# Annex C. Country notes

*Each note refers to the national assessment and recommendation at the time each country review was published (year indicated on the top of each country note). Efforts undertaken since the review publication are not accounted for.*

## Australia (2015)

**Box A C.1. Main opportunities and challenges for the food and agriculture system in Australia**

- Australia has abundant agricultural land, but agricultural productive potential is constrained by poor soils, scarce water resources and the most variable climate conditions in the world.
- The agricultural sector has a strong export focus, and many sectors are heavily reliant on foreign markets as the primary source of their demand.
- Productivity growth has been central to the continued viability and competitiveness of Australian farm businesses, and driven by advances in technologies and structural adjustment on the back of continued reforms.
- Productivity growth in agriculture slowed down considerably in the 2000s, due, in part, to the difficult climatic conditions that prevailed throughout this period.
- Low water availability in Australia's agricultural producing regions, which climate change will accentuate, is a principal factor limiting the expansion of agricultural activities.
- Australia's agriculture and food industries are well-placed to exploit global food demand, but this depends on maintaining productivity growth relative to trade competitors.

**Table A C.1. Policies for improving food and agriculture productivity and sustainability in Australia**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Australia's overall policy framework supports innovation, but the regulatory burden on farmers could be reduced through increasing regulatory coherence across jurisdictions. | Continue efforts to improve the coherence of regulations nationally that affect agro-food businesses.<br>Continue to improve the functioning of water markets, including through harmonising water access rights across jurisdictions, enhancing the co-ordination of the system, and performance assessment. |
| Eliminating and reducing unnecessary impediments to financing investment in innovation | Explore the nature of perceived difficulties in accessing finance for innovating farm businesses. Work with capital provides to identify areas where information to assess risks involved in financing new agri-business activities and technologies could be improved.<br>Raise the awareness of farm and agro-food investors about options for non-bank financing.<br>Investigate the demand for, and supply of, venture capital for agro-food industries, particularly for value chain development projects; identify constraints to this type of financing and any possible government role to ease these constraints. |
| **Capacities and services** | |
| Reducing infrastructure bottlenecks remains a challenge | Pursue improvements in infrastructure outcomes through more effective planning and by reducing the complexity of infrastructure governance.<br>Assist potential investors build a better vision of future infrastructure needs.<br>Undertake a comprehensive assessment of future agro-food infrastructure needs, considering: possible climate-related shifts in production patterns, value chain development prospects and environmental targets.<br>Evaluate the long-term impact of public support to modernise irrigation infrastructure on water use in agriculture. |
| There are uncertainties about the future supply of labour and skills for agriculture | Undertake a national survey of agriculture and food industries to diagnose current and potential skills bottlenecks.<br>Explore arrangements to better match demand and supply of skills in the agriculture and agro-food industries.<br>Explore the scope for job placement programmes and immigration schemes that target agro-food industries and orient these to longer-term labour and skills needs beyond current seasonal labour schemes. |

| Main findings | Key recommendations |
|---|---|
| Skills require a push towards top levels of international performance and need to be more strongly guided by industry demand | In the context of fiscal consolidation and education reforms, maintain the commitment to 2020 education attainment targets.<br>Consider a nationally-scoped and co-ordinated campaign to promote agro-food careers that emphasises the opportunities for high-skilled and knowledge-intensive jobs. |
| **Agricultural policy** | |
| Agricultural policy focuses on the sector's long-term development needs.<br>Keeping the focus of drought policy on farmer preparedness and adaptation will facilitate innovation | Keep the commitment to focus on measures to improve the preparedness of farmers and their adaptation to climate change.<br>Investigate the link between increased climate risks and the willingness of Australian farmers to invest.<br>Explore the possible impacts of various drought measures on farmers' risk perceptions and innovation activity. |
| The effects of taxation in agriculture require better understanding | Assess the impact of tax reforms on productivity, structural change and sustainable resource use. |
| **Direct incentives to innovation** | |
| The rural innovation system is responsive to short-term primary industry demand, but also needs to address broader long-term challenges | Provide a long-term vision for investment in the agricultural innovation system when revising government priorities and reviewing funding mechanisms.<br>Maintain the focus on climate change as a key factor for the future competitiveness of Australian agriculture. |
| Governance mechanisms ensure the coherence of a complex and interactive system, and facilitate continuous policy adaptation | Implement and, if needed, adapt the National Primary Industries Research, Development and Extension (RD&E) Framework to support greater collaboration and co-operation.<br>Adapt Research and Development Corporations (RDCs) to improve their responsiveness to cross-commodity issues, e.g. by creating a cross-sector thematic RDC, or by broadening the mandate and partnership of existing ones. |
| Growth in public funding of rural R&D has slowed, while demand for innovation has broadened and longer term challenges receive increasing public attention | Consider public funding for innovation, R&D and extension activities not covered by existing supply chains<br>Provide stable support to knowledge infrastructure and long-term projects, to strengthen the capacity for collaboration at the international level and to allow for break-through innovations. |
| Agribusiness underinvests in rural R&D despite estimated large returns on investment | Enhance the involvement of processing industries and retailers in innovation, by making them an integral part of the system, from the priority setting stage to the financing and commercialisation of innovation stage. |
| Stronger international R&D co-operation would benefit the sector and society | Explore further opportunities for bilateral and multilateral co-operation in R&D and technology transfer. |
| Further productivity gains require wider diffusion of innovation across farms and will depend on the capacity of the system to respond to a changing and more diverse sector | Use farm surveys to generate data on innovation (as was done once about ten years ago) in order to analyse the characteristics of innovators and the main barriers to adoption on farm.<br>Review technical assistance and the extension system to ensure adequate public and private supply and access by all farmers. |

*Source*: OECD (2015a), *Innovation, Agricultural Productivity and Sustainability in Australia*, https://dx.doi.org/10.1787/9789264238367-en.

## Brazil (2016)

**Box A C.2. Main opportunities and challenges for the food and agriculture system in Brazil**

- Brazil is the world's fifth largest country, both by land area and population.
- Agriculture benefits from abundant land and water resources, and diverse geographical conditions, although most of the country is tropical.
- Agriculture and the agro-processing sector have shown impressive growth, largely driven by productivity improvements and structural adjustment resulting from broad economic reforms, as well as new technologies.
- Sustaining high agricultural growth is critical to Brazil's overall development given the importance of the agri-food sector to the national economy and to poverty reduction
- It is also important globally due to Brazil's role as a leading supplier on international agricultural markets.
- Key drivers of agricultural growth in the past have weakened, necessitating increased cost-competitiveness.
- Main challenges are to ensure that the sector expands sustainably; to reconcile agricultural growth with poverty alleviation objectives; and to overcome structural deficiencies characteristic of an emerging economy.

**Table A C.2. Policies for improving food and agriculture productivity and sustainability in Brazil**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Businesses face fairly restrictive and complex regulations, and incur high costs for doing business | Reduce overall regulatory burden on entrepreneurship, particularly, by simplifying regulatory procedures and easing administrative burdens on start-ups.<br>Undertake a comprehensive review of regulations that govern agriculture and agro-industries to identify areas where the burden of these regulations could be reduced, such as stronger coherence of regulations across regulatory areas and different administrative levels. |
| Tariff protection for capital and intermediate goods is high, increasing the cost of agricultural inputs | Reduce industrial tariff protection to lower the cost of imported inputs and technological items, including for the agricultural and agro-processing sectors. |
| Domestic credit is generally costly and difficult to access, while long-term credit is scarce | Facilitate the development of private long-term finance, including, as an interim approach, by requiring private co-financing of loans from the National Bank for Economic and Social Development (BNDES). In the longer-term, phase-out financial support to BNDES and concentrate its lending on infrastructure, small and medium-sized enterprises, and on innovation. |
| Businesses bear a substantial tax burden and high costs to comply with tax regulations | Simplify the tax system, in particular, by further efforts to unify indirect taxes into a single national system. |
| **Capacities and services** | |
| Agriculture is set to gain substantially from infrastructure improvements | Sustain the commitment to accelerated development of infrastructure and move forward planned infrastructure projects; reduce investment delays and increase private investment in infrastructure through further simplification of regulatory procedures. |
| Labour regulation framework requires modernisation | Modernise labour regulations to allow for greater flexibility in labour agreements and to reduce uncertainties in the interpretation and application of regulations. Enhance labour market insertion programmes with a greater focus on training and re-training of job seekers. |

| Main findings | Key recommendations |
|---|---|
| Education improvements have been impressive but there is much scope for further catch up | Ensure that improvement in education quality is on par with a wider access to it, and support the advancement of poor students, particularly from rural areas, to higher levels of education and performance.<br>Continue to develop the agricultural vocational training system and facilitate greater use of apprenticeships to enhance agricultural skills.<br>Promote co-operation between agri-business and educators in the development of curricula and their adjustment to business demands.<br>Encourage arrangements for industry-public co-funding of training and job placement programmes. |
| **Agricultural policy** | . |
| Agricultural policy serves two distinct farm segments and is driven by different rationales. It has been liberalised and increasingly incorporates sustainability criteria, but it can be more strongly oriented to productivity and sustainability outcomes | Move away from interventions that lower producer current costs and eliminate cross-commodity variations in support levels as a broad policy re-orientation. |
| Refocussing credit support to well-specified investments could spur innovation resulting in productivity and sustainability improvements | Reform the concessional credit system with the view to gradually limiting the scope of eligible commercial producers and their supported activities.<br>Further promote the development of private non-bank financial instruments for agriculture and agro-industries, subject to a review of existing instruments.<br>Pursue efforts to ease access to credit by rural borrowers though simpler regulations and procedures.<br>Assess concessional investment credit with the view to streamlining existing programmes and simplifying access procedures.<br>Enhance criteria for loan eligibility to better screen out borrowers that would have invested without support.<br>Increasingly shift concessional investment credit to projects that explicitly incorporate technological innovations, and advanced farm management and environmental practices.<br>Maintain the focus of concessional investment credit on farm infrastructure support, subject to performance assessment of new infrastructure credit programmes. |
| **Direct incentives to innovation** | |
| The agricultural innovation system is an effective provider of innovation: it benefits from well-established governance mechanisms; as a sector-specific organisation, the Brazilian Corporation for Agricultural Research (Embrapa) plays a central role in the system, while universities contribute with high quality education and research; Foreign R&D co-operation is developing fast. However, there is scope for further developing collaboration with other research partners. | Promote research co-operation across sectors (Centres of Competitiveness or Excellence).<br>Strengthen Embrapa's capacity and flexibility to collaborate with other researchers in universities and the private sector in Brazil and abroad, for example by removing restrictions for public institutions to hire foreign researchers and trainees, facilitating temporary transfers of Brazilian researchers abroad, and exploring arrangements regarding the sharing of property rights. |
| The contribution of agribusiness should continue to increase as there is still unrealised potential for contributions by the private sector in agricultural innovation due to the general business environment and lack of capacity of local companies to do this | Consider strengthening Intellectual Property Right protection to attract private investment.<br>Strengthen the capacity of businesses to participate in local innovation projects by supporting networking and actions to raise awareness and providing training opportunities. |
| Adoption could be faster and more widespread. | Reinforce technical assistance and rural extension services to ensure they provide expected services and improve opportunities for small family farms.<br>Broaden the scope of advisory services to cover technical, financial and organisational aspects.<br>Strengthen links between R&D and technical assistance, for example by adding a technology transfer component to research projects, or by encouraging networking between researchers, advisors and producers. |

*Source*: OECD (2015b), *Innovation, Agricultural Productivity and Sustainability in Brazil*, https://dx.doi.org/10.1787/9789264237056-en.

## Canada (2015)

**Box A C.3. Main opportunities and challenges for the food and agriculture system in Canada**

- Canada is a very large country in terms of land mass, occupying the Northern part of America, with a relatively small, wealthy and open economy.
- Canadian agriculture benefits from relatively abundant land and water resources, although there are significant regional differences in environmental pressure and climate, and it faces limited environmental constraints which relate mainly to local water pollution by agricultural nutrients.
- Canada is a major and competitive exporter of agricultural commodities.
- Agricultural productivity growth, resulting from technological advances and increases in farm scale and consolidation, has driven production and income growth without significantly increasing pressure on resource use.
- The capacity to innovate is crucial for the export oriented Canadian sector to take advantage of the growing and changing demand for food and agricultural products at the global level.

**Table A C.3. Policies for improving food and agriculture productivity and sustainability in Canada**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Efforts are being made at the federal and provincial levels to reduce regulatory burden without compromising health and environmental safety outcomes. | These efforts should continue by improving clarity, consistency and responsiveness to industry and consumer needs, using more outcome-based regulations, and adopting a forward-looking approach to developing regulations for new products and services. Regulatory services to businesses should be strengthened. To reduce compliance costs, information relevant to companies could be included in a single platform. Further efforts could focus on regulatory collaboration between provinces and with main trade partners. |
| Farmers and food industries have access to credit and specialised and personalised services from a well-developed financial and banking sector. In addition, they benefit from specific agricultural credit programmes. | The extent to which agriculture credit programmes are well targeted and respond to the current credit market situation should be reassessed. |
| Various programmes support investment and innovation. The government has also taken steps to support the development of venture capital markets. | Efficient and deep financial markets should continue to be promoted. In addition, placing information on market and programme opportunities on a single platform would improve access to capital. |
| Lower rates of corporate tax for small firms may act as a disincentive to firm innovation and growth. | Applying the same rate to all firms would remove this disincentive. |
| **Capacities and services** | |
| There is a mismatch between supply and demand of skills for innovation in agriculture. | Skills for innovation could be reinforced by increasing integration between education, formal training and practical experience within tertiary education, increasing the distinction between institutions that target research and those that emphasise teaching, and re-evaluating tuition policies. Increased efforts should be made, in particular by the private sector, to better communicate evolving needs to educators and to promote further opportunities, such as internships, which are responsive to evolving business needs. |
| Shortage of labour is a growing issue. | Further efforts could be made to enhance the public's perception of agriculture and its role in the economy, including by improving information on job market opportunities in the sector. |
| **Agricultural policy** | . |
| High levels of support through domestic and border measures like those in place for supply-managed commodities distort markets and can impose a high cost on intermediate and final consumers. | Lowering support and minimising distortions could help the industry adapt to market opportunities, including through enhanced innovation. |
| The dairy, poultry and egg sectors operate under a supply management system. This discourages structural adjustment, which is an important driver of productivity growth, together with innovation. | Removing impediments and/or disincentives to structural adjustment could facilitate the adoption of innovation and increase productivity growth. |

| Main findings | Key recommendations |
|---|---|
| Canadian agricultural policy traditionally provides farmers with tools and support to manage risk and facilitate investment. Innovation has received more attention in the most recent Growing Forward 2 policy framework. | Programmes that target innovation directly and provide incentives for private investment in the creation and adoption of innovation should be further developed. |
| **Direct incentives to innovation** | |
| Agricultural innovation includes a large diversity of actors, which calls for strong co-operation and governance systems. Economy-wide, agriculture and innovation policy provide incentives to innovation. | Establish a common strategy for agriculture and broader, government-wide innovation objectives to strengthen policy coherence. |
| Innovation policies are regularly evaluated according to the common framework used to evaluate all government policies, and which is mainly based on trends in economic performance. | Evaluate all agricultural programmes in terms of their impact on innovation, as the results would help to strengthen the focus on innovation of future frameworks. The development of outcome and performance indicators needs to be built into the policy-making process and used to evaluate policy impacts to allow for future improvements. |
| The public sector is the main supplier and funder of agricultural R&D through various institutions and programmes. | Simplifying programming, such as initiatives related to financial support and business management advice, that aim to facilitate the adoption of innovation in farms and firms, would improve access to support and information, and thus to innovation.<br>There should be a single platform which can identify all sources of available government funding. Streamlining fragmented federal granting programmes would encourage businesses to collaborate with researchers in the public sector. It would also help if provinces aligned their grants with those of the federal government. |
| Knowledge infrastructures, such as research centres and universities, are well-spread across Canada and tend to specialise into regional systems. However, these infrastructures are ageing. | To maintain research capacity, ensure stable funding for knowledge infrastructure, including general knowledge technologies, institutions, networks and databanks, as well as funding for long-term projects |
| Public research expenditures are relatively high but decreasing in real terms. Private investment in agricultural R&D is increasing, but in general, there appears to be scope for an expanded private sector role. | Explore funding models that can help attract private sector investment, as well as public private partnerships that can support agricultural knowledge infrastructure and further innovation. |
| Because of the diversity of actors and stakeholders in the Canadian agricultural innovation system, consultation and co-ordination mechanisms are in place, and collaboration is encouraged. | Review the effectiveness of co-ordination and the responsiveness of the system to stakeholder demands. To increase collaboration and partnerships between public and private actors it is important to explore and tackle difficulties such as differences in culture, constraining requirements for using public funds, and frictions over the handling of Intellectual Property Rights (IPRs). |
| At the time of the review, Plant variety protection in Canada was lower than in many developed countries, as Canada had not sign the more protective 1991 UPOV convention. | Strengthening Plant Breeders' Rights would attract private investment and place Canadian farmers at a level playing field with their major competitors on world markets. |
| So far venture capital benefits mainly Information and Communications Technology (ICT) companies, and only a few agri-food companies have been successful at accessing it. | Further investigate the demand and supply for venture capital for agricultural businesses and identify constraints and possible government role to ease these constraints. |
| The government plays an important role in facilitating flow and access to information. | It must also contribute to improving public understanding of the importance of innovation in the agricultural sector, as well as to society at large. |

*Source*: OECD (2015c), *Innovation, Agricultural Productivity and Sustainability in Canada*, https://dx.doi.org/10.1787/9789264238541-en.

## China (2018)

**Box A C.4. Main opportunities and challenges for the food and agriculture system in the People's Republic of China (hereafter "China")**

- China achieved a remarkable expansion of agricultural production, but intensive use of chemical inputs has led to soil degradation, water pollution, and damaged bio-diversity.
- Water resources reached the limit of sustainable use, particularly in areas where irrigation is intensive or water resources are scarce. The development of the intensive livestock sector has created serious environmental stress, especially on water quality.
- China has succeeded in reducing the incidence of poverty in rural areas, but rapid industrialisation has led to large income disparity between urban and rural households.
- The rising cost of labour and the rapid aging of the rural population require agricultural production to concentrate on a smaller number of more productive farms.
- Consolidating small and fragmented farm operations in large-scale units is one of the most important pathways of improving productivity growth and sustainability in China.
- Dietary changes associated with income growth have been a major driver for the shift of domestic agricultural production towards livestock and fruits and vegetables.
- Future growth opportunities of agriculture in China lie primarily in agricultural products that are intensive in capital and knowledge.

**Table A C.4. Policies for improving food and agriculture productivity and sustainability in China**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| The quality of governance is still lower than the OECD average, most notably in the protection of property rights, both physical and intellectual. | Strengthen the enforcement of intellectual property rights by raising awareness of laws and increasing penalties for infringements and systematically prosecuting violators. |
| The State Owned Enterprises (SOEs) are dominating some areas of the service sector (e.g. financial services). | Reduce barriers to entry and investment into services related to food and agriculture sector to enhance value addition. |
| **Capacities and services** | |
| Ensuring long-term stability of land contracts and operational rights is also important to provide incentives to commit to long-term investments in land. | Secure long-term stability of contracts and operational rights of land by: increasing the duration of contracts and operational rights, with contracts automatically renewable upon expiration; establishing a registration system of operational rights at the local level; providing certificates detailing land rights. |
| Sustainable agriculture productivity growth requires a sufficient and stable quantity of usable freshwater for crops and livestock, and minimised impacts of agricultural activities on water resources. | Conduct a comprehensive review of water governance to better define responsibilities, remove conflicts and ensure effective and efficient policy implementation. Implement the proposed 2016 water price mechanism. Enforce the three red-line policies on water resource efficiency, conservation and water quality with enhanced monitoring and evaluation. Prioritise policy efforts to agricultural regions concentrating the most water risks. |
| China's household registration (hukou) system restricts access to social security and education systems in urban areas for households registered in rural areas | Ensure more equal access to social and education service in urban areas to facilitate the migration of rural residents to urban areas. |
| The education attainment of rural residents is largely limited to lower-secondary level and not necessary skill-based. | Increase vocational training opportunities and develop the broad skill sets needed to adapt and innovate in the agriculture sector; facilitate life-long learning and upgrading of skills in agriculture. |
| **Agricultural policy** | |
| More integration with international markets and decoupling of support from production would optimise the domestic agricultural structure and reduce pressure on the environment and national resources. | Further decouple the existing commodity-specific support from production to enhance reallocation of resources based on market demand and to allow producers to set aside farmland, while maintaining production capacity. |

| Main findings | Key recommendations |
|---|---|
| The continued pursuit of food grain self-sufficiency is becoming more costly in terms of both maintaining a large amount of public stock of grains and unsustainable use of land and water resources | Following the reform to reduce or cap the minimum purchase prices for rice and wheat, consider in the future replacing domestic price support policy with direct payments for rice and wheat, making domestic prices close to international prices. |
| Existing agricultural policy instruments to promote grain production are not necessarily coherent such agri-environmental policy objectives. | Review existing agricultural policy to improve their coherence with agri-environmental policy objectives including the removal of all the implicit support to fertiliser and chemicals. |
| The effective enforcement of environmental regulations remains a major challenge. Further monitoring and liability management will be necessary to make progress, but this is costly under China's small and fragmented agricultural structure. | Strengthen the enforcement of environmental regulations through strengthening monitoring and liability management as well as complementary measures such as making payments conditional on the recipient's compliance with environmental standards adapted to local conditions. |
| Subsidy to purchase agricultural machinery stimulated the replacement of inefficient smaller machines with more efficient larger ones. However, this subsidy should only have a transitory role. | Scale down the subsidy to purchase farm machinery, while increasing the role of rural credit institutions in financing farm capital investment. |
| **Direct incentives to innovation** | |
| Agriculture R&D activities are dominated by public agricultural R&D institutions, and private agriculture R&D expenditure is estimated to account for only 10-20% of overall agriculture R&D. The role of private agriculture R&D is lower than in most OECD countries. | Focus public agricultural R&D on areas of public interest such as environment and resource conservation and on areas where the private sector would under-invest and privatise the public R&D institutions in commercially viable areas of research. |
| China's protection of IPR still lags behind most OECD countries, particularly in the area of enforcement. China maintains barriers to Foreign Direct Investment (FDI) in agricultural R&D. For example, foreign companies are not allowed to conduct research on transgenic crop breeding. | Strengthen the role of the private sector in agricultural R&D through more effective enforcement of IPR protection, more transparent biosafety regulation, lower barriers to FDI in agricultural R&D. |
| China's agricultural innovation system can be characterised as a top-down one, where scientists in the public sector create new technologies with little consideration of farmers' changing demands. | Improve co-ordination between government agencies and public research institutes at national and subnational levels to avoid duplication, and increase the linkage between public research institutions, higher education institutions, agri-food enterprises, and public and private extension services to reflect industries' changing demands to public agricultural R&D activities. |
| The commercialisation of extension activities reduced their capacity to provide a variety of technical advice. Private organisations are increasingly playing a major role in facilitating knowledge flows. | Concentrate the role of the public extension system to the services which private organisations have less incentive to provide, such as promoting sustainable production practices. |

*Source*: OECD (2018a), *Innovation, Agricultural Productivity and Sustainability in China*, https://doi.org/10.1787/9789264085299-en.

## Estonia (2018)

**Box A C.5. Main opportunities and challenges for the food and agriculture system in Estonia**

- Estonia is the northernmost and smallest of the Baltic countries.
- Estonia has experienced significant structural change and growth in agricultural production and productivity, in particular since the country joined the European Union in 2004.
- This growth was achieved with relatively limited, mainly localised, environmental pressure, taking advantage of abundant land and water resources.
- Most productivity improvements occurred in larger farms, and there is scope for increasing productivity in smaller farms.
- The food processing sector has not invested as much and adjusted as fast as primary agriculture, and is still struggling in terms of capacity and competitiveness.
- Looking forward, the agri-food sector will have to keep adjusting to changing conditions, such as higher labour costs, agricultural policy developments, more diverse demand, and climate change, which will provide both opportunities and challenges.
- Responding to demand for diversified, healthier products can be an opportunity to develop new products, and improve the competitiveness of the Estonian agro-food sector.
- Maintaining the recent growth rates sustainably will require further innovation and adaptation in food and agriculture.

**Table A C.5. Policies for improving food and agriculture productivity and sustainability in Estonia**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Access to traditional export markets has been disrupted by the Russian ban on imports. | Promote a regional approach to trade diversification in order to gain new markets for agri-food products. |
| Agricultural loans have a higher risk premium on markets. | Promote risk management, through financial tools. |
| High taxes on labour increase labour cost. | Further reduce the taxation of labour earnings to facilitate employment in food and agriculture. |
| Environmental taxes and charges have increased, but do not always reflect environmental damages. Fuel used in agriculture is taxed at 27% of the standard rate. | Explore the scope for using environmental and agri-environmental taxes. Reduce gradually the tax rebate for fuel used in agriculture and encourage the use of renewable energy. |
| **Capacities and services** | |
| Estonia has a good potential for producing biomass from agriculture and forestry. | Develop green energy, and facilitate the development of bio-based products. |
| The drainage system is upgraded but requires maintenance, all the more with climate change. | Facilitate co-operation among land owners and farmers to improve the maintenance of the drainage system. |
| Rural areas face a declining population and shortage of skills. | Efforts to attract and maintain people in rural areas could include improving infrastructure connection, and services, providing information on employment opportunities, and facilitating relocation. |
| The number of Estonian students is declining overall and especially in agriculture and bioeconomy. | Attract foreign students in agriculture-related topics, by offering more courses in foreign languages and adapting them to demand. |
| **Agricultural policy** | |
| Implementation of agricultural policy supported investment to increase productivity and meet EU environmental and other regulations, while limiting market distortions. | Continue to limit distortions and develop support targeting for specific objectives; Promote risk management and strengthen risk management tools; Phase out national complements to Direct Payments. |
| Despite improvements in environmental performance some local issues remain. | Strengthen efforts by providing targeted advice on sustainable technologies and practices. |
| COP21 engagements may impose pressure on agriculture to reduce greenhouse gas (GHG) emissions | Explore options for reducing GHG emissions from agriculture, in particular grazing livestock, and facilitate farmers' adaptation and relevant research. |
| The competitiveness of the agri-food sector remains low. | Develop a competiveness strategy with the sector. |

| Main findings | Key recommendations |
|---|---|
| Stakeholders need to develop a strategy for responding to specific market demand (e.g. organic products) and for strengthening technological, organisational, and marketing innovation. | Make use of the opportunity given by the CAP to recognise Producer and Branch Organisations and support the participation of farmers or farmers' organisations in knowledge networks. |
| Estonia has strong Information and Communication Technologies (ICT). | Develop further ICT solutions to collect and manage data, reduce control costs and implement more targeted policies, and to improve traceability along the food chain. Explore the scope for using output-based agri-environmental measures with the help of ICT for monitoring outcomes. |
| **Direct incentives to innovation** | |
| The abundance of strategic documents, action plans, programmes and projects does not facilitate coherence. | Consolidate innovation and growth strategy documents to improve clarity. |
| The policy framework is driven by supply-side measures, with relatively little input from, or ownership by, the business community. | Better involve the private actors in policy dialogue on R&D and innovation policies at an early stage. |
| The approach to innovation is top-down. | Facilitate discussion among and between producers and the industry to enable them to contribute more effectively and efficiently to the agricultural innovation system. |
| The funding of R&D for agriculture fluctuates across programming periods and is highly dependent on short-term projects. | Improve the stability of R&D funding; Continue developing longer-term, larger scope project funding. |
| Explore ways to complement public funding, for example from foundations or agricultural levies. | |
| Maintaining good research infrastructure is essential for future progress and to maintain excellence and collaboration capacity at national and international levels. | Maintain and improve research infrastructure, including EU and regional networks. Explore further opportunities to share public infrastructure with the private sector. |
| The contribution of private companies to research is limited, in particular in the food and agricultural sector. | Identify areas where local companies and researchers could collaborate, e.g. through public-private partnerships, to develop local or niche products and innovation. |
| Skills for innovation in the system need to be upgraded continuously. | Encourage a diverse supply of advice that is accessible, including through ICT, and responsive to market demand, and goes beyond technical issues towards management, marketing, and sustainability improvements. |
| Continue ensuring farm advisors are well-trained professionals with up-to-date skills. | |
| Innovation and policy evaluation are becoming more complex and require a wealth of information. | Continue developing information systems, including market intelligence (big data) and research results |

*Source*: OECD (2018b), *Innovation, Agricultural Productivity and Sustainability in Estonia*, https://dx.doi.org/10.1787/9789264288744-en.

## Japan (2019)

**Box A C.6. Main opportunities and challenges for the food and agriculture system in Japan**

- Agriculture in Japan has contracted since 1990, in terms of production value, number of commercial farm households and number of farm workers. The food and agriculture sector is under continuous pressure to raise productivity to keep up with the highly competitive manufacturing sector and increase its exposure to international competition.
- The declining and ageing population in Japan has significant long-term implications for Japan's agriculture, most notably a smaller domestic market and scarce labour force.
- Japan's agriculture has been characterised by small-scale rice production, and structural transformation towards more profitable sectors and more productive large-scale farms has been a major policy agenda in agriculture. However, Japan's agriculture today looks quite different from the traditional image. Agricultural production and land use is concentrated in a small number of large, commercial, often corporate farms. In 2015, the largest 3% of farms produced more than half of the total agricultural production.
- Agriculture has become a more technology- and data-intensive industry, incorporating a diversity of services into value generation.
- Strengthening the sector's capacity to innovate and improving its environmental performance of agriculture is critical to ensure the long-term growth of agriculture in Japan. Innovation in agriculture increasingly depends on technologies developed outside agriculture, such as genetics and digital technologies. The process of innovation in agriculture is becoming highly interactive among a growing and diverse network of stakeholders, institutions and users. More integration of agriculture with other parts of the economy would bring Japan's competitive technology and skills from outside agriculture and enhance innovation and entrepreneurship in agriculture.

**Table A C.6. Policies for improving food and agriculture productivity and sustainability in Japan**

| Key policy recommendations |
|---|
| **Develop policy and market environments that are more conducive to innovation and entrepreneurship in agriculture** |
| • Develop a more demand-oriented approach to exploit the diverse demand for Japanese agro-food products in overseas markets, including the international expansion of local production networks. |
| • Reduce the role of government credit support and increase the role of commercial banks. |
| • Ensure a level playing field between JA groups, and other agricultural input and service providers by enforcing the Antimonopoly Act and limiting cross-subsidies between financial and agricultural businesses in local JAs. |
| • Increase the linkage between farm management policy and wider policies focussed on small and medium-sized enterprises (SMEs) to address the entrepreneurial needs of farms beyond agricultural production. |
| • Develop soft infrastructure to facilitate the digitalisation of agriculture and redesign the hard infrastructure to facilitate the adoption of new digital technology. |
| • Give farmers more freedom to make production decisions by phasing out commodity-specific support and progressively opening up to international markets. |
| • Enhance the role of farmers in managing normal business risk by lowering the threshold of revenue loss covered by policy programmes and consider introducing voluntary risk-management programmes. |
| **Fully integrate environmental policy objectives in the agricultural policy framework** |
| • Define agri-environmental policy targets at the national and regional levels based on a systemic assessment of the environmental performance of agriculture with the participation of a wide range of stakeholders. |
| • Expand the scope of environmental reference levels defined in the current environmental principle to a wider set of environmental issues, including climate change mitigation and biodiversity, and establish environmental targets and reference levels adapted to local ecological conditions. |
| • Increase cross-compliance conditions on producer support programmes with locally adapted reference levels of environmental quality and design an integrated agri-environmental policy at the sub-national level. |

- Better reflect the actual water use in paddy field on water use fees to improve the water use efficiency and include the long-term rehabilitation costs of irrigation system in order to balance the costs and benefits of the investment between current and future water users, and to maintain irrigation infrastructure sustainably.

**Establish a more collaborative agricultural innovation system**

- Focus public agricultural R&D on pre-competitive research areas with a medium- to long-term perspective and on areas that are not specifically tied to commercial production.
- Introduce co-funding schemes for agricultural R&D with producer organisations to reflect demand in R&D activities; increase overall spending capacity for agricultural R&D investment.
- Increase funding for collaboration, and co-funding with the private sector, foreign researchers and institutions beyond the presently limited number of competitive research grant projects.
- Further integrate agricultural R&D systems with general innovation systems to promote cross-sectoral innovation.
- Clarify the role of national and prefectural agricultural research organisations and consolidate efforts in regional R&D at a broader regional level.

**Enhance the capacity of farmers to innovate**

- Strengthen the partnership between agricultural education and the agro-food industry, including more participation of professional farms in teaching activities and funding.
- Reorient the curriculum of vocational education in agriculture to develop the skills required of farm managers, provide more structured opportunities for learning, and develop training programmes that combine lectures with work experiences.
- Consolidate prefectural agricultural colleges at a broader regional level to pool resources and develop a unique and specialised agricultural education that is adapted to regional conditions. This should be accomplished in partnership with the private sector.
- Focus on the role of prefectural extension services in areas of public interest, such as promoting sustainable production practices and giving advice on compliance with regulations and government policy programmes; expand the role of private advisory services.

*Source*: OECD (2019a), *Innovation, Agricultural Productivity and Sustainability in Japan*, https://doi.org/10.1787/92b8dff7-en.

## Korea (2018)

**Box A C.7. Main opportunities and challenges for the food and agriculture system in Korea**

- The agriculture sector is under pressure to meet changing domestic demand, to improve its productivity to keep up with the highly competitive manufacturing sector and to increase its exposure to international competition.
- Per capita arable land area is the smallest among OECD countries. The highly fragmented land ownership structure hinders consolidated use of cropland and limits the scale of operations.
- The livestock sector has expanded rapidly to meet a growing national demand, but the rapid expansion of intensive livestock production has aggravated the environmental pressure from manure emission.
- Income disparity between farm and urban households expanded and income problems concentrate on aged farmers.
- Despite its comparative disadvantage in land-intensive crop production, Korea's potential to export niche agricultural products and processed food that reflect its rich and unique food culture could be explored further.
- Korea's agricultural innovation system can benefit from a strong advantage in Information and Communication Technology (ICT).

**Table A C.7. Policies for improving food and agriculture productivity and sustainability in Korea**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Agricultural co-operatives have high market shares in certain input and output markets | Ensure fair competition between agricultural co-operatives and other private agricultural service and input suppliers under the existing provisions of the Monopoly Regulation and Fair Trade Act. |
| Tax exemption and reduced charges on agricultural inputs may create incentives for excessive use of inputs and natural resources. | Value Added Tax (VAT) exemptions on certain agricultural inputs and the fuel tax exemption should be reviewed to promote more sustainable agriculture. |
| **Capacities and services** | |
| Subdivision of farmland ownership through inheritance is exacerbating land fragmentation. | Reform the property tax system to provide incentives for the succession of farms to a designated successor. |
| The high price of farmland, reflecting the potential non-agricultural use value of land, is discouraging farm consolidation and encouraging land abandonment. | Apply stricter land conversion regulation to farmland within designated Agricultural Promotion Regions (APR), while concentrating policy support to guide land conversion outside them. |
| Informal land lease is reducing the incentive to invest in land improvement and rent out land to more efficient users. | Establish a formal registration system of land lease contracts at the local government level. |
| Free supply of irrigation water reduces the incentive to conserve water use. | Ensure that charges for water supplied to agriculture at least reflect full supply costs. |
| Professional education for agriculture is attracting less attention. | Reorient the agricultural education system to focus on skills required in the agricultural sector, and not only on formal qualifications. |
| **Agricultural policy** | |
| Overall portfolio of agricultural policy is dominated by policies which are linked to production of staples and to supporting farm income. | Continue rebalancing the portfolio of agricultural support to public investment oriented towards long-term productivity growth and sustainability. |
| Commodity-specific support constrains farmers' responses to market signals, hinders structural adjustment toward production of more value-added products and increases environmental pressure from agriculture. | Phase out border protection and commodity-specific support to allow markets to play their role in allocating production resources to more high-value-added niche products |

| Main findings | Key recommendations |
|---|---|
| A more comprehensive policy approach beyond agricultural policy is needed to address the low-income problem of farm households. | Increase the role of general social security system as an income safety net for farm households by introducing adjusted eligibility criteria and additional incentives for early retirement and resource transfer to young commercial farmers.<br>Take a more bottom-up approach to promoting integrated investments and public services that are geared to local needs to attract non-agriculture industries to locate in rural areas. |
| Exemption of income tax could impede resource reallocation to more profitable and competitive non-grain agricultural sectors and reduce farmers' incentive to record and manage their farming business activities through bookkeeping. | Take steps to induce farmers to declare income situation to facilitate the self-evaluation of the financial performance of the farm and to allow the government to design better-targeted policies to the household income. |
| There is no clear definition of reference environmental quality with which farmers need to comply. | Establish a framework of agri-environmental policies which clarifies the reference environmental quality as well as environmental targets. |
| The growing issue of livestock manure emission requires a more comprehensive policy approach, beyond regulation alone. | Take a multi-dimensional approach to manure management, including regulation, incentives to invest in new technology, capacity-building of producers and building partnerships between stakeholders. |
| **Direct incentives to innovation** | |
| The public sector dominates investment in agricultural R&D. | To let private R&D investment play a greater role, concentrate public R&D investment in areas of public interest, such as environment and resource conservation, and on areas where the private sector would naturally under-invest. |
| Public R&D projects are implemented largely by a top-down approach and can reflect more the technical demands of commercial farmers. | Allow the participation of a wide range of stakeholders in the public R&D planning and evaluation process to reflect their technical needs.<br>Increase the participation of farmers in R&D projects of public R&D institutions and universities. |
| A weak network exists between different actors in the agricultural innovation system, including weak public and private partnership in agriculture R&D projects. | Enhance collaboration between different actors in the agricultural innovation system by introducing conditionality of public agriculture R&D projects on collaboration with private sectors, higher education institutions and other public R&D institutions. |
| Inadequate co-ordination exists between different government agencies engaging in public agricultural R&D. | Strengthen the co-ordinating function of the STCA to form a more consolidated and coherent public agricultural R&D investment strategy. |
| The public extension system's standardised services are limited to meeting producers' needs, and the development of private technical advisory services is limited. | Redefine the role of the public extension system, leaving more room for private technical service providers in transferring technologies, capital and information.<br>Shift the focus of the public extension service to the provision of public goods such as improvement of environment performance, and to the governance of the whole system to ensure access of small farmers to relevant advice. |

*Source*: OECD (2018c), *Innovation, Agricultural Productivity and Sustainability in Korea*, https://doi.org/10.1787/9789264307773-en.

## Latvia (2019)

**Box A C.8. Main opportunities and challenges for the food and agriculture system in Latvia**

- As a small, dynamic and open economy, Latvia has deployed a broad range of reform initiatives that have driven progress, although generally from low levels, in many of the areas that would nurture future innovation based economic growth. However, progress has been slower in agriculture.
- While Latvia's agriculture faces challenging climatic conditions with a short vegetation period, it enjoys high levels of land and water availability and quality. Its environmental performance is high and, although there may be local environmental stress, no area of national concern has been identified so far despite intensification of mineral fertiliser use over the past decade.
- Today, cereals and dairy farming make up most of Latvia's agricultural output. The structure of commercial farms is dual; livestock farms are typically smaller than the average EU farm, whereas cereal farms are mostly large and export-oriented. At the same time, half of the farms do not market any agricultural goods at all, thus weighing on the sector's performance.
- While Latvia is mostly a service economy, its agriculture holds a relatively large share in the economy. Accession to the European Union and implementation of the Common Agricultural Policy stopped the sector's decline and contributed to its relatively large share in the economy.
- Agricultural incomes have risen, both as a result of direct payments, and indirectly through structural adjustment and support to investments that have contributed to labour productivity growth, to higher yields and ultimately to higher agricultural Total Factor Productivity (TFP). However, the sector has not yet reached its full efficiency and productivity potential.

**Table A C.8. Policies for improving food and agriculture productivity and sustainability in Latvia**

| Main findings | Recommendations |
|---|---|
| **Agriculture** | |
| Non-commercial farms account for about half of farms. They divert productive resources and agricultural support from the sector and may contribute to informality. | Address social issues with social policies.<br>Use advisory services and retraining to support the transition of non-commercial farmers to market oriented activities, within or outside the agricultural sector. |
| Support accounts for more than 60% of average farm income. | Target support currently based on area or production to the sector's longer-term productivity: education, farm management, investment, co-operation. |
| Latvia's CAP payments have supported farm incomes and productivity. | Increase incentives to produce higher value products. Address bottlenecks along the value chain. |
| Farming suffers from value chain inefficiencies and exports raw or low value-added products. | Use CAP RDP funds to<br>strengthen the value chain through producer groups and the processing industry;<br>facilitate co-operation in the creation and diffusion of innovation. |
| Regulations on land ownership and lease may hinder a more efficient allocation of land resources. | Ease regulations on land ownership and lease to support a well-functioning land market. Consider other instruments to guarantee farmers' access to land and prevent speculation. |
| Access to credit has improved, from low levels. National policies support farm access to credit. | Evaluate the recent restructuring of Altum and the adequacy of the institutional framework for the sector's credit needs. |
| Latvia's CAP RDP choices support investments to improve the overall performance and competitiveness of agricultural holdings.<br>Production-distorting support remain in specific commodity sectors.<br>Voluntary coupled support absorbs half as much budget as the annual expenditure under the CAP RDP competitiveness priority. | Align policy signals, reduce commodity-specific support and use budgets to encourage the longer-term productivity and competitiveness of the sector. |

| Main findings | Recommendations |
|---|---|
| More than two-thirds of farm labour is unpaid. | Accompany the transition of unpaid family labour into the formal labour force. Provide a legal status to unpaid agricultural labour and adjust tax, social security and pension systems accordingly.<br>Improve job opportunities in and outside the sector for unpaid farm labour through education and better connection to job markets. |
| Unemployment is higher in rural areas. Labour costs have increased while they remain below EU28 levels. | While taking into account job quality aspects, increase recourse to contracting for farm labour and farm services and consider relaxing wage obligations for non-EU labour to encourage employment, increase farm productivity and the viability of rural areas. |
| Subsidies per head of livestock tend to intensify livestock production and increase the environmental load.<br>Diesel fuel and natural gas used in agriculture benefit from reduced excise tax rates and add to the sector's environmental load. | Eliminate support based on animal numbers and production volumes that adversely affect the environment. Payments per ha of grass rather than per animal head could be a first step towards less environmentally harmful practices.<br>Gradually reduce the excise tax rebates for diesel fuel and natural gas used in agriculture and encourage the use of renewable energy. |
| **Innovation dissemination and take-up** | |
| Little is known on the factors that drive the adoption of innovation at farm level. | Use CAP RDP funds to support<br>farmer access to advisory services<br>farmer participation in innovation networks<br>Identify and monitor factors that drive the adoption of innovative technologies, practices, at the farm level and along the food chain. |
| Advisory and education services in agriculture and food production have become more widely available. At the same time, there is a skills shortage in the farm workforce. | Bridge the skill gap and improve the educational attainment of farm holders and train qualified specialists.<br>Further strengthen knowledge transfer activities to facilitate better access of the farming workforce.<br>Harness the farm advisory system to facilitate the participation of farmers in training and expand innovation take up.<br>The system can also be used to support small farms' assessment of their profitability and transition to more profitable activities in and outside the sector. |
| Latvia has directed very little CAP RDP funds to risk management instruments. While innovation can improve farm resilience; associated investments may increase farmers' financial vulnerability. | Promote risk management and strengthen risk management tools. |
| **Education** | |
| Adult participation in training has increased significantly, although from low levels and mostly in non-formal education. | Strengthen the availability, accessibility and affordability of lifelong development opportunities both in qualifying and informal agricultural education. |
| The education system needs to adapt to the changing demography. The Employment Council, established in 2016, addresses labour market issues, including those related to education and the impact of demographic trends. | Attract foreign students and encourage lifelong learning to enlarge the pool of students. |
| The share of Latvia's tertiary educated students in the science, technology, engineering and mathematics (STEM) fields is below the OECD and the EU average rates. More students have chosen STEM fields since 2015. | Encourage student participation in STEM fields to offer a supportive environment for the creation, adoption and acceptance of innovative technologies |
| **Research and innovation** | |
| The ZTAI sets general innovation policy objectives for innovation in the bioeconomy in general.<br>Numerous policy instruments in place and available public funds are significant for agricultural innovation. | Define a specific agricultural innovation strategy using a bottom-up approach to identify the sector's specific needs and gaps in the agricultural innovation system.<br>Improve the co-ordination among the policy instruments and public funds. Monitoring their implementation, evaluate their direct outcomes and socio-economic and environmental impacts. |
| There is insufficient participation of research institutions in EU and other international initiatives. | Ensure stable funding for the research infrastructure in food and agriculture to strengthen capacity to participate in collaborative efforts.<br>Maintain public funding to enable co-operation with private companies and with foreign research organisations |
| Latvia's research and innovation capacity lacks a critical mass to contribute to the needs of the agricultural sector. | Foster regional collaboration in research and innovation to overcome the market-size limitations. |
| Little private expenditure is invested in agro-food R&D | Use public procurement to stimulate innovation.<br>Strengthen public-private co-operation, in particular on projects directed towards the market introduction of research results. |

| Main findings | Recommendations |
|---|---|
| Better information and better data are needed to support better decision making from field to policy making. | For farm managers: use farm level data and improve access to information on markets, regulations and policy instruments to enhance farm and risk management choices.<br>For policy makers: better data allows better targeting of policy instruments to objectives and needs, a more accurate monitoring of outcomes and, altogether, improve policy relevance.<br>Improve capacity by participating in internationally comparable data collection and reporting exercises. |

*Source*: OECD (2019b), *Innovation, Agricultural Productivity and Sustainability in Latvia*, https://doi.org/10.1787/9789264312524-en.

## Netherlands (2015)

**Box A C.9. Main opportunities and challenges for the food and agriculture system in the Netherlands**

- The Netherlands is a small, densely populated and urbanised European country.
- The Dutch food, agriculture and horticulture sector is innovative and export oriented, with high value-added along the food chain and significant world export shares for many products.
- Continuous adoption of innovation has permitted to reach high levels of productivity, and sustained productivity growth, in particular at the farm-level, in a context of increasing environmental regulatory constraints.
- Characterised by high land intensity, Dutch agriculture generates significant pressures on the environment.
- The challenge is whether marginal improvements in current technologies and know-how will be enough to pursue current rates of productivity growth, sustainably, and face future challenges, including those linked to climate change.

**Table A C.9. Policies for improving food and agriculture productivity and sustainability in the Netherlands**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Reforms have significantly reduced regulatory barriers to entrepreneurship, but there is still scope for reducing complexity and transaction cost related to compliance with regulations. | Efforts to minimise administrative costs of compliance and reduce the costs of registering products, and reduce length and simplify procedures, need to continue. Regulators need to keep up pace with innovation. |
| Access to finance for innovative firms has decreased since the financial crisis has weakened Dutch banks.<br>Credit support is generally targeted to investments to improve competitiveness and sustainability, in particular compliance with environmental, food safety and animal welfare regulations. | Focus public support to investment in areas where financial markets fail to provide funds. Simplify the architecture of credit support programmes to improve access and targeting.<br>Identify market failures in credit and land markets to design better targeted agricultural policies. |
| Tax incentives for innovation have increased in recent years and account for over three-quarters of government support to business innovation. | Rebalance the policy mix by complementing the current focus on R&D tax credits with competitive, well-designed direct support instruments, e.g. for joint R&D projects with knowledge institutes, and instruments used in the top sectors approach. |
| **Capacities and services** | |
| Economic activities and rural populations benefit from an excellent infrastructure network and good access to public services. | -- |
| Demand for labour and skills in agri-food and nature management is strong. | Increase the flexibility of employment and migration policy to facilitate labour force moving into these areas with strong demand. |
| This demand is being addressed in collaboration with the education system, but delays in the response may lead to temporary shortages of skills. | Ensure public funding for education and knowledge institutions enables them to continue to offer relevant education and training. Ensure students are able to move to areas with attractive employment prospects such as agri-food education, by ensuring equal funding.<br>Facilitate discussion between education and knowledge institutions and the industry to identify current and future skills. Facilitate further life-long learning and upgrading of skills in the labour force.<br>Continue to develop business management programmes, including for future researchers and farmers, to facilitate the valorisation and adoption of knowledge. |
| **Agricultural policy** | . |
| Dutch implementation of the CAP generally aims to facilitate productive investment. | Develop a long-term vision reconciling productivity growth and sustainability and reduce policy uncertainty.<br>Continue to limit the provision of coupled payments to very targeted and temporary measures. |
| Broad-based support measures affect the environmental performance of agriculture | Strengthen the ability of agricultural policy to improve the environmental performance of agriculture, by focusing agri-environmental measures to objectives and outcomes rather than on process and EU regulation constraints; revisit the balance between regulation and economic incentives in view of fostering environmentally-friendly innovation. |

| Main findings | Key recommendations |
|---|---|
| Farmers' linkages with the agricultural innovation system could be further encouraged. | Make use of the opportunity given by the CAP to recognise Producer and Branch Organisations and support the participation of farmers or farmers' organisations in knowledge networks. |
| The government has developed a good information base in collaboration with the sector | Maintain the good information base and analytical capacity to monitor progress, evaluate policies and guide farmers' decisions, with specific attention to innovation adoption and environmental practices. |
| **Direct incentives to innovation** | |
| Institutional developments have made the system more collaborative and demand-driven and have strengthened the role of the private sector in guiding investment. | Strengthen the role of the government in defining long-term objectives for R&D and innovation, taking into account long-term challenges and societal demand.<br>Facilitate the organisation of producers and the industry to enable them to contribute more effectively and efficiently to the agricultural innovation system, including through participation in networks or formulation of demand. |
| The innovation policy targets specific sectors, resulting in weak links across sectors and policies | Improve policy co-ordination amongst agricultural, industrial, innovation, education, and regional policies, and policy stability. |
| Sources of R&D funding have become more uncertain. | Facilitate access to other sources of funding: How could revenues from IPRs be increased? Explore ways to increase Intellectual Property revenues or generate additional funding from royalties or levies. |
| There are concerns that the government is paying a larger share of the investment than is apparent, including through tax incentives that provide the majority of support to innovation in the private sector | Ensure the contribution that business makes to public-private partnerships is commensurate with the benefits they get. |
| That the system limits research in some areas | Identify and fund areas not covered by public-private partnerships, with specific attention to food safety, sanitary and phytosanitary issues, economic analysis, societal issues of no direct interest to the private sector, longer term and more risky issues.<br>Explore ways to generate new (breaking through) ideas to overcome current constraints, for example through demand-driven mechanisms, including to develop technologies and systems allowing for a better management of natural resources and improved resilience to risks.<br>Ensure public co-financing is available for participation in EU programmes and international collaborative efforts. |
| Evaluation of the innovation policy could be strengthened | Continue developing information systems, including market intelligence (big data) and research results, as innovation and policy evaluation become more complex and require a wealth of information. In particular, continue to monitor innovation adoption and environmental performance in surveys to better understand determinants and policy impact. Continue to use and share innovative methods to reduce collection costs and improve farm and firm participation.<br>Develop indicators and tools to evaluate the performance of the agricultural innovation systems in general, and innovation policy regularly, taking longer term effects into account. |

*Source*: OECD (2015d), *Innovation, Agricultural Productivity and Sustainability in the Netherlands*, https://dx.doi.org/10.1787/9789264238473-en.

## Sweden (2018)

**Box A C.10. Main opportunities and challenges for the food and agriculture system in Sweden**

- The main socio-economic challenge facing the Swedish food and agriculture sector is achieving sustainable growth and employment, and maintaining high environmental and animal welfare standards, given the relatively weak competitiveness in several parts of the sector.
- The food and agriculture sector is a small and decreasing part of the Swedish economy in terms of output and employment. Structural changes in agriculture over time have resulted in a sharp decline in the number of farmers, and farms have become larger and more specialised.
- While Sweden does not have a comparative advantage overall in food and agriculture production, there is a high degree of heterogeneity and some sectors, such as vegetables and the downstream food supply chain are competitive.
- Since Sweden joined the European Union, total factor productivity (TFP) for the agricultural sector as a whole has grown at a slightly higher rate than the EU28 average over 1995-2016. The growth in agricultural TFP is mainly due to structural changes such as the concentration of production in fewer, larger and more efficient farms.
- High awareness of animal welfare, food safety and environmental issues by consumers and the citizens.
- Sweden has a robust innovation-oriented economy and the agricultural innovation system is mostly integrated in the general innovation framework.
- Making growth more sustainable, inclusive and green is a key overall policy objective.

**Table A C.10. Policies for improving food and agriculture productivity and sustainability in Sweden**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Regulations in Sweden are more extensive and complex than those in other EU member states | Efforts to simplify domestic regulations related to the environment, animal and crop health, and animal welfare that go beyond EU regulations by reducing administrative and compliance costs should be continued to be a priority. In particular, there is a need for better policy integration and collaboration between businesses in the food and agriculture sector, policy makers and regulators, so as to ensure that encourage the development and adoption of innovations and improve productivity and competitiveness of the food and agriculture sector. |
| Sweden does not have an overall comparative advantage in agri-food production | Strengthen efforts to focus agri-food research and innovation on knowledge-intensive high-tech areas including biotechnology, green energy, and food waste, and shorten and improve food and agriculture supply chains. Sweden has a highly developed knowledge economy, is well placed in this regard. |
| Insufficient technology transfer in remote areas | Improve technology transfer across in the food and agriculture system, in particular with the aim of enhancing access in remote regions. |
| Concerns about the high market concentration in Swedish retail food industry | Assess competition and functioning of the food production and food retail markets through, for example, the Swedish Competition Authority. |
| Strict animal welfare regulations | Consider establishing a scientific council on animal welfare as suggested in the 2017 Food Strategy. |
| **Capacities and services** | |
| Meeting labour market needs in the food and agriculture sector | Implement and facilitate pro-active skills policies – through for example the creation of education councils for the sector to promote life-long learning, and labour mobility to alleviate shortages of high-skilled workers in the agro-food chain and to better identify current and future skill requirements of the sector.<br>Assess the support needs of new entrants to farming and identify their potential business and organisational models, such as which knowledge they manage and how they acquire it, the use of technology, their access to capital (including land) and financial management, their marketing strategies, and co-operation initiatives. |

| Main findings | Key recommendations |
|---|---|
| Ageing agricultural workforce | Prioritise inter-generational renewal in agriculture by developing tailor-made schemes that target Swedish young farmers. Assess the extent to which land regulations, taxation, inheritance law, territorial planning and agricultural policies such as direct payments impede generational renewal. |
| Rural areas face a declining population and shortage of skills. | Fully connect farmers and rural population to the digital economy by ensuring reliable high-speed internet access across all rural areas and upgrading the people's skills and business practices so that they can fully benefit from these new technologies.<br>Strengthen the socio-economic foundation of the rural economy by stimulating the bio- and circular-economy in sustainable agricultural, forestry and agri-forestry business models.<br>Establish a mechanism to engage with stakeholders with the aim of improving the coherence of rural development policy. |
| Declining number of students enrolled in agri-food courses | Strengthen the co-ordination between agricultural education institutions and the food and agriculture industry, and facilitate discussions between education and knowledge institutions and the industry so as to identify the skills needed for future development. |
| **Agricultural policy** | |
| Reform of agricultural policies | Prioritise further reform of agricultural policies by advocating the implementation of results-based, nationally specified agricultural policies (devolution) that reflect the diversity and uniqueness of Sweden's agri-environment, within the broad guidelines agreed at the EU level.<br>Identify appropriate policy measures that target the development of agricultural activities that are potentially financially viable, as well as those that ensure the provision of sufficient collective or public goods (environmental, cultural, social values) provided by agricultural activities. |
| High reliance of agricultural incomes on support | Reduce the relative importance of government support in agricultural incomes and increase farmers' returns from the market through investment and strengthening the knowledge-based for farming through more research and innovation by encouraging further integration of agriculture in the Swedish Innovation System. |
| Investment support | Assess investment needs and enhance the effectiveness of public investment support by focusing on areas where financial markets fail to provide funds for the provision of public goods, and better integrate business advice and synergies with research and innovation.<br>Boost investments into innovation, modernisation, farm restructuring, diversification and uptake of new technologies and digital-based opportunities such as the use of big data, precision farming and clean energy. New business models as well clarity around the rules on data sharing will be necessary before the full potential of these technologies can be exploited. |
| Further enhancing environmental sustainability | Ensure that environmental and climate change concerns continue to be taken into account when developing and assessing policies that can contribute to productivity and competitiveness.<br>Encourage performance-based evaluation of policies and implement measurable indicators of performance.<br>Apply the polluter-pays-principle more systematically to hold farmers accountable for all harmful environmental effects from crop and livestock pollution; for example, by adding taxes on fertilisers and issuing penalties where these contribute to water pollution.<br>Strengthen efforts to provide targeted and tailored advice to farmers on sustainable technologies and practices. |
| **Direct incentives to innovation** | |
| Linkages between basic research, applied research and the industry could be improved | Strengthen linkages between basic research, applied research and the industry by undertaking the following actions:<br>Develop a long-term strategy for research and innovation in the food and agriculture chain by: clarifying the institutional roles of SBA, SLU and RISE, establishing a platform to co-ordinate their tasks, or by merging them within RISE (the Research Institutes of Sweden Holding AB); creating a national council to monitor R&D policies of institutions; setting up a national agricultural research institute to carry out applied R&D; and assessing the effectiveness of current funding allocations to research councils and universities.<br>Encourage active participation by stakeholders, producers and the industry in RISE, EU EIP-Agri and international networks to transfer innovation in agricultural practices, which focus on agri-food research and innovation on knowledge-intensive high-tech areas.<br>Ensure that farm advisors are well-trained, and are in possession of the most up-to-date practical knowledge and skills.<br>Strengthen research evaluation by improving the internal system for quality assurance.<br>Develop indicators and tools to evaluate performance and monitor the rate and quality of innovation in the food and agriculture sectors. In addition to traditional indicators on efforts (e.g. R&D expenditures) and outcomes (e.g. number and quality of patents), such indicators should include impact (e.g. the rate of innovation adoption, TFP and environmentally adjusted TFP growth, and agri-environmental indicators). |

*Source*: OECD (2018d), *Innovation,* Agricultural *Productivity and Sustainability in Sweden*, https://dx.doi.org/9789264085268-en.

## Turkey (2016)

**Box A C.11. Main opportunities and challenges for the food and agriculture system in Turkey**

- Turkey is a relatively well-endowed in land and water, and benefits from favourable climatic conditions for agriculture.
- Agriculture still employs almost a quarter of the active population.
- The Turkish agro-food sector has the potential to significantly contribute to the country's overall economic development, but its ability to do so will depend largely on productivity growth.
- Rigidities in the labour market, regulations, taxation and education, and lacking infrastructure investment, particularly in rural areas, slow the sectors' overall productivity growth.
- Irrigation expansion can help the growth of the sector if accompanied by improved and reinforced water management and policies.
- An essential challenge will be for Turkey to develop its rural economy to enable people to generate income outside low technology agriculture.

**Table A C.11. Policies for improving food and agriculture productivity and sustainability in Turkey**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Businesses face fairly rigid regulations, and there is room to improve conditions for doing business | Reduce the overall regulatory burden on entrepreneurship, particularly by simplifying regulatory procedures and administrative burdens on start-ups.<br>Ensure coherence across regulatory areas and different administrative levels.<br>Undertake a comprehensive review of business regulations and procedures to determine critical areas for further reform. |
| There has been progress in the development of environmental regulations, but implementation, monitoring, and assessment are also important | Continue the development and consolidation of environmental laws and regulations, and strengthen their implementation; ensure that appropriate human and institutional resources are deployed to fulfil environmental targets; improve the cost-efficiency of regulations and reinforce their acceptability. |
| The tariff regime is liberal overall, but better trade facilitation could increase gains from trade | Improve trade facilitation by expanding the application of internationally-harmonised standards, certification procedures and mutual recognition agreements. Simplify border formalities, ensure the disciplining of fees and charges, and support transparency and availability of information |
| The tax burden on businesses is moderate and substantial tax concessions are provided, but there are de facto distortions in business taxation | Continue efforts across policy areas to eliminate business informality, in particular, in order to reduce de facto distortions in the tax treatment of different-sized businesses. |
| **Capacities and services** | |
| The infrastructure gap is being reduced and future plans are ambitious | Pursue improvements in infrastructure, with a focus on impact assessment and the monitoring of infrastructure projects in terms of environmental sustainability, climate resilience, and changes in the availability and quality of agricultural land. |
| Stronger governance, monitoring and impact analysis is needed | Simplify governance and facilitate the co-ordination of infrastructure development initiatives at different administrative levels and with different scopes. |
| The rigid labour system impedes more modern and efficient businesses from developing, social safety nets remain insufficient. | Progress with the planned labour reforms; allow the formal sector greater flexibility in labour arrangements; strengthen unemployment safety nets, job placement, and up-skilling programmes. |
| Despite recent progress, education and skills require a major boost | Ensure that efforts to meet higher targets for participation in education take place in parallel with improvements in the quality of education. |
| Rural populations in particular need to become better educated | Enhance measures and the underlying resources for greater inclusion of rural populations in the education system, rural women in particular; align efforts to improve participation rates with social policies, exploit low cost distance-learning methods. |

| Main findings | Key recommendations |
|---|---|
| Various initiatives for better education have been undertaken and further objectives defined | Pursue the promotion of the non-government provision of education, with a special focus on vocational education and training; promote public-private partnerships in the area of education; co-operate with industry and professional organisations in the creation and updating of training packages, job placements, and advocate agro-food careers among those in vocational and higher education. |
| **Agricultural policy** | |
| Boosting domestic and export supplies is the principal orientation of agricultural policy | Move towards the more balanced distribution of public resources, including by down-sizing and targeting the eventual elimination of transfers to state economic enterprises and agricultural co-operatives. |
| Environmental sustainability has become an explicit policy objective and specific policy measures are emerging | Improve the efficiency of water use in a combined effort to develop and modernise irrigation systems, to put in place formal, transparent and simple water-sharing mechanisms, and to ensure the financial viability of irrigation systems. Integrate climate change adaptation and mitigation as a cross-cutting aspect of agricultural and agri-environmental policies |
| The current producer support structure is unlikely to be effective in stimulating long-term productivity gains | Move away from support which alters output and input prices and from product-specific subsidies. Increase focus on investments in people, strategic physical infrastructure, and agricultural innovation system that are responsive to the needs of producers and consumers.<br>Consider an assessment of existing subsidised agricultural insurance, with regard to its longer-term financial and actuarial soundness and in view of climate change risk. |
| Important productivity-enhancing general services have a small spending share and require a better balance | Exploit the possibilities presented in the new national agricultural information system to generate more comprehensive and up-to-date evidence on agricultural productivity trends and its determinants. |
| Rural diversification and environmental objectives attract little resources | Consolidate and enhance rural diversification activities across various agencies and within various programmes; consider a co-ordinated national rural diversification framework that focuses on the development of rural industries; increase the emphasis on rural diversification in regional and rural development investments. |
| **Direct incentives to innovation** | |
| R&D intensity in the agro-food sector lags behind other economic sectors and is low internationally | Enable increased R&D investment and R&D conduct by agricultural and food businesses; investigate the impediments to participation by these businesses in R&D compared to other economic sectors; consider actions to raise awareness amongst agricultural and food businesses of the opportunities for business development through R&D and innovation. |
| Agribusiness participation in R&D is increasing, aided by policy stimuli, but is still limited | Undertake an impact evaluation of tax incentives for business R&D in terms of their thematic focus, their association with national general and sectoral R&D priorities, and the alignment of incentives across R&D providers of different sizes. |
| IPR regulation has been considerably strengthened, while procedures and law enforcement require improvement | Raise IPR awareness amongst potential innovators, simplify procedures and regulations that protect IPRs, and strengthen law enforcement; exploit the flexibilities in country's international IP bindings to increase the availability of IP-protected products in the agricultural and food sector.. |
| Efforts are made to strengthen knowledge flows to farmers and industry | Strengthen feedback flows from local to higher levels of the public extension system in; consider increasing resources and staff to re-inforce the extension system at local level; continue encouraging the provision of extension services by private consultants |
| There have been rapid increases in R&D output, however further progress needs to be made with regard to its quality and impacts | Exploit further opportunities for bilateral and multilateral co-operation in R&D and technology transfer. |

*Source*: OECD (2016a), *Innovation, Agricultural Productivity and Sustainability in Turkey*, https://dx.doi.org/10.1787/9789264261198-en.

## United States (2016)

**Box A C.12. Main opportunities and challenges for the food and agriculture system in the United States**

- The United States has a large, innovative and internationally competitive food and agricultural sector.
- Abundant arable and pasture land along with diverse climatic conditions allow for the production of a wide range of crop and livestock products. The sector also benefits from a diversity of efficient family farm enterprises dominated by large operations, innovative managers, competitive agri-food companies, and a large domestic consumer market.
- High Total Factor Productivity (TFP), largely driven by farm consolidation and the continuous and widespread adoption of innovation, enables sustained agricultural production growth.
- TFP growth has been achieved with reduction in environmental pressures, but there still exist areas with significant environmental problems linked to agriculture.
- US food and agriculture can take advantage of growing and diversifying demand, at both the national and global levels. Yet market, climate and resource-related constraints create new challenges to meet these demands, while maintaining past levels of high productivity and improving sustainability.

**Table A C.12. Policies for improving food and agriculture productivity and sustainability in the United States**

| Main findings | Key recommendations |
|---|---|
| **Incentives for private investment** | |
| Competition policy facilitates adjustment and does not slow market-driven consolidation, but the issue of concentration in food and agriculture attracts widespread attention | Establish a system to monitor with greater regularity the impact of high concentration of firms in the agri-food sector. |
| Increasing vertical co-ordination (including via contracting) in the agri-food chain could potentially lead to a lack of transparency and the exercise of market power. | Reduce transactions costs for farmer participation in contracts with agri-food firms by establishing a common contracting format in each market; improve data collection on prices and quantities; and provide production and marketing advice to producers through public extension services to improve the participation of small producers. |
| Regulations on access to and use of natural resources mostly take place at the state level, with varying types of policy responses in terms of stringency, instrument choice, and priorities. | Improve water management regulations in agriculture to avoid over-use of water and to increase resilience to current and future scarcity, as well as ensure that water users pay the right price. |
| Regulatory frameworks and guidance are being reviewed with a view to facilitating new developments, while maintaining trust in the system. | Review regulations to respond to science and technology developments and changes in consumer, societal and market demand. Increase transparency and discussion with stakeholders concerning regulations on product and processes. |
| Interesting initiatives have been implemented to facilitate trade via the use of single window and electronic data management. | Sharing this experience with other countries would further contribute o international trade facilitation. |
| Numerous exemptions to corporate and personal income tax distort economic activities and are often regressive. | The 2015 OECD report Going for Growth (OECD, 2015e) includes recommendations to reduce statutory marginal corporate income tax rate and broaden its base, eliminate regressive exemptions, and to simplify eligibility procedures and record-keeping requirements. The report also recommends increasing reliance on environmental taxation. There is scope for applying this recommendation to agricultural activities. |
| **Capacities and services** | |
| Telephone and internet coverage and use are unequal across regions and by technology. | Continue to facilitate access to broadband and the management of information given that data-intensive knowledge is increasingly important to improving productivity and sustainability in food and agriculture. |
| The labour market functions flexibly, but the sector faces labour shortages, in particular for hired, seasonal labour. | Implement pro-active skills policy and information systems to facilitate the labour force moving into areas with strong demand. |

| Main findings | Key recommendations |
|---|---|
| The United States is a global leader in tertiary education, but performs poorly below secondary level, despite the high level of investment. | Assess the relevance and cost-efficiency of secondary education in agriculture-related areas in providing the skills required for a modern economy. Improve co-ordination and consolidate the information base to facilitate evaluation of different initiatives, sharing of experience to achieve higher levels of performance. Sharing experiences with other countries could also be useful. |
| The agricultural education system faces a number of challenges, arising in particular from the broader range of knowledge required in this sector. | Increase public knowledge of science, in particular of biological, agricultural and food processes, through education and communication, to facilitate acceptance of innovation and the expression of informed choices.<br>Reduce the shortfall of college students in this sector by reaching out to non-traditional agricultural students. Use other mechanisms that involve stronger co-ordination with the private sector, and implement specific training programmes. Consider the introduction of quality requirements to receive federal support, and common core standards in primary and secondary education.<br>Increase exposure of agricultural science specialists to social sciences, which should be included in agricultural science curricula as they are increasingly important to improving the relevance of food and agricultural innovation, and to ensuring that research leads to economically useful and ethically acceptable innovations. |
| **Agricultural policy** | · |
| Producer decisions respond largely to market signals, although resource allocation across commodity sectors could be improved. | Better link agricultural policies to clear objectives to facilitate policy evaluation and reduce policy uncertainty.<br>Continue to reform commodity programmes, including those market price support measures and other commodity-specific support measures that remain to reduce distortions |
| The emphasis on insurance and risk management policy tools increases. | Evaluate risk management instruments to ensure they do not transfer risk to the public budget that should be borne by farmers, and to monitor they effectively lead to better targeting of risk. |
| Insurance programmes remain commodity-specific. | Move towards an all farm-revenue approach to exploit differences in price and yield variability across products, thereby reducing government costs for a given objective as well as removing distortions across commodity sectors.· |
| The design of agri-environmental programmes has improved, with better targeting of a broader set of environmental issues, but environmental issues remain at the local level. | Strengthen the role of the federal government to co-ordinate and facilitate the implementation of efficient approaches to state or local agri-environmental problems. Provide guidelines, mechanisms to share experiences, and matching funds if appropriate.<br>Increase the scope of the polluter-pays-principle to address environmental pressure from agriculture to free funds for more ambitious agri-environmental targets where appropriate, and reduce unsustainable intensification on non-enrolled land (slippage effect). Consider market-based approaches to reduce environmental pressure and the development of environmental service markets, such as carbon offsets and water quality credit markets.<br>Continue to improve the design of agri-environmental programmes, using best available scientific and economic evidence basis, to better target and tailor to actual needs. Explore the feasibility of introducing output-based targets through pilot programmes |
| The good information base and analytical capacity supports the design and evaluation of policies. | Continue to maintain a good information base and analytical capacity to monitor progress, evaluate policies and guide farmer decisions, with specific attention to innovation adoption and environmental practices. Foster the development of internationally-comparable indicators and open data. Continue to improve information on the potential impact of climate change at the local level through research and scenarios analyses to help adaptation of farming systems. |
| **Direct incentives to innovation** | |
| The agricultural innovation system needs to continuously adapt to new innovation challenges. | Establish a national innovation office to increase coherence and continuity in implementation of the national innovation strategy. Pursue efforts to build bridges with other sectors in response to changing global landscape for science and technology, including the emergence of integration of life sciences in other disciplines.<br>Strengthen mechanisms to better reflect environmental and societal considerations in agricultural research and facilitate the development of technologies and systems allowing for a better management of natural resources and improved resilience to risks. Integrate food and agriculture in the climate-change strategy, including energy saving promotion and low carbon technology in the sector. |

| Main findings | Key recommendations |
|---|---|
| Public funding of agricultural R&D has decreased over time, building complementarity with private R&D. Reduction in public funding increases pressure for higher focus and efficiency, but basic public capacity is needed for the functioning of the whole system | Maintain public research capacity in food and agriculture, with secure and adequate funding. Evaluate public research infrastructure to upgrade equipment and rationalise costs. Build further complementarity with private R&D and focus on public good aspects. Strengthen assistance to global food and agricultural science and development for agricultural innovation.<br>Review the efficiency of different funding mechanisms to ensure higher impact. Consider greater use of mechanisms that incentivise transdisciplinary and system-based approaches, and wider stakeholder involvement that increases relevance. |
| Agricultural research funding has evolved to better exploit public-private complementarity. | Explore further research collaboration opportunities at multilateral level or with non-traditional partners, in particular to deal with global issues. |
| Federal funding of public extension services has also decreased and the consolidation of county programmes has resulted in a reduction of the number of county agents | Ensure farmers continue to receive advice facilitating sustainable management and adaptation to new pressure, despite reductions in expenditure for public extension services, and have ready access to the newest technologies available to maintain competitive hedge.<br>Strengthen support to technical assistance and research projects in agri-environmental policies and use it to better understand issues and needs. |
| Efforts to improve transparency and evaluation will contribute to greater relevance and trust. | Continue funding and improving tools for improved monitoring of research investments and results, in collaboration with other countries and organisations, to allow for better impact analysis and review of innovation policy mechanisms and broader reviews of the food and agricultural innovation system. Promote the integration of research data at the international level.<br>Develop improved, transparent, and flexible regulatory and information programmes for biotechnology, animal welfare, and climate change to facilitate the public acceptance of innovations in these, and other areas, and the materialisation of their potential benefits. |

*Source*: OECD (2016b), *Innovation, Agricultural Productivity and Sustainability in the United States*, https://dx.doi.org/10.1787/9789264264120-en.

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OECD Food and Agricultural Reviews

# Innovation, Productivity and Sustainability in Food and Agriculture

## MAIN FINDINGS FROM COUNTRY REVIEWS AND POLICY LESSONS

Markets that function well within a stable regulatory and policy environment are key to improving the productivity and sustainability of the food and agriculture sector. This report contains the main findings and policy lessons gained from a series of wide-ranging country reviews on how government policies can improve sectoral productivity and sustainability through their impact on innovation, structural change, natural resource use, and climate change. Improving the policy environment would require rolling back those policies that distort markets the most and retain farmers in uncompetitive and low-income activities, harm the environment, stifle innovation, slow structural and generational change, and weaken resilience.

Agriculture policy should focus instead on measures that facilitate the uptake of technologies and practices that use resources more efficiently and sustainably, and which contribute to reducing greenhouse gas emissions. Of equal importance are: a more collaborative approach, more effective governance systems, the development of long-term strategies, strengthened linkages between national and international actors, and comprehensive and coherent evaluation procedures. Public funding of food and agricultural research is also crucial, and private efforts need to be strengthened, including through public-private partnerships. Finally, improving overall policy coherence would contribute to building trust, and to increasing policy effectiveness at each step of the food and agriculture chain.

Consult this publication on line at ***https://doi.org/10.1787/c9c4ec1d-en***.

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