Chapter 4

CAPACITY BUILDING AND SERVICES FOR THE FOOD AND AGRICULTURE SYSTEM IN TURKEY

This chapter outlines the role of infrastructure capacity, labour mobility, skills, and education in facilitating innovation in agriculture and food sectors. It describes the policies to improve rural infrastructure and outlines the main regional programmes. It then analyses how labour and education policies respond to demands for skills, and reports on trends in education expenditure and on the performance of the educational system. Finally, an overview is given on the level of education of those working in agriculture and on enrolment in agricultural programmes, notably by outlining the gap between supply and demand of skills.

4.1. Infrastructure and regional development policies

Transport infrastructure connects the economic system so as to allow for the movement of factors of production, goods and information across agents and markets. Irrigation and electricity infrastructures are essential to the production process, while ICT infrastructure ensures information flows. As such, infrastructure as a whole provides the possibility of economic activity in principle, and determines its location and the kinds of activities or sectors that can develop within the economy. The availability and quality of infrastructure affect the decisions of firms and individuals to invest, including in innovation. This section looks at the general state of infrastructure in Turkey and government policy to develop it, while infrastructure issues within the rural development programmes are examined in Chapter 5.

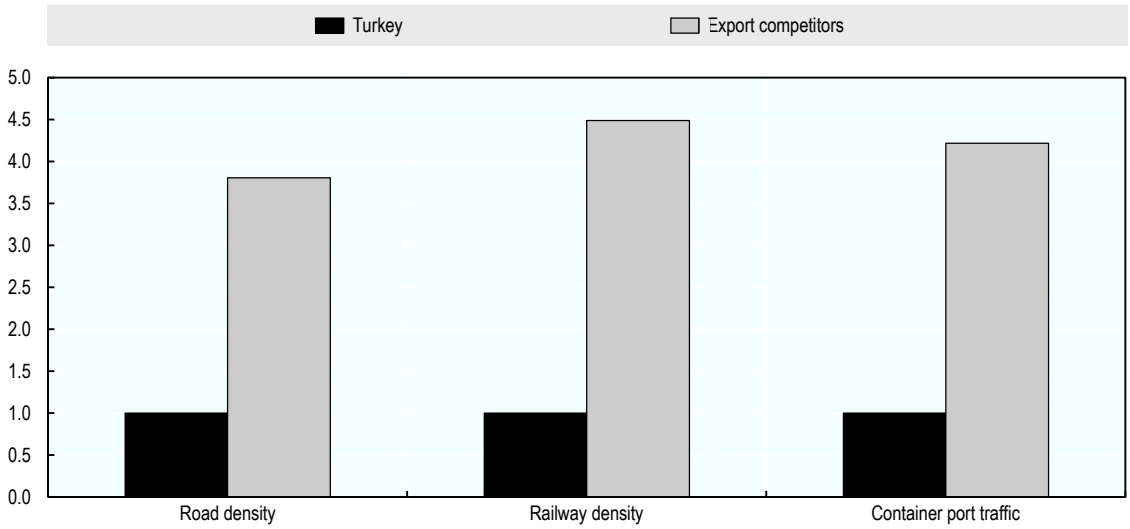
Availability and quality of infrastructure

Adequate transport and other physical infrastructure are essential for Turkey's economic and social development. Road and railway density, and container port traffic are around one quarter of that of its export competitors in OECD countries (Figure 4.1 and Annex 4.A1).[1]

The gap in terms of quality of transport infrastructure seems to be less pronounced than in its availability, as evidenced by the WEF's survey of business opinions. Overall, businesses in Turkey rated the quality of transport infrastructure close to OECD average levels, although the quality of railroads is perceived less favourably as compared to the average across OECD countries (Figure 4.2). In terms of ICT penetration and the quality of electricity and communications infrastructure, Turkey's ranking is also relatively modest (Figure 4.3). According to 2012 data, 53% of the population did not have access to internet in their neighbourhood. ICT deficiencies are particularly prevalent in rural regions (MOFAL, 2014).

Figure 4.1. Turkey's availability of transport infrastructure, international comparison, 2013

Normalised to 1 for the value of Turkey



Note Export competitors are OECD countries representing top exporters relative to Turkey's agricultural export strength (Belgium, Canada, China, France, Germany, Italy, Netherlands, Spain, United Kingdom and the United States). Data for road density refer to 2011.

Source: WDI (2015), *World Development Indicators Database*, World Bank, http://data.worldbank.org/data-catalog/world-development-indicators.

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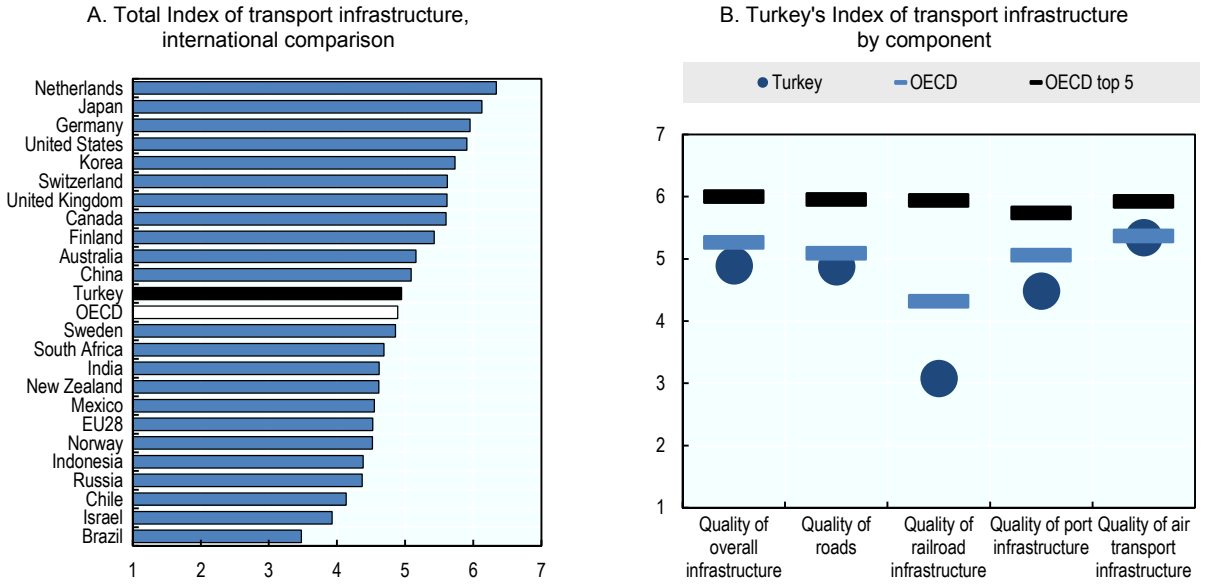
Figure 4.2. Global Competiveness Index: Quality of Turkey's transport infrastructure 2015-16

Scale 1 to 7 (best)



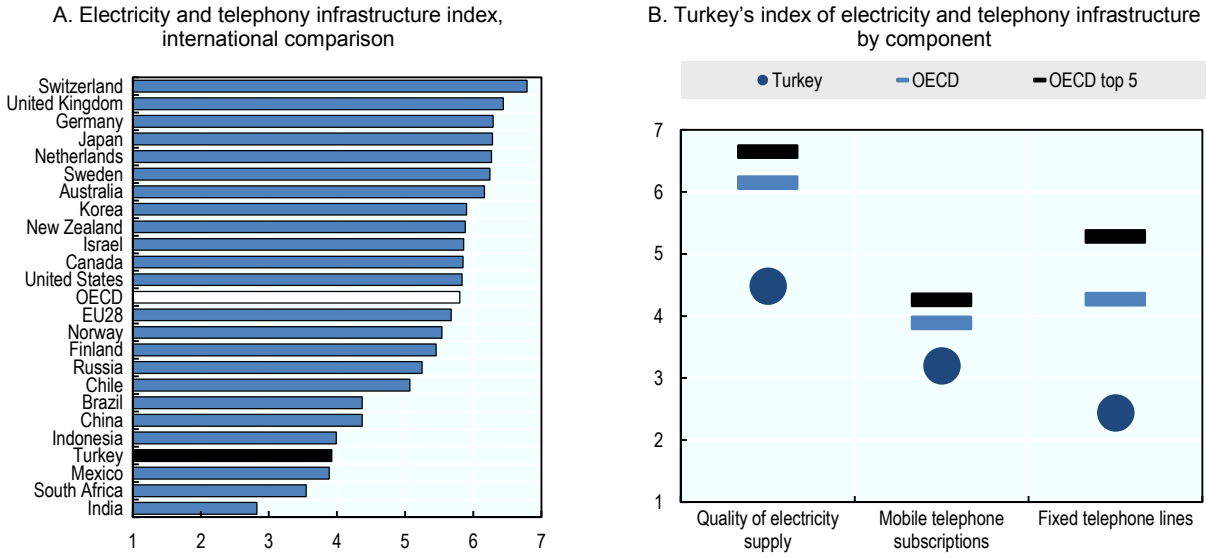
Note: OECD top 5 refers to the average of the scores for the top 5 performers among OECD countries (Netherlands, Japan, Spain, France and Germany). Indices for EU28 and OECD are the simple average of member-country indices.

Source: WEF (2015), *The Global Competitiveness Report 2015-2016: Full data Edition*, http://reports.weforum.org/global-competitiveness-report-2015-2016.

StatLink http://dx.doi.org/10.1787/888933389759

Figure 4.3. Global Competiveness Index: Quality of Turkey's electricity and telephony infrastructure 2015-16

Scale 1 to 7 (best)



Note: OECD top 5 refers to the average of the scores for the top 5 performers among OECD countries (Switzerland, Luxembourg, Austria, United Kingdom and Iceland). Indices for EU28 and OECD are the simple average of member-country indices.

Source: WEF (2015), *The Global Competitiveness Report 2015-2016: Full data Edition*, http://reports.weforum.org/global-competitiveness-report-2015-2016.

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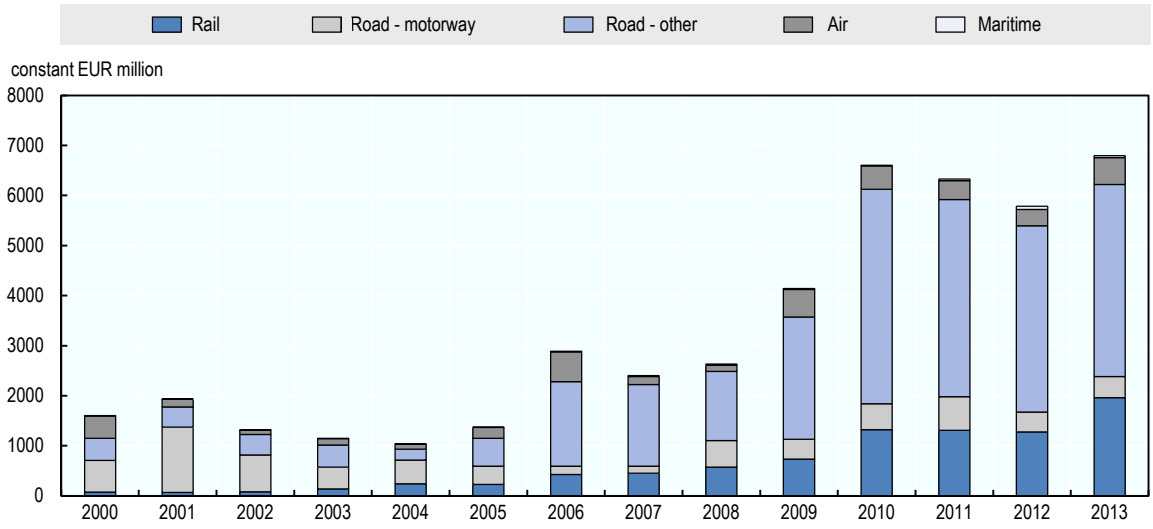
Infrastructure in the national and regional development strategies

The accelerated infrastructural development is viewed in Turkey as a national development priority. Since the mid-2000s, institutional and regulatory reforms in the infrastructure sectors have been implemented and investments made in large projects. The total amount of investment in transport infrastructure increased in real terms from EUR 1.6 billion per year in 2000-02 to EUR 6.3 billion per year in 2011-13, almost quadrupling (Figure 4.4). The GDP share of investments in inland transport infrastructure rose from 0.5% to 1.6% between these two periods. Road and rail transport has seen rapid growth, with the expansion of the road network and an increase in more modern roads and freight capacity (Figure 4.5).

Further ambitious targets to develop transport infrastructure are set for 2023, the centennial year of the Republic of Turkey. The government aspires to transform the country into a regional logistics hub and the targets, among others, include building 14 000 km of new railways, 5 300 km of new motorways, the largest airport in the world, and a 50 km waterway between the Black Sea and the Sea of Marmara (Thomas, 2015). The current Tenth Development Plan for 2014-18 is aligned with the orientations for the 2023 centennial. It sets accelerated growth targets for key transport sectors, far above those realised between 2006 and 2013 (Figure 4.5). Turkey is largely reliant on highway transport (90.5% of passenger transport, 87.4% of freight transport) and has included plans for a balanced distribution of modes of transport (MOD, 2014b). The rail and maritime transport sectors are to be given the most important boost. Turkey's rail transport is insufficiently developed and has a low share of domestic transportation, accounting for only 5% of freight. Maritime transport is of particular importance: with a coastline of 8 200 km and 220 seaports open to commercial traffic, over half of Turkey's foreign trade is shipped via maritime transport (Thomas, 2015). For road transport, the accelerated construction of motorways is foreseen.

Figure 4.4. Investments in transport infrastructure in Turkey, 2000-13



Source: OECD (2015h), *Infrastructure Investment Indicators*, OECD Publishing, Paris, https://data.oecd.org/transport/infrastructure-investment.htm.

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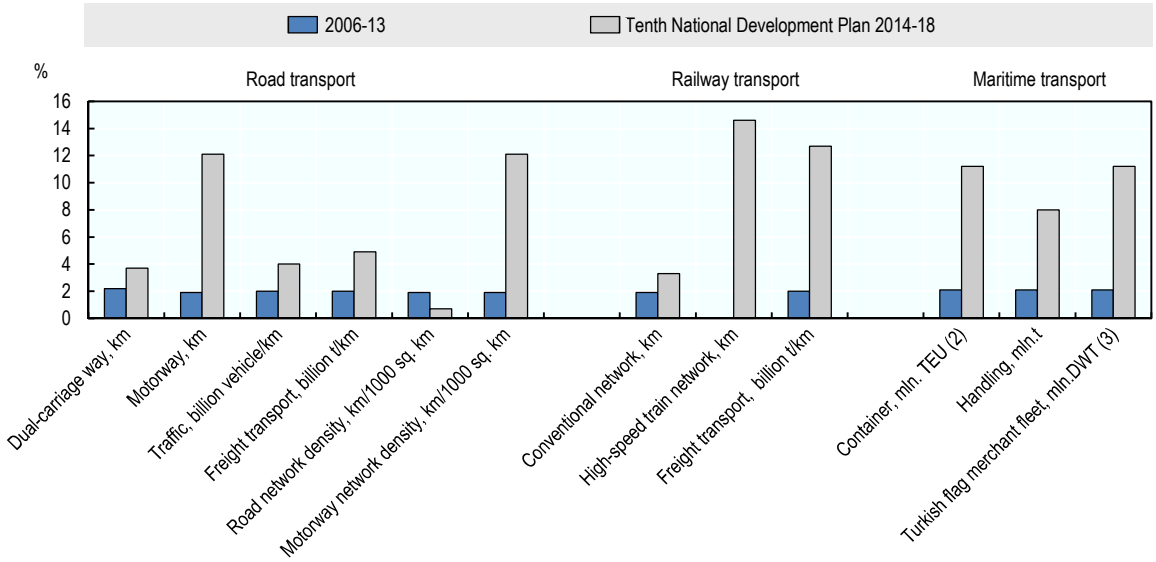
Figure 4.5. Development of transport infrastructure in Turkey: Selected indicators

Annual rates of growth over the period



1. Growth rate is not indicated as no high-speed train network existed in 2006; 888 km of high-speed network has been constructed by 2013.
2. TEU – twenty-foot equivalent units.
3. DWT – deadweight tonnage.

Source: MOD (2014b), *The Tenth Development Plan 2014-2018*, www.mod.gov.tr/Pages/DevelopmentPlans.aspx.

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A special chapter of Turkish EU *acquis* relates to the integration of Turkish transport and energy sectors into the Trans-European networks. This includes the connections with the Trans-European Transport Network (TEN-T), and full integration and interoperability with the European Network of Transmission Systems Operators for Electricity (EC, 2015). The Instrument for Pre-Accession (IPA) allocated EUR 353 million of EU financial assistance in 2007-13 for the Turkish transport sector, and EUR 443 million are to be provided over the 2014-20 period, mainly to connect the TEN-T rail network and the greening of the transport system. Turkish transport plans also foresee developing connections to Asia, in particular towards China.

In the ICT area, Turkey has developed regulations and strategies, including the Electronic Communications Act and the R&D Law. The Information Society Strategy and Action Plan (2015-18) sets the objectives and actions to transform Turkey into an information society (MOD, 2015). The strategy is based on eight pillars: information technologies sector; quality of human resources and employment, information security and user trust, internet entrepreneurship and e-commerce; broadband infrastructure and competition; diffusion of ICT into society; ICT-supported innovative solutions; and user-centric and effective public services. Shaped by the Tenth Development Plan and the Digital Agenda for Europe, the Action Plan focuses on: growth and employment to effectively use ICT; integrating ICTs in other sectors and e-government; increasing job opportunities; and becoming more competitive in the global economy. Progress has been made towards attaining rates of national internet penetration and levels of network standards, but in the absence of measurement objectives, social inclusion of technology has yet to be addressed (Uçkan, 2009). Given urban-rural disparities, ICT strategies need to be targeted and embedded into social policies in order to address the challenges faced by the rural population.

Infrastructure development in Turkey has a strong regional development aspect. Turkey is one of the ten OECD countries with the highest regional disparities, as measured by the difference between the unemployment rates across regions of the country (OECD, 2014c). The greater wealth, urbanisation and

high profile infrastructure, including high speed rail, canals, and bridges, in the western regions contrast with the gaps in basic infrastructure and remote subsistence farming in the eastern regions. Infrastructure development projects are largely embedded into the regional development programmes, which address the important needs of the rural areas.

The National Strategy for Regional Development 2014-23 (NSRD) provides a framework for policy development and implementation at the regional level. There are 26 regional development agencies that implement national-level plans through territorial objectives that are broadly aimed at alleviating regional disparities. The regional development agencies also implement regional development plans in a decentralised manner in compliance with the European Union's regional and cohesion policies (Catir, 2015; Tiftikcigil, 2015). These projects address infrastructure and socio-economic issues specific to each region by offering technical support, planning, monitoring and evaluation activities, fostering research activities, and developing private sector co-operation (Montabone, 2010).

Among the various regional development projects of different scales and scope, four large projects concern the least developed areas of Turkey. They represent integrated, multi-sectoral undertakings with an emphasis on infrastructure improvements (Figure 4.6).

Figure 4.6. Turkey's large regional development projects

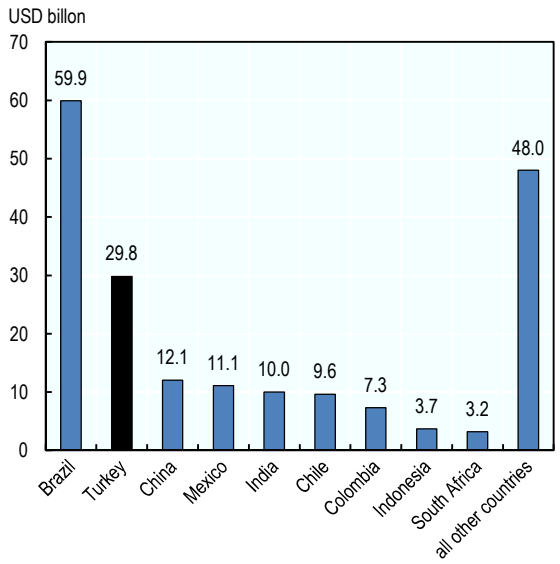
Source: MOD (2014a), *GAP Action Plan 2014-2018: South-Eastern Anatolia Project*, Republic of Turkey, Ministry of Development, Ankara.

The large South Eastern Anatolia Project (GAP) 2014-18 is currently on-going in nine provinces of the Euphrates and Tigris basins and in Upper Mesopotamia. The project aims to support the integrated sustainable development of the region, which covers approximately 10% of Turkey's total land area in terms of both population and surface (MOD, 2014a). GAP is an integrated project concerning agriculture,[2] hydroelectric power production, urban and rural infrastructure, forestry, and the education and health sectors. It includes the construction of 22 dams and 19 power plants, extensive irrigation schemes, and highway infrastructure (network extension and surface quality). GAP has also constructed seven airports, including Turkey's biggest cargo airport in Şırnak.

The Konya Plains Project (KOP) spans almost 50 000 km^2 within the Konya River basin and covers 73% of the total area that can be irrigated in this basin. The KOP includes 12 big projects for water management and water and energy supply, as well as a number of small-scale surface and ground water irrigation projects. The KOP includes the construction of dams, hydroelectric power plants, irrigation systems, and other agricultural infrastructure, as well as the development of transportation and water supply networks. In terms of irrigation, it is described as the second largest project after the South Eastern Project (Berktay et al., 2009). Improvements to Konya's agriculture-based industries are also meant to promote collaboration and to develop centres of agricultural innovation (KOP, 2013).

The Eastern Anatolia Project (DAP) was launched in 2000 and covers 14 provinces in the least developed eastern parts of Turkey. An increase in irrigation pipelines as well as the consolidation of farm land is foreseen in an effort to boost agricultural productivity (Burrell, 2005). The Eastern Black Sea Project (DOKAP) is being implemented in eight provinces. It aims to improve the livelihood of small-scale famers by way of improving, for example, the transportation and communication infrastructures so that mountainous regions are more accessible (Zhelezov, 2011).

Figure 4.7. Total private infrastructure investments in 2013 and 2014[1]

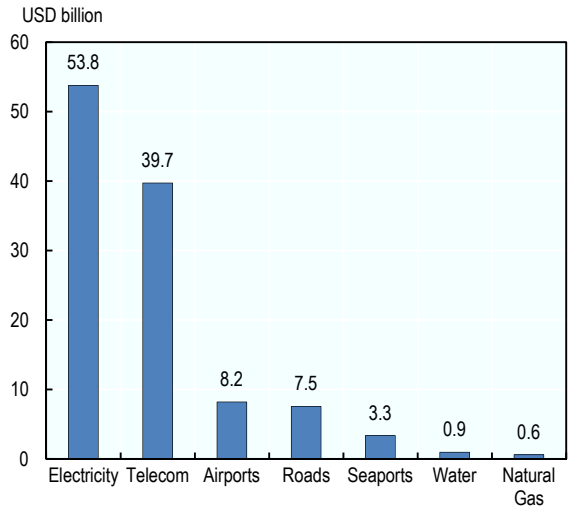


1. The investment amounts represent the total investment commitments by the project entity at the beginning of the project (at contract signature or financial closure).

Source: World Bank (2015), *World Bank Private Participation in Infrastructure Database*, http://ppi.worldbank.org.

StatLink http://dx.doi.org/10.1787/888933389796

Figure 4.8. Private infrastructure investments in Turkey by sector between 1994 and 2014[1]



1. See note to Figure 4.7.

Source: World Bank (2015), *World Bank Private Participation in Infrastructure Database*, http://ppi.worldbank.org.

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Given the substantial funding that is needed to support infrastructure development plans, Turkey has encouraged private investment, including foreign direct investment. The investment incentive framework (Box 3.1 in Chapter 3) provides considerable concessions to private investors who engage in infrastructure projects. Within this framework, infrastructure projects may fall under various preferential schemes in taxation, credit and social contributions, all of which are further enhanced for investments in the least developed regions. Turkey promotes Public-Private-Partnerships for infrastructure projects in various forms: Build–Operate-Transfer (BOT), Build-Operate (BO), Build-Lease-Transfer (BLT) and Transfer of Operating Rights (ToR) arrangements. The recently enacted legislation (Law No. 6428 on Building and Renewal of Facilities and Procurement of Services through Public Private Model) consolidated financing regulations and opened a range of infrastructure sectors (electricity, transport, etc.) to private financing.[3] In an international comparison, Turkey ranked second in 2013-14 in receiving private funding for infrastructure (Figure 4.7). The telecom and electricity sectors have been by far the largest recipients of private funds (Figure 4.8).

Although national strategies are in place, the experience of infrastructure projects crossing through areas of responsibility of different government bodies has highlighted the need for clearer governance and coordination. Infrastructure development is associated with environmental and social impacts due to shifts in land ownership, land use structure, economic activity structure, and the demography of the regions. This creates the need for the adequate monitoring and management of natural resources,

appropriate land use planning and urbanisation, and management of industrial pollution (OECD, 2008). As highlighted in Chapter 2, there is also a need to consider infrastructure and regional development projects in terms of changes in the availability and quality of agricultural land and shifts of skilled labour across sectors, and how these changes affect agricultural productivity.

4.2. Labour policy

Labour market policy influences employment composition and can play an important role in facilitating structural adjustment. Flexibility in labour mobility and social security help provide the conditions for innovation and skills training. Labour regulations affect the cost and conditions of employing labour, and thus production choice by firms and their incentives to invest in new products and processes. Innovative enterprises engaged in changing technologies, processes, or business organisation are likely to be particularly sensitive to adequate conditions for hiring and dismissing people, complemented by a good unemployment insurance system and support for job placement, skills training and continuous learning. Labour market policies play an important role not only for the general economy, but for bringing innovation into the agricultural sector through improved opportunities for rural employment overall.

General features of labour market and regulations

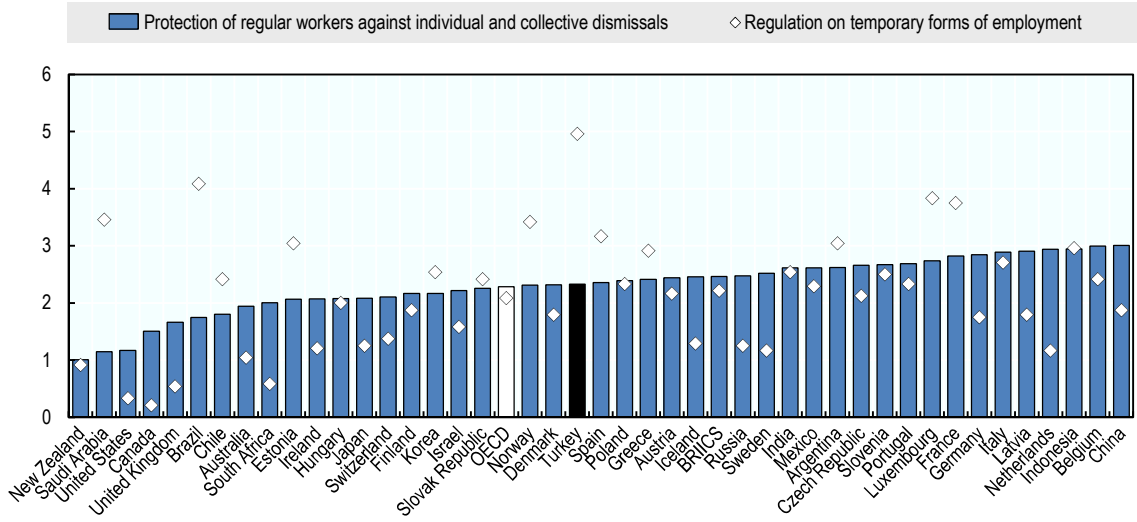
Turkey has a growing population, with a rising share of the working age. Wage earners account for 66% of total employment, with slightly less than 10% in agriculture. This means there is a significantly higher share of self-employed – employers, independent workers, and unpaid family members – in Turkey than in the majority of OECD countries (OECD, 2015a). Labour relations are characterised by a considerable degree of informality. The share of informal jobs, although declining since the early 2000s, is still around 33% for the whole economy and 22% in the non-agricultural sectors (OECD, 2015f). Around half of total employment and one-third of employees in the business sector are concentrated in small enterprises with less than 20 employees (OECD, 2015g). Small businesses are more likely to exploit informal labour arrangements and thus face an effectively reduced burden of labour regulations. This creates a trade-off between reduced labour costs and flexibility of smaller and semi-formal businesses, and scale economy and other productivity drivers of larger and formal businesses (OECD, 2014a). Placing all businesses into the formal framework of labour regulations would enable more efficient firms to develop and for growth opportunities across the entire economy to be realised. This transition, however, would require policies to support smaller informal and semi-formal businesses in such a transition, as well as a strengthening of the safety net system.

Employment protection regulations directly affect labour mobility. The OECD indicators of employment protection legislation measure the procedures and the costs involved in dismissing individuals or groups of workers, and labour market flexibility regarding procedures involved in hiring workers on fixed-term or temporary work agency contracts. Overall, Turkish employment legislation is stricter than the OECD average, with particular rigidity for temporary contracts, employment through work agencies, and severance costs (Figure 4.9).

The World Economic Forum's Global Competitive Index, based on a business survey, finds Turkey ranked lowest among OECD countries in overall labour market efficiency (Figure 4.10). In terms of the individual components evaluating the labour market, Turkey's low ranking in the ability to attract and retain talent suggests the challenges to develop its capacity to innovate. Additional difficulties to attracting workers to agriculture suggest the importance of life-long learning for women and men in rural regions.

Figure 4.9. OECD Indicators of Employment Protection Legislation, 2013

Index from 0 (least) to 6 (most) restrictive



Note: Data for Argentina, Brazil, China, India, Indonesia, Russian Federation, Saudi Arabia and South Africa represent 2012.

Source: OECD (2015i), *Indicators of Employment Protection Legislation database*, www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm.

StatLink http://dx.doi.org/10.1787/888933389810

The rigidity of employment protection regulations increases the labour costs of firms, which has implications on their international competitiveness. It also encourages informality and traps business activities in smaller, lower-productive activities (OECD, 2014a). The lack of flexibility of temporary employment regulations, in particular, impedes formal labour arrangements in sectors which rely on seasonal labour, such as agriculture.

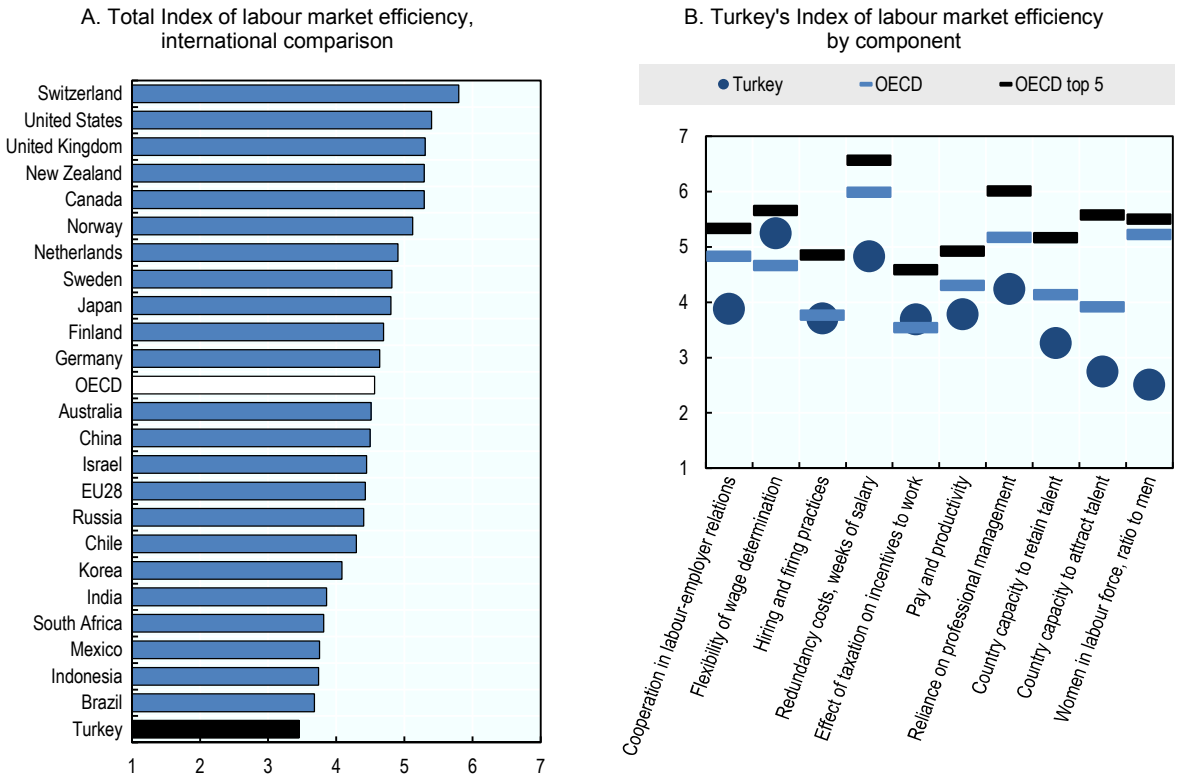
The modest performance of the labour market is shown by Tansel and Kan (2012) who studied non-agricultural labour market transitions in Turkey between 2006 and 2009. As resumed in OECD (2014a), their findings indicate that: most individuals remained at their entry-level; outflows from informal self-employment were very limited; transitions from informal to formal work were more frequent, but concerned only a minority of workers; few salaried workers exited; most women remained either inactive or informally self-employed; and transitions from unemployment to employment were twice as frequent towards jobs with informal rather than formal status.[4]

A far-reaching labour market reform – National Employment Strategy – was prepared in 2014 and included as a top priority in the Tenth Development Plan. This document, in line with OECD good practices, emphasises human capital and skills, vulnerable groups, dialogue with social partners, and enabling labour legislation. It seeks to reform the costly severance payment regime and facilitate modern employment methods through: permanent labour contracts with severance saving accounts (more secure for workers and potentially more affordable for enterprises), less restrictive fixed-term contracts, temporary employment, employment through work agencies, and employment on-call and home-based work. Many of these types of contracts had been prohibited or highly restricted in the formal sector, in contrast to their massive utilisation in the informal, small and low-productivity enterprises (OECD, 2014a).

The implementation of these reforms has, however, faltered amid a lack of stakeholder consensus on the principal aspects of the labour framework. Unions argued that in view of *de facto* restrictions of worker rights and protections, the reforms, with their greater employment flexibility and non-standard employment forms, would undermine social protection. Semi-formal and informal employers rejected

any change that would involve stricter labour rules and greater labour costs, while formal employers considered the reform of severance system would make it unaffordable unless contribution rates were reduced. Designing and implementing a consensual social safety net system could help support the necessary reforms. Collective social protections, including unemployment insurance, up-grading the skills of the unemployed, and Earned Income Tax Credit-type of transfers to the working poor, are still limited in scope. The schemes in place do not offer a credible alternative to enterprise-level job protections, neither for the minority of formal sector insiders nor for the majority of workers aspiring to the same levels of protection (OECD, 2014a). In the most recent development, the government's 2016 Action Plan has included the objective of improving the flexibility and security ("flexicurity") of labour market based on EU good practices. It also envisages an impact analysis of the on-going active labour market schemes (OECD, 2016).

Figure 4.10. Global Competitive Index: Labour market efficiency, 2015-16



Notes: OECD top 5 refers to the average of the scores for the top 5 performers among OECD countries (Switzerland, United States, United Kingdom, New Zealand and Canada). Indices for EU28 and OECD are the simple average of member-country indices.

Source: WEF (2015), *The Global Competitiveness Report 2015-2016: Full data Edition*, World Economic Forum Geneva 2015. http://reports.weforum.org/global-competitiveness-report-2015-2016.

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Labour programmes with relevance to the agricultural sector

Agriculture employs nearly one-quarter of the total workforce and is the primary source of income in rural areas. It is largely composed of self-employed, unpaid family labourers with low levels of education. They are a vulnerable workforce, lacking the skills necessary to diversify rural activity or to make farm holdings more efficient. Nearly half of the employed in agriculture are women working as unpaid family labour and some are illiterate.

Turkey's general labour policy has prioritised investment in female employment for economic and social growth. The Ninth Development Plan (2007-13) included an action plan for gender equality but no substantive action was taken (OECD, 2014a). The current Tenth Development Plan (2014-18) includes an action on increasing the participation of women in the employment by offering vocational training when they enter the labour market. Activation policies included in the initiatives of the Life Long Learning Strategy Plan 2014-18 take into account the socio-economic variations in rural regions where vocational training may be insufficient to prepare women for the formal workforce. Socio-cultural factors on the role of women in the workforce will remain challenges for female education and labour market participation, particularly in rural areas (World Bank, 2009).

More and Better Jobs for Women: Women's Empowerment through Decent Work (2013-16) is a joint project by the Turkish Employment Agency (İŞKUR) and International Labour Organization (ILO). It was launched to promote women's employment and create better work opportunities. The project, among other outcomes, is intended to help prepare a new nation-wide policy framework, a National Action Plan on Women's Employment and Gender Equality. While the project targets women, it includes training for both men and women on gender equality and labour standards. This nation-wide project seeks to benefit unemployed women in urban areas with basic education, provide training, support and counselling to bring greater sensitivity to gender equality and employment practices, and to develop and implement active labour market policies for women (Eşitiz Beraberiz, 2016).

To address the issues of agricultural rural labour, several targeted job programmes which also focus on more vulnerable rural groups, such as rural women and young people, are being implemented.

The Project Supporting Women Entrepreneurship in Rural Areas aims to enhance knowledge and skills for entrepreneurship and thereby improve the employment prospects for women by helping them to develop business in agricultural products they produce. Women receive training and support in learning how to brand and market local products.

Through the Active Employment Market Programs Project, the Turkish Labour Agency and the Turkish Agricultural Chamber Association have signed a protocol "Cooperation for Active Employment Market Programs". Within this framework, a Younger Agricultural Population project aims at training young farmers with general production to be able to provide extension services in their communities and regions. A Herd Management Personnel Project with contributions from provincial governments and the Goat Breeders Association provides the needed training in 61 provinces. A Handcrafts Project will provide support for rural youths aged 14-24 to develop employment opportunities in rural regions and to support the transition of rural employment from agriculture to other sectors (Government of Turkey, 2015).

4.3. Education and skills policy

Education policy has strong and diverse links to innovation. A high level of general and scientific education across the population facilitates acceptance of innovations by society in general. Effective innovation systems require well-educated researchers, teachers, extension officers and business owners. Producers with a good general, technical and business education will generally be more willing and better skilled in fostering and adopting innovations.

Overall education status and education policy reforms

The education levels of the population have increased over the past two decades, helped by overall improvements in incomes and significant poverty alleviation. This progress has also been supported by the educational reforms of the late 1990s and in the 2000s to better align with EU standards. Primary and secondary enrolment rates have improved, with 95% of all 5 to 14-year olds enrolled in schools in 2012 (OECD 2014b). There has been a shift in the overall educational attainment structure, with the share of tertiary-level graduates increasing from 8% to 17% between 2000 and 2014, and those having below an upper secondary level education falling from 77% to 64% (OECD, 2015e).

Along with the increases in educational levels, student performance has also improved. In the OECD Programme for International Student Assessment (PISA) results for 2012, 15-year old students performed just below the OECD average in reading, mathematics and science, but have nevertheless shown some of the largest improvements in performance since 2006. These results are in part attributed to the improving economic and social status of the student population. Turkey is one of the few countries that has improved its performance in mathematics and its level of equity in education between the 2003 and 2012 PISA surveys. Nevertheless, compared to other countries performing at similar PISA levels, students in Turkey scored significantly worse in problem solving where students were asked to explore scenarios in unfamiliar settings, a key skill for innovation, (OECD, 2013).

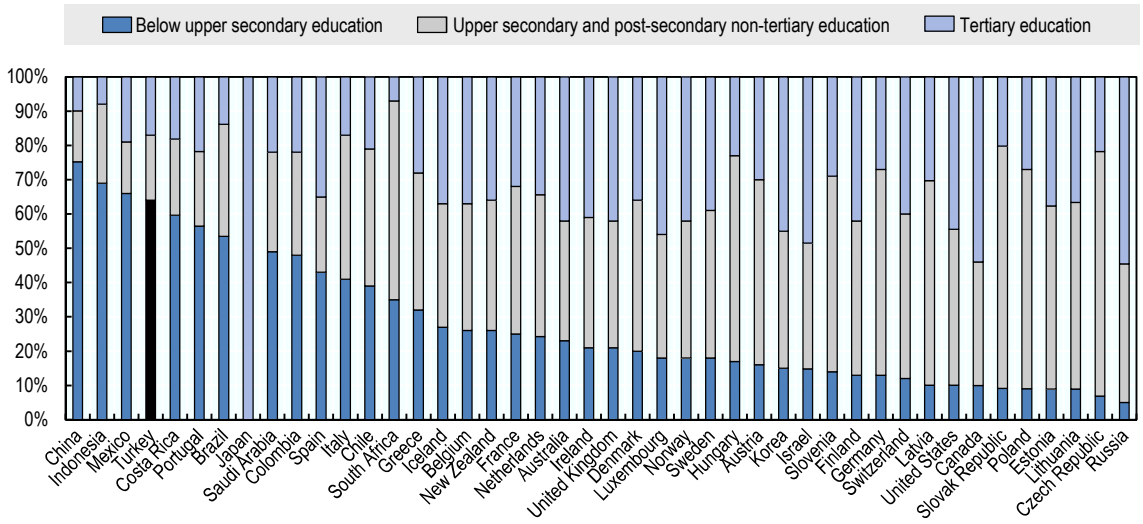
Despite the progress achieved in important dimensions of education, Turkey's overall education attainment status remains modest. Among OECD countries, it has the second-highest share of the population who have not obtained an upper-level secondary education and the lowest share of those having a higher education (Figure 4.11).

Turkey spends less per student than other OECD countries, particularly below the tertiary level of education, suggesting this may be a factor restraining advancement in education (Figure 4.12). Turkey ranks low among OECD countries by the share of time those aged 15-29 years spend on education: in 2014, it was 5.6% compared to the OECD average of 7.2%, and over 8% in countries such as Denmark, Slovenia, Norway, the Netherlands, Luxembourg and Finland (OECD, 2015c).

The WEFs Global Competitiveness Index provides an additional perspective on Turkey's educational performance as perceived by business (Figure 4.13). Whereas Turkish businesses evaluate the quantity of education relatively favourably, they have a low perception as to the quality of education and on-the-job-training. The Education Reform Initiative also puts the spotlight on the quality of education, noting that higher education targets were attained without sufficient increases in the quality and diversity of educational services (ERI, 2014).

Turkey's aspirations to become an information society, improve its economic competitiveness, and develop in a sustainable way, as well as its goal of EU membership, have made education reform an urgent necessity. Reforms are targeted to increase the participation rates at all levels, including the participation rates of disadvantaged populations such as females and the rural population in general (Box 4.1).

Figure 4.11. Educational attainment of the population aged 25-65 years, 2014



Source: OECD (2015e), *Education at a Glance* (database), http://stats.oecd.org/?lang=en#.

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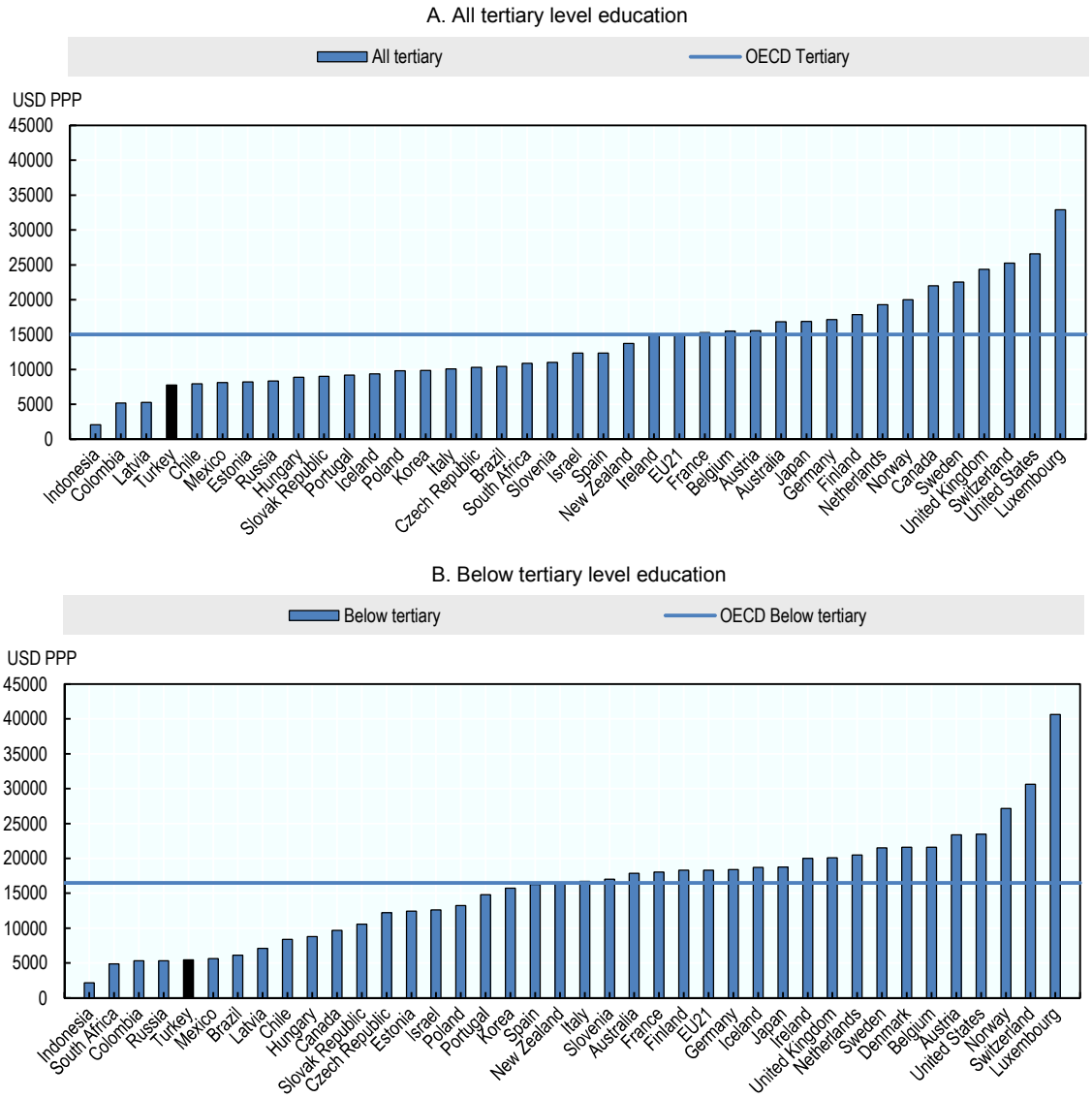
Figure 4.12. Annual expenditure per student by educational institution, 2014



Source: OECD (2015e), *Education at a Glance* (database), http://stats.oecd.org/?lang=en#.

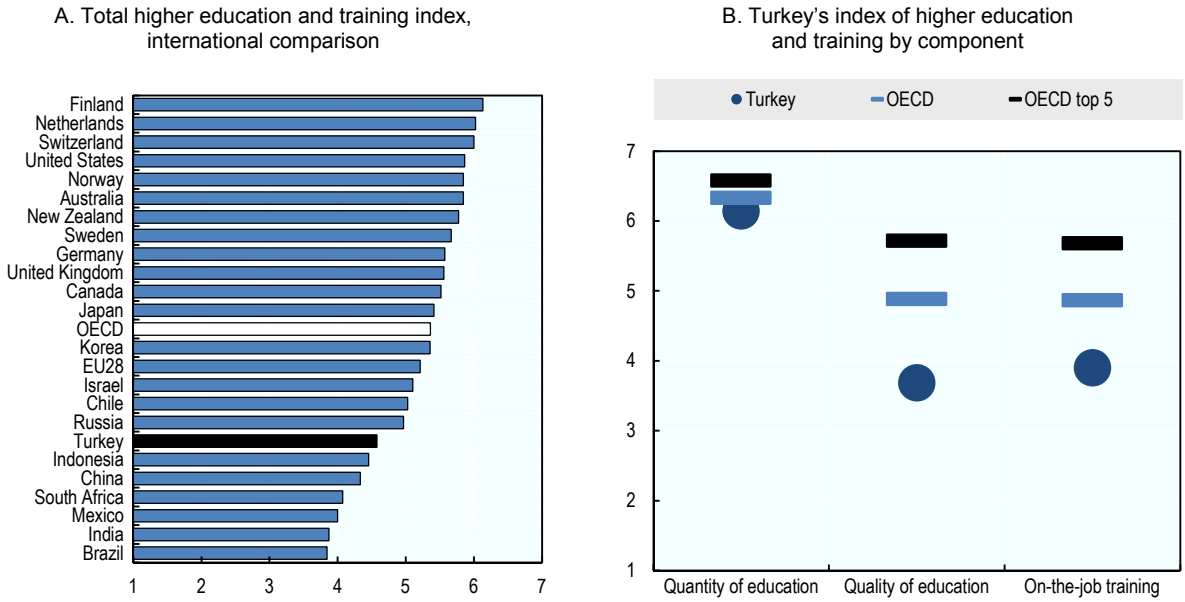
StatLink http://dx.doi.org/10.1787/888933389842

The Tenth Development Plan (2014-18), Strategic Plan for the Ministry of National Education (2014-18) and Skills Vision 2020 set multiple objectives for better education. They include further increases in the enrolment rates at all levels of education, with a focus on pre-schooling. Reducing the number of students per classroom in primary and secondary education and fewer students per academic teaching staff are other targets. The broader orientations include the establishment of adequate monitoring and evaluation of student performance, improvement of teacher education, and involvement of the private sector and professional organisations in the financing and administration of education. In the area of higher education, the objective is to transform it into a more autonomous, performance- and quality-oriented system. The creation of a National Qualification Framework and the updating of educational programmes are among the planned steps (MOD, 2014b). There is need to develop appropriate policy packages, such as on teacher policies to improve the quality of higher educational outcomes (ERI, 2014), particularly as concerns training and stimulating teachers to remain in

disadvantaged regions. Maintaining the momentum of these reforms in the long term, supported by adequate financial resources, is an imperative for national development, and rural and agricultural development in particular.

Figure 4.13. Global Competitiveness Index: Higher education and training, 2014-15

Scale 1 to 7 (best)



Notes: OECD top 5 refers to the average of the scores for the top 5 performers among OECD countries (Finland, Netherlands, Switzerland, Belgium and United States).

The quantity of education index is based on secondary and tertiary education enrolment rates from UNESCO Institute for Statistics. The quality of education index is based on responses from a WEF Executive Opinion Survey on "How well does the educational system meet the needs of a competitive economy; Executives' assessment of the quality of math and science education in schools and the quality of business schools; and on how widespread is Internet access in schools. The on-the-job-training index is based on survey responses on the availability of high-quality, specialized training services and the extent to which companies invest in training and employee development.

Indices for EU28 and OECD are the simple average of member-country indices.

Source: WEF (2015), *The Global Competitiveness Report 2015-2016: Full data Edition*, World Economic Forum Geneva 2015. http://reports.weforum.org/global-competitiveness-report-2015-2016/). Data for the Quantity of Education Index comes from UNESCO (2015), *Institute for Statistics*, http://www.uis.unesco.org/Pages/default.aspx.

StatLink http://dx.doi.org/10.1787/888933389859

Box 4.1. Recent education reforms and initiatives in Turkey

Many recent reforms in the education sector in Turkey have been supported by international organisations, in certain cases beginning as pilot projects. The Basic Education Programme (1997) and the Secondary Project (2006-11), both with the World Bank, aimed to improve quality of education at different levels of education. The Master Implementation Plan (2001-05) included multiple projects by UNICEF to improve both equity and quality of the education system. Initiatives in VET and tertiary education have been developed with the European Union to improve alignment with European standards. However, evaluations of certain projects indicate that not all targets or objectives were met and that it has been difficult to transform pilot projects into nationwide policy.

Box 4.1. Recent education reforms and initiatives in Turkey (*cont.*)

Various efforts have been directed to *increase the quantity and equity of education*. The latter goal in particular views women and socially disadvantaged youth and as such, has strong links to the improved educational status of rural population. A structural reform (2012) extended the length of compulsory education from 8 to 12 years and redefined the system into three levels (primary, lower and upper secondary) of four years each. This implies additional funding, personnel and restructuring of schools to provide separate primary and lower secondary institutions. An evaluation in Turkey found that enrolment rates for primary school increased in part as pre-primary education age students were enrolled in primary school instead of pre-primary school. New regulations were put in place for 2013-14 to properly enrol 5-year olds in primary school (ERI, 2014). Improving educational status of women is one of the most obvious imperatives for the education in Turkey. The Project for Increasing Enrolment Rates Especially for Girls (ISEG, 2011-13) was a pilot project in 16 provinces with the lowest enrolment rates to increase primary and secondary school participation and improve family educational awareness and links to the labour market. UNICEF also aimed to increase girls' educational participation as part of the Master Implementation Plan (2001-05), which included the Attendance of Girl Pupils to Schools project and the Girls to Schools Now campaign (2001-05).

Vocational and Education Training (VET) system has seen multiple reforms to strengthen completion rates and develop skills suitable for the labour market. Various projects and programmes were implemented in the 2000s targeting key problems, such as links with the labour market, teacher quality, and curriculum. The Specialised Vocational Training Centres Project (UMEM, 2010-15) aims to build capacity of youth and increase employment rates. The Ministry of National Education and the Scientific and Technological Research Council of Turkey (TÜBİTAK) are collaborating to support the vocational skills and entrepreneurship and leadership qualities of 15 000 VET school managers and teachers under the Teaching, Entrepreneurship and Leadership Training Cooperation Protocol for Managers and Teachers in Vocational and Technical Schools and Institutions. A number of initiatives aim to collect data and strengthen labour market outcomes.

To *improve teachers and quality of education*, the Teacher Training Programmes of Education Faculties (2008) aimed to increase the number of general knowledge and elective courses and credits. The New Teacher Programme (2011) was introduced to provide in-depth subject content and stricter requirements for certain subjects. The Transportable Schools and Mobile Teachers Programme aimed to improve quality of education in rural areas with pre-fabricated mobile schools and more teachers. Standards for Primary Education Institutions, were piloted in 2010 and expanded to all primary education schools from 2011-12. These standards, among other purposes, are intended to establish schools' self-assessment to determine the extent of its quality status and develop its own improvement plans.

To increase *private sector participation in education*, the Campaign of 100% Support for Education began to increase the financing from private and non-governmental organisations through tax exemptions on educational spending. Under the 193 Income Law (September 2003), a 100% tax deduction can be provided for contributions to education. Under the Private Teaching Institutions Law (January 2013, N°.5580), government funds have been provided to private vocational and technical schools in Organised Industrial Zones in addition to the funding available to private schools with students in special education.

Current reforms also include goals to be achieved by 2023 to improve educational opportunities through better *education technologies*. The Movement to Increase Opportunities and Technology project (FATIH) aims to equip each classroom with an interactive white board and each student with a tablet computer. The e-State Project (2009) was implemented to improve access to information for key stakeholders, such as teachers, administrators, students and parents. This project includes a number of initiatives: the e-Personnel Project to provide teachers and students with exam information and enable teacher requests; the e-Graduate Project to help vocational and technical secondary graduates locate employment and higher education opportunities; the e-Registration Project for parents to register their child in neighbourhood schools; and the e-School Information Management System to collect student information. The Ministry of National Education Information Systems (MEBBİS) (2002-03) was launched to collect and publish formal education statistics from school directors using the e-school module.

Source: OECD (2015d), *Education Policy Outlook 2015: Turkey*, www.oecd.org/edu/policyoutlook.htm.

Education status of agriculture

While the level of overall education has improved, a substantial part of the rural and poor populations continue to lack adequate education. Over three-quarters of employed in agriculture have only primary or secondary school education, while 15% are illiterate, due primarily to the extremely low level of education amongst women in agriculture (Table 4.1). One in four female agricultural workers is illiterate and lacks the essential skills to run productive farms, to use extension services, and to leverage technology.

Table 4.1. Educational status of the employed in Turkey, by economic sector, 2014

Percentage

	Illiterate	Primary and secondary school	High school and technical high school	University
Agriculture	14.6	77.2	6.5	1.6
Male	5.8	82.3	9.5	2.5
Female	24.9	71.3	3.1	0.7
Industry	1.6	66.1	21.3	11.1
Services	1.4	42.2	24.7	31.7

Source: TÜRKSTAT (2015b), *Labour Force Surveys* (database), http://www.turkstat.gov.tr.

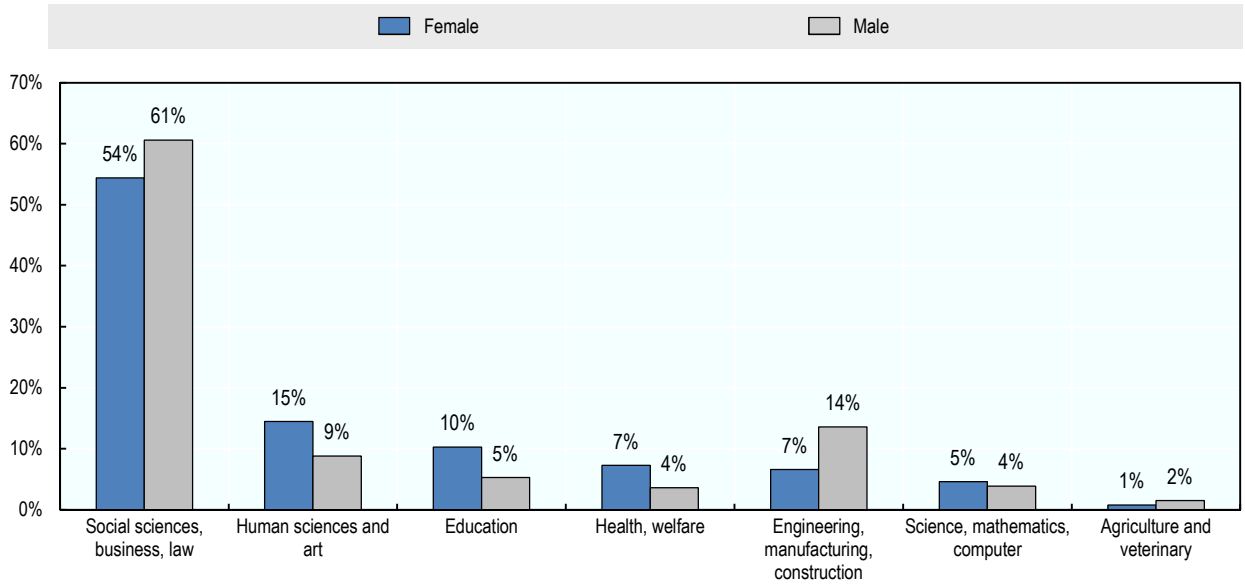
Education for rural people, beyond the issues of nation-wide relevance, faces specific challenges. An extension of compulsory education to 12 years may be hindered by the needs of rural families for farm labour. Oztürk (2012) found that the lack of a child benefit system in Turkey puts children of poor families at risk of being taken out of school and put in employment. The centralised governance by the Ministry of National Education for primary and secondary schools (the Council of Higher Education oversees tertiary level studies) provides limited autonomy to institutions to better respond to local needs in educating children in agricultural communities (ERI, 2014). Rural regions face additional transport challenges for students to have access to school. The Tenth Development Plan includes objectives to address transport in regionally disadvantaged areas as well as improving teacher quality and retention in these areas. The means to achieve this, however, have not been specified and in a centralised structure may remain difficult to address.

Turkey's agriculture education system includes agricultural vocational high schools, vocational schools and universities with specialised programmes in agriculture. Vocational schools provide training for agricultural machinery as well as training for modern agricultural technology disciplines at the level of EU agricultural colleges. At the 19 vocational agriculture high schools in Turkey, women represent only 25% of students (TÜRKSTAT, 2015a). Strengthening these programmes and improving the level of education for international accreditation will aid in developing a trained workforce.

With a low demand for education in the agricultural labour force, few students in Turkey pursue higher education in agricultural and veterinary sciences. In 2014/15, these disciplines attracted low enrolment shares across disciplines: 1% female and 2% male applicants (Figure 4.14). The number of university graduates in agriculture is likely below the sector's need for skilled labour, although no assessment is available of the skill demand and supply for agriculture. Slightly over 3% of all students completed their studies in agricultural programmes in 2013; this is a higher percentage than in many other countries, but substantially below Turkey's GDP share of agriculture (7%) (Figure 4.15). Furthermore, agricultural university graduation rates have been declining over the last ten years. Most innovations in the agricultural sector currently come from researchers and young people with higher education levels who start a farm as a business opportunity (Akkaya, 2011). Policies for education that foster agricultural innovation will need to be inclusive of rural populations and family farms to make gains in educational levels, basic skills and investment.

Figure 4.14. Higher education enrolment by field of study in Turkey, 2014-15 school year

Percentage in field of study

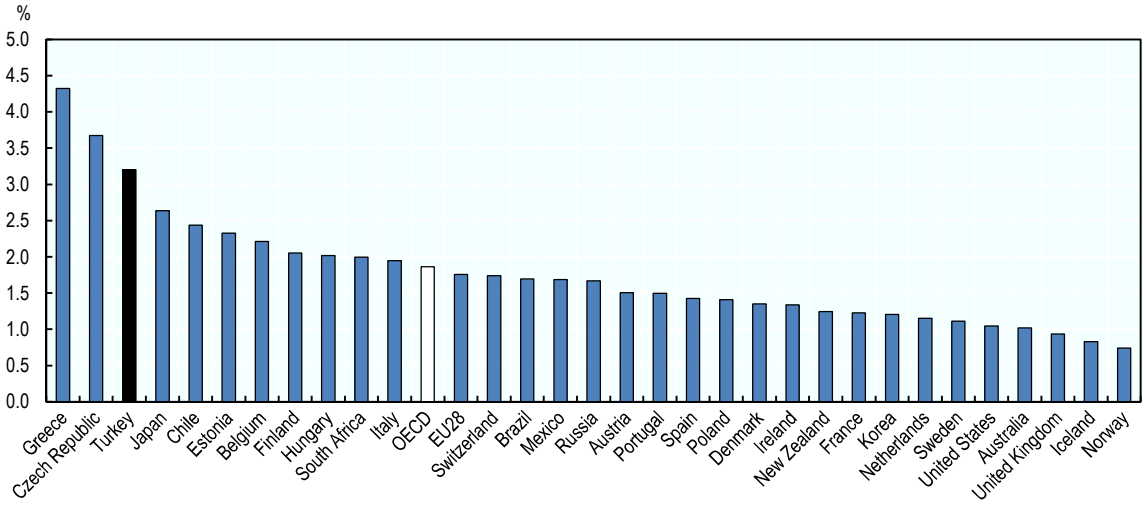


Source: TÜRKSTAT (2015a), *National Education Statistics, Formal Education* (database), www.turkstat.gov.tr .

StatLink http://dx.doi.org/10.1787/888933389866

Figure 4.15. Agriculture in tertiary education, 2013 or latest available year

Percentage of graduates from agriculture programmes



Source: UNESCO (2015), *Institute for Statistics*, www.uis.unesco.org/Pages/default.aspx .

StatLink http://dx.doi.org/10.1787/888933389873

Summary

- Turkey lags behind its international competitors in the agro-food area in the availability and quality of its infrastructure. Development of infrastructure is a national priority and large investments have been made; ambitious plans have been formulated up to 2032 to reduce this infrastructure gap further; integration with EU standards and trans-European transport and electricity networks are among the priorities.
- Another focus of infrastructure development is to contribute to reducing regional economic and social disparities by integrating infrastructure plans into regional development policy. As such, infrastructure plans address major needs of rural areas, such as farmland consolidation, irrigation networks, and rural transportation.
- With substantial funding needs to implement infrastructure plans, the policy has been to encourage private investment through important tax, credit and social contributions concessions; public-private partnerships in multiple forms have also been promoted.
- The labour market is characterised by a relatively high level of self-employment and small enterprises as principal employers, often relying on informal labour arrangements.
- Labour regulations are rigid leading to insufficient flexibility of the labour market. This increases labour costs and informality in labour relations and hinders structural adjustment. Placing all businesses into the formal framework of labour regulations would allow more efficient firms to develop and the growth opportunities across the entire economy to be realised. Policies would be required to support smaller informal and semi-formal businesses in such a transition, as well as a stronger safety net system. The government's Action Plan 2016 foresees to start labour reforms.
- Programmes are in place to address the difficulties of the most vulnerable labour groups, in particular women and youth, including in rural areas. However, the main improvement should come from a broad labour reform.
- Turkey's current level of education is modest, with a low share of people at higher levels of education and a significant illiteracy rate among the rural population, particularly women.
- Turkey has made gains in recent years in its level of education and performance, facilitated by the country's income growth and impressive progress in poverty alleviation. The improvements in education have also been supported by reforms which were largely driven by initiatives and pilot projects funded by international organisations, as well the goal of aligning with EU standards. Long-term efforts are required through sustained funding and national polices to build on these gains.
- While the overall education level has improved, substantial parts of the rural population lack essential skills. Education for rural people is hindered by the lack of a child benefit system as well as the needs of rural families for farm labour. Insufficient transport in some regions makes access to school more difficult, and primary and secondary education institutions have limited autonomy to better respond to local needs.
- The low demand for education amongst the agricultural labour force results in few students pursuing higher education in agriculture.
- Current objectives to improve education include increasing participation at all levels, in particular early childhood education. Improvements are also needed in the quality of education through the development of performance-based systems, curricula updates, national qualifications framework, increased autonomy in the system, and engagement of private investors and professional organisations in provision of education.
- Greater inclusion in education in rural regions, and women in particular, is a principal challenge if the agriculture is to develop into a more productive sector.

Notes

1. This comparison is conditional and requires care in view of the differences in countries' size, geographic conditions and development levels.
2. See Box 5.3 in Chapter 5 which describes the agricultural land consolidation component of the GAP.
3. Turkey has been an emerging market pioneer in public-private partnerships (PPPs) for infrastructure development since the mid-1980s. These projects were generally technically successful, but created fiscal risks. In particular, public purchase guarantees at pre-determined prices have been activated more often than expected. A Special Ad Hoc Committee on PPPs has been subsequently created to analyse the main governance issues encountered in PPP projects, and to formulate the best practice guidelines for implementation agencies. Establishing an accurate account for fiscal implications and risks was also a task. The work of this Commission contributed to the preparation of a new Framework Law on PPP (OECD, 2014a).
4. These results, however, may be also influenced by the 2008-09 global crisis.

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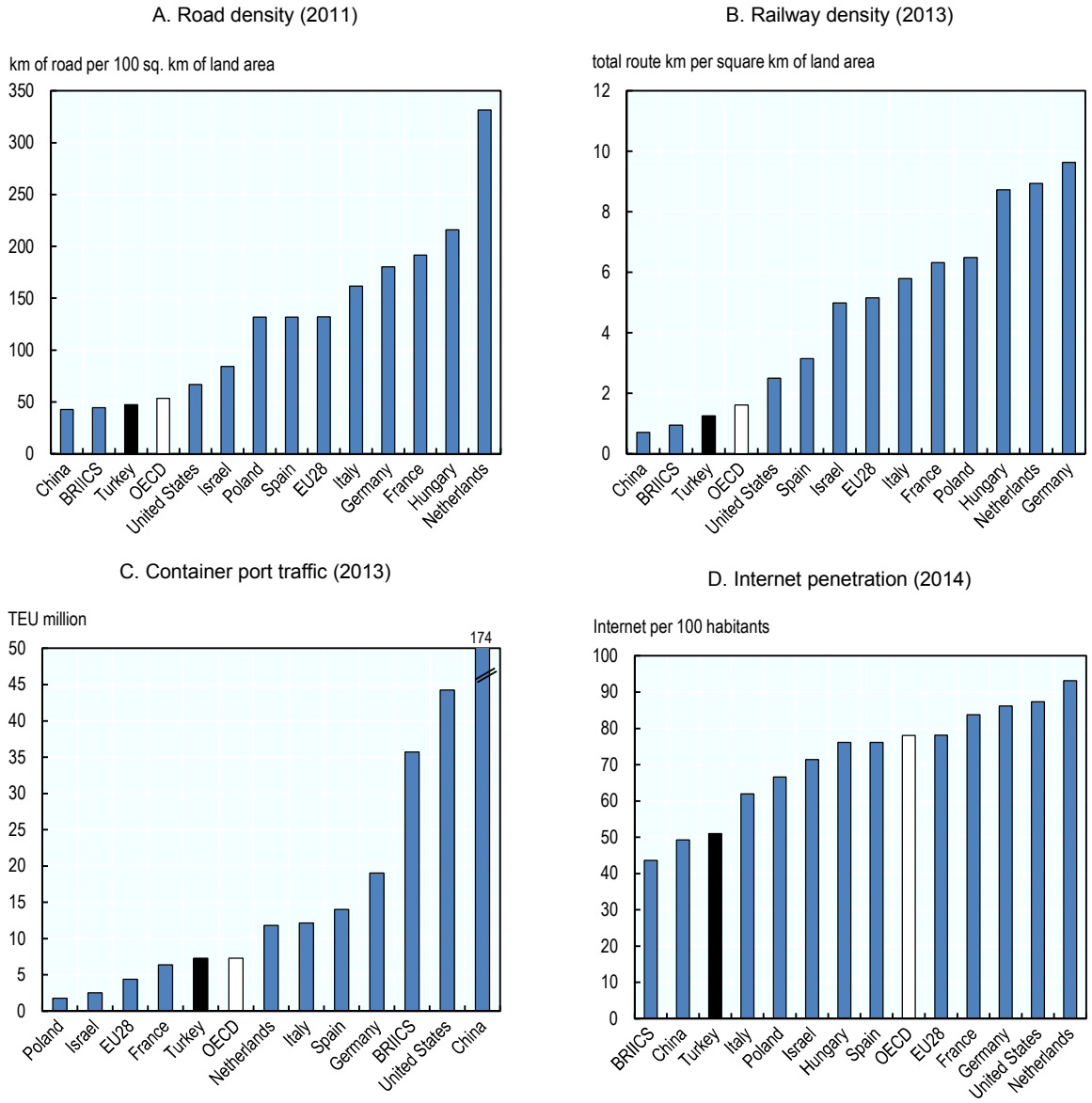
Annex 4.A1

Turkish infrastructure: An international comparison

Figure 4.A.1. Selected infrastructure availability indicators



TEU – twenty-foot equivalent units.

Source: WDI (2015), *World Development Indicators Database*, http://data.worldbank.org/data-catalog/world-development-indicators.

StatLink http://dx.doi.org/10.1787/888933389880