (ISCED 0) as a percentage of GDP (%)	0.8	0.8	2013	Table C2.3	OECD (2016)
Proportion of total expenditure on early childhood educational development (ISCED 01) from public sources (%)	70.9	68.6	2013	Table C2.3	OECD (2016)
Proportion of total expenditure on pre-primary education (ISCED 02) from public sources (%)	79.1	82.9	2013	Table C2.3	OECD (2016)
Proportion of total expenditure on early childhood education (ISCED 01 & ISCED 02) from public sources (%)	76.3	81.2	2013	Table C2.3	OECD (2016)
Annual expenditure per student in pre-primary education (in USD)	9 167	8 070	2013	Table C2.3	OECD (2016)
Quality of early childhood education and care services					
Ratio of children to teaching staff (in full-time equivalents) (ISCED 02)	10	14	2014	Table C2.2	OECD (2016)
Ratio of children to contact staff (educators and educators' aides) (in full-time equivalents) (ISCED 02)	9	12	2014	Table C2.2	OECD (2016)
Teachers' salaries					
Annual starting salary, typical training of pre-primary teachers in public institutions (in USD)	m	29 494	2014	Table D3.1a	OECD (2016)
Annual salary after 10 years of experience, typical training of pre-primary teachers in public institutions (in USD)	m	36 491	2014	Table D3.1a	OECD (2016)
Annual salary after 15 years of experience, typical training of pre-primary teachers in public institutions (in USD)	m	39 245	2014	Table D3.1a	OECD (2016)
Annual salary at top of scale, typical training of pre-primary teachers in public institutions (in USD)	m	47 826	2014	Table D3.1a	OECD (2016)
Pre-primary teachers' salaries relative to earnings for full-time, full-year with tertiary-education workers based on teachers' attainment level (25-64 years-old) (ratio)	m	0.74	2014	Table D3.2a	OECD (2016)
ECEC Staff's characteristics					
Total duration of initial pre-primary state-recognised educator education (in years)	3	m	2013	Table D6.1a	OECD (2014)
Annual net teaching time of pre-primary state-recognised educator (in hours)	1482	1005	2014	Table D4.1	OECD (2016)
Number of annual days of teaching (in days)	190	190	2014	Table D4.1	OECD (2016)
Policy outputs					
Participation in early childhood education and care services					
Participation rate in formal care and pre-school services for children under 3 years (%)	29	33	2013	Chart PF3.2.A	OECD (2015b)
Participation rate in formal care and pre-school services for children under 3 years, full-time equivalent (%)	28	35	2013	Chart PF3.2.B	OECD (2015b)
Average weekly hours in childcare among children under 3 years of age (in hours per week)	28	30	2013	Chart PF3.2.B	OECD (2015b)

Table 1. Summary of ECEC indicators, Germany and OECD average (continued)

Indicator	Germany	OECD average	Ref. year	Table	Source
Participation rates for 3 year olds in pre-primary education (%)	94	71	2014	Table C2.1	OECD (2016)
Policy outcomes					
Average mathematics performance of students with					
No pre-primary education attendance (score points)	472	451	2012	Table II.4.12	OECD (2013)
Pre-primary education attendance for one year or less (score points)	466	475	2012	Table II.4.12	OECD (2013)
Pre-primary education attendance for more than one year (score points)	529	504	2012	Table II.4.12	OECD (2013)
Difference in mathematics performance between students (after accounting for students' economic, social and cultural status)					
Difference between those who reported having attended pre-primary school for one year or less and those who had not attended pre-primary education (score points)	-4	15	2012	Table II.4.12	OECD (2013)
Difference between those who reported having attended pre-primary school for more than one year and those who had not attended pre-primary education (score points)	42	31	2012	Table II.4.12	OECD (2013)

Notes: a - data are not applicable because the category does not apply; m – data are not available.