

Chapter 14.

Agriculture in South East Europe

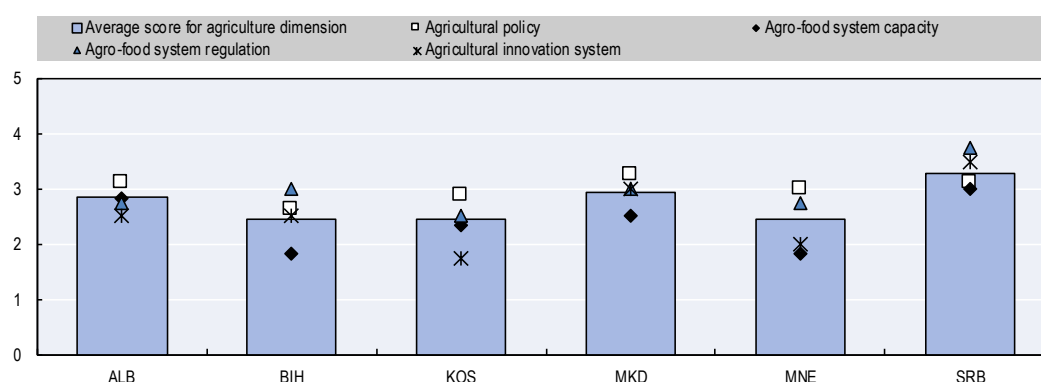
This chapter assesses the extent to which policies in six South East European (SEE) economies support competitiveness, innovation and structural change in agriculture. After an overview of the economic, social and environmental context of the agriculture sector, the chapter then focuses on four sub-dimensions. The first sub-dimension, agricultural policy, examines key policies and instruments focused on the agriculture sector – including domestic producer support, trade and tax. The second sub-dimension, agro-food system capacity, assesses rural infrastructure capacity, highlighting irrigation, labour mobility, skills and education. The third sub-dimension, agro-food system regulation, describes how well regulations for inputs and natural resources safeguard public safety and how burdensome it is for farmers to comply with them. The final sub-dimension, the agricultural innovation system, assesses the research and development frameworks to create new technologies and the extension services to support farmers in adopting them. The chapter includes suggestions for enhancing the policies in each of these sub-dimensions to enhance productivity and sustainability in their agriculture sectors, which in turn would foster the competitiveness of these economies.

Main findings

In many countries, the agriculture sector has the potential to contribute significantly to economic development, reduce poverty and increase food security. The six South East European (SEE) economies assessed in this chapter – Albania, Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Kosovo,* Montenegro and Serbia – are endowed with rich natural resources which allow their agriculture sectors to be economically significant, both in terms of value added and employment. To achieve the sector's full economic potential, policy frameworks must lay the foundations for sustainable growth in agricultural productivity. Increasing the sector's competitiveness through innovation and structural change are key pathways. Available data on agricultural productivity show some improvements in crop and livestock yields, and a small increase in labour productivity – but they remain mostly well below the average European Union (EU) levels.

All six SEE economies have basic operational policy frameworks for agriculture which aim to increase agricultural production and rural development. This is reflected in the six SEE economies' average dimension and sub-dimension scores, most of which are above 2 (Figure 14.1). However, the current structure of agricultural producer support across the region is market distorting, and thus unlikely to bring about long-term productivity gains. The highest scoring sub-dimension is on agro-food system regulation. Regulations for agricultural inputs are largely in place, while those for encouraging efficient natural resource use and preventing pollution are being developed. Basic rural infrastructure is accessible. While agricultural extension services are operational, policy frameworks to facilitate agricultural research and development are at an early stage. Monitoring and evaluation activities are limited – indeed, a few economies lack key agricultural statistics.

Figure 14.1. **Agriculture: Dimension and sub-dimension average scores**



Note: See the methodology chapter for information on the *Competitiveness Outlook* assessment and scoring process.

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* This designation is without prejudice to positions on status, and is in line with United Nations Security Council Resolution 1244/99 and the Advisory Opinion of the International Court of Justice on Kosovo's declaration of independence.

Comparison with the 2016 assessment

While the *2016 Competitiveness Outlook* did not include a chapter on agricultural policy, the environmental policy chapter included measures on irrigation and agri-environmental instruments. No significant progress has been noted in either of these two indicators over the last two years. Although all six SEE economies have taken steps to develop and adopt either individual sustainable irrigation strategies or sets of strategy-setting documents, coherent policy frameworks for improving sustainable irrigation are yet to be developed. Agri-environmental measures still remain at an initial planning and implementation stage. Currently, there are no major agri-environmental measures designed to protect soil, water, air, climate or biodiversity. However, they are emerging: the Former Yugoslav Republic of Macedonia and Serbia provide support for endangered livestock breeds, and the Former Yugoslav Republic of Macedonia for set-aside (taking a share of planted land out of cultivation) and green manure (a crop that is grown and ploughed under to improve the soil). In addition, all six SEE economies provide support to organic farming.

Achievements

The six SEE economies have agricultural strategies in place with accompanying annual programmes and budgets. However, they are at varying levels of readiness for the EU's Instrument for Pre-Accession Assistance in Rural Development II (IPARD II); a few of them have already used IPARD I or similarly structured programmes.

The assessed economies have reasonably well-developed rural infrastructure. Most rural areas have functioning roads, electricity, and information and communications technology (ICT), which enables rural producers to connect to markets for inputs and their crops, and to access critical information including on weather and technology.

Agricultural education, research and extension systems are in place in all six SEE economies. All SEE economies provide agricultural vocational education and training and university education, and have agricultural research institutes and functioning extension services.

The six SEE economies have regulations in place for key agricultural inputs. Regulations for seeds, fertiliser and tractors protect public health and compliance is not overly burdensome.

Remaining challenges and key recommendations

- **Strengthen inter-sectoral co-operation.** Low levels of co-operation, co-ordination and synergies between agriculture and other sectors hold back the performance of rural infrastructure for agriculture, irrigation systems and agricultural education and research.
- **Reorient agricultural producer support towards better productivity and sustainability objectives.** The current composition of producer support has a large share of payments for commodity output and input use which is unlikely to facilitate long-term productivity gains and competitiveness. Income support does not facilitate structural adjustment. Public resources which provide general services for the sector are better positioned to support productivity and sustainability objectives.
- **Fully implement farmland consolidation plans.** Small, fragmented farms limit productivity by hindering economies of scale and do not optimise natural resource use. While land transfer regulations in general do not pose a barrier, some economies need to make significant efforts to reform cadastres and clarify property rights.

- **Enhance the quality and impacts of the agricultural innovation system.** Increase investment in research and development, both public and private. Enhance the resources and human capacities of extension services and encourage private consultants to supply them.
- **Enhance environmental objectives across agricultural policy frameworks.** The economies' current agricultural legislation, producer support, rural development measures, education, research and extension do not provide sufficient incentives for the efficient use of natural resources nor safeguard them from pollution. Economies should continue to transpose the EU Nitrates Directive and prepare to implement the associated agri-environmental measures associated with the IPARD programme.
- **Strengthen policy analysis to better inform policy development.** Build the necessary databases to inform policy analysis, including data on agricultural economic accounts, employment and output. Monitoring and evaluation practices for the EU and other donor-funded programmes such as IPARD are well established, but monitoring and evaluation activities should be expanded to cover government programmes. Use basic data and evaluation findings to inform new policies more consistently.

Context

Increasing global demand for agricultural products coupled with a changing climate mean that long-term agricultural productivity and sustainability must be improved. Both overarching and sector-specific policies that facilitate structural change, innovation and sustainable resource use will improve the competitiveness of the agricultural sector. On the other hand, policies that create market distortions and encourage the inefficient use of agricultural resources hinder agricultural competitiveness.

This chapter draws on an OECD framework to analyse policies for innovation, productivity and sustainability in the food and agricultural sectors (OECD, 2015). It assesses how well economy-wide policies create incentives and disincentives for innovation, structural change, resource use and the adaptation to and mitigation of climate change. These constitute key drivers of productivity growth and sustainable resource use. Given the wide scope of policies which affect the competitiveness of the agriculture sector this chapter relates to all the others in this *Competitiveness Outlook*; however, the following chapters are especially relevant:

- **Chapter 2. Trade policy and facilitation** are key in determining agricultural global value chain (GVC) participation and in creating agricultural domestic value added. Barriers to imports reduce engagement in GVCs along with the domestic returns from agro-food exports. On the other hand, non-tariff measures based on more transparent and science-based arrangements can increase the domestic value added generated by exports (Greenville et al., 2017).
- **Chapter 13. Environmental policy** plays an important role in agriculture, which is a major user of natural capital – e.g. land, soil, water, biodiversity – and can degrade the natural resources it depends on through inappropriate practices. Furthermore, despite being threatened by climate change, agriculture also contributes to it.

Agriculture assessment framework

The agriculture dimension in the *2018 Competitiveness Outlook* examines the extent to which the six assessed SEE economies have established policies to support productive and sustainable agricultural sectors. Without seeking to be exhaustive, it considers four broad sub-dimensions which are critical to an agricultural sector that facilitate economic growth and well-being across the population:

1. Agricultural policy: Do agricultural policies and instruments provide incentives for farmers to meet market demand for agricultural products efficiently? Do they facilitate structural change?
2. Agro-food system capacity: are the quality and accessibility of rural infrastructure and irrigation systems good enough to meet the needs of agricultural producers and businesses? Are agricultural producers educated enough to adopt new technologies and diversify their income activities?
3. Agro-food system regulation: how effectively do regulations for natural resources and agricultural inputs protect the environment and safeguard public safety? How difficult is it for farmers and agri-business to comply with them?
4. Agricultural innovation system: how effective is the agricultural research and development system? Do agricultural extension services support agricultural producers in adopting more productive and sustainable technologies?

Figure 14.2 shows how the sub-dimensions and their constituent indicators make up the agriculture dimension assessment framework. Each sub-dimension is assessed through quantitative and/or qualitative indicators. Quantitative indicators are based on national or international statistics. Qualitative indicators have been scored in ascending order on a scale of 0 to 5, and are summarised in Annex 14.A1.¹ For more details on the methodology underpinning this assessment please refer to the methodology chapter.

Agricultural performance in SEE economies

Agriculture has traditionally played an important role in the six SEE economies. The sector's contribution to gross domestic product (GDP) and employment is higher than in OECD and EU countries (Table 14.1). However, this contribution has been falling throughout the assessed economies – with the relative weight of agriculture in Serbia's GDP more than halving from 2000 to 2015 (from 19.9% to 8.1%). In the Former Yugoslav Republic of Macedonia, by contrast, the agricultural share in GDP has hovered at around 11% since 2000.

Agriculture is a major user of natural resources (Table 14.1). It uses about 40% of total land on average in the six SEE economies, except in Montenegro where it uses 17%. This average lies between the OECD average (35.6%) and the EU average (43.8%). The sector's share of freshwater withdrawals among the economies varies widely – from 39.5% in Albania to less than 3% in Serbia and Montenegro. Except for Albania, the assessed economies use a smaller share of their freshwater resources in agriculture than the OECD average (43.9%) and the EU average (29.7%).

Figure 14.2. Agriculture assessment framework

Agriculture			
Outcome indicators <ul style="list-style-type: none"> Gross value added of agriculture Employment in agriculture Agro-food trade: exports, imports and trade balance Agricultural land area Agricultural freshwater withdrawals Value of agricultural production Farmer demographics Farm structure, number and total area Number of agricultural co-operatives Crop and livestock yield Agricultural labor productivity Arable land per capita Commercial fertiliser intensity Agricultural greenhouse gas emissions 			
Sub-dimension 1 Agricultural policy	Sub-dimension 2 Agro-food system capacity	Sub-dimension 3 Agro-food system regulation	Sub-dimension 4 Agricultural innovation system
Qualitative indicators <ol style="list-style-type: none"> Agricultural policy framework Domestic producer support instruments Agricultural trade policy Agricultural tax regime 	Qualitative indicators <ol style="list-style-type: none"> Rural infrastructure policy framework Irrigation policy framework Agricultural education system 	Qualitative indicators <ol style="list-style-type: none"> Regulation of natural resources Regulation of inputs 	Qualitative indicators <ol style="list-style-type: none"> Agricultural research and development framework Agricultural extension services framework
Quantitative indicators <ol style="list-style-type: none"> Budgetary support to agricultural producers Import tariffs 	Quantitative indicators <ol style="list-style-type: none"> Global Competitiveness Index: transport, and electricity and telephony Agricultural area equipped for irrigation Farmers' educational attainment Agriculture in tertiary education 	Quantitative indicators Not applicable in this assessment	Quantitative indicators <ol style="list-style-type: none"> Public expenditure on agricultural research and development Farms using extension services

Table 14.1. Importance of agriculture in the economy (2015)

	%					
	Gross value added	Employment	Exports	Imports	Total land area*	Total freshwater withdrawals*
Albania	23.0	41.3	6.5	16.8	42.8	39.5
Bosnia and Herzegovina	7.6	17.9	9.4	18.4	42.2	-
Kosovo	12.6	-	19.3	12.1	38.0	-
Former Yugoslav Republic of Macedonia	11.4	17.9	12.0	11.8	50.1	22.8
Montenegro	10.2	-	18.7	24.7	17.1	1.1
Serbia	8.2	19.4	21.6	8.4	40.1	2.8
OECD	1.5	4.8	10.6	8.9	35.6	43.9
EU	1.6	4.5	11.3	10.5	43.8	29.7

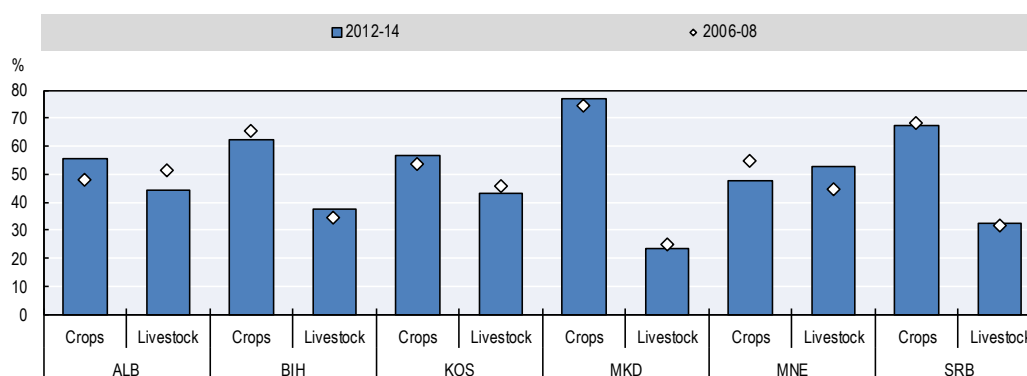
Note: * data from 2014; – data unavailable.

Source: ASK (2015a), "Agriculture census 2014", <http://ask.rks-gov.net>; OECD (2017a), "OECD System of National Accounts", <http://stats.oecd.org>; World Bank (2017a), *World Development Indicators* (database), <http://data.worldbank.org/data-catalog/world-development-indicators>; UN Comtrade (2017), *UN Comtrade* (database), <http://comtrade.un.org>; FAO (2017a), *FAOSTAT* (database), <http://faostat.fao.org>; FAO (2017b), *AQUASTAT* (database), www.fao.org/nr/water/aquastat/main/index.stm.

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In the last ten years, while agricultural output has fluctuated across all SEE six economies, it has generally increased. Furthermore, there has been significant variation in the scale of growth across economies. While in Serbia, output increased by about 60% from 2007 to 2015, Kosovo's level of output has remained quite stable. Crops accounted for a greater share of total output value than livestock in 2012-14 in all but one of the assessed SEE economies (Figure 14.3). In the Former Yugoslav Republic of Macedonia, crops contributed the greatest share – making up almost three-quarters of the total output value. Montenegro was the exception, with its share of livestock output being slightly greater than crop output. Since 2006-08, the composition of total output value has seen an increase in the share of crops in Albania and Kosovo, and an increase in the share of livestock in Bosnia and Herzegovina and Montenegro. The composition is fairly stable in the Former Yugoslav Republic of Macedonia and Serbia.

Figure 14.3. Value of agricultural production (2006-08 and 2012-14)



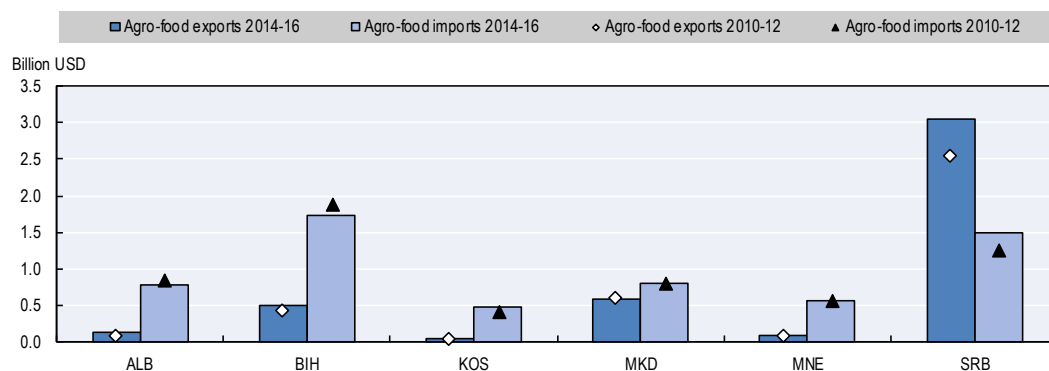
Note: Values based on constant international dollars except Kosovo, which is based on current euros.

Source: ASK (2016a), “Economic accounts for agriculture”, <http://ask.rks-gov.net>; FAO (2017a), *FAOSTAT* (database), <http://faostat.fao.org>.

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All the assessed economies except Serbia are net importers of agro-food products (Figure 14.4). On average, agro-food accounts for about 14% of total exports across the six SEE economies and 16% of total imports (2014-16). From 2010 to 2016, most of the assessed economies saw growth in agricultural exports, except for Kosovo and Montenegro, where levels have not changed significantly. Albania leads with exports more than doubling, followed by Serbia, which increased its exports by 40%. In half of the assessed economies imports slightly increased, in Montenegro they fluctuated around the same level, and in Albania and Bosnia and Herzegovina they decreased by almost 10% and 3% respectively. As a result, the negative agricultural trade balances in Kosovo and the Former Yugoslav Republic of Macedonia increased; in Montenegro the balance remained quite stable while in Albania and Bosnia and Herzegovina their negative balances decreased. Serbia's positive trade balance increased. The main origins and destinations for agro-food products to and from the six SEE economies are the European Union and the SEE economies themselves, each being areas with preferential trade agreements (through individual Stabilisation and Association Agreements between each SEE economy and the EU, and the Central European Free Trade Agreement in the SEE region).

Figure 14.4. Agro-food trade (2010-12 and 2014-16)



Notes: Data in current USD. Agro-food definition does not include fish and fish products. Agro-food codes in H0: 01, 02, 04 to 24, 3301, 3501 to 3505, 4101 to 4103, 4301, 5001 to 5003, 5101 to 5103, 5201 to 5203, 5301, 5302, 290543/44, 380910, 382360.

Source: ASK (2016b), "International trade statistics", <http://ask.rks-gov.net>; UN Comtrade (2017), UN Comtrade (database), <http://comtrade.un.org>.

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In 2016, the rural populations of the assessed SEE economies accounted for significant shares of their populations. Shares ranged from 36% (Montenegro) to 60% (Bosnia and Herzegovina) – much higher than the OECD (20%) and European Union (25%). Between 2000 and 2016, the share of the rural population was relatively stable in Bosnia and Herzegovina, Serbia (44%) and the Former Yugoslav Republic of Macedonia (43%). By contrast, the rural population decreased by 14% in Montenegro and by 29% in Albania – leaving 42% of the population in rural areas in Albania (no data available for Kosovo) (World Bank, 2017a).

Agriculture is an important employer and source of income in the rural economy, though sources are becoming more diversified. The agricultural labour force in the assessed SEE economies is mainly unpaid family labour, of which nearly 40% are women – except in Kosovo where they account for about one-third of the agricultural labour force (ASK, 2015a; FAO, 2017a). The agricultural labour force is older than in other sectors, with, for example, the median age of farmers is 50 in Bosnia and Herzegovina, 52 in Kosovo and 59 in Serbia (ASK, 2015a; BHAS, 2016a; SORS, 2013). Those working in agriculture have mostly completed at least primary education and have a basic level of proficiency in literacy and numeracy (Table 14.2).

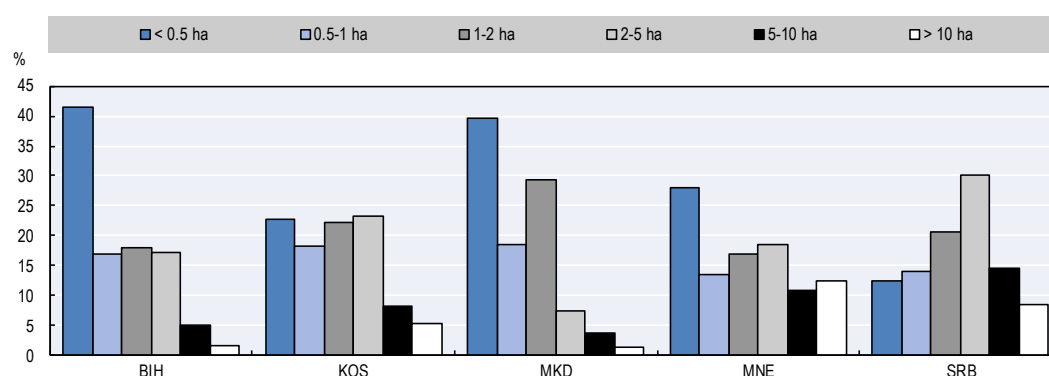
An estimated 1.65 million farms operate across the six SEE economies. Average farm holding sizes are small – half of the economies have average farm sizes of less than two hectares: Albania (1.3 ha), Bosnia and Herzegovina (1.6 ha), and the Former Yugoslav Republic of Macedonia (1.9 ha) (BHAS, 2016b; INSTAT, 2017; MAKSTAT, 2014). While average holding sizes are bigger in Kosovo (3.2 ha), Montenegro (5.8 ha) and Serbia (5.4 ha), they are still much smaller than the EU average of 16.1 ha (ASK, 2015a; Eurostat, 2017a; MONSTAT, 2017; SORS, 2013).

Holdings smaller than 5 ha are the most numerous (Figure 14.5). In the assessed SEE economies, 88% of farms are under 5 ha and operate on 44% of the total agricultural area. Compared to Kosovo and Serbia, Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia have a greater share of very small farm holdings; about 40% of

farm holdings are under 0.5 ha and operate on about 5% of the total land area in these two economies. Montenegro has a significant share of holdings under 0.5 ha (28%), yet it also has the largest share of farms over 10 ha (13%) of the assessed economies. By contrast, farm holdings between 2 and 5 ha are the most numerous in Serbia, accounting for 30% of holdings and using 17% of the land. At the other end of the spectrum, farms greater than 10 ha use significant portions of the land in Serbia (57%) and in Kosovo (44%). Meanwhile, farms larger than 10 ha only use about a quarter of the land in Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia.

Figure 14.5. **Distribution of farm size**

% of farm holdings by size during the 2000s



Note: Data for Bosnia and Herzegovina are for 2001, Kosovo are for 2014, the Former Yugoslav Republic of Macedonia are for 2001, Montenegro are for 2016, and Serbia are for 2012. Data categories for the Former Yugoslav Republic of Macedonia are 1-3 ha and 3-5 ha. Data for Albania unavailable.

Source: ASK (2015a), “Agriculture census 2014”, <http://ask.rks-gov.net>; BHAS (2016b), “Population census 2013”, www.bhas.ba; MakStat (2014), “Farm structure survey 2013”, www.stat.gov.mk; MONSTAT (2017), “Farm structure survey 2016”, www.monstat.org/userfiles/file/fss/Saopstenje%20FSS-final%2029_12_2017%20eng.pdf; SORS (2013), “Census of agriculture 2012 in the Republic of Serbia”, www.stat.gov.rs.

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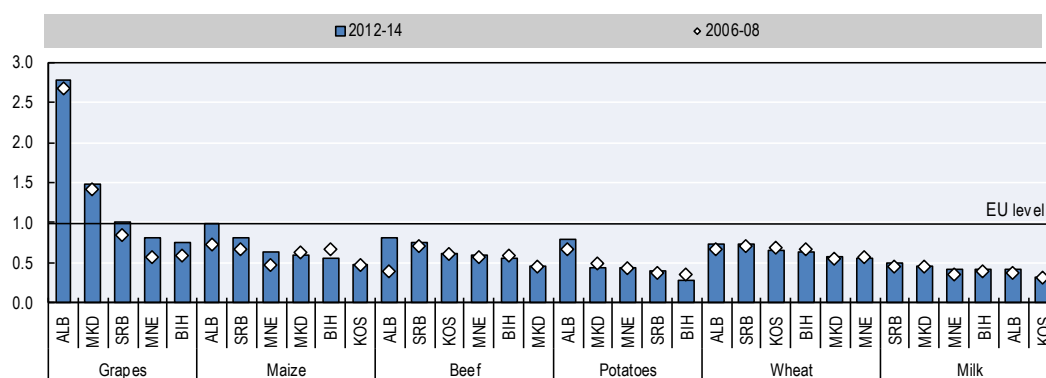
Even where land is concentrated in larger holdings, the farm structure is broadly based on small family enterprises. This differs from countries with distinctly dualistic agriculture, where many smallholders use a small proportion of natural resources and large farms use a greater share of the land, such as in Brazil, where over 50% of the land is used by farms larger than 500 ha; or the European Union, where over 50% of the land is used by farms of over 100 ha (Eurostat, 2016; IGBE, 2006). The vast majority of farms in the six SEE economies remain small, family owned and highly fragmented.

Given this large number of small, fragmented farms, agricultural co-operatives could be a useful way to help them integrate into the agro-food value chain. However, agricultural co-operatives do not play a major role in these economies, following a history of mandated collective farming under communism. According to one survey of a subset of the registered co-operatives in the Former Yugoslav Republic of Macedonia, procuring inputs and marketing were the most common activities conducted (Caccamisi, 2016). Of the 62 countries surveyed in the World Bank report, *Enabling the Business of Agriculture 2017*, Serbia was one of a few countries to set out minimum capital requirements to establish a producer organisation and to limit producer organisation membership to one member per household (World Bank, 2017b). Minimum capital

requirements may be a barrier to agricultural co-operative growth, as capital formation is a challenge for smallholder farmers. Limiting household membership in agricultural producer groups may hinder women's participation.

Since 2006 the six SEE economies have seen some improvements in crop and animal yields, especially in grapes (Figure 14.6). The yields of principal crops and livestock have moved closer to average EU levels, while half of the economies met or surpassed those levels for grapes. However, yields for some key products, such as milk and potatoes, remain less than half of the EU average for most of the six SEE economies. Of the assessed economies, Albania has the highest yields for all reviewed products except milk.

Figure 14.6. Crop and livestock yields as ratios of European Union yields



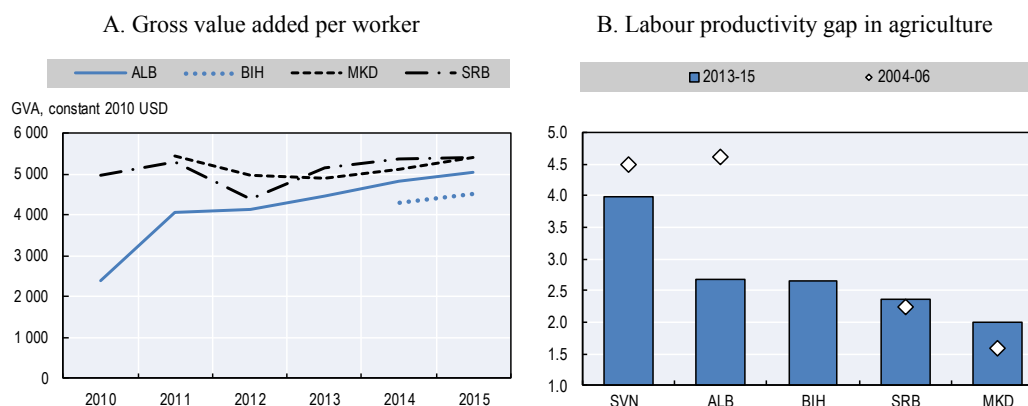
Note: The ratios are based on smoothed three-year yield averages. For Kosovo, data for grapes and potatoes are unavailable, data for milk are for 2007-09, and data for beef are for 2008-10.

Source: ASK (2015b), "Agricultural household surveys", <http://ask.rks-gov.net>; FAO (2017a), *FAOSTAT* (database), <http://faostat.fao.org>.

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Agricultural labour productivity has increased in Serbia and Albania since 2004, while in the Former Yugoslav Republic of Macedonia it has fluctuated (Figure 14.7.A). The average agriculture gross value added (GVA) per worker in the EU and OECD is more than four times the average amount of about USD 5 000 in the assessed SEE economies (World Bank, 2017a). The labour productivity gap between agriculture and the non-agricultural economy has dropped significantly in Albania, but increased in Serbia and the Former Yugoslav Republic of Macedonia (Figure 14.7.B). Non-agricultural labour is more than twice as productive as agricultural labour across the assessed economies. While the labour productivity gap is larger in their regional neighbour Slovenia, agricultural labour productivity is roughly twice as high. The persistent gap between agricultural and non-agricultural labour productivity indicates that agriculture plays a buffer role in these economies. In the absence of more productive labour options in agriculture and other sectors of the economy, agriculture absorbs excess labour.

Agriculture in the six SEE economies is a significant user of natural resources and puts pressure on the environment (Table 14.1). It uses a large share of land, similar to OECD and EU average levels, except for Montenegro, which uses less. The available data for SEE economies show that they use a smaller share of fresh water than the OECD and EU average levels, except for Albania, whose share is similar.

Figure 14.7. **Agricultural labour productivity**

Notes: GVA – gross value added; SVN – Slovenia. The labour productivity gap in agriculture is measured as the ratio between GVA per worker in non-agricultural sectors and GVA per worker in agriculture. Data for Bosnia and Herzegovina unavailable before 2014. Data for the Former Yugoslav Republic of Macedonia not available in 2010. Data for Kosovo and Montenegro not available.

Source: World Bank (2017a), *World Development Indicators* (database), <http://data.worldbank.org/data-catalog/world-development-indicators>.

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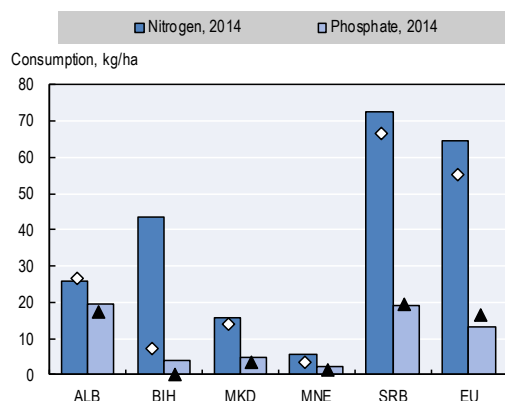
The share of agricultural land has decreased since 2000, particularly in Montenegro (see Chapter 13, Environmental policy). There is more arable land per capita in Serbia (0.37 ha per person) and Bosnia and Herzegovina (0.26 ha per person) than the EU average of 0.21. For example, the northern part of Serbia (Vojvodina) and parts of Bosnia and Herzegovina along the River Sava and River Neretva, are typical arable regions, with an abundance of fertile land. In Kosovo, the low value (0.10 ha per person) reflects that it is the most densely populated economy of the region. The low figure for Montenegro (0.01) reflects its small share of agricultural land, despite it being the least densely populated economy of the six.

Nutrients such as nitrogen and phosphate are vital to crop productivity. Too few nutrients can decrease soil fertility, while too many increase the risk of polluting soil, air and water through eutrophication (OECD, 2014). Most of the assessed SEE economies (except Serbia) apply relatively small amounts of mineral fertiliser (Figure 14.8). In Bosnia and Herzegovina, fertiliser application rates jumped in 2009. In Serbia, the rate of mineral fertiliser application is above the EU average, encouraged by fertiliser subsidies based on payment per hectare. However, whether the intensity of input use is low or high, safeguarding the air, soil and water from pollution through appropriate practices is the critical issue. However, the lack of comprehensive monitoring of nutrients and pesticides prevents a broader assessment of nutrient flows and balances.

Most of the assessed economies have seen a reduction in greenhouse gas (GHG) emissions from agriculture since 2000. Only in Bosnia and Herzegovina did emissions jump in 2009 due to increased use of commercial fertilisers (FAO, 2017a). Agriculture's contribution to total GHG emissions in the six SEE economies in 2008-10 was higher than the EU and OECD averages (Figure 14.9). It is significantly higher in Albania, at 32% of total GHG emissions. This reflects two key factors – Albania's distinct energy sector and economic structure. While all the other assessed economies have widespread

coal-fired electricity generation which significantly contributes to their largest source of GHG emissions, the energy sector, Albania's electricity generation is almost 100% hydropower, whose emissions are not measured. Additionally, agriculture plays a greater role in Albania's economy than the other assessed economies – contributing a greater share of its gross value added.

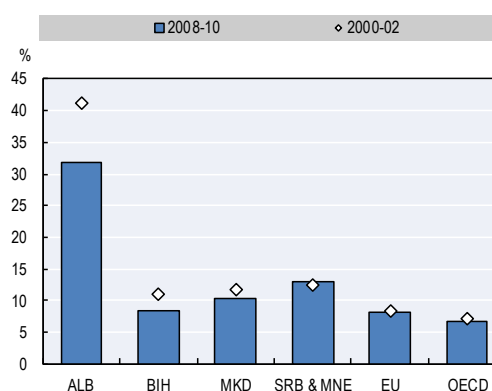
Figure 14.8. Commercial fertiliser intensities per area of agricultural land (2006 and 2014)



Note: Commercial fertiliser intensities are the apparent consumption of fertilisers for agriculture production (in nutrient contents) divided by the area of agricultural land.

Source: FAO (2017a), *FAOSTAT* (database), <http://faostat.fao.org>.

Figure 14.9. Share of agriculture in total greenhouse gas emissions (2000-02 and 2008-10)



Note: Excluding land use, land-use change and forestry. Data for Kosovo unavailable. The most recently available data for Montenegro and Serbia, 2003-05, reported.

Source: FAO (2017a), *FAOSTAT* (database), <http://faostat.fao.org>.

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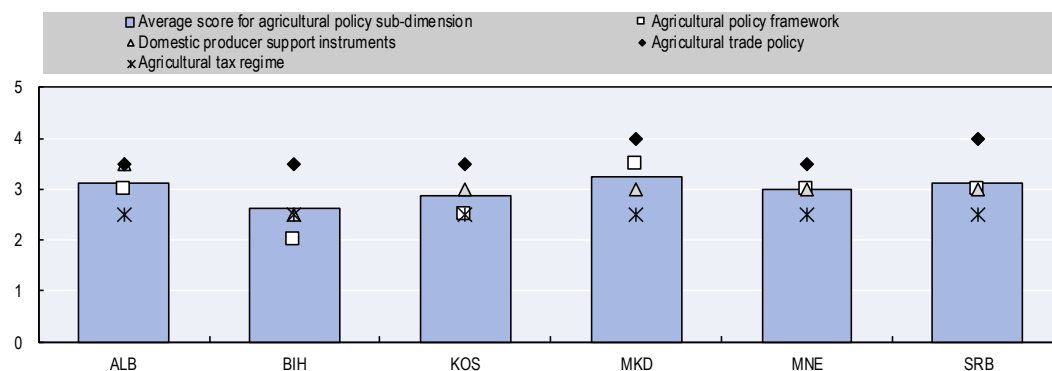
Climate change is a challenge for agricultural productivity and sustainability in the six SEE economies. Seasonal average temperatures are predicted to rise throughout the region – by 1°C in Bosnia and Herzegovina by 2030, and by 1.9°C in the Former Yugoslav Republic of Macedonia, 2.4-3.1°C in Albania and 1.5-2.2°C in Serbia by 2050. More extreme weather – with intense precipitation, floods and droughts – is predicted across the six SEE economies. Rainfall is predicted to decrease. These changes could reduce crop yields across the six SEE economies, especially for maize, and increase exposure to agricultural pests. Livestock productivity in Albania, Kosovo and Montenegro could fall (Callaway et al., 2010; USAID, 2016a, 2016b, 2017a, 2017b; World Bank, 2010).

Agricultural policy

How countries structure their support to farmers is arguably as important as the total level of that support. To accomplish policy goals, governments have many measures to choose from (including direct support, taxes and trade), all of which have different implications for agricultural production, trade and incomes. Some options are more suitable for targeting specific policy objectives or beneficiaries than others (OECD, 2016a). Four qualitative indicators assess the existence and degree of implementation of: 1) agricultural policy frameworks; 2) domestic producer support instruments; 3) agricultural trade policies; and 4) agricultural tax regimes.

The key elements of agricultural policy in the six SEE economies are mostly in place, reflected in the average score of 3 for this sub-dimension (Figure 14.10). Agricultural trade policy is the most advanced area, while agricultural tax regimes are less developed. Albania, the Former Yugoslav Republic of Macedonia and Serbia lead the assessed economies in this sub-dimension. Albania leads in the design of their producer support instruments, the Former Yugoslav Republic of Macedonia leads in IPARD implementation and Serbia's agricultural trade policy is relatively stronger.

Figure 14.10. **Agricultural policy: Sub-dimension average scores and indicator scores**



Note: See the methodology chapter for information on the *Competitiveness Outlook* assessment and scoring process.

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Agricultural policy frameworks are in place

Most of the assessed SEE economies have adopted medium to long-term strategies for agriculture and rural development. The exception is Kosovo, which does follow a strategy despite it not being adopted. Similarly, nearly all economies (except Serbia) have annual programmes or action plans. In pursuit of their goal of EU membership, key agricultural policy objectives in all six SEE economies largely follow those set by the EU Common Agriculture Policy (CAP) – “to improve agricultural productivity, so that consumers have a stable supply of affordable food, and to ensure that EU farmers can make a reasonable living” (EU, 2017). However, agricultural strategies, programmes and action plans in the six SEE economies are rarely subject to in-depth monitoring and evaluation, and findings are rarely reflected in the formulation of new ones.

All six SEE economies are working towards setting up and implementing the EU's Instrument for Pre-Accession Assistance in Rural Development (IPARD) programmes and operating structures (IPARD Agency and Managing Authority). IPARD has the objectives to assist implementation of the *acquis* regarding the CAP and to support the sustainable adaptation of the agricultural sector and rural areas candidate and potential candidate countries (EC, 2017). Complying with its strict implementation rules (including financial management, monitoring, evaluation and reporting) requires significant ongoing political and institutional efforts. It is also a challenge for SEE producers to fill out application forms and comply with environmental requirements. The Former Yugoslav Republic Macedonia has implemented the IPARD I Programme (2007-13) and used IPARD I funds through to the end of 2017, while Albania and Montenegro have implemented IPARD-like schemes. IPARD II Programme (2014-2020) funds have not been dispersed yet. The Former Yugoslav Republic of Macedonia has been granted entrustment of IPARD II implementation. Preparations in meeting IPARD II system

requirements are advanced in Albania, Montenegro and Serbia. However, preparations in Kosovo and Bosnia and Herzegovina are not as advanced. Bosnia and Herzegovina's institutional complexity is a significant challenge to setting up basic operating structures.²

Support to agricultural producers could better support productivity and sustainability objectives

The extent to which producer support relies on measures that distort agricultural output and input markets is key in agricultural policy, affecting producers' ability to innovate. OECD analysis finds that border protection, supply controls, domestic price administration, output-based payments and variable input subsidies have the greatest potential to distort markets (OECD, 2016a). These policies reduce incentives for producers to use production factors (labour, machinery, land, water, etc.) more efficiently and to innovate to become more competitive. Distorting policies such as these not only shield producers from competition, but are also inefficient in transferring income to the intended beneficiaries. Furthermore, they encourage riskier behaviour by producers, exposing them to more market and natural risks. Broad-based income support decoupled from commodity production is more effective in transferring income to producers and preserves more flexibility in their options to undertake new activities or switch to new products. If this support is conditional on the adoption of environmentally friendly practices, it could facilitate more sustainable resource use. However, even if decoupled from production choices, income support slows the structural adjustment that is needed to facilitate economies of scale, attract new entrants and thus foster innovation and productivity growth (OECD, 2016a).

For OECD countries and a number of key partners, the OECD calculates indicators of support, including support to producers and support to the sector. The producer support estimate (PSE) is the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. A component of the PSE is market price support arising from the gap between domestic market prices and border prices (OECD, 2016b). As data on market price support in the six SEE economies are currently unavailable, support indicators only include budgetary support. As a result, assuming that market price support is positive in the six SEE economies, support values are probably lower than they otherwise would be. Budgetary support to agricultural producers in the six SEE economies ranged from less than 1% of gross farm receipts in Albania to 6% in the Former Yugoslav Republic of Macedonia in 2013-15 (Figure 14.11.A). Among economies monitored by the OECD, this level of support places the six SEE economies among those with agricultural sectors ranging from relatively open to very open, such as New Zealand (0.1%) and Brazil (2.9%). It is substantially lower than the EU (18%) and OECD (14%) averages.

Budgetary support to agricultural producers in all the assessed SEE economies except Bosnia and Herzegovina is mostly generated by measures that are less market distorting (Figure 14.11.A). Only in Bosnia and Herzegovina is this support generated predominantly through the most distorting measures (58%), including payments based on output, and variable input use without input constraints. From 2013-15, both entities supported dairy and seedlings, while the Republika Srpska also supported wheat, oilseeds, tobacco, vegetables, fruit and seeds. On the input side, the Republika Srpska supported fuel. Producer support in the Former Yugoslav Republic of Macedonia also has a significant share of the most distorting measures (33%), mainly payments based on output on the following items from 2013-15: dairy, tobacco, vegetables and fruit for processing, cereal

seeds, seedlings and chicks. In Albania and Kosovo, the most distorting measures only make up 0.1% of gross farm receipts (APM Database, 2016).

The largest category of producer support measures in Serbia, the Former Yugoslav Republic of Macedonia and Kosovo is payments based on current area and animal numbers, with production required. Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia practice the most diverse payments on current area and animal production – each of them having as many as 23 crop and livestock payments (APM Database, 2016).

In the OECD, total support to agriculture is measured by the total support estimate (TSE), the annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures that support agriculture. This includes the PSE as already described above; the general services support estimate (GSSE), which is the value of transfers that create enabling conditions for the primary agricultural sector through developing private or public services and through institutions and infrastructures; and an estimate of transfers to consumers from taxpayers, which may increase the demand for agricultural commodities. As data on market price transfers from consumers are not available for the six assessed economies, total budgetary transfers to agriculture are calculated as the sum of budgetary support to agricultural producers, GSSE and transfers to consumers. In the Former Yugoslav Republic of Macedonia, Kosovo and Serbia, the total budgetary transfers to agriculture make up an equal or greater share of GDP than the EU average of 0.5% (Figure 14.11.B). In the remaining economies where the total budgetary transfers to agriculture represent a smaller share of GDP – Albania, Bosnia and Herzegovina, and Montenegro – support to agriculture places a lower burden on the economy.

In all the assessed SEE economies except Albania, total budgetary transfers to agriculture are dominated by transfers to individual producers (Figure 14.11.B). Not including Albania, producer budgetary support ranges from 93% of total support to agriculture in Bosnia and Herzegovina to 60% in Montenegro. Excluding Albania, transfers to general services to agriculture in the assessed economies range from 5% of total budgetary support in Bosnia and Herzegovina to 35% in Montenegro. This composition is not far off the EU average of 15%. Albania's composition of total budgetary support to agriculture differs more from its regional neighbours, with its focus on general services accounting for 68% of total support to agriculture. In contrast to their SEE neighbours and the EU, in Kosovo and Albania the share of transfers from taxpayers to consumers is about 12% of total budgetary support to agriculture, in between the OECD average of 20% and EU average of 1%. This largely reflects investment support for constructing facilities to collect, store and process agricultural products.

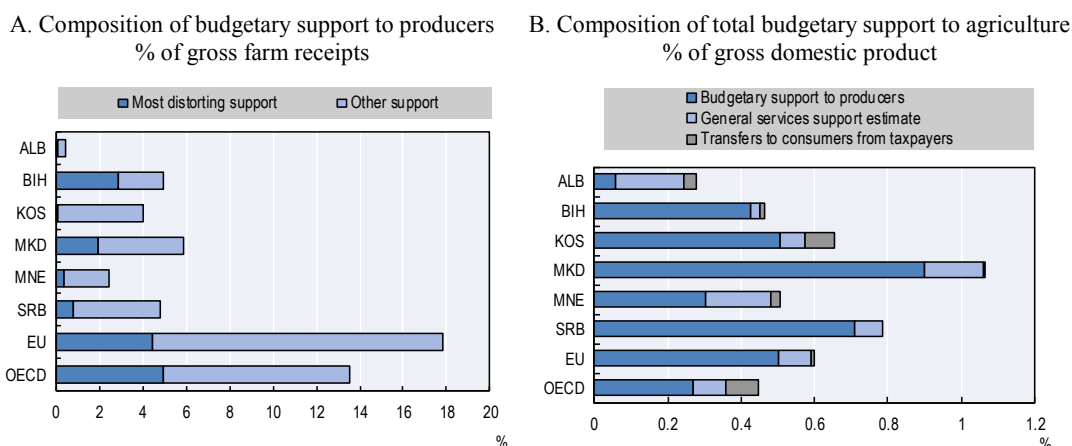
Measures aiming to protect natural resources are absent in all six SEE economies. Environmental cross-compliance requirements are gradually emerging.

Agricultural trade measures do not directly subsidise nor prevent agricultural exports

On the one hand, a liberal agricultural trade policy connects SEE agricultural producers to global value chains, but on the other it exposes them to greater competition from other countries, forcing them to become more competitive. The six SEE economies are relatively well integrated into the world trading system. All six economies are signatories of the Central European Free Trade Agreement (CEFTA), through which they have achieved full tariff liberalisation on trade in agricultural goods. Albania, the Former

Yugoslav Republic of Macedonia and Montenegro are members of the World Trade Organization (WTO). The remaining three economies have begun to implement the WTO required institutional and legislative provisions through CEFTA. Bosnia and Herzegovina and Serbia are currently negotiating their accession to the WTO (see Chapter 2, Trade policy and facilitation).

Figure 14.11. **Budgetary support to producers and total budgetary support to agriculture (2013-15 average)**

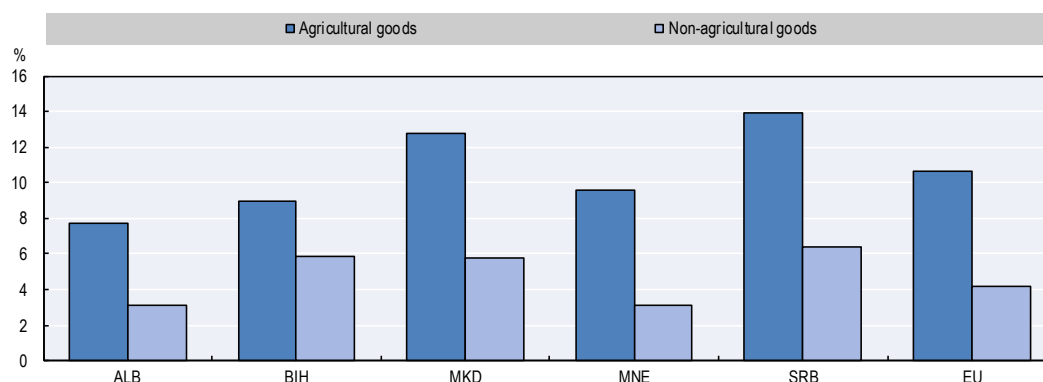


Note: Data on market price support in the six SEE economies are currently unavailable so support indicators only include budgetary support. As a result, assuming that market price support is positive in the six SEE economies, support values are probably lower than they otherwise would be. Data for agricultural output for Albania is 2009-11, for the Former Yugoslav Republic of Macedonia 2012-14, and for Montenegro 2012-13.

Source: Adapted from APM Database (2016), *Agricultural Policy Measures Database*, <http://app.seerural.org/agricultural-statistics>; ASK (2016a), "Economic Accounts for Agriculture", <http://ask.rks-gov.net>; BHAS (2016c), "Competitiveness in South East Europe: A Policy Outlook 2018: Agriculture Questionnaire", Responses to the OECD received from the Bosnia and Herzegovina Agency for Statistics; INSTAT (2012), "Statistical yearbooks through 2011", www.instat.gov.al; MAKSTAT (2015), "Economic Accounts for Agriculture", www.stat.gov.mk; MARD (2015), "Strategy for the Development of Agriculture and Rural Areas 2015-2020", www.minpolj.gov.me/ResourceManager/FileDownload.aspx?rid=253749&rType=2&file=Strategija%20razvoja%20poljoprivrede%20i%20ruralnih%20podrucja%202015-2020.pdf; OECD (2017b), "Producer and consumer support estimates", *OECD Agriculture Statistics* (database), <http://dx.doi.org/10.1787/agr-pcse-data-en>; SORS (2016b), "Economic accounts for agriculture in the Republic of Serbia 2007-2015", www.stat.gov.rs; World Bank (2017a), *World Development Indicators* (database), <http://data.worldbank.org/data-catalog/world-development-indicators>.

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None of the six SEE economies employ trade measures that directly subsidise or prevent agricultural exports – i.e. export subsidies, export credit support, export duties or export prohibitions. Across the economies, there is some protection against imports of agro-food products, with the most commonly protected groups across the region being dairy products, and beverages and tobacco. However, tariffs on agricultural products and inputs are relatively low, especially in SEE regional agreements (where most of the SEE export agricultural products are bound) and bilateral trade agreements. The six SEE economies' tariff profiles reveal a distinct agricultural bias. The average import tariffs on agricultural goods are higher than for non-agricultural goods (Figure 14.12). On average, the assessed economies' simple average "most favoured nation" (MFN) tariffs, both for agricultural (10.6%) and non-agricultural goods (4.9%), are on par with EU averages.

Figure 14.12. **Import tariffs for agricultural and non-agricultural goods (2015)**

Note: Simple average most favoured nation tariffs. Data for Kosovo unavailable.

Source: WTO/ITC/UNCTAD (2016), “World tariff profile 2016”, http://unctad.org/en/PublicationsLibrary/wto2016_en.pdf.

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Although the assessed SEE economies do not impede agro-food trade by employing trade-adverse instruments, incomplete implementation of sanitary and phytosanitary measures and inspection procedures hinders trade. For more information, see Chapter 2 (Trade policy and facilitation).

Agricultural tax regimes should be examined further

Tax policy influences the conduct, structure and behaviour of farms, input suppliers and food companies. Taxes on income, property and land, and on capital transfer, including land may affect structural change, while differential tax rates on specific activities (e.g. exempting payments for environmentally friendly practices from taxes), resources, or input use may affect sustainability (OECD, 2015). In general, in contrast to a sectoral approach for farming, including farming in economy-wide, social safety nets or tax systems could be more efficient, effective and equitable to address instability or low incomes (OECD, 2005). The six SEE economies impose relatively low corporate and personal income tax rates while levying relatively high rates in indirect taxes such as value-added tax (VAT) and social security contributions. For more information, see Chapter 4 (Tax policy).

Taxes associated with agricultural activities largely fall under overarching tax policies, but special agricultural tax provisions exist, including for capital gains taxes and property taxes. A large number of small farmers in the six SEE economies operate in the informal sector. As such, they produce mostly for themselves and their extended families, selling their surplus products locally for cash, without any receipts. This suggests, for instance, that informal agricultural businesses are not entitled to a refund for any VAT they have paid on their inputs. Indeed, being outside of the tax system results in hidden costs. The six SEE economies would therefore benefit from a more in-depth analysis of how their tax regime affects their agricultural sector. This would include an analysis of the preferential tax regimes, the impact of VAT on informal agricultural sectors and tax administration strategies. As a starting point, the six economies should start with calculating the tax revenue forgone as a result of the special tax regimes for the agricultural sector, as well as the economic impact of those incentives.

The way forward for agricultural policy

The six SEE economies should reorient agricultural policy towards long-term productivity outcomes. While producer support in the form of payments based on output and variable input use can have short-term effects on production levels, they ultimately distort the market, and do not support long-term competitiveness. As such, the six SEE economies should shift away from this form of support, especially in Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia where they make up a significant share. The economies should increase the share of producer support dedicated to general services for the sector, balanced across key areas such as infrastructure, knowledge and inspection to strengthen the foundation for long-term productivity growth.

The six SEE economies should enhance environmental sustainability objectives and corresponding measures. They should carefully structure their producer support targeting environmental practices to meet basic standards, such as those set out in EU regulations. These payments can act as temporary support leading to a transition in farmers' attitudes and practices – but should not be a permanent core payment. Furthermore, the measures should not be structured in such a way as to pay commercial farms for agri-environmental farming activities that they already practise.

Rural development is becoming a more prominent policy focus, driven by the six SEE economies' activities to align their policies with those of the EU. **The economies should continue to set up and strengthen the institutional frameworks, administrative procedures and databases required for EU integration and utilisation of EU funds,** notably IPARD-related components such as the Paying Agency and Farm Accountancy Data Network. They should continue to develop and implement measures that facilitate rural economy diversification and off-farm employment. This could include developing financing mechanisms to help smaller producers access IPARD investment funding, by allowing their co-investment to be paid in instalments instead of in full at the beginning.

The six SEE economies should strengthen policy analysis to better inform policy development. They should build the necessary databases including agricultural economic accounts, employment and output to inform policy analysis. Monitoring and evaluation practices for EU and other donor-funded programmes such as IPARD are well established – monitoring and evaluation activities should be expanded to cover government programmes. The basic data and evaluation findings should then inform new policy design and implementation more consistently. Public consultation mechanisms and activities should be strengthened to better take stakeholder priorities into account.

The six SEE economies should continue to avoid measures that impede the export or import of agro-food goods and maintain the current relatively liberal tariff rates. However, to engage more in global value chains, better administration of sanitary and phyto-sanitary measures is still a significant challenge to be addressed, as described in Chapter 2.

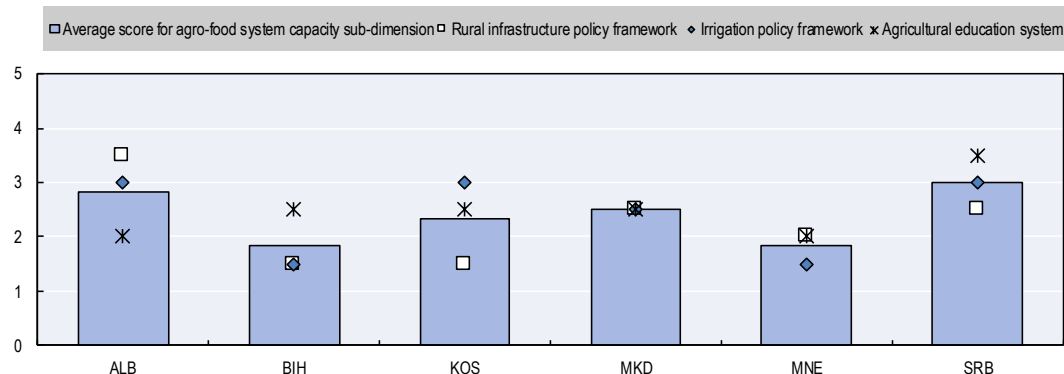
The six SEE economies should conduct additional analysis on how preferential tax concessions support agricultural policy objectives and whether they distort markets. Part of this analysis could include estimating the associated tax expenditure – that is, the amount of tax revenue forgone due to a special exemption which the government would have otherwise collected.

Agro-food system capacity

Infrastructure connects the economic system, allowing the movement of production factors, goods and information between people and across markets. It therefore plays a large role in determining the location of and types of economic activities that can develop, including in rural areas. Irrigation in particular can be important in increasing agricultural productivity. Education lays the foundation for farmers to adopt productivity and sustainability enhancing agricultural technology, as well as diversify their income activities from agriculture. Higher education facilitates the base for agricultural research and extension activities. Three qualitative indicators assess the agro-food system capacity sub-dimension: 1) rural infrastructure policy framework; 2) irrigation policy framework; and 3) agricultural education system.

The agro-food system capacity of the six SEE economies is mostly in place, indicated by the average score of 2.4 (Figure 14.13). Serbia and Albania are the most advanced of the six, with frameworks in all areas in place and some implementation under way. Montenegro and Bosnia and Herzegovina have the most room for improvement in putting frameworks in place. No area is significantly more or less advanced across the six economies.

Figure 14.13. **Agro-food system capacity: Sub-dimension average scores and indicator scores**



Note: See the methodology chapter for information on the *Competitiveness Outlook* assessment and scoring process.

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Rural infrastructure policy frameworks exist, and some are being implemented

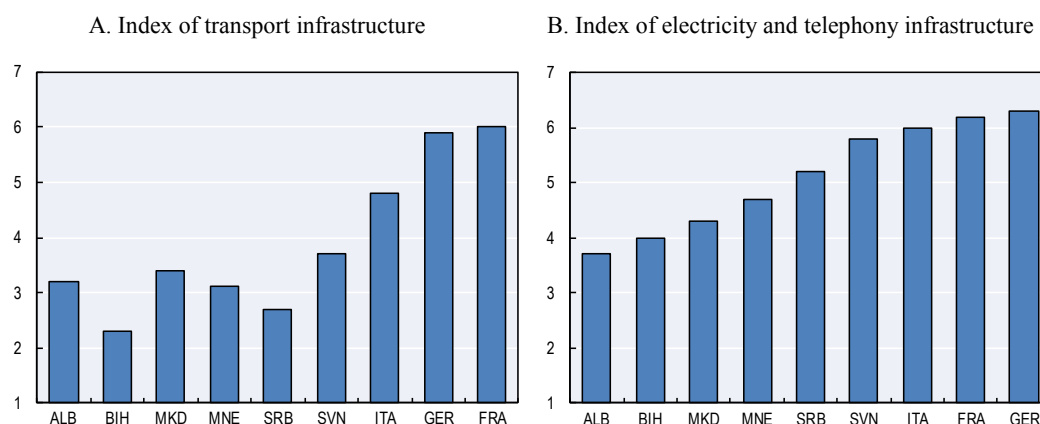
Rural infrastructure – electricity, roads and ICT – is key to the delivery of and access to important services, playing a critical role in linking farmers and related businesses to markets and encouraging innovation. Although basic rural infrastructure is largely in place in most areas in the region, it may not be fully used for agricultural purposes. For example, a survey in the Republika Srpska found that despite Internet access in farming households, only a small fraction used it for agricultural purposes (e.g. learning about new techniques or buying or selling agricultural inputs and products).

In terms of the density and quality of rural roads and electricity, as with ICT penetration, the assessed economies' performance is relatively modest. According to the Global Competitiveness Index, the assessed SEE economies have a lower transport infrastructure index than European countries such as France, Germany and Italy as well as regional neighbour Slovenia (Figure 14.14.A). In the electricity and telephony

infrastructure index, the economies are also lagging behind (Figure 14.14.B). Serbia is approaching EU levels, while Albania has more catching up to do. Electricity infrastructure is present in most rural areas and the electricity supply is stable. However, the SEE economies occasionally experience electricity cuts, forcing those with storage facilities for agricultural produce to buy generators.

Figure 14.14. **Global Competitiveness Index: transport, electricity and telephony infrastructure (2016-17)**

Scale 1 to 7 (best)



Note: Data for Kosovo unavailable. FRA – France; GER – Germany; ITA – Italy; SVN – Slovenia.

Source: WEF (2016), *The Global Competitiveness Report 2016-2017: Full Report*, www3.weforum.org/docs/GCR2016-2017/05FullReport/TheGlobalCompetitivenessReport2016-2017_FINAL.pdf.

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All six economies have some policy frameworks for rural infrastructure and implement programmes supporting investment in electricity, roads and ICT in rural areas. However, these policy frameworks are often split between institutions at the sectoral level (e.g. ministries of agriculture and infrastructure) and at the local level. None of the economies have an integrated policy framework specifically targeting rural infrastructure. Co-ordination of strategic planning is often lacking or ad hoc. Monitoring and evaluation of rural infrastructure project implementation is also weak, except for donor-funded projects such as the EU's IPARD.

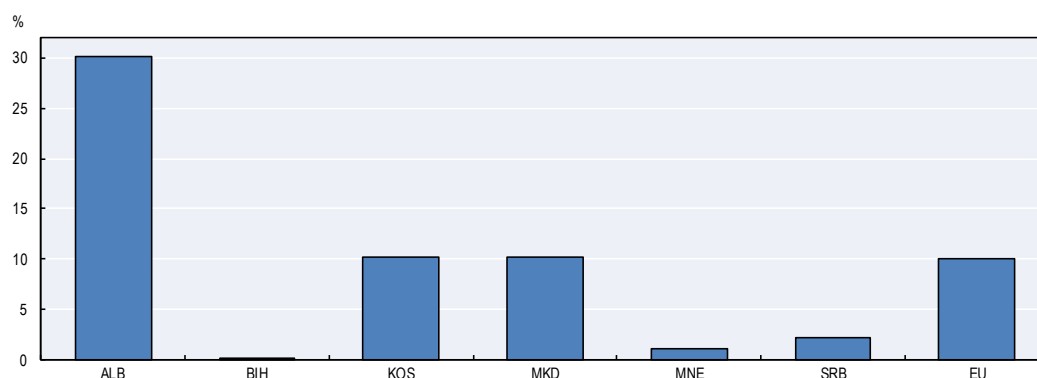
Current funding for rural infrastructure is often insufficient to finance larger rural infrastructure maintenance or construction projects. Important funding mechanisms include government funding and international donors, and in some cases public-private partnerships. Central governments often provide co-financing support for rural infrastructure projects to municipalities or local communities. Most rural development programmes provide support to rural infrastructure. However, this support is rather limited in size; for instance, in 2015 Montenegro's Ministry of Agriculture and Rural Development financed as many as 40 rural infrastructure projects from a total budget of EUR 533 000. The World Bank and the European Bank for Reconstruction and Development (EBRD) have funded several large infrastructure projects (notably roads and ICT). Although these do not exclusively target rural areas, many of them are implemented in rural areas.

Policy frameworks for irrigation remain at an initial planning and implementation stage

Well-managed irrigation systems with efficient technology can use precious water resources more efficiently to increase agricultural productivity while safeguarding the environment. Moreover, irrigation is becoming an important measure for adapting to climate change, given the expected increase in air and soil temperatures and lower rainfall.

The percentage of agricultural land equipped for irrigation in Albania exceeds the EU average, while Kosovo and the Former Yugoslav Republic of Macedonia approach it (Figure 14.15). However, Bosnia and Herzegovina and Montenegro have very low shares of land equipped for irrigation: just 0.1% and 1% respectively. While irrigation systems are being modernised and most commercial farms use drip or low-pressure sprinkler irrigation, many small-scale farmers still use less efficient water conveyance and application systems, such as open canals and surface irrigation.

Figure 14.15. **Share of total agricultural area equipped for irrigation (2014)**



Source: ASK (2015a), “Agriculture census 2014”, <http://ask.rks-gov.net>; FAO (2017a), *FAOSTAT* (database), <http://faostat.fao.org>.

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Irrigation objectives and measures are defined across the six SEE economies, but comprehensive plans for infrastructure and water use aligned with river basins are at varying stages of development. Across the economies, irrigation infrastructure is addressed in either or both their strategies on water, and on agriculture and rural development. IPARD measures in most of the assessed economies include irrigation infrastructure. Additionally in Albania, an irrigation and drainage programme is in place and a strategy is in the process of adoption. Dedicated plans are under preparation in Kosovo and Montenegro. Stakeholders have limited involvement in setting up irrigation policy frameworks across the assessed economies, with the exception of Serbia which carries out water planning at national and basin levels with public consultation (World Bank, 2017b).

Central governments provide financial support for constructing and maintaining large irrigation infrastructure (often co-financed by the World Bank or EBRD), such as irrigation channels, dams and drilling wells. In Bosnia and Herzegovina, while there is no government funding, there is a World Bank project that addresses irrigation infrastructure. The management of irrigation schemes has been decentralised in most of the six SEE

economies. There are a range of water management authorities at regional and local levels, notably in Albania and Kosovo. All ministries of agriculture except those in Bosnia and Herzegovina provide some form of support to farmers to purchase individual irrigation machinery and equipment, such as water pumps, (drip) irrigation pipes and sprinklers. However, this support is rather limited, sometimes only enough to install an irrigation system on about a hectare.

While environmental and socio-economic impact assessments of irrigation programmes may be legally mandated, in practice they exist only for donor-funded projects. The existing irrigation programmes do not sufficiently address the potential adverse effects of intensive irrigation, such as overexploitation, soil salinisation or the depletion of groundwater. In general, water charges are low, not fully covering operation and maintenance costs, much less infrastructure costs. Water pricing is usually not based on volume but rather by area, which does not provide incentives for efficient water use. Price is largely determined by the “ability to pay” principle. Furthermore, collection rates are low, especially among smallholder farmers.

Agricultural education systems are in place but strategies are not

In an evolving agro-food sector, the ability to adopt technology that enhances productivity and sustainability is key. Education enables both the development of new technology and its adoption by producers (OECD, 2015). All six SEE economies are committed to compulsory primary education, and as a result literacy rates among farmers are close to 100%. However, some elderly farmers have not completed primary education. The economies with data report that the share of their farmers who have partially or fully completed primary education ranges from 34% in Montenegro to 61% in Serbia. The share of farmers who have completed secondary education ranges from 33% in Serbia to 53% in Montenegro (Table 14.2).

Table 14.2. **Farmers’ educational attainment**

	%			
	No formal education	Primary education	Secondary education	Tertiary education
Kosovo (2014)	3	40	43	14
Former Yugoslav Republic of Macedonia (2013)	3	44	45	8
Montenegro (2010)	4	34	53	9
Serbia (2012)	0	61	33	6

Note: Data for Serbia refer to farm managers. Data for Albania, and Bosnia and Herzegovina unavailable.

Source: ASK (2015a), “Agriculture census 2014”, <http://ask.rks-gov.net>; MAKSTAT (2014), “Farm structure survey 2013”, www.stat.gov.mk; MONSTAT (2012), “Agricultural census 2010”, www.monstat.org; SORS (2013), “Census of agriculture 2012 in the Republic of Serbia”, www.stat.gov.rs.

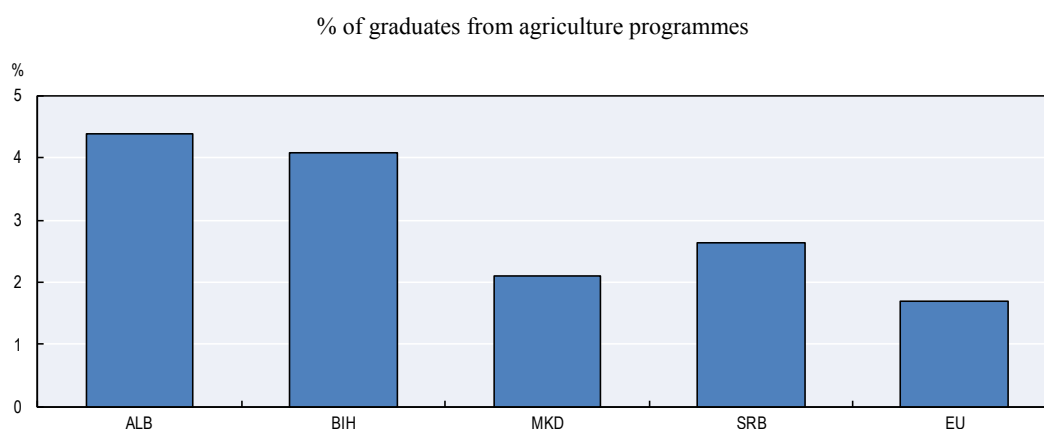
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While higher percentages of tertiary education graduates completed agriculture programmes in Albania (4.4), Bosnia and Herzegovina (4.1), the Former Yugoslav Republic of Macedonia (2.1) and Serbia (2.6) than the EU average (1.7), these shares are still likely to be insufficient for the sector’s needs given the relatively high contribution that agriculture makes to the economies’ GVA (ranging from 7% to 23%) (Figure 14.16). Despite this probable deficit of university graduates in agriculture, keeping current agricultural graduates in the sector is a challenge. While exact data are unavailable,

during OECD field trips to the assessed economies, officials and experts noted that a lack of adequate skills among agricultural graduates was a significant factor driving them to seek employment in other sectors.

The six SEE economies have yet to develop training needs assessments for agricultural education. There is no information on the match between the agricultural education system (such as profile and number of students admitted, curricula, specialisation directions, and knowledge and skills attained) and labour market demand. Furthermore, farmers and the agri-business sector are rarely involved in consultation processes for designing and implementing the agricultural education system. Consequently, the current agricultural education systems are not well adapted to labour market needs and are not responsive to the private sector's need for a well-educated and skilled labour force.

Figure 14.16. **Agriculture in tertiary education (2015)**



Note: Data for Montenegro and Kosovo unavailable. The Former Yugoslav Republic of Macedonia data are for 2014.

Source: UNESCO (2017), *Data for the Sustainable Development Goals* (database), www.uis.unesco.org/Pages/default.aspx.

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Vocational education and training (VET) and higher agricultural education is available in all six SEE economies through public and private institutions accredited by ministries of education. However, none of the six SEE economies has a strategy specifically targeting agricultural education. Co-ordination between the ministries of education and agriculture is weak across all six economies. Almost the entire agricultural education system rests on the prevailing public education organisations and public funding. However, private VET and university education institutions are emerging (notably in Montenegro and Serbia) and some of these also provide agricultural education. The private sector is more engaged in agricultural VET than in university education. VET is occasionally carried out through projects and programmes financed by the agricultural ministries – this is a fairly common practice in Bosnia and Herzegovina. However, the agricultural VET in all six economies is still marginal and less developed than university education.

Although all SEE economies have an adequate number of organisations providing agricultural VET and university education, their programmes do not offer a sufficient level of knowledge or the practical skills required by farms, extension services and other

organisations. The agricultural education system is still largely geared towards building students' capacities to memorise and reproduce information, rather than systems analysis and problem-solving skills (e.g. using case studies and simulation games). Courses rarely employ group work or work on a project cycle including project design, writing, budget preparation, implementation, and monitoring and evaluation. Instead, most agricultural education in the six economies is still organised around strictly separated specialisations with little attention to inter- and trans-disciplinary approaches. Training in public institutions is nearly always provided by the host organisation, with a limited inflow of guest lecturers, and rarely allows students to earn credit points elsewhere. However, there are some encouraging changes in this respect, particularly thanks to the EU ERASMUS student exchange programme, which is particularly popular in Albania and Kosovo.

Although the agricultural education programmes in most of the six economies include some training on natural resource management and climate change, these topics are addressed marginally and insufficiently. The agricultural education systems in all six economies are subject to occasional monitoring and evaluation. However, this rarely provides a deep analysis. Findings are more descriptive than analytical, with hardly any impact on policy making or formulating new education strategies and programmes. Monitoring and evaluation in the six economies is performed by the education authorities with little involvement by the agricultural sector. Exact figures on expenditures for the agricultural education system in the economies are largely missing.

The way forward for agro-food system capacity

The six SEE economies would benefit from better inter-sectoral co-ordination in formulating and implementing cross-cutting frameworks for agro-food system capacity. Rural infrastructure would benefit from better co-ordination between the agriculture and infrastructure authorities; irrigation policy from better co-ordination between the agriculture and water authorities; and the agricultural education system from closer co-operation between the agriculture and education authorities. In addition, greater co-operation between sectoral institutions (e.g. ministries) and regional/local level institutions (e.g. counties, municipalities) would enable more effective implementation of rural infrastructure and irrigation policies. All six SEE economies would benefit from tailored monitoring and evaluation schemes to track policy implementation progress and to serve as the basis for corrective action plans. Stakeholder involvement in setting up rural infrastructure and irrigation policy frameworks is limited and could be improved.

The six economies could make additional efforts through awareness raising and training to ensure that agricultural activities make full use of existing rural infrastructure, notably ICT, to improve farmer access to production technology and markets. Agricultural advisory services could also offer services online or through cell phones. Farmers would also benefit from improved Internet coverage in rural areas. Kosovo could consider making additional efforts to provide a more stable electricity supply in rural areas.

The six SEE economies would benefit from improving their irrigation policy frameworks, in particular by assessing and addressing the environmental impacts – and adopting the programmes they have prepared, notably Bosnia and Herzegovina and Montenegro. A sound cost-benefit analysis for each irrigation programme should be conducted, applying realistic water charges that are sufficient to cover irrigation infrastructure operation and maintenance as well as the environmental and social costs of irrigation. Irrigation should not be promoted in areas where it is not economically

feasible. For example on rich soils a good alternative could be to promote measures that increase soil organic matter. It would be beneficial for SEE agriculture to practise more water-saving irrigation techniques, and to test solar-powered irrigation schemes. Water charges should be based on volume to provide incentives for its efficient use; they should be gradually increased to reflect capital costs, opportunity costs of water scarcity and environmental externalities.

The quality of the agricultural education system could be strengthened by introducing more multi- and inter-disciplinary subjects, such as the agri-environment, and system analysis and problem solving. Facilitating student exchanges both at domestic and international levels is another important measure. The economies should also facilitate discussion between agricultural education institutions and the agro-industry to identify bottlenecks for sector development. They could promote public-private partnerships (notably for VET) and co-operation with farmers and the agro-industry in creating and updating training packages. Albania would particularly benefit from strengthening its agricultural VET education. The monitoring and evaluation system in agricultural education in all six SEE economies could be strengthened to ensure that targets and objectives are met and the findings used to improve the existing education policy.

The six SEE economies would benefit from completing statistics on farmer demographics, notably their education. This would enable more targeted policies and agricultural extension activities to the level of education. In regards to agricultural higher education, an assessment of agricultural graduates' early careers would help understand the factors which cause them to stay in or leave the agriculture sector.

Agro-food system regulation

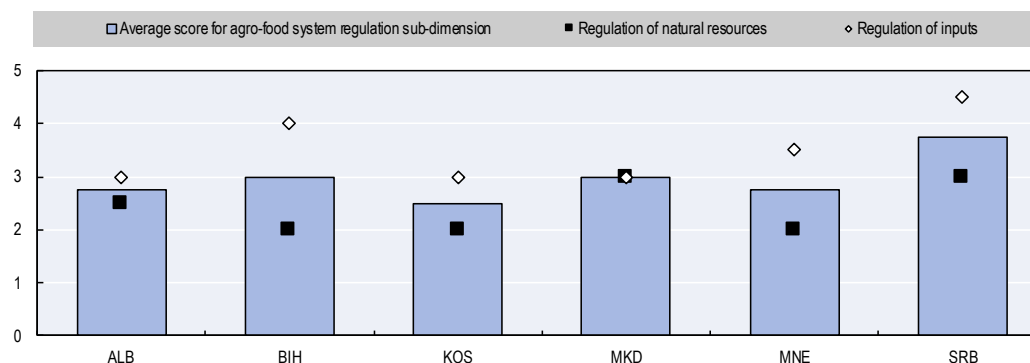
Effective regulation protects the environment and safeguards public safety while minimising the compliance burden for farmers and agri-businesses. The agro-food system regulation sub-dimension uses two qualitative indicators to assess the presence and degree of implementation of: 1) regulation of natural resources, such as land, soil, water, air, climate and biodiversity; and 2) regulation of inputs, such as seed, fertiliser, and agricultural machinery.

The six SEE economies mostly have operational frameworks for regulating the agro-food system, as indicated by their average score of 3 for this sub-dimension (Figure 14.17). Serbia leads its peers, followed by Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia, leaving Kosovo with the most room for improvement. Regulation of inputs is more developed than natural resource regulation in all six SEE economies.

Natural resource regulations affecting agriculture are emerging

Regulations for natural resources are central to ensuring their sustainable, long-term use. They influence access to land, water and biodiversity resources, and determine the impact of agricultural production on these resources.

All six SEE economies are making progress in developing regulations on natural resources, mostly under the impetus of the EU *acquis*, specifically the EU environmental protection directives (e.g. the Habitats and Birds Directives, Water Framework Directive, and Nitrates Directive)³. All six SEE economies have legislation on soil, water, and biodiversity in relation to agriculture. However, there is substantial room for improvement, particularly in transposing the Nitrates Directive (1991/676/EC), and enforcing all of them.

Figure 14.17. **Agro-food system regulation: Sub-dimension average scores and indicator scores**

Note: See the methodology chapter for information on the *Competitiveness Outlook* assessment and scoring process.

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Recent changes in the assessed economies' regulations for land transfers, along with farmland consolidation works, are expected to help reduce farmland fragmentation and improve its use, with potential benefits for agricultural productivity and natural resource management. Albania and Kosovo have adopted land consolidation strategies. This is a positive development, but their implementation depends on effective cadastre reform and clarifying property rights. The law on agriculture in Serbia requires all agricultural land to be managed according to a code of good agricultural practice – but this is still voluntary.

All six SEE economies have made some progress with setting up cross-compliance systems – environmental requirements farmers must follow to receive public payments – similar to those in the EU Common Agriculture Policy. In the Former Yugoslav Republic of Macedonia, direct payments are conditional on adherence to environmental cross-compliance requirements. However, although the Paying Agency checks if farmers comply with these requirements, the legally regulated penalty system is not yet enforced. In Montenegro, there is a recommended code of agricultural practices, but no compulsory enforcement. Serbia supports the maintenance of genetic agricultural resources (per hectare/head payments for endangered varieties and breeds). Organic farming has also been encouraged in the economies, notably through per-hectare payments for fruit, vegetables and arable crops; payments for livestock; and payments for inspection and certification costs.

Agricultural input regulations are well defined

To be productive and competitive, farmers need access to seed, fertiliser and tractors. Regulations on inputs that seek to protect human, animal and plant health and can also affect natural resource use. Well-designed regulations can build public trust in new products, while unnecessary or disproportionate regulations can stifle technological development (OECD, 2015).

The six SEE economies have put in place well-formulated and well-enforced regulation of fertiliser and tractors. Some of them even converge towards best practice. The World Bank's *Enabling the Business of Agriculture 2017* report found the 2 assessed SEE economies that were included among its assessment of 62 economies – Bosnia and Herzegovina, and Serbia – led the way in regulating fertiliser and tractors (Box 14.1) (World Bank, 2017b). Across the assessed SEE economies, fertiliser registration, fertiliser quality control, and fertiliser importation and distribution are defined and the time and cost to register a new fertiliser product are not burdensome. Similarly, criteria

specifying tractor operation, tractor testing and standards, and tractor importing are mostly in place, and the time and cost entailed to register a tractor are reasonable. Furthermore, Serbia adheres to the OECD Tractor Codes, which include testing of tractor performance, driver safety and noise levels.

In terms of seed regulation, while national gene banks and variety release committees are established across the assessed economies, they function to varying degrees. Publicly available information on the work of these committees (e.g. composition and meeting frequency) is scarce. In Bosnia and Herzegovina, the committee does not appear to meet in practice (World Bank, 2017b). Participation in the OECD Seed Schemes is another good practice – these provide OECD certification for crop varieties that satisfy the criteria of “Distinction, Uniformity and Stability conditions, having an agronomic value, and published in official lists” (OECD, 2017c). Of the species covered by the schemes, Albania participates in the groups on cereals, and maize and sorghum, while Serbia participates in grasses and legumes; crucifers and other oil or fibre species; cereals, maize and sorghum; sugar and fodder beet; and vegetables.

Box 14.1. Good practice: Fertiliser regulation in Bosnia and Herzegovina, and Serbia

Bosnia and Herzegovina was found to have one of the most inexpensive and least burdensome fertiliser registration and quality control procedures in the World Bank’s *Enabling the Business of Agriculture 2017*. Its fertiliser registration does not expire and is not subject to periodic fees. In addition, all registered fertiliser products are included in an online catalogue, creating further transparency for industry stakeholders. Importer registration is a one-time-only requirement and no per-shipment import permits apply. Fertiliser registration includes an application to register and lab sample analysis, and excludes field testing due to limited additional benefits. There are also good quality control measures in place: fertiliser bags must comply with comprehensive labelling requirements in at least one of the country’s official languages, and mislabeled and open bags are prohibited and subject to penalties, encouraging further fertiliser quality control. Most of these good practices are applied in Serbia too. The fertiliser registration process takes about one month in both economies and costs only 0.5% (Bosnia and Herzegovina) and 5.3% (Serbia) of income per capita. In both economies there are hardly any regulatory obstacles for agri-businesses in producing, marketing and exporting fertiliser. In Bosnia and Herzegovina, only one day is required to obtain per-shipment export documents, which is among the most efficient in the world.

Source: World Bank (2017b), *Enabling the Business of Agriculture 2017: Comparing Regulatory Good Practices*, <http://dx.doi.org/10.1596/978-1-4648-1021-3>.

The way forward for agro-food system regulation

The six SEE economies should continue to strengthen natural resources regulations affecting agriculture, including adopting relevant EU directives such as the Nitrates Directive. They should re-double their efforts to enforce them. The SEE economies should also continue to press forward with regulations and measures to consolidate farmland, especially in Kosovo and Albania. The SEE economies can allocate water more efficiently, for example, by using water markets and appropriate regulations (Box 14.2). They should continue to put in place and enforce environmental requirements for receiving state support.

The six economies should enhance and enforce the regulation of seeds. They should improve the transparency and quality of the work of their variety release committees (especially Bosnia and Herzegovina). Seed quality control measures could be strengthened. They would benefit from making the process of registering a new variety more efficient.

Box 14.2. Good practice: Water policy reforms and property rights in Australia

Australia has embraced the idea of competition and markets as a paradigm for water management. It has established a nationally consistent water entitlement and trading system to provide security for both water users and the environment. Water trading allows scarce water resources to be transferred to their most efficient and productive uses, and is being delivered through a range of initiatives at national and state level.

This system has provided significant opportunities for sustainable and efficient water use. The development of water markets is seen as a key mechanism, along with planning and appropriate regulation, to address the over-allocation of water resources while optimising economic, social and environmental outcomes in Australia. This integrated approach will also help the country adapt to changing water availability in the face of climate change.

Underpinning the Australian experience is a suite of institutional and property right reforms that have made it easier to set up viable water markets. The general model involves developing a water entitlement regime that allows people to own the right to use water. State government legislation makes it clear that water is controlled by the state on behalf of the general public.

Water users may only acquire or hold an entitlement to use water that is available according to a statutory water plan. Moreover, it is the role of governments rather than the courts to determine how much water is available for use. The result is a property rights regime conducive to the development of efficient markets.

Source: Adapted from OECD (2010), *Sustainable Management of Water Resources in Agriculture*, <http://dx.doi.org/10.1787/9789264083578-en>.

Agricultural innovation system

Agricultural innovation systems are key to improving the economic, environmental and social performance of the agro-food sector. They comprise networks of actors – such as farmer representative bodies, research institutions and governments – that contribute to the development, diffusion and use of new agricultural technology and institutional innovations for productivity growth (OECD, 2016c). They are also vital for finding solutions to the ever-increasing pressures on natural resources and to society's high demands for agriculture to respond to its challenges sustainably. Two qualitative indicators measure the agricultural innovation system sub-dimension: 1) the agricultural research and development framework; and 2) the agricultural extension services framework.

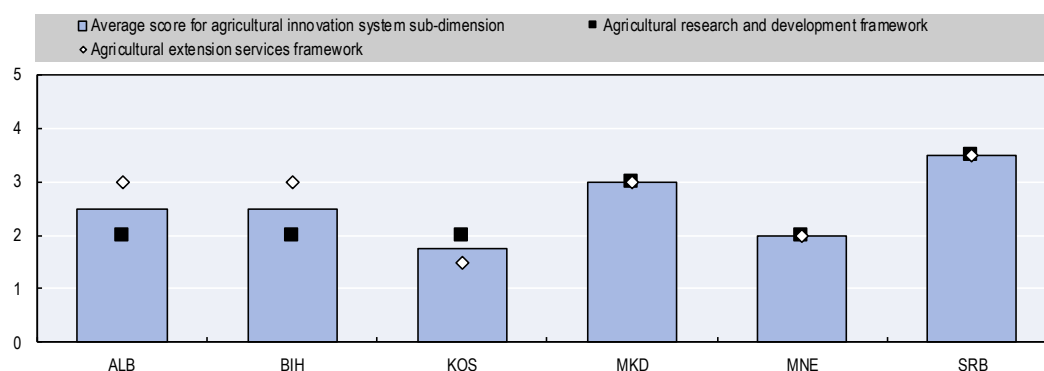
The six SEE economies' agricultural innovation systems are mostly in place but not fully implemented, leading to an overall average score of 2.5 for this sub-dimension (Figure 14.18). The Former Yugoslav Republic of Macedonia and Serbia lead the way in implementation, while Kosovo and Montenegro have the most room to improve. In all the assessed economies except Kosovo, the scores for the agricultural extension services framework indicator are equal to or higher than the scores for the agricultural research and development framework.

Agricultural research occurs despite the absence of agricultural research strategies

The agricultural research and development framework spans public, private and higher education institutions in fostering the underlying knowledge to create innovations in products, processes, marketing and organisation. Agricultural research priorities can range from crops, livestock and fisheries to sustainable resource use and climate change.

International co-operation can have many benefits – including allowing countries with limited research capacity to focus scarce resources on adapting knowledge to local specificities (OECD, 2015).

Figure 14.18. **Agricultural innovation system: Sub-dimension average scores and indicator scores**



Note: See the methodology chapter for information on the *Competitiveness Outlook* assessment and scoring process.

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Agricultural research is taking place in all six SEE economies. However, none of the economies has a strategy specifically targeting such research. The majority of agricultural research and development activities are funded by the ministries of science, while the economies' overall research strategies do not include agriculture as a thematic priority. Co-ordination between the ministries of science and agriculture is rather weak in all the economies.

Almost the entire agricultural research system is based on the prevailing public research institutes and public funding; the private sector hardly takes part. However, a couple of private companies (mainly in Serbia) are involved in agricultural research that could lead to patents and commercial products, such as new varieties or pesticides. Public research funding is modest, and insufficient for multi-year and inter-disciplinary research involving larger research teams.

Exact figures on public expenditures on agricultural research are largely lacking in all six SEE economies. Serbia's annual agricultural research budget of EUR 20 million appears to be the biggest. However, given Serbia's size and number of agricultural researchers, this budget seems modest.

Most laboratory and other research equipment is outdated; new apparatus is mainly acquired through internationally funded research projects. Most research projects are focused on applied rather than fundamental science.

Although all six SEE economies have a sufficient number of institutes involved in agricultural research, the quality of their research programmes is modest. Most agricultural research is still organised around strictly separated specialisations with little attention being paid to inter- and trans-disciplinary approaches. There are also too few research programmes focusing on the environment, such as adaptation to climate change and agrobiodiversity improvement. Links are weak between research conducted at university level, and farmers' and businesses' needs. Collaboration between research and agri-business, which facilitates innovation, is not widely practised. Farmers and the agri-business sector are rarely involved in setting the agricultural research agenda and rarely take part in

research projects. Where co-operation exists, farmers' participation is mainly limited to providing agricultural land and machinery for field trials.

The six SEE economies' agricultural research institutes and universities take part in EU and other international research projects. However, there are no exact data on the number of international projects that the agricultural research institutes are leading or taking part in, the amount of funding received or matched funding provided. The general impression given by the officials and experts contacted during this assessment is that while participation in international research projects is growing, it is not yet at the level it should be. This is also partly due to the fact that it is difficult to keep good, and especially young, researchers in the SEE region. Many of those who have been educated abroad tend to leave the region in search of better career opportunities, research facilities and higher salaries.

There is no comprehensive monitoring and evaluation of the agricultural research system, indeed any such practices are scarce. Self-evaluation of individual research projects sometimes occurs – as a chapter in the final project report. However, this is not common practice and mainly a formality.

Agricultural extension services are widely used

Agricultural extension services facilitate farmers' access to vital knowledge and technology to increase the productivity and sustainability of their activities. They also help to connect farmers to networks that allow them to adopt innovations, and contribute to shaping research networks (OECD, 2015).

All six SEE economies have functioning agricultural extension services that are widely used by farmers. But exact figures on the number of farmers regularly using these extension services are scarce. This assessment found that, in the Former Yugoslav Republic of Macedonia, out of 100 000 registered farmers, 80% receive agriculture extension services. The work of the extension service in Serbia encompasses 41 500 households which are intensively monitored four times a year. Other households are included in the extension system in other ways; mainly through participation in group classes and occasional on-farm visits and consultations.

Usually, the extension work is publicly funded and organised at central, regional and local levels. It is provided free of charge to farmers. In all six SEE economies, extension services are modestly funded with a limited number of extension specialists – for example, in Kosovo there is one extension specialist for every 1 700 farmers. Often, agriculture advisors are engaged in a number of tasks outside their primary technical specialisation. They tend to have limited knowledge, notably in farm management, marketing and business planning; their average age is high; and they have limited IT skills.

Limited private extension services are available in some of the economies, mainly provided by input dealers and food processing companies who are interested in improving the yields and quality of primary products. In Serbia, international donors have developed a small private extension network. Its long-term funding is still unclear and so far it has only reached a small number of farmers. Similarly, some donor organisations such as the US Agency for International Development in Kosovo are active in providing advice to farmers and food processors.

The way forward for the agricultural innovation system

The six SEE economies would benefit from ensuring better inter-sectoral co-ordination in formulating and implementing agricultural innovation, notably between the agriculture and science ministries and other organisations. They could develop multi- and inter-disciplinary approaches and research topics, such as the agri-environment and agro-processing, to improve the quality of their agricultural research and extension services.

The economies could strengthen agricultural research tailored to stakeholder needs and the environment, including the impact of agriculture on natural resources and the environment, and adaptation to climate change. Furthermore, the six economies could focus on making the agricultural innovation system more responsive to the needs of diverse stakeholders – such as farmers, producer groups, agri-business and policy makers. All six economies could benefit from increasing the budgets for their agricultural knowledge and innovation systems.

The economies could prepare long-term strategies and action plans for the work of agricultural extension services and revise them regularly in order to be more responsive to the needs of farmers, agri-business and other stakeholders. They could include building the capacity of extension officers and developing new models leveraging ICT to disseminate information such as the decentralised and participatory model described in Box 14.3. They could explore opportunities provided by public-private partnerships in the area of knowledge and technology transfer.

Box 14.3. Good practice: Social networks for agricultural extension in India

Traditional “training and visit” approaches for agricultural extension provides scientific and technical support to farmers, but the centralised system can only reach a limited number of farmers. Digital Green is a non-government organisation founded in 2008 to reach under-served smallholder producers with an innovative, decentralised and participatory model of information sharing. It combines agriculture extension workers with community engagement and participation to create multi-media content showcasing agricultural practices on social network sites.

The online community shares best practices and technical expertise through a series of independent tutorials posted online. These “agri-videos” are made in local languages, in consultation with civil society experts and other stakeholders. According to the Food and Agricultural Organization of the United Nations, “digital greening” has produced nearly 3 000 videos in more than 20 languages, and has reached more than 300 000 farmers since the practice began in 2006 (Sylvester, 2015).

Through the video-based approach, farmers communicate directly with stakeholders, eliminating logistical middlemen and ultimately saving costs. A controlled evaluation found Digital Green’s model to be ten times more efficient than traditional training and visiting schemes, with best practices streamed directly to farmers’ mobile devices.

Unlike centrally co-ordinated and often inaccessible expertise, the model offers an exciting platform for horizontal learning. Its community-orientated solutions are both responsive to local challenges and easily accessible online, making it the perfect space for information sharing and knowledge diffusion.

Source: Sylvester (2015), *Success Stories on Information and Communication Technologies for Agriculture and Rural Development*, www.fao.org/3/a-i4622e.pdf.

The six SEE economies' research institutions could play a more proactive role in becoming partners in collaborative international research projects, in particular at the EU level, but also in regional networks and initiatives. The six SEE economies would benefit from strengthening cross-country co-operation, which would enable a targeted focus on cross-border problems, issues and shared costs. This type of regional co-operation would enhance knowledge flow as well as exchanges of research staff and students. In addition, acquiring more internationally funded projects would diversify funding sources and reduce research institutes' dependence on public funding for agricultural research, which has been shrinking and becoming more uncertain. Examples of EU research programmes include Horizon 2020 and Hercule III.

The six SEE economies are advised to address the limitations of agricultural extension and advisory services whose outreach is frequently hampered by a lack of resources – human, financial and institutional. In particular, the economies could focus on finding solutions for the limited number of extension specialists, their high average age, limited IT skills and limited capacities in farm management, marketing and business planning. More focus could be put on developing skills that advisors are missing, including farm socio-economic assessments, calculating investment profitability, risk assessments and managing farm development projects.

Conclusions

The six SEE economies have agricultural policies and legislation in place and are taking steps to develop them further. In particular, they are setting up the requirements to implement IPARD II to invest in agricultural production and continuing to adopt environmental directives critical to agriculture, such as the Nitrates Directive. Basic rural infrastructure connects farmers to markets and to information, though existing infrastructure could be better leveraged to support agricultural activities. Land consolidation plans are in place but require significant efforts to implement.

For agriculture across the six economies to reach its full economic potential, however, agricultural productivity growth is key. As such, re-allocating labour to more productive uses within and outside the agriculture sector is vital – a process that depends on the economies' overall economic and human development. The six SEE economies should redouble their efforts to reorient their agricultural policies and producer support towards long-term productivity gains and sustainability objectives. Specifically, producer support should focus on bolstering general services, such as agricultural research and extension, which promote the creation and adoption of innovations. Policies and regulation should provide more incentives for producers to safeguard their natural resources. The economies should build and publish necessary databases including those on agricultural economic accounts, employment and nutrient balances. Monitoring and evaluation activities should be strengthened and used to inform new policies more consistently.

Notes

1. A score of 0 denotes absence or minimal policy development while a 5 indicates alignment with what is considered best practices. Each level of scoring is updated for the individual indicator under consideration, but they all follow the same score scale: a score of 1 denotes a weak pilot framework, 2 means the framework has been adopted as is standard, 3 that is operational and effective, 4 that some monitoring and adjustment has been carried out, and 5 that monitoring and improvement practices are systematic.
2. There are four main administrative levels in Bosnia and Herzegovina: the State, the Federation of Bosnia and Herzegovina, the Republika Srpska and the Brčko District. The administrative levels of the State, the Federation of Bosnia and Herzegovina and the Republika Srpska are taken into account in the *Competitiveness Outlook 2018* assessment, when relevant. The Brčko District is not assessed separately.
3. Habitats and Birds Directives Council Directive 92/43/EEC; Water Framework Directive 2000/60/EC; Nitrates Directive 1991/676/EC.

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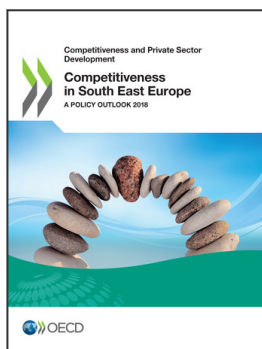
Annex 14.A1.

Agriculture: Indicator scores

Table 14.A1.1. **Agriculture: Indicator scores**

	ALB	BIH	KOS	MKD	MNE	SRB
Agricultural policy						
Agricultural policy framework	3.0	2.0	2.5	3.5	3.0	3.0
Domestic producer support instruments	3.5	2.5	3.0	3.0	3.0	3.0
Agricultural trade policy	3.5	3.5	3.5	4.0	3.5	4.0
Agricultural tax regime	2.5	2.5	2.5	2.5	2.5	2.5
Agro-food system capacity						
Rural infrastructure policy framework	3.5	1.5	1.5	2.5	2.0	2.5
Irrigation policy framework	3.0	1.5	3.0	2.5	1.5	3.0
Agricultural education system	2.0	2.5	2.5	2.5	2.0	3.5
Agro-food system regulation						
Regulation of natural resources	2.5	2.0	2.0	3.0	2.0	3.0
Regulation of inputs	3.0	4.0	3.0	3.0	3.5	4.5
Agricultural innovation system						
Agricultural research and development framework	2.0	2.0	2.0	3.0	2.0	3.5
Agricultural extension services framework	3.0	3.0	1.5	3.0	2.0	3.5

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